ARMENIA

PROJECT TECHNICAL NOTES AND WORKING PAPERS FOR ARMENIA

The European Union's TRACECA programme

for Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

EUROPEAID/133698/C/SER/MULTI

March 2016

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Project Title:	**TRACECA – Road Safety II**
Project Number:	EuropAid/133698/C/SER/Multi
Beneficiary Countries:	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Ukraine, Uzbekistan.
Project Partner	**Contractor**
Name: Directorate-General for Development and Cooperation - EuropeAid European Commission	Consortium SAFEGE – IMC – Grant Thornton – Granturco, led by SAFEGE

Content this document:

1. All Project Technical Notes and Working papers
2. Reports of Specialists visits to Armenia
3. DVD (on last page)
   - Electronic PDF-files of Project Technical Notes of Working Papers undertaken in Armenia
   - Film of Study tour and Training in Serbia

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Note

The since these are internal working documents produced by different experts within the Project Team they have not been edited to a common format or formally proof read. They are working documents not final reports for external publication and provided here only for information for those who may be interested to get an overview of road safety in each sector in each country.

CONTENT OF WORKING DOCUMENTS REPORT FOR ARMENIA

This Report for ARMENIA contains case study/overviewa of the Project and 22 individual sector reports prepared under the EU funded TRACECA Road Safety II Project. Each report is a freestanding report and can be extracted for standalone distribution and usage. The reports are preceded by an overview section to place the reports and contents in context.

Preface and overview of project

1. Benchmarking (reference to downloadable Regional Benchmarking Report)

2. Road Safety Management

- **2.1 Road Safety Management, Coordination and Funding** (Country Specific Report)
- **2.2 Action planning workshop** (Country specific report)
- **2.3 National Action Plan** (Country Specific Report)

3. Crash Data System

- **3.1 Analysis of Crash Data System** (Country Specific Report)
- **3.2 Crash Data Benchmarking** (Country Specific Report)
- **3.3 Comparison with CADAs EU protocol** (Country Specific Report)
- **3.4 Regional GIS Database outline of possible structure** (Regional Report)
  - 3.4.1 Crash Data System – User Manual for TRACECA Countries
  - 3.4.2 Crash Data System – User Manual for Stakeholers

4. Safety Engineering, Roads

- **4.1 RSA-BSM Mission Report** (Country Specific Report)
- **4.2 Safe Design Mission Report** (Country Specific Report)
- **4.3 Freight routes/Parking Mission Report** (Country Specific Report)
- **4.4 Regional Guidelines:**
  - **4.4.1 Regional Road Safety Audit Manual** (Regional Report)
  - **4.4.2 RSA Policy, Legislation changes and Training Curriculum** (Regional Report)
  - **4.4.3 Black Spot Management Guidelines** (Regional Report)
  - **4.4.4 Guidelines for routes for freight/through traffic to avoid residential areas** (Regional report)
- **4.5 Safety engineering workshops**
  - **4.5.1 RSA/BSM** (Regional report)
  - **4.5.2 Design** (Regional report)
  - **4.5.3 Tunnel Safety Workshop Reports** (Regional Report)

5. Safety Engineering, Vehicles:

- **5.1 Technical Inspection & Motor Vehicle Safety Regulations/Standards** (Country Specific Report)

6. UN Conventions and EU Agreements

- **6.1 UNECE Conventions** (Regional Workshop)
- **6.2 AETR Convention** (Country Specific Report)
- **6.3 UN 1958 Agreement** (Country Specific Report)
- **6.4 ADR Mission Report** (Country Specific Report) – no country report prepared for the country

7. Road Safety Implementation, Training and Research

- **7.1 Decision makers and academics** (Country Specific Report)
- **7.2 Academics** (Country Specific Report)

8. Study Tour and motivation (DVD)

9. DVD with all Reports and Study Tour

- **DVD with all working documents and Technical Notes**
- **Film of Study Tour**

Preface

The "TRACECA Road Safety II" project's main objective is the implementation of the TRACECA Regional Road Safety Action Plan, ensuring that the corridor transport system actively promotes the safety, security and protection of users, property, general public and the environment that might be involved in or affected by this system.

The project covers the following TRACECA countries[1]: Armenia, Azerbaijan, Georgia, Moldova, Kazakhstan, Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan. The project is aimed at supporting all 9 countries in their efforts to improve capacity to implement improvements in 6 sectors of road safety:

1. Safe Management
2. Safer Roads
3. Safer Vehicles
4. Safer Road Users
5. Safer Emergency Services
6. Changing attitudes

Activities in the first 3 sectors are being implemented by a consortium led by Safege (and which has produced this country report) and focuses more on establishing the institutional structures, standards and capacity building to enable sustainable road safety activity. The last 3 sectors are being implemented by an international NGO Global Road Safety Partnership (GRSP) and focuses more on developing capacity at local level to design and implement interventions aimed at risk factors in those sectors. Because management of road safety requires a multidisciplinary approach across all sectors the Safege part of the project addressed safety management and coordination across all 6 sectors but dealt only with sectors 1-3 in terms of technical issues.

The first task of the project was to benchmark the current situation in each sector in each country to identify the strengths, weaknesses and needs of each country. The next phases were spent in undertaking 17 regional, sub regional and national workshops to introduce over 450 local experts from the key stakeholders in beneficiary countries to develop country specific road safety action plans and to train over 70 local experts in key aspects of safety engineering.

The last phase of the project was used to "institutionalise" road safety in each country according to its particular needs. This included advice on management, coordination and funding of road safety and encouraging establishment of local road safety audit (RSA) courses to be run annually by the RSA instructors trained by the project, introduction of safety engineering into final year of road engineering degree courses review and guidance on implementation of UNECE Conventions /EU Agreements related to road safety, review of vehicle safety and crash data systems, assistance in development of road safety research programmes in universities and research institutes, getting road safety aspects included into road design standards and approval processes and capacity building in key sectors of road safety. The project has been designed using the "safe systems" approach and is being implemented in accordance with best international practices.

[1] Turkmenistan was originally to be included but they did not participate in the project beneficiary countries. Aid with agreement/approval of EU was dropped from the schedule of project activities. They were however kept informed of events.

A number of reports/guidelines and documentation have been produced on various aspects of road safety by the Project Team. Some are Regional and some are country specific. The series of reports and documents shown diagramically on each back page of this report and are as follows:

A. Contractually required deliverables
1. Inception report *(available on TRACECA website)*
2. Interim reports at 6 monthly intervals (4) *(available on TRACECA website)*
3. Final report *(available on TRACECA website)*

B. Additional deliverables
1. Benchmarking report(available on TRACECA website)
2. Country Specific Reports containing working papers, Technical Notes and country visit reports distributed directly to key stakeholder in each country.

For more details please visit TRACECA web site:
http://www.traceca-org.org/en/technical-assistance/traceca-road-safety-ii/

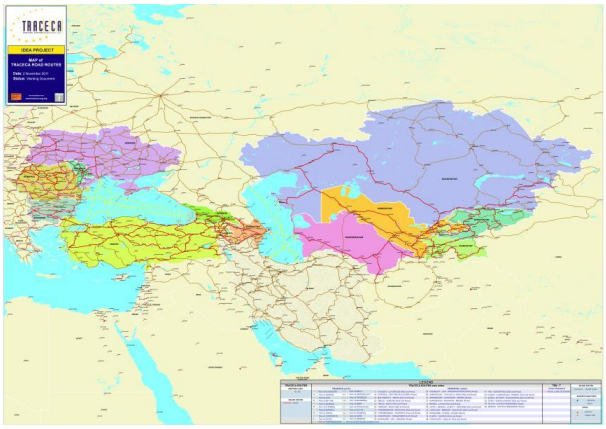
CASE STUDY

EU FUNDED REGIONAL APPROACH TO IMPROVING ROAD SAFETY VIA MULTI COUNTRY PROJECT [1]

Safege portion of *TRACECA* Regional road safety Project II
(Covering10 countries in Eastern Europe, Caucasus and Central Asia)

1 BACKGROUND

This 2-year project which commenced mid-January 2014 and which finishes mid-March 2016 is an EU funded regional road safety project covering 10 beneficiary countries in TRACECA region. This region covers the countries between China and Europe and includes Armenia, Azerbaijan, Georgia, Moldova, Kazakhstan, Kyrgyzstan, Tajikistan Turkmenistan[2], Ukraine and Uzbekistan.



Regional statistics
Road deaths: 19000/ years Road injuries: 200,000 / year
Annual losses: US$ 17 billion / year (Approx. 4 % of annual regional GDP)
Regional Ave Deaths / 100000 Population = 15.27
(EU Average = 6)

These countries over the next 30-50 years are likely to experience huge increases in traffic as a result of the expected increasing trade links between these 2 major economic powers. Even with the current relatively low traffic levels, there are around 19,000 road deaths and nearly 200,000 persons injured every year and this is now costing the region around US $17 billion annually (4% of the region's GDP) and risk of death in a road crash is about 2 to 3 times as high as the average of EU countries. The economic losses from road accidents are about 5 times as high as the total development aid provided to that region). With increasing traffic levels such human and economic losses are certain to increase in future years unless effective action is taken to prevent this.

The project is aimed at supporting the 10 countries in their efforts to enhance their capacity to implement improvements aligned to 6 sectors of road safety; 5 of which are same as the 5 pillars in the UN Decade of Action (safety management, safer roads, safer vehicles, safer road users and safer emergency services). In addition, the project also includes activities in a 6th sector "changing attitudes".

The activities in the first 3 sectors are being implemented by a consortium led by Safege[3] and focus more on establishing the institutional structures, standards and capacity building to enable sustainable road safety activity within individual countries and across the region.

The activities targeting he second three 3 sectors are being implemented by the Global Road Safety Partnership (GRSP)[4]. The objective of this part of the project is to help building the capacity of both government and civil society stakeholders to design and implement community-based risk factor interventions, to promote long-term and sustainable multi-sectorial partnership and knowledge sharing, and to increase collaboration and cooperation within Eastern Europe, Caucasus and Central Asia sub-regions. To achieve these objectives, the GRSP is implementing the project through the multi-pronged and multi-partnership approach. Their model of partnership involves the collaboration of twelve co-implementers (Red Cross and Red Crescent societies, civil society organizations) with different level of technical and organisational capacity and operations.

[1] The contents of this case study are the views of the author only and do not necessarily reflect the views of the EU or other parties involved.
[2] Although originally included as part of the regional project, Turkmenistan did not take up the invitations to participate in the various workshops and training opportunities.
[3] The consortium led by Safege includes IMC, Grant Thornton and Granturco.
[4] The non-profit Global Road Safety Partnership (GRSP) is hosted by the International Federation of Red Cross and Red Crescent Societies (IFRC) and is dedicated to the sustainable reduction of road-crash death and injury in low- and middle-income countries. http://www.grsproadsafety.org/

However, in order to ensure a holistic approach across all 6 sectors, the 2 consortia are coordinating their efforts and collaborating where feasible to maintain a consistent approach and to develop a single unified road safety action plan for each country. In addition, since the project led by GRSP focuses primarily on risk factors and community-based interventions and does not address the wider structural, organisational and coordination issues in its three sectors, the project led by Safege/IMC, because it has to address all sectors in considering management and coordination of road safety, will address management aspects of those sectors as part of its overall effort to improve management coordination and funding of road safety.

The following section describes how the Safege consortium project developed and then systematically implemented a strategy focussed on delivering agreed impacts that will increase the chances of sustainability. In developing and implementing the strategy the team drew upon the best practices and guidance available in various World Bank and other documents[5 6 7]. The strategy also took into account the fact that although a similar general approach can be used to provide consistency and comparability, the starting position and needs of each country are very different. To be sure that the required impact has occurred, these "starting positions" and needs had to be documented in some systematic way so that country specific solutions could be developed to meet the particular circumstances of each country. The EU task managers had also emphasised the need to deliver real impacts though the project and the consultants were asked to give particular attention to this aspect in their implementation strategy so that such impact could be demonstrated at project end.

In order to place high emphasis and focus on delivering the impacts that will lead to sustainability, the project team developed a 4-phase strategy for implementation:

Phase 1: Understanding problems, needs and constraints in each country
Phase 2: Developing capacity amongst key specialists to be able to apply safe systems approaches
Phase 3: Developing motivation and aspirations of key decision makers in these countries
Phase 4: Institutionalising road safety activities to increase likelihood of sustainability

2 PHASES 1 AND 2: UNDERSTANDING THE PROBLEMS, NEEDS AND CONSTRAINTS IN EACH COUNTRY AND DEVELOPING CAPACITY

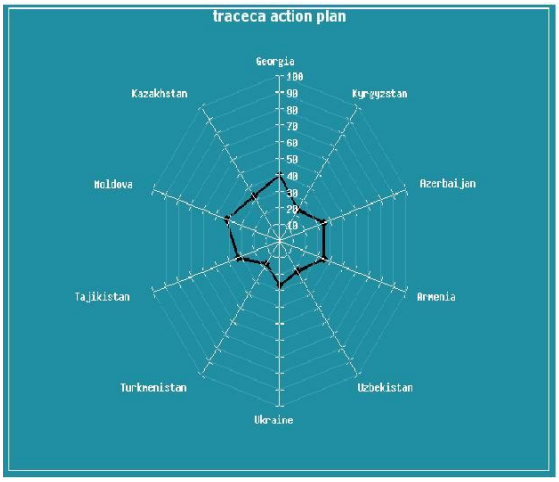
The Safege led consortium project focused in its first 2 phases on understanding the general problems across the region, identifying the particular problems inhibiting development of road safety within key sectors in each of the 10 individual countries and in training of safety engineering and other professionals in key sectors from each country. This was done through a number of activities including:

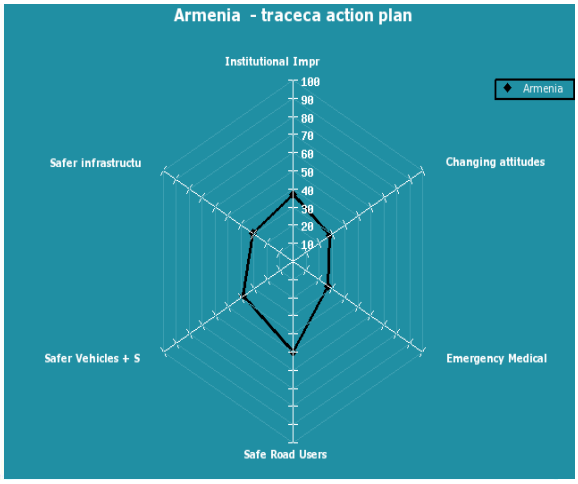
- **Visits to every one of the 10 beneficiary countries during inception period** for discussions with experts in each country so that current status of safety activities and institutional capacity regarding road safety could be "benchmarked" at project commencement against impact indicators related to institutional development. For example to assess if there is effective capacity to manage and coordinate road safety activity, we can check to what extent (0% to 100%) that elements and functions such as the following exist in a country:
  - Legislation exists designating responsibilities for road safety
  - A coordination body has been established
  - There is a fully staffed and funded Secretariat to follow up coordination body decisions
  - Reliable sustainable funding is available for safety activities and interventions.

Depending on the extent to which that these and similar "institutional development indicators" exist and are fulfilling their function, one can make a rough assessment of the likelihood of there being effective institutional capacity to manage and coordinate road safety in that country. The data can be presented in DEE benchmarking spider charts.

[5] World report on Injury prevention, WHO/ World Bank, Geneva, 2004
[6] World Bank Road Safety Management Project Guide
[7] Road safety management capacity review and safe systems projects - Guidelines, GRSF, World Bank, May 2013

These can show the strengths and weaknesses of each country and within each individual sector (examples below show percentage progress in all countries on implementing action plans and an example spider chart from Azerbaijan shows how it compares on key aspects of "management and coordination" against the average (in white) of all TRACECA countries. Similar DEE[8] benchmarking spider charts were prepared for each country and for each sector and subsector within each country to provide a definitive overview and record of the position at the project start point.





These aspects benchmarked at commencement can be used during the project to keep everyone focused on what has to be delivered by project end and if repeated at project end, provide a very convenient and unambiguous way to demonstrate the specific changes and impacts achieved by the project

- **7 Regional and sub regional workshops and training courses** ranging from 2 days to 5 days to do capacity building of key experts and potential future trainers from each country and to agree sector specific needs in key sectors in each country. This resulted in over 70 persons being trained in safety engineering issues such as, tunnel safety, road safety audit and Blackspot management programmes. Over 20 were given an additional 1-week intensive course on safety auditing. After further training in following months and submission and marking of their practical projects/ assignments, around 15 were certified as Road Safety Audit (RSA) Instructors able to train others in their respective countries and the remaining 5 being certified as only as Road Safety Auditors The now constitutes a pool of 20 Road safety auditors all trained to a consistent level and able to provide safety auditing services at local prices in each country plus a capacity to develop future safety auditors to create a larger pool of road safety auditors to meet the growing needs for such services. Draft regional guidelines have been prepared on road safety Audits and Blackspot programmes and guidance provided on alternative ways in which mandatory road safety audits can be included into legislation.
- **9x Four day National Action planning workshops** for 40 -50 representatives from the key stakeholder agencies in each country to develop priority action plans aimed only at removing obstacles and impediments preventing effective road safety activity in each sector and to define priorities for action. Over 450 senior persons from key government, private sector and NGO stakeholders introduced to international best practices in road safety in key sectors and successful road safety programmes in the region and from around the world. Safety experts from each country participated via sector specific breakout groups within each workshop to develop the action plans for each sector that were then amalgamated into 3 year priority action plans for each country. Where necessary or feasible an interim multisector working group was established in each country to liaise with the project team and to provide coordination until appropriate more formal coordination mechanisms could be established by government.

[8] DEE technique - impacts and outcomes delivery system - see www.deetechnique .com

3 PHASE 3 DEVELOPING MOTIVATION AND ASPIRATIONS OF KEY DECISION MAKERS IN THESE COUNTRIES

A **Study tour was organised for 24 deputy directors / 2nd highest officials from the 3 most important organisations** responsible for road safety in each country (traffic police, Ministry of transport and roads administration) to show them how other similar countries have improved road safety. Normally such study tours are organised to take senior officials to the countries with the best road safety (e.g. Sweden, UK, Netherlands etc.). Although this can be very useful in giving participants an overview of what can be achieved in a country, this can sometimes also be counterproductive and intimidating as study tour participants can sometimes go away disheartened at the huge gap between their own country and the study tour country in terms of road safety, systems and funding. They often return to their own countries depressed and disheartened feeling that it would be impossible to reach such high levels of safety in their own countries. It was therefore necessary for motivation and aspirational purposes, to identify a role model country which was similar to them but which had been very successful in road safety and to which they could relate to better and see as a possible aspirational role model.

The ex-Soviet countries that are now in EU all had very similar ex-Soviet systems, standards and constraints that currently exist in TRACECA region but overcame them and like other EU countries managed to make dramatic reductions of 40-60% in road deaths in the last decade by adopting the safe systems approaches being applied in other EU countries. Although they achieved significant reductions and are potential role models for the ex-Soviet TRACECA countries, they are, in fact, not the best examples since, as a consequence of being EU members, they had additional pressures on them, to comply with EU directives, agreements and legislation affecting road safety and which pushed their governments to comply with EU best practices. However, another nearby country, Serbia is NOT an EU member so did not have such pressures but also had similar ex-Soviet systems, practices and constraints to those in TRACECA countries. Despite this, they also achieved equally impressive reductions in road deaths over the last 10 years as were achieved in EU countries. They did this by **voluntarily** adopting and where appropriate adapting best practices from Europe and applying them in their country.

Table 1: Success in ex-Soviet countries implementing EU approaches to road safety.

	Road deaths		%Change	Deaths /100.000 population	
	2001	2011	2001-2011	2001	2011
Bulgaria	1011	755	-34.9	12.4	8.9
Czech Republic	1334	802	-47.0	13.0	6.7
Estonia	199	101	-49.2	14.6	7.5
Hungary	1239	638	-48.5	12.1	6.4
Latvia	558	179	-67.9	23.6	8.0
Lithuania	706	297	-57.9	20.2	9.2
Poland	5534	4189	-24.3	14.5	11.0
Romania	2461	2018	-18.0	10.9	9.4
Slovakia	814	324	-47.2	11.6	6.0
Slovenia	278	141	-49.2	14.0	6.9
Serbia	1275	728	-42.9%	16.99	10.06
European Union ((EU)	54302	30108	-44.6	11.3	6.0

Consequently Serbia was potentially a much more “replicable ” role model and all participants, although initially very dubious about the merits of going to Serbia for a study tour, went away astonished that a country like them and despite its similar ex-Soviet constraints was still able to address its road safety problems effectively and achieve huge reductions in road deaths. The study tour participants were given some joint and some sector specific training each morning and then taken on site visits each afternoon so they could talk directly to and to question/ interrogate counterpart officials in Serbian government organizations who were directly involved in implementing the major reforms in how road safety is addressed in Serbia. The participants from TRACECA countries went away highly motivated and enthused feeling that

if a country like them which is not in EU or wealthier or smarter or with better educated officials can do this, then there is absolutely no reason why their own countries could not also do this. This to them was not only an achievable goal but for the richer or larger countries, a little bit shaming that a small, much poorer country had been able to do so much more in road safety while they despite their size and wealth had been able to do so little in their own countries. All study tour participants went away highly motivated and determined to do something to move road safety forward in their own countries. Follow up visits taken to date (e.g. Moldova, Georgia and Kazakhstan) have confirmed that this much more motivated and more proactive approach is now evident amongst these "leaders of road safety" who returned enthused from the study tour and there is some evidence that they are pushing harder for action to be taken to improve road safety.

In order to encourage regional cooperation, sharing of expertise and exchange of information across the region, the opportunity was to create 3 informal regional sector specific working groups (in traffic police, in ministries of Transport and in roads agencies) with relevant representatives from each country. These sector-working groups will be encouraged to share information, guidelines and to harmonize activities (e.g. police fines and penalties) to develop a more consistency in dealing with road safety issues across the region. In addition, the one week of close proximity by the 3 key persons from each country (some of whom did not know each other well before the study tour) also enabled "bonding" and growth of friendships amongst these 3 key officials to create a core team of key senior officials in each country with a common vision on how road safety can be improved in their country.

4 PHASE 4 INSTITUTIONALIZING ROAD SAFETY TO INCREASE LIKELIHOOD OF SUSTAINABLE ACTIVITY

Most of the TRACECA project beneficiary countries are still at an early stage of road safety development and need practical assistance /guidance to develop their road safety activities – especially in management coordination and funding of road safety. For road safety to germinate, prosper and grow we need to systematically build road safety into the normal activities and practices in selected organizations that can influence road safety in a country and to develop, train and motivate key individuals who can then go on to train and motivate other professionals beyond the project period.

We need to provide guidance on safety legislation, international conventions and organisational structures and mechanisms to manage and stimulate road safety activities. We also need to enable the road safety audit instructors developed earlier within the project to train other local safety auditors each year as needed. These 'institutionalizing' activities are being implemented by deploying a number of teams (each typically with 1-3 experts from the project) to make 2-day visits to each country with each team focussing on their particular specialist topics or aspects. They will work with small groups of 12-15 relevant local experts from that country in round table discussions, site visits and practical training sessions. Sometimes two or more teams will be in the same country on the same days because of need to have joint sessions, but most of the time each team and members within each team will have their own distinct programme of tasks and team specific schedule of visits. Team members will be drawn from our pool of international of experts who are all practitioners with extensive practical implementation experience in their areas of expertise. Our pool includes many of the same individuals who were the architects and implementers of the major reforms that were done in Serbia to convert a country with typical ex-Soviet systems, corruption and constraints, etc. into one with a modern EU safe systems approach to road safety. They can share their practical experience with the TRACECA countries. Once the initial round of visits to initiate activities have been completed, the core group of experts will be redeployed/reconfigured into different "teams" with different tasks so that they can do follow up activities initiated earlier and provide mentoring / support until local experts are confident and able to do the key activities that we are trying to institutionalize in each country.

All of the activities are defined in the original work programme in the project inception report but have now been developed in more depth so that impacts and sustainable activity can be delivered in each country. The activities are designed to initiate, develop or expand safety activity in key institutions or organisations and to create a supportive and conducive environment for road safety to take root so that it can grow and prosper. Trying to create win – win solutions and activities that will institutionalise road safety activity so that it will continue and expand because of local interests

beyond the project end, will do this.

The teams that are being deployed during the institutionalising phase are as follows:

1 Road safety Audit (RSA) and Blackspot management (BSM) team will make follow up visit to every country to help them develop BSM activity and do further training / evaluation of the BSM engineers and the road safety audit (RSA) instructors that we trained during phase 1 – the best of whom we certified as "project approved" Safety Auditor Instructors. We have provided guidance on alternative ways to draft legislation for mandatory safety audits, have developed regional guidelines on safety audit and separate regional guidelines on Blackspot management programmes. We will help to establish an annual road safety audit course at a university or under a 'society of engineers' or similar in each country to develop a regular local safety audit course to develop local safety auditors. The team will make a second visit later to check on developments and progress with implementation.

2 Action plan implementation and safety training team will make a visit to every country to implement a 1 day workshop / round table discussion with the 12-15 member interim working groups (established from key agencies after each action planning workshop and who are developing / finalising the immediate road safety action plans). This team will cover action plan implementation and provide practical examples of how to implement safety in each sector in a country. On the 2nd day, they will hold a ½-day round table discussion with university professors and assist them to introduce modules of road safety lectures into relevant university courses. They will also implement a ½-day round table discussion for university professors and local research institutes on road safety research (including crash costing) and provide assistance / support and mentoring plus links to overseas university researchers to start implementing and encouraging development of road safety research programmes in each country.

After the first round of visits, the team will make further follow up visits to monitor and oversee development / integration of safety modules provided for inclusion into local university courses and to provide mentoring for those doing safety research (including crash-costing research). They will also establish links with overseas researchers for joint research projects and publishing of research papers on road safety issues.

3 UNECE conventions Team. Individual experts on EU Agreements and UNECE Conventions will be deployed to make 2-day visits to different groups of countries in accordance with the needs identified and specific assistance requested by individual countries at the regional UNECE conventions workshop. For example, ADR (dangerous goods) expert will visit 6 countries, and the AETR (working hours) expert will visit 6 countries and the Vehicle regulations expert will visit 5 countries. Each expert will have his own programme and schedule of visits but they will occasionally be together for joint activity. Each expert will provide advice/practical training as required in their specialist areas.

4 Vehicle Periodic Technical Inspection team will make a 2 day visit to each of the 9 countries to assess the effectiveness of current practices in periodic technical inspection of private vehicles, to provide training where needed and advice /guidance on how things could be improved. A second follow up visit will be done a couple of months later to review progress and to develop road maps for improvement (where a system already exists) or for introducing a periodic technical inspection system (where a periodic technical inspection system for private vehicles has been discontinued /suspended e.g. Kyrgyzstan, Ukraine and Georgia). Additional visits will be made to assist them to re-establish periodic technical inspection of light vehicles.

5 Crash data systems Team will visit police in every country to review existing systems and practices in crash data collection, storage, retrieval, analyses and dissemination in relation to best international practices before recommending country specific improvements to the crash data system, data analyses and accessibility to data by stakeholders in a country. If possible and police agree, we will identify core non-confidential items that could be placed on a regional crash database where data could be accessible to all countries for inter-regional comparisons etc.

6 freight traffic routes and commercial parking team The expert has already visited several countries in the region while providing inputs to the safety engineering work in phase 1 so will make a few more visits before preparing the draft guidelines and recommendations. These will then be discussed further with roads administrations in each country by the RSA and BSM team and later the Design Standards team.

7 Safety Design Standards team This team will do a "gap analyses" of existing (ex-Soviet style) road design standards and practices of scheme approvals/ checking in each country to identify the impediments, which are preventing application of modern techniques of safety conscious planning and design. They will then develop recommendations on how road design standards need to be improved/updated to incorporate safety engineering and to permit modern speed reduction interventions such a traffic calming on major roads where they pass through small communities. They will also suggest how the road design approval process can be improved to remove the current (ex-Soviet style) focus on simplistic ''compliance with standards" to one where the proposed road scheme is reviewed from a wider safety and operational perspective instead of just compliance with (often out-dated or inadequate) design standards.

8 Management, Coordination, Funding and Cost estimation team (variable numbers - drawn from our core team and our pool of experts as necessary). This team will provide inputs to the work of other teams as well as providing advice/ guidance to beneficiary stakeholder organisations on the 4 key aspects of management, coordination, Funding and crash cost estimation plus related issues such as legislation, crash data system etc. Different experts will participate in this team as and when needed and each team member will follow up his/her specialist areas of activity in that country when the team visit a country.

All of the above teams will be working on a number of integrated tasks where the aggregated activities of all teams will influence and affect the final outcomes in a particular sector in a particular country. We expect to achieve significantly increased institutional capacity of the beneficiary countries to address road safety issues. We will also have developed and motivated a corps of local experts in key sectors who can continue improving safety in each country. We will also have initiated key activities such improved crash data analyses and accessibility, regular road safety audit courses, road safety research and inclusion of road safety training into the curricula of universities producing future road engineers and other key professionals. All of these activities will initiate the development of a more conducive environment for road safety to develop and grow in each country.

The 3-year priority plans have been finalised for each of the 9 countries and each country has been assisted during the first year to remove the most urgent obstacles and impediments inhibiting the development of effective road safety activities. The institutionalisation of some safety activities will sow the seeds for more effective activity if they can be nurtured and supported, but much will depend on the willingness of countries to take road safety more seriously and to see road safety as an investment and not as a cost. Ideally, the countries should be assisted to implement the whole of the 3-year priority action plans that would embed road safety into all key sectors and make it highly likely that sustainability could be achieved.

5 COMPLIANCE WITH BEST INTERNATIONAL PRACTICE IN DESIGNING / IMPLEMENTING ROAD SAFETY PROJECTS IN LOW AND MIDDLE INCOME COUNTRIES

The project has been designed using the "safe systems" approach and is being implemented in accordance with best international practice as outlined below:

1 Lead agency empowerment

Most of the 10 countries are at an early stage of road safety development and do not yet have effective road safety coordination, management and funding of their road safety activities. Relevant technical assistance is being provided as needed to each country to strengthen these activities. Country specific priority action plans have been finalised to identify and remove obstacles and impediments to improvement of road safety. Interim multi-sector working groups are being established in each country to do coordination until more formal structures can be established and a lead agency designated. Assistance /guidance is being provided on safety legislation and in some countries (e.g. Ukraine) assistance/ support has been being provided to establish and support a Parliamentary road safety subcommittee to raise awareness and to promote road safety amongst highest level decision makers.

2 Health Sector Collaboration and Partnership

The health sector is included in the working groups being established and health sector along with other key stakeholders from government private sector and NGOs are being encouraged to work in partnership to support and promote the multisector approach advocated via the project. Health sector data will be used along with Police crash data and data on insurance compensation claims to estimate the true value of each severity of casualty and crash type in each country. This will enable annual losses to the economy to be estimated and will permit cost benefit analyses of potential interventions to enable more effective use of the limited funds available.

3 Sequencing of World Bank report recommendations

The project fully endorses the systematic multi sector approach where interventions have to be undertaken in key sectors to try to prevent unsafe vehicles, unsafe roads and unsafe road users from using public roads and recognises that these should be done in a integrated manner and under an overall action plan being implemented and managed by a multi sector coordinating Group with adequate human and financial resources to coordinate and manage such activity. The project has been designed and implemented using exactly this approach.

4 Strengthening Monitoring and evaluation

At commencement of the project road safety activities in each sector were benchmarked against the "desired" situation (i.e. if everything was being done perfectly) to see what percentage of progress had been made towards the desired situation in each country. It was also used to compare each country against the average of the other countries in the region so that strengths and weakness of each individual country could be assessed. This exercise will be repeated at the end of the project to assess what developmental "impact" the project has had in moving road safety forward. In addition, efforts are being made to encourage traffic police to make non -confidential items within the crash database available to all stakeholders so that sector specific interventions can be devised and monitored more easily by stakeholders in each country to ensure effectiveness of safety investments. Efforts are also being made to establish a regional crash database so that countries can make comparisons against other countries in the region. Countries are being introduced to and encouraged to use intermediate performance indicators (e.g. %age of vehicle occupants wearing seat belts) and institutional development indicators (as used in the benchmarking) to monitor development of institutional road safety capacity and to monitor the effects of interventions.

5 Integrating Project management arrangements

The country specific action plans all include actions to establish improved management coordination and funding of road safety activity and all plans advocate the designation of a lead agency to coordinate and promote road safety activity. Where there is no effective management such as where there is a road safety commission but no permanent technical staff to act as a secretariat (e.g. Azerbaijan), establishment of a Secretariat is included in the action plan. Where no coordinating mechanism exists, an interim multi sector-working group has been established to coordinate matters until government can establish suitable structures and mechanisms to do such activity.

6 Targeting road policing and communications support

The importance of ensuring effective enforcement supported by relevant road user awareness /publicity campaigns is recognised and the parallel GRSP part of the project will do that as it supports the individual interventions in each country. As part of the Safege project, a regional traffic police - working group is being established to enable traffic police across the region to share experience and to harmonise legislation, penalties and processes. This will facilitate consistency of traffic policing enforcement across the region and contribute to better management of road safety in TRACECA countries. In addition, the project has had discussions with development banks active in each country to encourage them to include safety components (including awareness raising campaigns in communities affected by infrastructure projects) into their lending programmes.

7 Engaging all tiers of government, NGOs and the private sector

The 4 day Action planning workshops in each of the 9 countries have involved around 40 - 50 participants drawn from the key government, NGO and private sector stakeholders with responsibilities in or the ability to influence road safety (i.e. over 450 persons in total across the region). Sector experts from these different organisations worked in sector breakout groups to discuss and develop the specific actions and interventions for each sector in the Action plan. The project team just acing as a facilitator / catalyst to enable such multi sector meetings to take place and the plans to be devised. All tiers of government, NGOs and Private sector have collaborated to develop the action plans and are represented on the interim working groups that are refining the action plan until government

establishes appropriate structures to manage, coordinate and finance road safety.

8 Ensuring access to performance data

Police crash data is still considered confidential in many TRACECA countries and police normally only supply data tables to other stakeholders if a specific written request is made. The police crash databases are generally not available for further direct analyses by stakeholders. The project is reviewing current police crash data systems and making recommendations on improvement of content and analyses procedures and will look at ways to enable better access to crash data for other stakeholders. An effort will also be made to establish a regional crash database from the non-confidential items of data collected in each country so that inter country comparisons can be made. Such improved access to crash data will permit improved performance monitoring of interventions.

9 Partnering with Global and Regional service networks

The 9 countries have been introduced to the willingness of development banks to support road safety, to the UN Decade of safety and WHO/UNRSC publications / guidelines on safety issues as well as to the most important 7 EU Agreements and UN conventions that are related to road safety. (The countries are being assisted to implement such conventions in an effort to encourage consistency and harmonisation of international legislation across the region.) They have also been informed about the wide range of safety management structures and funding mechanisms that have been used at various times in various countries and the particular circumstances where they have been most successful. Examples of successful safety programmes in the most safety conscious countries Sweden, UK, Netherlands, Australia and Japan have been used to illustrate how other countries have successfully improved their road safety and the organisational structures and funding mechanisms they have used to do this. Of particular relevance has been the experience of the EU, which consistently, over several decades, has continued improving road safety by 40-50% each decade showing that even when all the easy, initial improvements have been done it is still possible to achieve further reductions in road deaths.

10 Stimulating South - South dialogue and Action

A number of ex-Soviet countries who are now EU members also managed to reduce their road deaths by 40-60 % during the last decade but because they were inside the EU, they had been subject to a number of additional pressures, legislation and directives as EU members, which pushed and encouraged their governments to take action on road safety. However. Serbia, another country with similar ex-Soviet structures, systems and practices **but NOT an EU member** also managed to make a 50% reduction in road deaths over the same Decade. They did this by adapting and **voluntarily implementing EU practices.** Serbia therefore offered a more suitable role model for TRACECA countries to emulate rather than one of the EU countries. Twenty-Four very senior officials (deputy directors) from senior police, roads authority and Ministries of Transport from the 9 countries were taken to Serbia on a 1 week Study tour so they could meet with counterparts and see and discuss with implementers how the reforms had been achieved. Later the same Serbian experts and who designed and oversaw implementation of the reforms in each sector in Serbia were taken to each country so that additional senior officials and decision makers could be made aware of the Serbian experience / success as motivation to them to also to implement such reforms. Thus, in this case the experience of one developing country was directly used in motivating and encouraging the 9 TRACECA countries to do more.

11 Accelerating project implementation

This project covers 9 countries and has been designed on the basis of delivering outcomes and developmental impacts that were defined and used in the benchmarking report at project commencement. The first phases of the project focussed on understanding both the general deficiencies across the region (which could be dealt with via regional initiatives) and country specific needs (that required country specific assistance). The first phases also developed technical capacity of key officials who need to be the key providers of the safer systems that have to be developed in each country. To motivate senior officials it was necessary to demonstrate to them that improvement was possible and that smaller, poorer countries with ex-Soviet systems and constraints the same as theirs had nevertheless achieved major improvements. The study tour to Serbia provided that spur and encouraged the officials to realise that they too could make similar improvements in their own countries by adopting and implementing the EU safe systems approach to road safety as being advocated and being implemented by the project team. This helped to accelerated the willingness and ambition of the key influential officials in each country to take action. To further accelerate and strengthen the development of road safety, the final phase of the project was focused on “institutionalising” road safety to try to set in motion the key activities and to create the right conditions and environment where road safety could grow and develop. This was done in part by using the same experts who made the major reforms in Serbia to provide advice and short cuts to the TRACECA countries seeking to implement similar reforms as were done in Serbia. The project is on

target for delivery of agreed outcomes by project end.

12 Adapting to Unique Country Circumstances

The recommendations of the world report on traffic injury were the basis of the approach adopted in the TRACECA regional project. The need for effective management and coordination of road safety, the need for sustainable funding, the need for good crash data etc. are all fundamentals of any serious effort to improve road safety. The was a clear need in every country to improve the management coordination and funding of road safety but how this was to be done, of course, depended on the particular circumstances, existing structures and legislative framework in each country. The first 2 phases of the project focused on raising general awareness of the scale and urgency of the road safety problem, capacity building in some key sectors such a safety engineering and in understanding the sector specific needs in each country. The subsequent phases focussed on motivating key officials to action and providing country specific follow up.

"Institutionalising "activities most appropriate to the needs of each country for sustainability.

6 CONCLUDING REMARKS

Implementing successful road safety projects in low and middle income countries (LMICs) is difficult because so many aspects of the safe systems approach are missing, there can be rivalries and territorial disputes between key agencies (e.g. police and engineers) which can inhibit effective collaboration and there is often a lack of political will to address the problem as forcefully as needs to be done. Further more there is often insufficient understanding about the underlying problems, inadequate numbers of local experts knowledgeable about road safety issues and a sense of helplessness in the face of the multitude of aspects needing to be addressed with the limited funds available. The implementation strategy adopted for this project does appear to have had some success in overcoming such problems and constraints.

The efficacy of this approach was verified by an independent external evaluation undertaken by EU that looked at around 30 projects funded by EU in the last 10 years. This EU funded TRACECA project was seen as one of the most successful in the region in terms of delivering impacts and effectiveness. That study will be published soon but in the meantime, perhaps the best independent vindication of the approach adopted is to see what knowledgeable persons who are familiar with the project say about it.

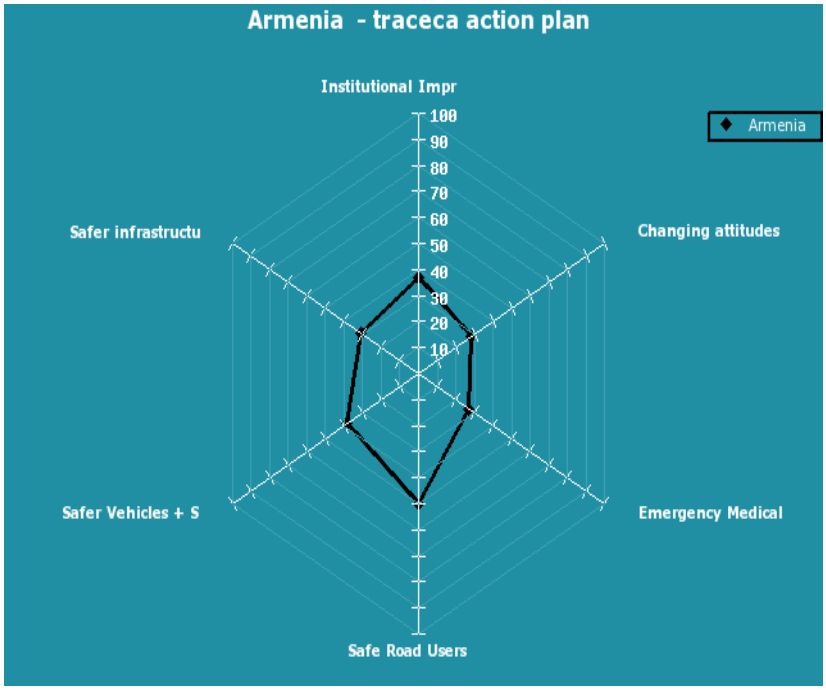
"…..I am currently writing the national road safety strategy for Tajikistan as part of an ADB-funded project. In February 2015, I attended a four-day workshop organised by the TRACECA Road Safety II project in Dushanbe. I was highly impressed at the quality of the discussion developed by the workshop – 40 plus senior officials concerned with road safety in Tajikistan spent four days fully engaged in debating and working out the details of what needs to be done to improve road safety in Tajikistan……".'

Anthony Pearce, former Director General of International Road Federation (IRF) and member of EU evaluation team reviewing EU projects undertaken in TRACECA region in the last 10 years.

«… I have no doubts that the steps undertaken by the team of your Project will help our member states to achieve a principally new level of awareness of the priority of Road Safety components. Training provided by the Project experts aroused real interest among specialists of the relevant institutions, and they are willingly and enthusiastically participating practically in all Project activities. I would like to hope that the Project staff will continue activity next year in similar positive mood, taking into consideration positive responses and absolute benefit of your efforts …".

Mircea Ciopraga, Secretary General of TRACECA Permanent Inter Government Commission Secretariat

1. BENCHMARKING



Benchmarking was undertaken of current status of road safety at project commencement for all Beneficiary countries and again at the end of the project to assess and demonstrate project impact.

The results for the region and for Armenia are given in the Benchmarking report which can be downloaded from:
http://www.traceca-org.org/fileadmin/fm-dam/TAREP/70ta/TRACECA_Documents/Benchmarking_Report_English.pdf

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2. ROAD SAFETY MANAGEMENT, COORDINATION AND FUNDING

All countries of the region have deficiencies in how road safety management, coordination and funding is organized by government. This report outlines present practices in Armenia and what needs to be done in this area.

2.1

COUNTRY: ARMENIA

TEAM: ROAD SAFETY MANAGEMENT TEAM
TOPIC: ROAD SAFETY MANAGEMENT, COORDINATION AND FUNDING STRUCTURE IN ARMENIA

PREPARED BY MANAGEMENT TEAM

Team members:

Alan Ross (KE1)
Mariya Ivchenko (JTE-18)

December 21st , 2015

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* * *

1. Introduction and Background

Like most of the TRACECA project beneficiary countries Armenia is still at an early stage of road safety development and does not at present have appropriate management, coordination and funding structures to lead the government's road safety efforts across the various government agencies.

In accordance with the project ToR for Component 2: "Institutional and Regulatory Reforms" the management team has implemented a series of activities to provide practical assistance and guidance to the road safety stakeholders and where possible high-level decision makers on the key aspects of road safety management, coordination and funding.

The main purpose of the discussion was to decide how and in which organisational form management, coordination and funding mechanisms and structures can be established in Armenia in order to "institutionalise" road safety and increase likelihood of sustainability.

A secondary task was to provide inputs and follow-up the work of the other sector specific sub teams within the project.

2. Activities undertaken

(i) Mobilising high level political support

In 2010, the Armenian government created the National Road Safety Council, chaired by the Prime Minister and involving high-level officials in all public bodies involved in road safety. The government at that time approved a 5-year strategy for improving road safety. Despite the high-level government involvement in road safety, progress in improving road safety has been slow. Funding for road safety improvements has been limited, and apart from the first couple of years after establishment while the NRSC Secretariat was being funded by the World Bank, the National Road Safety Council has lapsed into periods of inactivity.

One constraint in improving road safety is lack of knowledge and awareness of the issue among high-level government decision makers. Although the National Road Safety Council on paper involves the current Prime Minister and other high-level government officials, the council was created by the previous government, and the current government may not have had the opportunity to become fully

aware of and sensitized to road safety. Consequently, there have been no meetings in recent years of the council and no funding provided for its safety activities.

In order to mobilise high-level political support, TRACECA Regional Road Safety Project in collaboration with ADB's Armenia Resident Mission (ARRM) helped to arrange the participation of three high-level officials from Armenia in the 2nd Global High-Level Meeting on Road Safety, that was held in Brazil 18-19 November 2015 (http://www.roadsafetybrazil.com.br/en). The Armenian delegation was led by the Minister of Transport and Communication, Mr. Gagik Beglaryan. Other members of the delegation were the head of the Road Police of Armenia, Mr. Armen Hakobyan; head of staff of the Ministry of Transport and Communication of Armenia, Mr Gagik Grigoryan. In addition the Executive Director of a local NGO "National Road Safety Council", Mr Poghos Shahinyan, was hired by ADB to provide technical support to the delegation while at the Brasil conference and to provide support on return to Armenia in organizing a National high-level meeting to discuss road safety issues and the need for action.

It was agreed, that ARRM and TRACECA Regional Road Safety Project will coordinate with the Armenian delegation to launch a series of road-safety related activities after their return from the Brazil meeting. The Prime Minister will convene the National Road Safety Council to receive the delegation's report on how Armenia can adopt best international practices in road safety. The delegation will likewise report to Armenia's National Assembly. ARRM and the head of the Armenian delegation, supported by the staff consultant, Shahinyan, will jointly publish an Op-Ed on global road safety issues and the importance of improving road safety in Armenia. Later in 2016 (specific dates to be determined), ARRM will coordinate with the Armenian government to present Armenia's approach to road safety at ADB's Transport Forum 2016. There activities and obligations will push Armenia to give more consideration and priority to road safety.

The TRACECA Regional Road Safety Project in discussion with the Ministry of Transport and Communications agreed on the need to appoint new members to the National Road Safety Council created in 2010, to establish a sustainably funded Secretariat and on the need to develop and finalise action plan based on the draft action plan done by the project. To assist the government, the TRACECA management team have reviewed, ammended and updated the previous Prime ministerial Decree and sent the draft for Armenia to consider for adoption. In order to discuss the road safety agenda for Armenia on a highest political level it is expected that a National Road Safety Council meeting will be held in January 2016 and that the TRACECA project management team will make a presentation to support the need to take action.

(ii) Management and coordination

The existing management structure, represented by the National Road Safety Council, which is chaired by the Prime Minister and involving the key road safety stakeholders with responsibilities or interest in road safety, showed some good results only in the first couple of years (2010-2012) after establishment. The main reason for its inactivity in the recent years has been lack of funded permanent Secretariat. After the Council establishment and funding of it's Secretariat provided by the World Bank, this role has been temporally filled by an NGO that has the same name - "National Road Safety Council of Armenia". Unfortunately, this NGO did not have any executive powers and there was no sustainable funding provided for road safety activities, so after some time it had to stop its activities. Consequently, despite existence of the Council on paper there is still little coordination/cooperation between the key ministries and no lead agency to oversee the delivery of the action plan with sustainable funding to enable its implementation.

The project team and the MoT agreed to request the Prime Minister to call the National Road Safety Council meeting in January 2016 to discuss the establishment of a permanent secretariat to support the work of the National Road Safety Council and the need to establish a mechanism for more sustainable funding of road safety. The project recommends that such permanent multi sector Secretariat (with 5-6 staff) should operate under the authority of the Prime Minster's office to lift it above individual ministries and to have sufficient power to ensure effective action and coordination of activities. However day to day supervision could be done by the Minister of Transport and Communication (MoTC). That will reinforce the important role that MoTC needs to play in ensuring road safety happens in Armenia.

It was also agreed that the main elements of the draft immediate action plan developed by TRACECA regional road safety project 2015-2017 will be presented at the high level meeting in January 2016 and after some update to the local needs and current situation, will be approved and adopted by the government. The new composition of the NRSC and it's proposed new full time, adequately funded Secretariat will be responsible for the overall implementation of the action plan.

(iii) Funding

With approximately 300 deaths and 4500 injuries annually in road accidents resulting in losses of 4% of GDP each year, road accidents are an economic, health and social problem for the country that needs urgent attention and high-level political commitment.

To ensure sustainability of the road safety programs in Armenia there should be a sustainable funding mechanism. This can be done as in many other countries by imposing a safety levy (of say US $ 2) per compulsory Third party (CTP) Insurance policy issued. Payments could be placed into a special road safety fund quarterly in arrears. This with 500,000 vehicles will raise around US$ 1 million each year to operate the Secretariat and to finance its horizontal and vertical coordination and its road safety campaigns.

The project team has met with senior insurance industry representatives to discuss the insurance industry participation in funding road safety in Armenia. They have expressed their interest and willingness to explore this opportunity further but stressed a need for transparency in the funding/disbursement procedures and adequate road safety legislation.

Other potential sources of funding for road safety activities of the NRSC Secretariat include:

1. The unclaimed deposit paid by vehicle owners to ensure they have vehicles technically inspected each year. These are supposed to be returned to vehicle owners on proof of an inspection having been carried out. Many do not have inspection done so the funds remain at the Central Bank. These should be used to establish and maintain the Road Safety Fund.

2. Some or a portion of traffic fines could be set aside to finance the road safety fund to create sustainable funding for road safety activities of the NRSC Secretariat.

A further interesting funding mechanism that could be considered in Armenia is using an innovative method (such as a development impact bond) for funding a comprehensive road safety programme. This is based on "payment by results" where the government does not pay anything until and unless savings achieved are far in excess of the funds invested. The project team is having a serious discussion with the government, EU DEL and MDBs in Armenia about their willingness to consider using such approach. The project team have been invited by the government of Armenia to make a

presentation to the high level NRSC meeting in January 2016 on the possible funding sources for the Secretariat and its safety programmes.

(iv) Legislation

The PM decree on establishment of National Road Safety Council needed to be updated to add some additional sections on funding of the secretariat and safety programmes, as well as to delete the names of the NRSC members to ensure NRSC members are specified by position rather than by specific name.

There is also a merit in creating an umbrella law to bring current safety legislation into line with best international practice including designation of a lead agency, specification of road safety management, coordination and funding structures, requirement of mandatory road safety audits etc.

One issue constraining improvements in road safety in Armenia is lack of threatment of hazardous road sections and intersections, known as "'black spots''. In cooperation with the ARRM it was agreed to apply to the ongoing ADB technical assistance on "Knowledge for Solutions" on a twinning exchange with the Republic of Korea that has extensive expertise in managing black spots, its innovative funding mechanisms for the road traffic safety Aassociation (RTSA) and for its implementation of a very effective and well funded road safety improvement programme over recent decades. Upon completion of the knowledge exchange and enhancement of knowledge of black spot and other road safety improvement programmes with support and enforcement from the project, ADB will coordinate with the Armenian government to apply to the e-Asia and Knowledge Partnership Fund for a grant to introduce black spot improvement techniques and methodologies in Armenia.

(v) Crash data system

Efficient road safety measures start with good crash data system and scientific research evidence-based approach and effective and systematic analyses of crash data.

The existing road accident database in Armenia is new and was established in 2015. It is developed as a modern web oriented application and consequently can be updated in line with best European practice and recommendations of the European Commission.

Currently there appears to be little or no road safety research done in Armenia that could be used by the decision makers to implement cost-benefit approaches in tackling road safety problems. The main reasons for this is the lack of road safety data being accessible at a central location where an integrated data base can be created and analysed and the data made available to all stakeholders. Stakeholders need to do further analyses in their particular areas of interest to implement improvements so that all contribute to the improvement of road safety. Traffic police at present is not obliged by law to share road accident data with the other road safety stakeholders and this creates problems for them to get access to the data. This is being addressed by the sector specific subteam within the project.

(vi) Coordination with Donors and Lenders

The project team has had discussions regularly with the Multilateral Development Banks (MDBs) active in Armenia to explore possibilities of safety funding for items of need identified via the country immediate action plan and as part of the project efforts to try to build synergies between the key players and to create a common unified and integrated approach to road safety in Armenia.

The team has worked closely with the World Bank, Asian Development Bank, European Investment Bank and European Bank for Reconstruction and Development to get their support in emphasizing the importance of road safety to the senior decision makers who are responsible for

allocation of resources to different Ministries but who may not be as aware of the huge economic and human losses the country is incurring by failure to invest adequately in road safety. The coordination is also aimed to ensure that the infrastructure projects funded by the IFIs build upon the recommendations of the project to address safer infrastructure issues and to establish a fully operational road safety audit system in Armenia.

The project team has also kept the local EU Delegation office fully informed about the status of the project and has consulted and kept aware whenever there were some political considerations to the current project activities. The project has assisted the EU DEL where possible with information about Armenian needs in road safety so they can build up on this in further exploring policy dialogue and/or potential bilateral/regional support.

3. Current situation (present practice), deficiencies requiring attention and recommendations (suggested way forward)

Discussions with the relevant stakeholders, based on identified performance indicators, give an idea of the current situation (present practice) and major deficiencies (obstacles and impediments) which can prevent road safety happening in Armenia. Performance and impact indicators will be monitored in future missions as a way to follow up progress.

Implementation (institutionalization) of different impact indicators:

	Selected Impact indicator (current situation)	Deficiencies requiring attention	Recommendations (suggested way forward)
1	**Multidisciplinary Road Safety Agency** 1. Legislation exists	1. There is a PM decree N 211-A dated March, 30 2010 on establishment of the NRSC.	1. It is recommended to add some additional sections on establishment and financing of the secretariat and funding of safety programmes, as well as take out the names of the NRSC members to ensure they are specified by position rather than by name.
	2. Coordination body established	2. The NRSC on paper, entitled to fulfil the role of a lead agency has been inactive recently due to lack of funding and permanent Secretariat.	2. Whatever the organisational form in which it is established the lead agency needs to have an effective mandate, full time Secretariat and sustainable funding to perform the role effectively.
	3. Fully staffed and funded Secretariat exists	3. There is no Secretariat existing at the moment. This role has been temporally fulfilled by an NGO, but it's activity was stopped as soon as the funding of donors dried up.	3. It is recommended that a permanent NRSC Secretariat is established and experts of the key government agencies are seconded to guarantee the actual implementation of the road safety activities.
	4. Reliable, sustainable safety funding mechanism in place	4. There are obvious constraints on road safety funding from the Government of Armenia. There is little potential for serious financial recourses to be allocated for the road safety activities in the short term.	4. There is a need to emphasize that road safety is an economic poblem, so that expenditure can be seen by the decision-makers as an "investment", not a "cost" to the government. It is also necessary to consider alternative sources of

			funding, i.e. insurance premiums, road traffic enforcement fines and innovative funding mechanisms (Development Impact Bonds - DIBs).
2	**Implementation of National Road Safety Strategy** 1. Strategy is developed 2. Stakeholders consulted 3. Strategy approved by Government 4. Implementation commenced	1. Despite existence of the Council there is still little coordination/cooperation between the key ministries. Although WHO (2015) report indicates there is a National Road Safety Strategy, there appears to be no designated lead agency to oversee its delivery and special funding to enable its implementation. 2. The key stakeholders were officially invited to participate/comment on the Strategy, but since the road safety problem has always been seen as a problem of driver behaviour that should be addressed only by traffic police enforcement measures, there was little contribution from the side of the other government agencies to the development of the actual document. 3. The previous Strategy was approved by the Government in 2009 (RA Government Decree № 995 dated 13 August 2009). 4. In 2010 the NGO confusingly also called "National Road Safety Council" was appointed by the Government as the "secretariat" to support the NRSC and to be responsible for the overall implementation of the National Road Safety strategy of the Republic of Armenia and the 5 year action plan. The Strategy was later suspended mainly due to financial constraints.	1. It is recommended that a new Strategy is prepared with the focus on safe system's approach, clear targets and performance indicators. In the meantime the draft Immediate action plan can be finalised and implemented. All key stakeholders participated in development of the action plan so it does address the priorities as seen by stakeholders. The implementation of the draft Action Plan will eliminate or reduce the main constraints and impediments to road safety creating a more conducive environment for a new strategy to be developed.
3	**Realistic and long term targets for road accident reduction** 1. Realistic long term targets in place 2. Action plan prepared to deliver targets 3. Action plan being implemented	1. There are no long-term targets set. 2. At present, there is no approved action plan. 3. There is no action plan being	It is recommended that the draft 3 year immediate action plan based on the work done at the action planning workshop in February 2015 is used as an interim document specifically designed to remove / reduce obstacles and impediments currently preventing effective road safety action in Armenia. The impact monitoring indicators in the Action plan can be used to monitor

	4. Progress towards targets being monitored	implemented. 4. There is no monitoring and evaluation of the action plan implementation.	progress.
4	**Long term sustainability of road safety development**		
	1. Annual losses to economy quantified	1. There is no annual estimation of losses to economy.	1. The project has tried to initiate research on this. It is recommended that local research on socio-economic cost of road trauma in Armenia is implemented with some guidance from the TRACECA project. It should help the high-level decision makers recognise the real scale of the problem and get the high-end political mandate.
	2. Road Safety funding mechanism exists	2. There are no funding mechanisms.	2. It is recommended to consider the alternative sources of funding, i.e. insurance premiums, road traffic enforcement fines and innovative funding mechanisms (Development Impact Bonds - DIBs).
	3. Budget being allocated for road safety improvement	3. There are no funds allocated to road safety.	3. These issues are being raised by the project team with relevant high-level decision makers in Armenia.
	4. Monitoring demonstrates effectiveness of investments in road safety	4. 4. There is no monitoring and evaluation.	

4. Conclusions

The potential for resumption of effective road safety activity in Armenia is high as it did have an appropriate and functioning National Road Safety Council under a previous Prime Minister. If an effective NRSC can be re established with a fulltime, well-qualified, well-funded Secretariat and sustainable funding mechanisms put in place to finance the Secretariat and the safety programmes, Armenia could improve road safety significantly. The Project team consider it likely that a suitable management, coordination and funding structure can be set in place by the project end.

ANNEX:
A: Key persons met or consulted on management, coordination and funding issues.

"Management, coordination and funding of road safety" working meeting

Yerevan, Armenia, as part of

EU funded TRACECA ROAD SAFETY II project

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2.2

TRACECA Regional Road Safety Project

Action Planning Workshop

REPORT ON 2-W001

ARMENIA

«NATIONAL ACTION PLANNING WORKSHOP»

2-W001

Yerevan,
3-6 February 2015

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1.1. Brief Introduction
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* * *

1.1. Introduction/Overview

In accordance with the Project Terms of Reference and Inception Report it was agreed that the EU funded TRACECA regional road safety project II should implement ten National Action Planning (NAP) Workshops in order to assist the ten beneficiary countries (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Ukraine, Uzbekistan and Turkmenistan) to develop country specific action plans to implement the previously agreed Regional Road Safety Action Plan.

The NAP workshops are undertaken with 40-50 representatives of key stakeholders government, private sector and NGO stakeholders in each country with responsibilities in or the ability to influence road safety in that country. The 4-day workshops in each country result in a draft country specific action plan based on and compatible with the earlier EU funded regional road safety action plan. These Action Plans cover the 6 sectors as follows:

1 Institutional Issues.
2 Safer Roads
3 Safer vehicles
4 Safer road user behaviour
5 Emergency medical services
6 Changing attitudes

The first 5 of these sectors are the same as the 5 pillars of the UN Decade of Safety and the 6th sector has been included in recognition of the very early stage of road safety development in some TRACECA countries and thus the need to change attitudes to road safety both of the general public but also of government officials and responsible organisations.

The main target groups of the workshops were representatives of the key government ministries and organizations with road safety responsibilities (e.g. Ministries of Transport, Interior, Health, Education, Finance, Traffic Police, Roads Authority etc.), Private sector organizations already active in or who should be active in road safety (e.g. oil companies, freight transport operator associations, bus or taxi operator associations, insurance associations, large fleet owners) and NGOS (Red Cross/ Red crescent, road safety NGOs, pedestrian or cyclist associations) and International Organizations able to influence government (international development banks, EU Delegation, WHO etc.). Representatives attending the workshop, between them cover all the functions related to the six sectors to be addressed in the draft action plan.

3 Content of National action planning workshop workshops.

The main action-planning workshops are held over 3 days. After the opening Ministerial and EU Ambassador (visibility) speeches, the first day provides an overview of the safety situation in that particular country with 4 of the key government agencies, academics, private sector firms and NGOs each giving a 10 minute over view of the main problems and issues to be addressed as they see them. Local offices of development banks (WB, ADB, EBRD and EIB) emphasise as available indicate the

projects where they have included road safety that support for road safety and their willingness to provide road safety components with future projects to support government efforts in this area. The first day presentations also included an overview of TRACECA Road Safety Project and international experience showing how other countries around the world and especially in EU, the Central and East European region have improved their road safety in recent years. Particular attention is given to identifying successes in TRACECA countries that might be worth sharing across the region.

The next two days are spent by the local experts working in breakout groups focussing on different sectors, followed each time by plenary sessions to agree the actions needed to implement fully the required improvements in each of the 6 sectors. The focus of the Action Plans is on the "..." and organisational management changes needed to enable more effective road safety activity in each sector. Wherever feasible, the project team will liaise with GRSP part of the TRACECA project to have their input (or with local organisation who participated in the GRSP workshops) so that we can include their proposed GRSP initiatives in each country. This will allow preparation of holistic action plans covering all 6 sectors and where possible, interventions being developed by GRSP. The resulting action plan will be based on delivery of improvements that can be monitored via the "results orientated" impact indicators that have been devised for each item. By the end of the 3rd day, a rough draft of possible activities will have been devised and agreed for all sectors by all participants.

On the 4th day, work will continue with a smaller more senior group to refine /fine tune the actions and proposed activities in close consultation with around 20 senior persons representing the key stakeholders. Where appropriate and where there is no existing coordination body, a multi-sector working group will be selected from amongst the representatives on the 4th day, who can, in consultation with the project team, continue drafting the National road safety action plan over the following couple of months.

1.2. Action Planning Workshop: Objectives and Expected Outcomes

The agreed objective is to produce (via national action planning workshops), the first drafts of country specific road safety immediate action plans for each country that are compatible with the previously agreed regional road safety action plan. The most important outcome is an agreed set of activities in each country that are necessary for the implementation of the Regional road safety action plan.

The first drafts of such Immediate Action Plans will be prepared by the Project team from the activities and aspirations identified by the relevant stakeholders for each sector. This first draft will be sent to the working group in each country to review/refine and to make any further changes/modifications/additions etc. The project Team will then assist the Working Group by assisting in a second round of editing of the Action Plan before sending it back to them. Thereafter it will be left to the country to make any further changes/improvements/modifications that may be required. The Project team will however provide advice on monitoring of the Action Plan and through follow up country specific activities will assist in implementation of some of the activities, e.g. establishing road safety audit courses.

It is important to note that the draft Action plans being prepared are not intended to replace or amend any existing road safety strategies or Action Plans that may already exist. They focus instead on the identifying and removing the obstacles and impediments that are preventing effective action on road safety by the key stakeholders. They are immediate Action Plans to be implemented over a 3-year period and focus on the issues/constraints identified by stakeholders which, if removed, would facilitate more effective safety activity.

1.3. Action Planning Workshop: Implementation

Visits were made to all countries during the inception period and discussions were held with representatives of the key stakeholders in order to benchmark each country in relation to its progress with implementation of the recommendations of the original regional road safety action plan. This provided a framework for discussion/review by participants at the workshops

This benchmarking of progress provided a starting point for discussion / review by the sector specific experts participating in each workshop and enabled them to verify the progress in each aspect of road safety in each sector. They were then able to develop specific actions necessary to make progress in each aspect of safety in their sector of activity. The cumulative actions proposed across the six sectors constitute the embryonic first draft of a possible action plan for that country.

The typical programme and content of the Workshop is presented below. This is only presented one time since it was broadly similar in each country.

ACTION PLANNING WORKSHOP

"National Action Planning Workshop"

DRAFT PROGRAMME AND AGENDA

3 DAY ROAD SAFETY ACTION PLANNING WORKSHOP
DAY 1:
OFFICIAL OPENING AND OVERVIEWS OF THE PROBLEM

0830-0900 Registration of delegates
0900-0910 Official opening ceremony /welcome
0910-1920 Ministerial address (Minister of Health, Transport or Interior, depending on country)
0920-0930 EU speech (EU local Delegation Ambassador or representative from the EU delegation)
0930-1015 Global overview, International developments and Lessons in Tackling Road safety Issues
1015–1045 Overview of TRACECA regional safety project and role of EU in supporting road safety activities across TRACECA region. This will include results from project benchmarking assessment activities to show how the country compares with regional averages
1030-1045 COFFEE BREAK
1045- 1145 Overview of responsibilities, current activities/successes, obstacles and suggested action areas in key government agencies [2]

- Ministry of Public Health
- Ministry of Transport or infrastructure
- Ministry of Interior/ traffic police
- Ministry of Education
- Roads Agency or Safety Agency (if one exists)

1145--1300 Private sector, academic and community constraints[3]

- Academic representative

[2] Only 10 minutes per organization with no repetition basics and generalities or failings of other agencies. Each organization should talk **only about its own areas of activity,** to present information on 4 aspects (1) statistics on trends of deaths and injuries in its area of activity (2) list any responsibilities in road safety and indicate current activity /successes, (3) identify specific institutional impediments/ obstacles why it cannot be more effective on safety , (4) to indicate what needs to be done in its area of activity to enable it to be more effective .

[3] Only 10 minutes each to outline (1) areas of activity or interest in road safety (2) what constraints are preventing greater academic , private sector and NGO activity/involvement in addressing road safety issues (3) what should be done

- Private sector representatives (e.g. chamber of commerce)
- Insurance Association representatives
- Freight or public transport association
- NGO Representative

1300-1400 LUNCH

1400-1445 Open forum discussion about the needs and problems in that country

1445-1545 Regional and nearby countries' experience /lessons Good practices (project team members who are from these countries)

- Armenia
- Georgia
- Serbia

1545-1600 COFFEE BREAK

1600-1645 International Funding Institutions (IFIs) - Role and funding of road safety activities (ADB, World Bank, EBRD, EIB as available)

1645-1715 Coordination Management and Funding of road safety: an overview

1715-1730 Allocation of participants into breakout groups for Day 2

1730 CLOSE OF DAY 1

DAY 2:

BREAK OUT GROUPS WORKING ON SECTORS

0900-0930 Explanation of breakout working and objectives / tasks for the day

0930-1045 Breakout parallel workshop session 1 to discuss/agree specific priority actions needed and target dates for completion of tasks in sectors 1-6

Group 1: Institutional I Issues
Group 2: Safer Infrastructure
Group 3; Safer Vehicles
Group 4: Safer road users
Group 5: Emergency Medical services
Group 6: Changing Attitudes

1045-1100 COFFEE BREAK

1100-1300 Breakout parallel workshop session 2 to continue discussing /agreeing specific actions needed in sectors 1-6. Identify who should lead and those who should be involved

Group 1: Institutional I Issues
Group 2: Safer Infrastructure
Group 3; Safer Vehicles
Group 4: Safer road users
Group 5: Emergency Medical services
Group 6: Changing Attitudes

1300-1400 LUNCH

1400-1530 Breakout parallel workshop session 3 to continue discussing /agreeing specific actions needed in sectors 1-6 and budgets needed to implement + possible sources of funding.

Group 1: Institutional I Issues
Group 2: Safer Infrastructure
Group 3; Safer Vehicles
Group 4: Safer road users
Group 5: Emergency Medical services
Group 6: Changing Attitudes

1530-1515 COFFEE BREAK

1545-1715 Plenary session for Chairmen of Workshop breakout groups to report briefly (10 minutes each) on actions proposed in each sector and 10 mins each to get discussion

/feedback/suggestions /agreement from participants from other breakout groups (chaired by Ross)

1715 -1730 Round up and programme for day 3

1730 CLOSE OF DAY 2

DAY 3

PLENARY SESSIONS TO REFINE SECTOR BREAKOUT GROUP RECOMMENDATIONS

0900- 0915 Explanation of activities and tasks for the day

0915 -1015 Sector 1: Institutional issues

1015-1115 Sector 2: Safer Infrastructure

1115-1130 COFFEE BREAK

1130-1200 Safer Vehicles

1200-1300 Safer road users

1300-1400 LUNCH

1400-1500 Emergency Medical services

1500-1600 Changing Attitudes

1600-1615 COFFEE BREAK

1615-1715 Road safety action plans- lessons learned

1700- 1715 Closing remarks and Closing Ceremony

1730 CLOSE OF DAY 3

DAY 4:

ACTION PLAN CONSOLIDATION WORKSHOP (AROUND 20 PERSONS MAX BUT INCLUDING THE 6 CHAIRMEN OF THE SECTOR BREKOUT GROUPS FROM 3 DAY WORKSHOPS)

0830-0900 Registration of delegates

0900-0915 Overview of workshop and tasks to be completed

0915-0930 UN Decade of Action – Country obligations

0930-1000 Identifying and setting casualty reduction targets

1000-1030 Road safety action plans and monitoring – Lessons to be learned from other countries

1030-1045 COFFEE BREAK

1045-1100 Review of work completed in benchmarking and action planning workshops

1100-1145 Sector 1: Institutional I Issues

1145-1230 Sector 2: Safer Infrastructure

1230-1300 LUNCH

1300-1345 Sector 3: Safer Vehicles

1345-1430 Sector 4: Safer Road Users

1430-1515 Sector 5: Emergency Medical Services

1515-1530 COFFEE BREAK

1530- 1615 Sector 6: Changing Attitudes

1615-1650 WRAP UP AND CONCLUSIONS

1700 CLOSE OF ACTION PLAN CONSOLIDATION WORKSHOP

1800-2000hrs Reception /dinner for the 1-day workshop participants

This is to encourage dialogue and networking between senior officials of different organizations and to encourage them to establish a 10-12 person interim working group /expert committee that the Project team can develop and assist as the key coordination body to oversee finalization and to commence implementation of the action plan until a more formal arrangement and coordination body can be established by government.

Instantaneous translation was usually provided on days 1 and 4 to enable effective dialogue during plenary sessions. Whisper/ sequential translation was used during the breakout sessions on day 2 and 3 since work was done in small groups. Throughout the workshop lively discussion was encouraged between participants and between participants and lectures in order to discuss / explore alternative options and interventions.

Workshop attendance: Normally there are around 40 participants in the workshop. Information is usually provided in advance to public relation experts at EU Delegations to inform the media about EU funded TRACECA Regional road safety project and the scale and urgency of the road safety problem in the country concerned.

National Action Planning (NAP)

1.1 Armenia

The NAP Workshop (2-W001) was held in Yerevan, Armenia, during the period 3-6 February 2015. This NAP is the sixth of 10 Action Planning Workshops that are planned to be delivered (If Turkmenistan participates. If it does not, there will only be 9 workshops in total. It was implemented using the Generic programme presented in the introduction section.

Workshop attendance was over 40 participants from all key stakeholders on the first day, and 35-40 participants on days 2-4. There was a very active discussion throughout the workshop.

1.2 Participants of workshop

The list of participants attending all or parts of the workshop is presented below.

No	Name	Organization	Position	Contact Details
1	Gagik Grigoryan	Ministry of Transport and Communication	Head of Staff	traceca.ncommission@gmail.com
2	Kristine Beglaryan	Ministry of Transport and Communication	Head of Department	+37410-59-00-94 kristine.beglaryan@mtc.am
3	Artak Papyan	Ministry of Transport and Communication	Leading Specialist	+37410-59-00-36
4	Olibek Khachatryan	Ministry of Transport and Communication	Chief Specialist	+37410-59-00-39
5	Sargis Sahakyan	"Armenian Roads Directorate" SNCO	Leading Specialist	+37410-56-63-72
6	Yelena Papyan	"Armenian Roads Directorate" SNCO	Chief Specialist	+37410-56-63-72
7	Emil Sargsyan	Transport PIU State Institution	Director	+37410-59-01-61
8	Karen Badalyan	Transport PIU State Institution	Deputy Director	+37410-59-00-54
9	Bagrat Badalyan	"Organization for Implementation of North-South Road Corridor Investment Program" SNCO	Chief Engineer	+37460-50-68-71 info@northsouth.am
10	Tigran Avagyan	"Organization for Implementation of North-South Road Corridor Investment Program" SNCO	Transport Engineer, Flash Economist	+37460-50-68-71 info@northsouth.am
11	Hayk Sargsyan	"Organization for Implementation of North-South Road Corridor Investment Program" SNCO	Chief Advisor	+37460-50-68-71 info@northsouth.am
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13	Zaruhi Tokhmakhyan	The World Bank, Armenia office	Officer	+37410-52-09-92 ztokhmakhian@worldbank.org
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15	Hetum Hamamchyan	Ministry of Finance	Chief Specialist	+37411-80-02-44 hetum.hamamchyan@minfin.am

16	Gevorg Ayvazyan	Ministry of Education and Science	Chief Specialist	+37410-54-70-25 xaida@rambler.ru
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18	Ashot Stepanyan	Ministry of Territorial Administration and Emergency Situations	Senior Instructor, lieutenant colonel	+37499-56-40-03 ashot_stepanyan_1960@mail.ru
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20	Gurgen Sargsyan	Ministry of Territorial Administration and Emergency Situations	Senior Instructor, Maj.	+37491-00-15-35
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26	Knar Ghonyan	Ministry of Healthcare	Chief Specialist	+37410-56-57-95
27	Romella Abovyan	Ministry of Healthcare	Head of Department	+37410-34-04-44 rabovyan75@gmail.com
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33	Hayk Norekyan	Dorproject Design Institute	Road Engineer	+37455-99-55-51 hayknorekyan@mail.ru
34	Tigran Mesropyan	Artsakhroad Design Institute	Deputy Director	+37491-11-44-99 t.mesropyan@yahoo.com
35	Harutyun Avagyan	Yerevan Project Design Institute	Head of Department	+37410-58-01-85 harut@newmail.ru
36	Tigran Avagyan	Yerevan Project Design Institute	Engineer	+37410-58-01-85
37	Gohar Musaelyan	ADB	Senior Project Officer	+37410-54-63-71 gmousaelyan@adb.org
38	Areg Barseghyan	ADB	Senior Portfolio Management Officer	+37410-54-63-71 abarseghyan@adb.org
39	Maga Martirosyan	"Magavto" TV program	"Federation of women drivers", Anchorperson	+37491 417 478 magamagavto@mail.ru

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41	Edik Hovhannisyan	''Achill'' NGO	President	+37491 203 296 vip.achill@mail.ru
42	Ishkhan Yeghiazaryan	Emergency Service	Deputy Director	+37499-05-70-00 yerevan_emergency@mail.ru
43	Samvel Manukyan	Emergency Service	Head of Department	+37491-20-50-91
44	Larisa Grigoryan	Egis International Armenian Branch, Yerevan Western Ring Road Project	Office Manager, Principal translator	+374 (10) 58 44 04 +374 (99) 45 70 18 Larisa.GRIGORYAN-int@egis.fr

1.3 Results Achieved

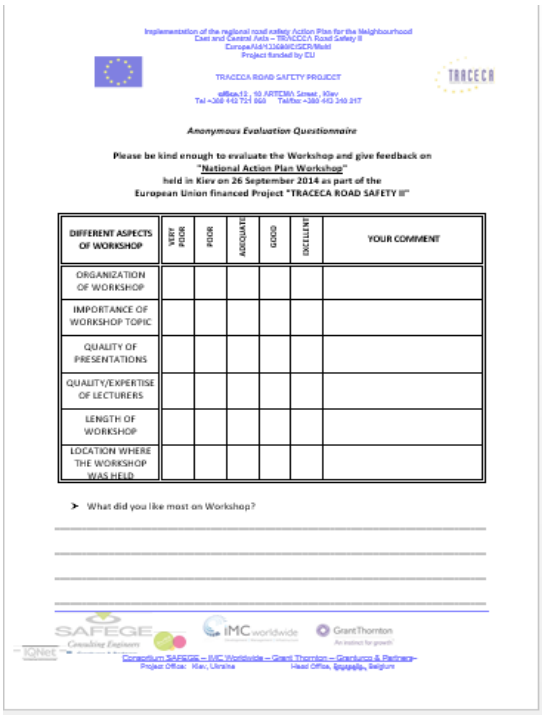
Results Achieved from the Workshop are shown in the following table.

Expected and achieved objectives and outcomes

	Expected objectives and outcomes	Objectives and outcomes Achieved	Comments
Objectives			
1	Discussion of actions needed in each sector to develop a country specific action plan to implement the regional road safety action plan	Yes,	40 + Armenia experts (around 6-7 from each sector) discussed needs and identified actions required in each sector
Outcomes			
2	Current status of progress in each sector verified	Yes	Sector specific experts checked the benchmarking percentages assessed in Feb/March 2014 by local experts. In most cases the percentage were considered to be accurate but where necessary, the original benchmarked percentages were amended to reflect true situation.
3	Priority actions and interventions identified and sector specific draft action plans prepared by local sector specialists	Yes	Sector specific specialists identified priority actions / interventions needed in each sector to comply with regional road safety action plan
4	Country specific draft road safety action plan prepared in compliance with and to enable implementation of the regional road safety action plan	Yes	The 6 sector specific draft action plans can be combined to create a draft country specific road safety action plan. This is now in process of development in consultation between the project team and the interim working group established in each country from the key stakeholders

1.4 Evaluation

An anonymous workshop evaluation form (with 1 as very poor and 5 as excellent) was completed by the 29 participants on the last day. This covered 5 aspects (see form below) and delivered an overall average score of 4.52 (90.4%) out of a maximum 5 indicating the very high satisfaction level of participants.

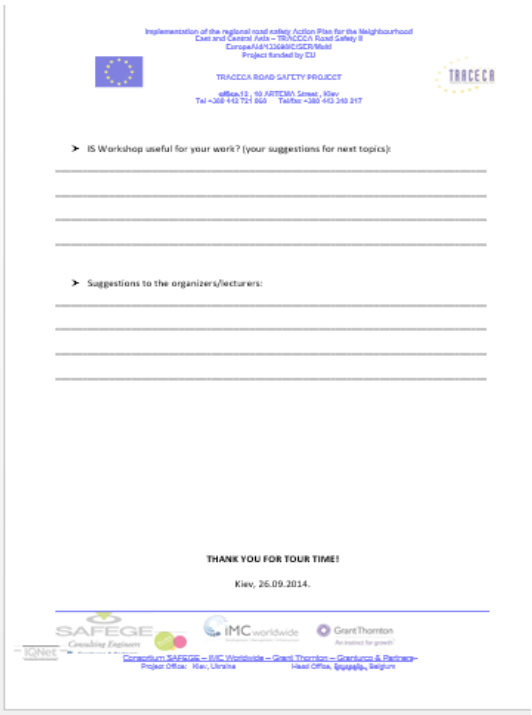


Anonymous Evaluation Questionnaire

Please be kind enough to evaluate the Workshop and give feedback on "National Action Plan Workshop" held in Kiev on 26 September 2014 as part of the European Union financed Project "TRACECA ROAD SAFETY III"

DIFFERENT ASPECTS OF WORKSHOP	VERY POOR	POOR	ADEQUATE	GOOD	EXCELLENT	YOUR COMMENT
ORGANIZATION OF WORKSHOP						
IMPORTANCE OF WORKSHOP TOPIC						
QUALITY OF PRESENTATIONS						
QUALITY/EXPERTISE OF LECTURERS						
LENGTH OF WORKSHOP						
LOCATION WHERE THE WORKSHOP WAS HELD						

➢ What did you like most on Workshop?



➢ IS Workshop useful for your work? (your suggestions for next topics):

➢ Suggestions to the organizers/lecturers:

THANK YOU FOR TOUR TIME!

Kiev, 26.09.2014.

Evaluation results of NAP WS 2-W001

44 participants from Armenia and 29 evaluation lists received

Yerevan, 3-6 February 2014.

Questions asked	Participants answers																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	AVG
Organization of WS ?	5	5	5	5	5	5	5	5	5	5	5	4	5	4	5	4	4	4	5	5	5	5	5	4	5	4	5	4	4	4,69
Importance of WS topics	5	3	5	5	5	5	5	4	5	5	5	4	5	5	5	4	5	5	5	5	5	5	5	3	5	4	4	3	3	4,55
Quality of presentations	5	4	4	5	5	5	5	5	5	5	5	5	5	4	5	4	4	5	5	5	5	4	5	4	5	4	5	4	3	4,62
Quality/Expertise of lecti	5	4	4	5	5	4	5	4	5	5	5	5	5	5	5	3	4	5	5	5	5	5	5	4	5	4	5	4	4	4,62
Length of Workshop ?	4	4	4	4	4	4	4	4	5	4	4	4	4	4	5	4	3	4	4	5	5	4	5	4	4	4	3	4	4	4,1
Location of Workshop ?	4	4	5	4	5	4	4	5	5	5	4	4	4	5	5	4	4	4	5	5	5	5	5	5	5	5	3	5	5	4,55
Average	4,67	4,00	4,50	4,67	4,83	4,50	4,67	4,50	5,00	4,83	4,67	4,33	4,67	4,50	5,00	3,83	4,00	4,50	4,83	5,00	5,00	4,67	5,00	4,00	4,83	4,17	4,17	4,00	3,83	**4,52**

Main participants comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organizers/lecturers
1	Thak you very much. I learnt many new things	Yes	-
2	Level of knowledge of lecturers, statistics	Yes, as I work at North-South Corridor investment program	Everything was great
3			
4	Organisation and professionalism of lecturers; urgency of the problem	Yes, please organise more workshops like this one	Please come to Armenia more often. We also need funding.
5	Organised work	Yes	-

6	-	-	-
7	Reports, videos	Yes, not only for work but in everyday life	The results would be better if we organised experience exchange
8	Reports, videos	Yes	The results would be better if we organised experience exchange
9	-	Yes	-
10	Importance of topic, dynamics of the workshop, general mood and lectures	Yes	-
11	-		
12	Useful connecions, high level of knowledge of lecturers	Yes	Please invite more senior officials
13			
14			
15	-	-	-
16	-		-
17	General mood	-	Organise such workshops somewhere away from the city
18	Very well-coordinated work	Yes	-
19	-	Yes	Best wishes
20	-	-	-
21	Organisation and communication	Yes	Very good
22	Discussion, versatile approach	Yes	Organisation "Atill" is ready for cooperation
23	Discussion, especially international agreements and conventions as in Armenia there are not many published. This will help to create national documentation	Yes	More materials (videos, photos etc.) on Road Safety and international experience
24	Discussion	Yes	-
25			
26	Discussion	Yes	Invite persons who have been involved in solving these issues
27	Work in break out groups by sectors and action planning	Yes	Propose topics for participants on which they can give recommendations and discuss them in groups
28	Discussion of problems	Next topic: improving legislation on design, construction and control over maintenance	-
29	-	-	-

Workshop organizer response to evaluation:

1. Overall the workshop was obviously considered by participants to be of very high quality, delivering an overall average score for all aspects of 4.52 out of 5 (90.4 %) and every positive comments by the participants.
2. The project team will make further improvements to the presentations and identify more example countries to show successes
3. Change order of presentations where necessary to have impact/ effect.
4. Present more analyses of the greatest local problems and what can be done.

1.5 Photo documentation

Plate 1. Instantaneous translations enabled very active dialogue/discussions between participants and lecturers and exchange of experience between all involved in the workshop (WS)

Plate 2. Presentation given by Dr. Dejan Jovanov.

DRAFT

ARMENIA

ROAD SAFETY IMMEDIATE ACTION PLAN

January 2015- December 2017

April 2015

Prepared by
key road safety stakeholders during a 4 day
road safety action planning workshop

3-6 Feb 2015

With technical support and further assistance from

EU funded TRACECA Road safety project

Download from https://www.dropbox.com/sh/1lbt0mi63vr2e2k/AAAW3LneQFddnNMCLqOfEcUEa?dl=0

Contents

I IMMEDIATE ACTION PLAN 2015-2017 .....
1. THE STATE OF ROAD SAFETY IN ARMENIA.....
1.3. Types of road traffic accidents in Armenia
2. BACKGROUND .....
II APPENDICES .....
APPENDIX A: ACTION PLANS FOR EACH SECTOR .....
INSTITUTIONAL IMPROVEMENTS
SAFER INFRASTRUCTURE
SAFER VEHICLES
SAFER ROAD USERS
IMPROVED MEDICAL CARE FOR CRASH VICTIMS
CHANGING ATTITUDES TO ROAD SAFETY
Summary Total Budget for Action Plan
APPENDIX B: PERFORMANCE INDICATORS FOR INSTITUTIONAL DEVELOPMENT....

Comment on structure and content of immediate action plan

For consistency and ease of monitoring progress in both individual countries and the amalgamated progress of all 10 beneficiary countries at regional level, the immediate action plan for each TRACECA beneficiary country has been designed to a common structure. Since all countries are seeking to implement the earlier regional action plan and in particular, its recommendations regarding institutional development and capacity building of key experts in the same 6 sectors, the monitoring framework and the impact indicators used for monitoring are similar for each country as they relate to progress made against the same items from the earlier regional action plan.

The content of each immediate action plan and how the regional impacts will be achieved is generally different for each country based on the "Safe Systems" outputs if road safety is to be improved. Each country's plan is specific to the road safety current stage of development of that country, the scale and characteristics of the road safety problem and the views of the stakeholders who have developed the actions and activities for each sector. All countries however appear to have problems in management, coordination and funding of road safety and many have similar impediments preventing effective action in some other sectors. Consequently, in some cases the tasks and activities will be similar to those being undertaken in other countries. Each country specific immediate Action Plan tries to remove such obstacles and impediments in that country while doing capacity building to equip local road safety experts to be able to do more effective road safety activity. In addition, after completion of the capacity building, specific activities were undertaken in each country to try to "institutionalize" road safety activities so that they would become sustainable beyond the project. This included assistance in developing legislation and management structures, advice on funding mechanisms , introduction of road safety teaching in university courses and initiation of road safety research in universities to provide a framework of knowledge and understanding to enable better policy making on road safety issues.

I IMMEDIATE ACTION PLAN 2015-2017

1. THE STATE OF ROAD SAFETY IN ARMENIA

Briefly about Armenia

The Republic of Armenia, is a country in the South Caucasus region of Eurasia, which is located in the north of Western Asia. It is a landlocked country. It borders with **Azerbaijan)** to the east, with **Iran** to the east, **Turkey** to the west and **Georgia** to the north. Armenia is a unitary state. The population of Armenia, as estimated in 2014, is 3017100 people, the territory is 29 743 km^2.

The existing border crossings with Turkey and Azerbaijan are locked. Railway communication is carried out through the territory of **Georgia** and the ferry across the **Black Sea.**

Roads **a**re an important part of the transportation system of the country. Due to the under development of the rail network because of difficult mountainous terrain, roads in Armenia are crucial to the socio-economic development of the country. Main roads of Armenia are also indispensable for international transport. The public road network in Armenia, comprises 7637 km, 96.7 % of which is paved. There is 258 km per 1000 km^2 of the territory of the Republic.

Specific statistical reporting on selected aspects of road accidents is not conducted systematically or regularly in the Republic of Armenia, but, if necessary, these can be compiled by using the data obtained from the local units of traffic police. In this regard, it is planned to create a specific database of road accidents according to the Traffic Police record cards of the road accidents in Armenia.

This draft Action plan presents the crash data obtained from the Traffic police. It should be noted that some data for 2014 is not included in the Report, because this data is still not included in the database which is under development.

1.1 Trends in the levels of deaths and injuries in recent years

The road safety situation in Armenia requires serious attention. The statistics of traffic accidents since 2005 and their severity are given in the Table 1[4]. Data definitions for period of death and underreporting vary by country and for international comparison it is normally necessary to bring all data to a comparable format by adjusting for under reporting and definitions Estimations undertaken by WHO[5] as part of the periodic Global Status Report on Road Safety suggest that the numbers of deaths in Armenia for international comparisons should around double the reported police figures (ie at 582

[4] Source: Traffic Police of the Republic of Armenia
[5] Global Status of road safety 2013 , WHO , Geneva

rather than the 297 as reported by police in 2014 . However, for the purposes of this document we have used the data as supplied by traffic police in Armenia without any adjustments.

Table 1 – Recent trends in numbers of reported traffic accidents, deaths and injuries.

	Year	Road accidents	Deaths	Injuries	Severity[6]
1.	2005	1312	**310**	1773	14,9
2.	2006	1574	**332**	2089	13,7
3.	2007	1943	**371**	2720	12,0
4.	2008	2202	**407**	3125	11,5
5.	2009	2002	**325**	2753	10,6
6.	2010	1989	**289**	2686	9,7
7.	2011	2319	**326**	3314	8,9
8.	2012	2602	**311**	3739	7,7
9.	2013	2824	**316**	3994	7,3
10.	2014	3156	**297**	4479	6,2

Table 1 shows that traffic deaths were increasing 2005 to 2009 but then reduced a little in subsequent years They seem to have stabilised in the range 310-325 in subsequent years although there appears to have been a around a 6% reduction in 2014. Apart from the 2 years 2009 and 2010, injuries have increased steadily year after year. The severity injury appears to have improved over the last 10 years. This could be because of better emergency services getting to victims quicker and saving lives of those who would have died or due to increasing numbers wearing seatbelts so that those who previously would have been killed are now only injured

Table 2 - Traffic accidents in Armenia, 2013-2014

	Accidents	Deaths	Injuries	Severity
2013	2824	316	3994	7,3
2014	3156	297	4479	**6.2**
Change	**+332**	**-19**	**+485**	**-4**
% age change	**+11,7%**	**-6.%**	**+12.1%.**	

Compared to the previous year (2013), the total number of traffic accidents reported in 2014 has increased by 11.7%, the number of injured by 12.1% and the number of deaths has decreased by 6%.

Despite the slight reduction in the number of deaths in the last year, the road deaths and injuries in Armenia are high in comparison with the other UNECE states and appear to be more severe (about 1 death for every 15 people injured, whereas in UK it is 1 death for 65 injured). This can result from several causes, most notable of which is the underreporting of minor accidents and minor injuries.

[6] The degree of severity is the percentage of those killed out of the total number of victims. Under reporting of injury crashes can give a misleading severity ratio

Compulsory third party insurance was first introduced in Armenia in January 2011. Currently there are around 430.000 vehicles insured in Armenia and that is around 90 % of the total number of registered vehicles. Such third part insurance can help to address the problem of underreporting minor crashes as it could be made mandatory that when there is a minor accident not involving injury, drivers should exchange information about their insurance policies. Consequently, these minor accidents would find their way into the crash data system and police statistics

Table 3. Traffic accidents in Yerevan, 2013-2014

	Accidents	Deaths	Injuries	Severity
2013	1182	61	1495	3,9
2014	1385	71	1806	3,83
	+203	**+10**	**+311**	**3,1**
	+17.1%	**+16.4%**	**+20.8%**	

According to the data, more than 40% of the total number of road traffic accidents (RTA) occur in Yerevan, the capital of the Republic of Armenia, which has over one million inhabitants.

1.2. What categories of the road users die most often in the car accidents in Armenia and what are the main causes of accidents?

1.2.1 Drivers

Table 4 - Accidents caused by driver fault, 2013-2014

	Accidents caused by drivers	Dead due to the fault of drivers	Injured due to the fault of drivers
2013r.	2183	249	3373
2014r.	2411	237	3746
	228	**-12**	**373**
	+10.4%	**-4.8%**	**+11 %**

In 2014 the drivers were blamed for around 80 % of deaths and 84 % of injuries in Armenia[7]. Although there are many problems caused by lack of driver discipline, particularly speeding, dangerous driving and not wearing seat belts, it is also clear that much of the infrastructure does not support road safety and safe driver behavior.

Table 5. Speeding (2013-2014)

		2013	2014	Change	Change, %
1.	Accidents	964	962	-2	-0.2%

[7] Police in every country are prosecution oriented and tend to "blame" someone rather than seeking causes that may have contributed to that behaviour (eg missing or obstructed advance warning signs)

2.	Deaths	160	140	-20	-12.5%
3.	Injuries	1530	1416	-114	-7.4%

Speeding accounts for 47 % of deaths and 32% of injuries. This is typical of the situation in many CIS countries where speeding is the largest cause of road deaths and injuries. The Soviet system of a 60 km/h limit in towns and 90 km/h outside towns produces a speed regime that is not suited to the needs of road users in urban or built up areas. The general urban speed should be limited to 50 km/h (where vulnerable road users are present). Within this limit, even lower limits should be posted, typically 30 km/hr or even 20km/hr with physical speed reducing devices on access roads and in residential areas and around schools. The high numbers of pedestrian deaths (20 %) in Armenia calls for a complete review of speed limits. A pedestrian hit at 20 or 30 km/ hr has around 95% chance of surviving the crash but the same person hit at 60 -80 km/hr is almost certain to die in a crash. Reducing speeds will save lives

1.2.2 Pedestrians

The data of the Traffic Police of the Republic of Armenia regarding road traffic accidents involving pedestrians is presented in the figure 1 below.

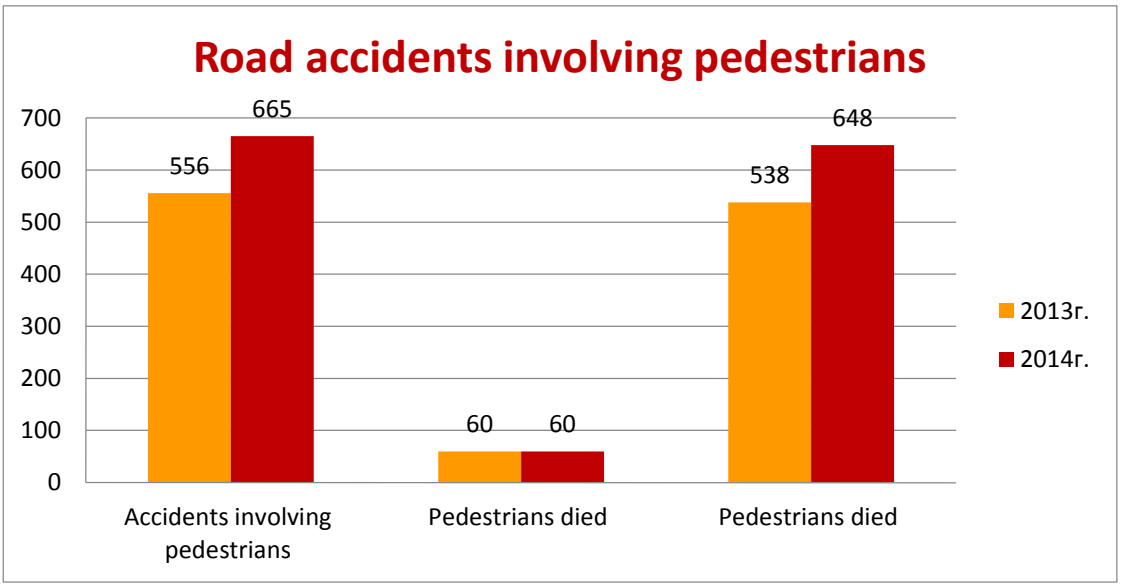


Figure 1 The number of accidents involving pedestrians and numbers killed and injured, 2013-2014

Pedestrians are involved in 21 % of crashes and 20 % of deaths and such accidents increased 19.65% in 2014. Although there was no increase in the numbers of deaths which remained at 60, the numbers injured increased by 110 giving a 20.4% increase in injured pedestrians. In urban areas, low public lightning and absence of clearly marked pedestrian crossing facilities on the major roads is a problem in Armenia as in many other CIS countries. Pedestrian safety needs to be addressed by applying appropriate measures.

1.2.3 Children

Table 6- Traffic accidents involving children, 2013-2014

Period	Accidents involving children	% of the total number of accidents	Children died	% of the total number of dead	Children injured	% of the total number of injured
2013r.	303	10.7%	20	6.3%	345	8.6%
2014r.	359	11.3%	15	5%	400	8.9%
	56		**-5**		**55**	
	18.4%		**-25%**		**15.9%**	

Children account for 11 % of crashes, 5 % of deaths and 9% of injuries and in just the last 2 years, 35 children died and 745 were injured some perhaps disabled for the rest of their lives. Although the numbers of children killed reduced in 2014 there was an 18.4% increase in the numbers of crashes involving children and a 16% increase in the numbers of children being injured. **Action needs to be taken to reduce the numbers of children killed and injured**. Creating "safe routes to school" and teaching young children age appropriate "survival skills" rather than the meanings of signs can have a significant beneficial effect upon child casualties.

1.2.4 Drinking alcohol

Table 7 – Traffic accidents involving drink driving, 2013-2014

Period	Road traffic accidents	% of the total number of accidents	Dead	% of the total number of dead	Injured	% of the total number of injured
2013r.	62	2.1%	6	1.9%	90	2,2%
2014r.	99	3.1%	17	5.7%	154	3,4%
	37		**11**		**64**	
	59.6%		**183%**		**71%**	

Alcohol impairment has a significant effect on the crash risk of drivers, riders and pedestrians. It is routinely reported as one of the most serious contributing factors to road crashes in motorized countries. There has been a significant increase in 2014 of the numbers killed and injured in accidents involving alcohol. However available statistics show that the percentage of crashes in Armenia involving alcohol appears to be surprisingly low at 3.3 crashes / 100,000 population (in EU it is around 7 crashes / 100,000 population) . It is likely that in Armenia, there is far less enforcement and checking plus a much higher incidence of underreporting of the incidence of drink driving, especially in cases where low BAC levels are involved. There would be merit in undertaking more enforcement of drink driving so that, as in many EU countries, there are around 165 roadside alcohol tests per 1000 population This would establish the right level of enforcement to deter much of the drink driving problem.

1.2.5 When do the accidents, deaths and injuries on the roads occur?

Table 8 - The number of accidents in Armenia by the hour of day

Time interval	2013	% of the total number of accidents	2014	% of the total number of accidents
0.01 – 6.00	380	468	0.01 – 6.00	380
6.01 – 9.00	138	287	6.01 – 9.00	138
9.01 – 12.00	292	339	9.01 – 12.00	292
12.01 – 15.00	401	430	12.01 – 15.00	401
15.01 – 18.00	473	491	15.01 – 18.00	473
18.01 – 21.00	**631**	**597**	**18.01 – 21.00**	**631**
21.01 – 24.00	**509**	**544**	**21.01 – 24.00**	**509**

As might be expected most of the crashes occur during peak hours and late in the evening after 1800 hrs. Around 40% of the daily crashes happen during the 6 hour period 1800-2400 hrs. (25% of the hours)

Table 9 - The number of accidents on the roads of the Republic of Armenia by days of the week

Day of the week	2013	2014
Monday	250	283
Tuesday	241	269
Wednesday	232	308
Thursday	240	256
Friday	235	309
Saturday	**254**	**319**
Sunday	**277**	**291**

Road accidents are fairly evenly spread across the days of the week but with very slightly more at the week end

1.3. Types of road traffic accidents in Armenia

In 2013-2014 the following accidents have occurred on the roads and in the settlements of Armenia:

Table 10. Types of road traffic accidents

		2013	% of the total number of accidents	2014	% of the total number of accidents
1.	Collision	1035	36.6%	1111	35.2%
2.	Collision with a pedestrian	873	30.9%	965	30.5%
3.	Vehicle overturn	428	15.1%	413	13.1%

Table 10 shows that the both the numbers of crashes with a vehicle hitting pedestrian and the collision of two or more vehicles have increased. It should be noted that Armenia has a rapidly growing vehicle fleet. In 2014 alone, an additional 46,475 vehicles were imported into Armenia, and this is the highest number of imported vehicle into the country in a single year since the year of it's independence. Unfortunately, many of these vehicles are very old and second-hand and will no longer have spare parts available for them. It is imperative to ensure that such vehicles are road worthy and safe before they are allowed to be used on public roads.

2. BACKGROUND

2.1 Introduction to Immediate Action Plan

With the help of the EU funded TRACECA regional road safety project, the Ministry of Transport of Armenia and the representatives of the other key institutions in Armenia have reviewed all sectors of road safety and have developed a road safety immediate action plan for Armenia. **This immediate action plan is not intended to replace any existing long-term road safety strategies or action plans that may already have been developed or may be developed in the future. Instead, this immediate action plan is intended simply to remove the obstacles and impediments that are currently preventing effective activity in the key sectors of road safety in Armenia** in order to facilitate more effective interventions and efforts by relevant organisations able to influence road safety.

Armenia is still at a relatively early stage of road safety development and many of the basic facilities, activities and capabilities required for the desired "Safe Systems" approach are just not available at this time amongst the key stakeholders or in the existing government systems and procedures. Considerable work will first need to be done to strengthen capacity, practices and activities before the key systems and knowledge can be in place to do more effective road safety work.

For these reasons, this Immediate Action Plan focuses, primarily on institution building, developing knowledge and capacity, and implementing improved practices and systems to enable more effective road safety work to be undertaken. Analyses of the available data and observations indicate that the main risk factors, such as: speeding, inadequate protection for pedestrians, drink driving etc remain the highest risk factors in Armenia as in other TRACECA countries. The Action plan therefore focuses on developing local capacity and on the key risk factors just to get activities going. In due course, once a new or improved crash data system has been installed, better data analyses being undertaken, data made available to stakeholders and other safety support systems have been put in place, the focus of the action plan can shift if required to any additional local risk factors and identified high risk road user groups based on more detailed sector specific analyses of local data.

This Action plan will:

1. Strengthen the current coordination mechanisms by strengthening the existing National Road Safety Council (NRSC) by establishing specialist sub committees to oversee implementation of this immediate action plan.
2. Strengthen the Secretariat function and technical support provided to the NRSC
3. Introduce local experts in selected areas to international best practices and to enhance their knowledge and expertise so they can be more affective in addressing road safety issues in their normal work activities.
4. Strengthen the ability of relevant agencies with road safety responsibilities to improve safety by reducing the number and the types of road crashes most frequently contributing to deaths and injuries in Armenia.
5. Encourage stakeholders to continue focussing for the moment on the known highest risk factors which have potential to deliver large reductions in deaths and injuries:
    - Seat belt wearing
    - Speeding
    - Drink Drive
    - Pedestrian safety

Implementation of this Immediate Action plan will be overseen by the National road safety council (NRSC) using a Partnership approach, which will enable different government ministries and departments to work together with the Private Sector and civil society/NGO stakeholders. The NRSC will need to be responsible for overall coordination, monitoring and implementation of the immediate

road safety action plan. Municipal level committees will be encouraged in due course to oversee development and implementation of local authority level road safety action plans.

2.2 Evidence that casualty reductions are possible

There is plenty of evidence that implementing a systematic, scientific safe systems approach can lead to very significant reductions in deaths and injuries. Table 2.1 below shows how a number of ex-Soviet countries with similar organisational structures, systems and constraints to some those in Armenia have nevertheless made very dramatic improvements in road safety. They did this by applying the well-proven techniques and approaches that have been developed and applied in EU over the last few decades. Armenia through some reductions in traffic casualties, has already demonstrated that it is capable of adopting and applying such approaches effectively. There is no reason why experts in Armenia could not continue achieving further success by continuing to adapt and apply such proven approaches so that it too can join the list of ex-soviet countries that are now role models for other countries of TRACECA region and who will deliver the UN Target of 50% reduction in road deaths by 2020.

Table 2.1 Ex-Soviet countries who have improved safety significantly by implementing proven EU techniques and approaches to road safety

Country	Road deaths		%Change 2001-2011	Deaths /100.000 population	
	2001	2011		2001	2011
Bulgaria	1011	755	-34.9	12.4	8.9
Czech Republic	1334	802	-47.0	13.0	6.7
Estonia	199	101	-49.2	14.6	7.5
Hungary	1239	638	-48.5	12.1	6.4
Latvia	558	179	-67.9	23.6	8.0
Lithuania	706	297	-57.9	20.2	9.2
Poland	5534	4189	-24.3	14.5	11.0
Romania	2461	2018	-18.0	10.9	9.4
Slovakia	814	324	-47.2	11.6	6.0
Slovenia	278	141	-49.2	14.0	6.9
Serbia	1275	728	-42.9%	16.99	10.06
European Union (EU)	54302	30108	-44.6	11.3	6.0

Source: TRACECA regional road safety Project

As Table 2.1 above shows, many Ex-Soviet countries and European Union have demonstrated that it is possible to steadily reduce the fatalities year after year, if effective and determined action is stimulated and coordinated by Government and if appropriate investment is made in road safety interventions. One of the great advantages for Armenia is that it is not alone in facing road safety problems and many other countries in EU including some former Soviet countries with similar systems , structures and standards / norms to some of those that still exist in Armenia have already developed and tested the tools and interventions and identified those that are most effective and applicable in

their systems. We can select from the menu of successful interventions implemented in other countries to select those that are most appropriate for Armenian conditions and its current stage of economic and social development. What is clear from the European experience is that setting ambitious targets is very beneficial[8] and even if you do not reach them, they do provide a focus for collective action and generally lead to much greater reductions than if no targets are set.

2.3 Desired "Safe Systems" outputs if road safety is to be improved

Sector 1: **Institutional issues** Well structured mechanisms and administrative structures in place for Armenia to be more capable of managing, coordinating and monitoring road safety within the national and international contexts.

Sector 2: **Safer roads** Roads authority and road engineers take more responsibility for the Safety of the roads they build and operate and recognise that humans make mistakes. Armenian roads authority needs to adopt a safe systems approach and ensure that Armenian Roads and road networks become safer and more "forgiving" to those involved in road crashes.

Sector 3: Safer Vehicles All types of vehicles comply with safe vehicle standards and regulations and that adequate controls and systems are in place to ensure that only roadworthy vehicles are permitted to use public roads.

Sector 4: Safer road users All road users know and understand their obligations under the Road Traffic Law, are aware of the main risk factors and how to avoid or minimise liklihood of death or injury in a crash.

Sector 5: Post crash care services are timely and highly effective in reducing severity and adverse outcomes of road crash injuries.

Sector 6: Changing Attitudes The Attitudes of government, private sector and communities changes so that all take more direct responsibility for road safety for themselves, those arround them and those that they can influence.

2.4 Summary of the actions needed in each sector

Sector 1: Road Safety Management

Road safety is a multi-sectoral issue, which requires a multi-dimensional management system and adequate technical and financial resources that allow the responsible agencies to develop and implement appropriate strategies, policies and plans to coordinate the various actors involved in road safety at all levels. It also requires the establishment of appropriate safety support systems such as a crash data system and data analyses that permit the problem to be fully understood and appropriate action to be taken to reduce the numbers of casualties and their severity. Funds are needed for coordination but do not necessarily have to cover all the costs once activities move down to individual municipalities. However, Funds need to be enough to allow sufficient horizontal and vertical coordination and integration activities, cross sector workshops and safety promotion activities at national level and a few demonstration and pilot projects to stimulate road safety activities at all administrative levels within Armenia so that municipal Mayors and Provincial Governors show leadership by chairing local road safety committees and mobilizing the resources available to them to reduce the deaths and injuries in their communities

In 2010 the National Road Safety Council (NRSC) was established under the Prime Minister's office of the Republic of Armenia with the membership of the key ministries, Yerevan Municipality and NGOs. Secretariat of the NRSC is chaired by an NGO that has the same name as the agency "National Road

[8] OECD/ITF, **Towards Zero: Ambitious Road Safety Targets and the Safe System Approach**.`2006

Safety Council of Armenia". Between 2006 and 2010 this NGO was working successfully on road engineering, road safety education, public awareness raising campaigns and seatbelt enforcement. After the establishment of NSRC the working groups in different areas were created, as follows: education and PR; data analyses; road safety engineering; capacities of traffic police and speed enforcement; public health and separate working group for Yerevan city. One of the main functions of the NRSC is to promote cooperation of the key road safety stakeholders. Unfortunately, NRSC doesn't have any executive power and there's no sustainable funding foreseen for the road safety activities, so it is not as effective as it could be.

Despite existence of the Council there is still little coordination/cooperation between the key ministries. Although WHO (2013) report indicates there is a National Road Safety Strategy, there appears to be no designated lead agency to oversee its delivery and special funding to enable its implementation. There is a need to establish a permanent secretariat to support the work of the National Road Safety Council and a need to establish a mechanism for more sustainable funding of road safety. There would be merit in introducing new safety legislation to designate a lead agency to manage / coordinate the national effort to improve road safety, to clearly state the obligations of all government organisations, to establish a permanent Secretariat and to provide the necessary funding to enable the strategy to be implemented. Key tasks will include further strengthening of knowledge and capacity building amongst key sector experts in relevant organisations, improvement to the quality of the police crash database and to make the data more accessible to all stakeholders and general public/NGOs so that safety activities can be decentralised horizontally to individual stakeholders and vertically to municipalities so they can take action at local level. The Government of Armenia has already recognised the need for improving the road accidents data collection system. The road accident report form used by police was developed on the basis of the best international practice

More road safety research will also need to be initiated within academic and scientific institutions in Armenia. This immediate Action plan should be rigorously monitored and evaluated to ensure that the institutional development goals are being achieved.

Sector 2: Infrastructure:

Infrastructure plays a crucial role in road safety. Well-designed roads can help people use roads safely and minimize the risk that a crash will occur. When a crash does happen, protective and forgiving road infrastructure can mean the difference between life and death. Infrastructure that emphasises traffic calming and that caters to the needs of vulnerable road users (cyclists, motorcycle riders, pedestrians, children and people with disabilities) is particularly important in Armenia where around 20 % of the deaths and 15 % of injuries are to pedestrians and where pedestrian accidents increased by nearly 20% in 2014. Although better than many countries in the region, the percentages are still on the high side in comparison to European countries where pedestrian deaths are typically 10-20% of total deaths. Efforts at improving road safety should address pedestrian safety as a priority and attention should be particularly given to speed control in populated areas.

In this sector, the focus will need to be on engineering solutions, which reduce speed through "traffic calming" measures and speed management, particularly in zones with a high volume of vulnerable road users such as school and residential zones, in build-up areas and in linear villages along major roads. Blackspot, mass action and route action improvement programmes should be implemented along the main road network to improve safety on the existing roads. The recommendations of the EU Directive 2008/96 EC on road safety infrastructure management should be implemented by the Armenian Roads Directorate and it should be compulsory for each level of roads administration to report annually on road safety of their network and to implement road Safety Audit and Road Safety Inspections on main and local roads. More road engineers should be trained in carrying out such safety activities and safety audits should be compulsory on all future road design and infrastructure projects. There should also be systematic analyses of crash data to identify the most dangerous locations on

each level of road network and implementation of hazardous locations (blackspots) improvement programmes on each network by the responsible level of roads administration.

Armenia has already started working in this area. In 2010, the Road Safety Audit Manual was prepared with the assistance of international expertise. Between 2010 and 2012, a number of pilot road safety audit projects were undertaken in different parts of Yerevan. The conclusions and recommendations were transmitted to the relevant road authorities for further action.

Sector 3: Safe Vehicles

Improvements to the crash protection and safety features in vehicles have been proven to reduce the numbers of road deaths and serious injuries. In recent years, there have been significant advances in vehicle safety that protect occupants and other road users and improves the ability to avoid crashes. Increasing the proportion of newer vehicles on roads with high standard safety features, both of company fleets and privately owned vehicles will substantially reduce risks for all road users – drivers, passengers, motorcyclists, pedestrians and cyclists.

However, in this sector, the current economic environment in Armenia suggests that older vehicles and second hand cars will remain a major part of the fleet for the foreseeable future and it is important that we ensure such vehicles are safe to be on the road. The year 2014 had the highest number of imported second hand vehicles since independence and most of those vehicles were very old. The government of Armenia need to adopt relevant legislation to prevent import of second-hand cars to Armenia unless they are proven to be road worthy to ensure that such vehicles are not allowed to use the roads in Armenia. This inspection and control system should include random roadside checks and unannounced checks/supervision of the testing stations to minimise corruption and illegality.

Sector 4: Safe Road User Behaviour

All road users share responsibility to use the road system safely and responsibly, and with consideration for other road users. To change the behaviour of the various road users and to protect vulnerable road users, awareness must be increased and attitudes changed of the citizens who use the road. Road users need to be made aware of the main risk factors that increase the probability of road crashes and the risk of them or others sustaining fatal or serious injuries so that they modify their behaviour to minimise such risks.

In this Sector, it is necessary to target the main “risk” factors, identified from analyses of the available data and from observations while using the roads in Armenia. As previously stated pedestrians account for around 20 % of deaths, proportions which are too high. Efforts at improving road safety should address pedestrian safety as a priority and attention should be given to improving both pedestrian discipline which is currently very poor and speed control in populated areas. The general observations while using the roads in Armenia show that many drivers are ill disciplined. The driving behavior is aggressive and leaves no room for error by other road users. This is also demonstrated by the fact that 80 % of road traffic deaths (according to police) are caused by bad driver behavior.

In July 2014, 80 traffic light control cameras were installed in Yerevan. Before that, the traffic management and surveillance system was outdated and lacked a traffic violation snapshot system. This measure should help to identify vehicles violating traffic rules, cut the number of violations (e.g. red-light violation and driving on the wrong side of the road) and more importantly save lives. Whilst this will help to bring the situation under control on some of the junctions, in the areas where there are no cameras or GAI officers it will still remain a serious problem. It is understood that it is the first phase of the traffic controls and more junctions will be covered in the future, but to improve the road users’ behavior the public awareness raising campaigns and road safety education programs need to be put in place. Check if done

As previously stated, speeding is the cause of 47% of the crashes and 32% of the injuries from road traffic crashes in Armenia. Vulnerable road users as pedestrians, cyclists, moped riders and motorcyclists have a high risk of severe or fatal injury when vehicles collide with them. The probability that a pedestrian will be killed if hit by a motor vehicle increases dramatically with speed. Research indicates that while most vulnerable road users survive if hit by a car travelling 30 km/h, the majority will be killed if hit by a car travelling at 50 km/h. Therefore, attention should be given to speed control measures. Where there is found to be a concentration of collisions with pedestrians, consideration should be given to humped crossings to force drivers to slow down. Examples from other countries show that a comprehensive system of speed cameras (predominantly at black spots) can significantly contribute to saving lives. Altogether, there are 153 speed cameras now in Armenia with 77 cameras in Yerevan and 76 cameras in the regions on inner and interstate highways. Whilst the costs of installing and operating speed cameras on each part of the road network can be quite high, many countries choose to use both the "fake" and the real cameras to influence the driver. It helps to minimize the costs and to control the speed as the drivers never know which camera boxes have real camera in them and which are empty.

Activities will need to include general public education through the various media channels. In addition, there is a need to develop and introduce an age specific road safety curriculum for different classes in schools. Many of the education campaigns should be linked to enforcement actions to maximise their impact. Armenia has already made some good progress in this sector. Between 2010 and 2014, the NRSC implemented the road safety education program for students of all grades in 10 schools in Armenia. It included training the teachers, publishing books for children and road safety guidelines. The specific trainings of mass media representatives on how to highlight the importance of road safety in the media and raise the general public awareness have been carried out.

Children account for 11.3% of road traffic accidents and incur 5% of deaths and 9% of injuries in Armenia. This is mostly due to the increased risk they face when travelling on a road system that does not adequately protect them. For example, children often have to cross busy roads without any central refuges to get to school, pedestrians often have to walk along the road because there is no footpath facility for them, and speeds of vehicles are often far too high as they pass through urban areas and especially through linear villages along major roads. This sector will need to focus on addressing the risks posed to vulnerable road users. Safe school zones should be established throughout the country for children, safe crossings and speed reduction measures should be applied in areas where large numbers of pedestrians can be expected.

Car occupants should be targeted particularly on seatbelt wearing and the existing methods of driver training/testing and the enforcement of standards will need to be strengthened and steadily improved.

Sector 5: Post-Crash Care

The likelihood of dying from a serious injury resulting from a road traffic crash is still too high in Armenia. Absence of a single nationwide emergency number and uncoordinated action by rescue services can result in delays in getting urgent treatment to critically injured victims. Each 10 minutes of delay in extracting a severely injured person from a crashed vehicle can reduce chances of survival by 10 %. Thus, many people may be dying needlessly because of the insufficient first aid being available at the scene, slow extraction of injured persons from the damaged vehicle, slow transport to a health centre or hospital, and in some cases, insufficient medical help at the health centre or hospital.

The key principle in this sector is to provide initial stabilization of the injured party during the golden hour (i.e. the first hour after injury). Thus, one approach for Armenia to consider could be somehow to expand the numbers of 1st aid trained persons by mobilising those who are most frequently on the road. Increasing the 1st aid capability of commercial drivers who are frequently on the road or first responders such as traffic police or community volunteers can make a significant impact on the time taken to get basic lifesaving 1st aid to stabilise a traffic victim. A particularly important initiative will be

to have joint training of ambulance, police and rescue crews in order to reduce the extrication time for injured victims.

Sector 6 Changing attitudes

This is an essential component of a more systematic approach where road safety has to be made everyone's responsibility and not just something, that government gives you. Every individual has the opportunity to influence those around him ranging from protecting himself, protecting and influencing his immediate family, influencing his wider family of relations, to friends and acquaintances, to people in his neighbourhood, to people he works with or who he employs. Attitudes to safety will need to be changed in Government, in private sector and amongst the public.

In 2010 there was a successful event organised by the NRSC NGO aimed at improving media reporting to road safety. The event resulted in the creation of a core group of journalists interested in and better informed about road safety, with a subsequent increase in reporting and press attendance at road safety events. Media can play a very important role in raising public awareness and changing attitudes to road safety.

Safety has to be made everyone's business as all can make a contribution towards its improvement and even the attitudes to and acceptance of unsafe behaviours by family and friends and others also has to change to visible and stated disapproval. Those who are anti- social (e.g. speeders, drink drivers, those ignoring traffic lights, users of mobiles or those texting when driving) are putting the law abiding citizens at risk and imposing very high costs (e.g. hospital treatment of those injured) upon Armenian taxpayers which are estimated to be around US$ 414.33 million/year (4.4 % of Armenia's annual GDP). Such anti-social persons should be made to feel that such behaviour is no longer unacceptable and that they are fools for engaging in such behaviour. In addition, they should be heavily fined and punished for putting others at risk and imposing unnecessary costs upon the taxpayers in Armenia.

2.5 Concluding remarks

This proposed immediate 3-year action plan is based on an assessment of each sector. It was developed by local Armenian experts drawn from all the key stakeholders in cooperation and discussion with international experts of the EU funded TRACECA road safety project. This plan tries to identify the most urgent needs in Armenia. Appendix A presents the Action Plans for each Sector, Appendix B presents impact indicators that can be used to assesses institutional impact of this immediate action plan. These were used in the initial benchmarking exercise and will be used to monitor "institutional impact" as the project proceeds.

The proposed total road safety investment required in Armenia over the 3 year period is around Euro 25 millions. This is a very modest investment given the very high returns that are likely to be achieved. In addition it must always be remembered that road crashes are already costing Armenia ova **over $US 414.33 Millions** each year (4.4 % of annual GDP). Therefore, **inaction is not an option** as failure to react appropriately and to invest in road safety will result in such losses continuing into the future, year after year.

II APPENDICES

APPENDIX A: ACTION PLANS FOR EACH SECTOR

DRAFT

Sector 1: Institutional strengthening
Sector 2: Safer Roads
Sector 3: Safer Vehicles
Sector 4: Safe road user Behaviour
Sector 5: Emergency Medical Services
Sector 6: Changing Attitudes

To be developed further by local Armenia stakeholders with assistance from TRACECA Road Safety Project team

1. INSTITUTIONAL IMPROVEMENTS

IMPACT INDICATORS	% of ACH	Actions required with time frame	Estimated costs	Lead Stakeholder	Stakeholders involved
1	2	3	4	5	6
Compliance with, accession, ratification and implementation of UNECE Conventions and EU Agreements **1.1 ADR 1957**					
1 Accede to agreements	100	Nil			
2 Translation to local language	100	Nil			
3 Review existing legislation	100	Nil			
4 Ratify and publish	100				
5 Training/capacity development	100	Nil			
6 Regular checks	100	Nil			
7 UNECE Working parties	0	7.1 Relevant experts attending WP meetings 7.2 experts contributing to work of WP			
Agreements **1.2 Vehicles Regulations Agreement 1958**					
1 Accede to agreements	0				
2 Translation to local language	0				
3 Review existing legislation	0				
4 Ratify and publish	0				
5 Training/capacity development	0				
6 Regular check	0	5.1 Training needs study completed by 05/16 5.2 training courses developed /available by 05/16 5.3 Relevant persons in key organizations being trained 06/16			
7 UNECE Working parties	0	7.1 Relevant experts attending WP meetings 7.2 experts contributing to work of WP			

1.3 Convention on Road Traffic 1968					
1 Accede to agreements	100	Nil			
2 Translation to local language	100	Nil			
3 Review existing legislation	100	Nil			
4 Ratify and publish	100	Nil			
5 Training/capacity development	100	Nil			
6 Regular check	100	Nil			
7 UNECE Working parties	0	7.1 Relevant experts attending WP meetings 7.2 experts contributing to work of WP			
1.4 Convention on Road Signs and Signals 1968					
1 Accede to agreements	90	Nil			
2 Translation to local language	90	Nil			
3 Review existing legislation	90	3.1 Introduce a programme of systematic removing /replacing non-compliant signs			
4 Ratify and publish	90	Nil			
5 Training/capacity development	90	Nil			
6 Regular check	90	Nil			
7 UNECE Working parties		7.1 Relevant experts attending WP meetings 7.2 experts contributing to work of WP			
1.5 AETR 1970					
1 Accede to agreements	10				
2 Translation to local language	10				
3 Review existing legislation	10				
4 Ratify and publish	10				
5 Training/capacity development	10	5.1 Training needs study completed by 05/16 5.2 training courses developed /available by 05/16 5.3 Relevant persons in key organizations being trained 06/16			
6 Regular checks	10				
7 UNECE Working parties	10	7.1 Relevant experts attending WP meetings 7.2 experts contributing to work of WP			
1.6 AGR 1975					
1 Accede to agreements	100	Nil			
2 Translation to local language	100	Nil			
3 Review existing legislation	100	Nil			
4 Ratify and publish	100	Nil			
5 Training/capacity development	100	Nil			
6 Regular checks	100	Nil			
7 UNECE Working parties	100	Nil			

1.7 Agreement on technical inspections 1997 1 Accede to agreements 2 Translation to local language 3 Review existing legislation 4 Ratify and publish 5 Training/capacity development 6 Regular checks 7 UNECE Working parties	 10 10 10 10 10 10 10	 7.1 Relevant attending WP meetings 7.2 experts contributing to work of WP			
Multidisciplinary Road Safety agency 1. Legislation exists 2. Coordination body established 3. Fully staffed and funded Secretariat exists 4. Reliable, sustainable safety funding mechanism in place	 80 90 10 50	 1.1 Legislation amended re lead agency , secretariat and funding by 03/16 1.2 Legislation enacted by end 3/15 2.1 Existing council coordination reviewed /improved by12/15 2.1Lead agency specified and responsibilities of all clarified by 3/15, 3.1 permanent secretariat established to support road safety council by 4/16 3.2 Technical support group (working groups) established at Director level to implement council decisions by 04/16 4.1 Review international best practice in funding safety by 12/15 4.2 Identify best models of financing to apply in Armenia by 4/16 4.3 Mechanism established for sustainable funding of road safety by 6/16		PM's office	NRSCA, All Government Ministries, Mayor's office, Road police
Implementation of National Road Safety Strategy 1. Strategy is developed 2. Stakeholders consulted 3. Strategy approved by Government 4. Implementation commenced	 100 100 100 15	 Nil nil nil 4.1 review of action plan by 11/2015 4.2 Adoption of the action plan by Government 02/2016 4.3 Govt assists / facilitates establishment of funding to implement strategy 06/16 4.4 National Assembly approves budget line for RS agency 11/2016		NRSCA (RSA)	Government, Ministry of Transport and Communication, Road Police, Ministry of Health, Ministry of Emergency, NGOs
Realistic and long term targets for road accident reduction 1. Realistic long term targets in place 2. Action plan prepared to deliver targets 3. Action plan being implemented 4. Progress towards targets being monitored	 100 0 50 50	 nil to be approved by Government 12/15 3.1 Create the mechanism of independent monitoring. by 03/16 3.2 priority elements of Existing action plan(if any) added into immediate action plan by 12/15 3.3 Govt. approval of a State road safety programme by 12/15 4.1 Monitoring system established for action plan by end 06/16 4.2 RSC reporting progress quarterly to Govt. transport Committee by 9/15		NRSCA (RSA)	Government, Ministry of Transport and Communication, Road Police, Ministry of Health, Ministry of Emergency, NGOs

Long term sustainability of road safety development 1. Annual losses to economy quantified 2. Road Safety funding mechanism exists 3 Budget being allocated for road safety improvement 4 Monitoring demonstrates effectiveness of investments in road safety	0 15 20 0	1.1 Research completed to quantify losses by end 02/16 1.2 Costs available for use in cost benefit analyses by end 04/16 2.1 Road safety Fund established by 09/16 2.2 Insurance levy on Third party policies goes into road safety fund by end 09 /16 2.3 other streams of income agreed for road safety by end 6/16 2.2 Improve mechanism of tasks performances. 09/16 3.1 Govt ministries have a budget item for road safety by 12/16 3.2 Ministries implementing interventions in their areas by 01/17 4.1 Independent monitoring of effectiveness of investments by 06/17 4.2 Annual report published on effectiveness of safety interventions by 12/17		NRSA (RSA)	Road Police, Statistical Department, NGOs, Universities
Establish a mandatory road user insurance scheme 1. Compulsory third party motor insurance exists 2. Enforcement and penalties in place for uninsured vehicles 3. Number of uninsured vehicle minimized	100 100 99	1. Third party insurance exists. 2. Enforcement of law and penalties exist for not insured vehicles.		Road Police	Central Bank, Insurance companies
Establish requirements for the issuing of driving licenses based on international best practice 1. Adequate theoretical testing in place 2. Adequate practical testing in place 3. Commercial drivers need to pass further tests 4. System complies with best international practices	50 50 50 50	1. More theoretical knowledge is required. 1.1. Complete Training for instructors and examiners by **12/2015** 2. More strict requirements needed. 2.1 Develop and implement EU compliant practical tests by 0**6/2015** 2.2 Complete Training for instructors and examiners by 12/2015 3. Develop mechanisms for implementation, review legislation 04/2016. 3.1 existing commercial drivers to pass CoC by 12/2017 3.2. System complies with relevant EU directives/ guidelines 09/2016 4. The system meets international requirements 09/2016		Road Police	Ministry of Justice, Ministry of Economy, Ministry of Finance, Ministry of Transport andCommunication, EU, NRSCA (RSA), Ministry of Education

Data collection and evaluation is unified in the region 1. Common core items to be agreed and identified 2. Agreed accident data being collected via police accident forms 3. An adequate data storage system is established 4, Adequate data retrieval and analysis system established 5. Adequate data dissemination system is established 6. Crash data accessible to all stakeholders for further analysis 7. Crash data system enables effective analysis of crash causes and remedial measures	0 0 0 0 0 0 0	1.1 Collaboration with others via TRACECA project by end 6/16 1.2 Traceca project expert reviews needs by end 6/15 2.2 Crash data form reviewed to meet all stakeholder needs by 12/16 3.1 System reviewed and improvements recommended by 12/16 4.1 System reviewed and improvements recommended by 12/16 5.1 System reviewed and improvements recommended by 12/16 6.1 Data available and accessible for further analyses by stakeholders by 12/16 7.1 police and stakeholders able to do further analyses to identify high risk road users and high risk behaviours by 12/16		NRSCA (RSA)	Ministry of Education, Ministry of Finance, Road Police, Armenian Road Directorate, Ministry of Transport and Communication, Ministry of Justice, Statistics Department, Universities
A common system is established for monitoring and evaluating the outcome of defined measures 1. Regional Working group established 2. The impacts to be monitored are agreed 3. Impact monitoring system is established 4. Quarterly monitoring progress reports being circulated 5. Effective strategic management of implementation	10 20 20 20 20	1.1 Regional data group established by 12/15 2.1 impacts indicators for monitoring agreed by 03/16 3.1 Impact monitoring system established by 03/16 4.1 Quarterly reports available / circulated by 06/16 5.1 coordinating group reviewing progress and taking 09/16		NRSCA (RSA)	Government, Ministry of Transport and Communication, Road Police, Ministry of Health, Ministry of Emergency, NGOs
Reviewed and improved road signing systems 1. Signing/standards reviewed 2. Needs and deficiencies identified 3. A program for improvement developed 4. The budgets needed estimated	10 10 20 20	1. Reviewing standards 12/2015 1.1 Existing signing / marking standards reviewed 12/15. 1.2 Areas of deficiency identified 02/16 2. Implementation of the program and assessment.02/16 3. A program for implementing improvements designed 12/2015 4. Budget estimated by 2016		Ministry of Transport and Communication	Ministry of Education, Ministry of Finance, Road Police, Armenian Road Directorate, NRSCA (RSA)
Implemented road safety audit (RSA) principles and practices in the design and construction of the existing and new roads 1. Participation in discussions held at Regional level to establish a common RSA approach 2. Implementation of the RSA policies at national levels agreed	10 20	1. Discussions between the leaders of agencies according to road safety. 1.1 discussions held between roads agency heads by 06/15 1.2 Regional guidelines of RSA in use by 09/15 2. The agreed policy at the national level is implemented. 2.1. RSA policy implemented by 06/15 2.2. RSA s being undertaken in compliance with policy by 12/15SA		Ministry of Transport and Communication	Ministry of Education, Ministry of Finance, Road Police, Armenian Road Directorate, NRSCA (RSA)

3. Participation in discussions for RSA accreditation system developed for region 4. Participation in discussions for preparation of Regional RSA Manual developed 5. Regional RSA Training courses developed 6. RSA trainers trained 7. In country RSA training programs established	20 20 20 20 20	3. The grievance requirement should be highlighted in the law/government decree. 3.1 Discussion completed with other Road agencies about mutual recognition of TRACECA project trained RSA instructors and accreditation of auditors by 12/15. 4. Comments made for development of regional RSA manual by 03/15. 5. TRACECA and specialized institutions for RS. 5.1 National RSA course being run 2 times / year by 11/15. 5.2 TRACECA project trained and certified RSA instructors offering regional training courses by 12/15. 6. RSA trainers trained by 03 /16. 7. More information in books and more visits of representatives of police to schools. 7.1 RSA Training course being implemented at least once a year by 11/15			
Best practice in road safety shared throughout region 1. TRACECA Road Safety Working Group Established 2, Shared database of Manuals, procedures, standards compiled 3. Annual conferences of best road safety practice organized	0 0 0	1.1 At least 3 sector specific regional working groups by 11/15 2.1 TRACECA countries sharing knowledge via regional working groups by 11/15 2.2 database / repository established for sharing documents / Manuals by 03/16 3.1 At least 1 regional road safety sector meeting / conference by 11 / 15 3.2 Regional working groups agree to hold Annual conferences by 12/15		RSA (NRSCA)	Ministry of Finance, Ministry of Transport and Communiaction, Ministry of Education, Ministry of Health, Road Police, EU, other International organisations, NGOs
Harmonized driving penalties in the region 1. Study existing penalty systems in countries 2. Discuss possible common penalty system across the Region 3. Establish common data system about violations 4. Mutually recognized sanctions being applied across the Region	0 0 0 0	1.1 Seek EU TAIEX assistance to review penalty systems by 10/15 1.2 Produce recommendations for a system by 12/15 2.1 Police in 10 countries to have discussed common penalty system by 12/15 3.1 Provide access both for the traffic police officers and researchers / universities to fines/ penalties y data base by 11/15 3.2 Police forces across 10 countries discuss possibility of common violations data system by 12/15 4.1 Police discuss and mutual recognition of sanctions across region by 12/15 4.2 Police introduce mutual recognition system y 12/16		Road Police	Ministry of Justice, Ministry of Finance, Ministry of Transport and Communiaction

2. SAFER INFRASTRUCTURE

IMPACT INDICATORS	% of ACH	Actions required with time frame	Estimated costs	Lead Stakeholder	Stakeholders involved
1	2	3	4	5	6
Implementation of road safety audit/ assessment 1. Legal basis for RSA 2. Adequate manual in use 3. Trained road safety auditors available 4. Road Authorities have budget to purchase RSA 5. All new, reconstructed and rehabilitated roads being safety audited 6. RSA Recommendations being implemented by Roads Authority	10 80 50 30 50 40	1.1. Preparation of the draft law on "Transport safety" which is stipulated in the RA Government resolution **01.2016** 1.2. C 1.3. R 2.1 Preparation of normative documents for usage of audit manual. **12.2015** 2.2 Coordination with concerned organizations. **09 - 112015** 2.3 Legal adoption of manual. **12.2015** 3.1 legal mechanisms for licensing auditors. 12.2015 3.2. Preparation of auditors for training. **01.2016.** 4.1 Budget for ATDB **10.2015** 5.1 Explanatory report is being compiled in case recommendations are not carried out.. 6.1. The reasons for not fulfillment are being analyzed. a l	0.5 mln USD	1. Ministry of Transport and Communication 2. Ministry of Transport and Communication 3. Ministry of Transport and Communication 4. Ministry of Transport and Communication 5. Ministry of Transport and Communication 6. Ministry of Transport and Communication 7. Ministry of Transport and Communication	1. Ministry of Territorial Administration and Emergency Situations, Ministry of Finance, Ministry of Economy, Road Police, NGOs 2. Road Police 3. Road Police 4. The Ministry of Finance Mayor's Office, Municipalities, Ministry of Finance 5. Road Police, Ministry of Territorial Administration and Emergency Situations 6. Road Police 7. Ministry of Justice
Implementation of Blackspot management 1. Legal basis for BSM 2. Adequate BSM Manual in use 3. Trained black spot investigators available 4. Annual hazardous improvement program in place	80 0 0 70	1.1 prepare legislation by 04/16 1.2 Coordination with concerned departments; 03/16 1.3 Approval by 06/16 2.1 Develop BSM policies and Procedures by 6/16 2.2 regional manual accepted into Armenian law by 8/16 2.3 Coordinate/ consult with others by 05/16 2.4- Register in relevant Ministry by 10/16 3.1 .TRACECA project trained BSM Instructors training others by 07/15 3.2 BSM training available at least once / year by 12/15 3.3 BSM training institutionalised by 12/15 4.1. roads agencies include budget for BSM by 10/16 4.2 Blackspot investigations being commissioned from consultants by 03/17 4.3 Consultants training their staff in BSM by 12/15		Ministry of Transport and Communication	Road Police, Ministry of Finance, Roads Directorate,RSA

5. Road Authorities has dedicated funds for BSM improvements	70	4.4 Annual BSM programmes in place at each road authority by 11/16 5.1 road authority have budget line for BSM by 10/16 5.2 all road authorities required to do annual report on road safety by 02/17			
6. BSM recommendations being implemented by Roads Authority	80	6.1 If Blackspot investigation recommendations not implemented road authority must do explanatory report at year end by 03/16 6.2 Monitoring of BS implementation and reported annually by 03/16 6.3 Review of BSM processes / procedures at 2 yearly intervals by 12/16			
Implementation of the program to define routes for freight avoiding residential areas					
1. Legal framework exists	0	1. Finalization of the legal framework		1. Ministry of Transport and Communication	1. Ministry of Territorial Administration and Emergency Situations
2. Freight traffic surveys done to assess needs	30	2. Carrying out additional surveys. **11.2015.**		2. Ministry of Transport and Communication	
3. Alternative routes defined	0	3.1 Develop cargo strategies based on survey results. 11**.2015** 3.2 Defining routes. **12.2015**		3. Ministry of Transport and Communication	3. Road Police, Ministry of Territorial Administration and Emergency Situations
4. Signing and markings placed	0	4.1 Conduct a research on the presence of road signs and markings, in line with international standards. **02.2016** 4.2 Work on a strategy on road signs and marks in the suggested roads.		4. Ministry of Transport and Communication	4. Road Police, Ministry of Territorial Administration and Emergency Situations
5. Effective enforcement of commercial vehicle routes	40	5. Coordination of strategies with the Road police. **02.2016**		5. Ministry of Transport and Communication	Ministry of Finance 5. Road Police, Ministry of Territorial Administration and Emergency Situations
6. Commercial through traffic in residential areas reduced	40	6. Coordination of strategies with the Road police. **02.2016**		6. Ministry of Transport and Communication	6. Ministry of Finance
Cost effective measures by local road authorities					
1. Updated cost of crashes and casualties known	10	1.1Economic researchers commissioned and guided to do research by 12/15 1.2 Crash costing research completed by 04/16		Ministry of Transport and Communiction	
2. Cost/Benefit of safety interventions is available	50	2.1 costs of different severity of crash known by 11/15 2.2 Cost of different severity of casualty known by 11/15			
3. Ranking/Prioritization for improvement is done on basis of Cost/Benefit analysis	10	3.1 Interventions being assessed using cost benefit analyses (CBA) by 12 /15 3.2 ranking based on CBA by 12/15			
4. Most hazardous locations are being systematically improved via annual programs	30	4.1 Adequate annual Blackspot improvement budgets for 30 blackspots improvement on their network within each roads authority by 03/16 4.2 Blackspots improvement prioritised on basis of CBA by 0216 4.3 BS budgets being used most cost effectively by 03/16			4.1 Ministry of interior; Ministry of transport; Ministry of health; Ministry of Finance, Ministry of Economy, Road users

Availability of safe and secure off-road parking for trucks					Road Police, Statistic Department, Ministry of Finance
1. Legal framework	80	1.1 Develop and approve the state target program of construction and arrangement of parking areas for freight vehicles by 11/15 1.2 Amend the norms and update standards to international best practice by 12/15			
2. Freight transport surveys done to identify parking needs	0	2.1 Survey completed by 11/15			
3 Potential parking sites defined	50	3.1 Report identifies potential sites along main roads by 12/15			
4.Direction Signing and markings placed	50	4.1 Signing needs assessed by 12/15 4.2 Systematic programme of signing initiated by 06/16			
5 Safe secure off-road parking for trucks available and in use on major routes	20	5.1. Three yearly review of needs occurring by 12/15 5.2 Planned programme of provision by 12/16		5.1 Ministry of transport and Communication	
Building the capacity of engineers and technical staff		1.1Roads administration to be member of PIAR b 10/15 1.2 Acquire, translate + circulate PIARC guides by 12/15		6.1 Ministry of transport and Communication	Road Police, Ministry fo Finance,Academic staff, Universities, Ministry of Education
1. Adequate Manuals/Guidelines for safety engineering produced	20	1.3 Adopt TRACECA regional RSA manual by 10/15 1.4 Adopt TRACEC regional BSM manual by 10/15			
2. Selected Government, Consultants and Academic staff trained	10	2.1 RSA and BSM course available in Armenia by 03/16 2.2 TRACECA trained instructors running course by 03/16 2.3 consultants and academics being trained by 03/16 2.4 courses self-financing by 05/16			
3. Curricula for University courses produced	10	3.1 university assisted to develop curriculum by 12/15 3.2 lecture materials developed for universities by 12/15			
4. Students being taught about safe design approaches during their studies	50	4.1 Road safety included in engineering courses by 09/16 4.1 Graduating engineering Students aware of safety issues by 05/17			

3. SAFER VEHICLES

IMPACT INDICATORS	% of ACH	Actions required with time frame	Estimated costs	Lead Stakeholder	Stakeholders involved
1	2	3	4	5	6
Vehicles regularly checked for technical requirements 1. Int. convention ratified 2. Legal basis for vehicle inspection 3. Manual for vehicle inspectio	100 100 90 100 60 30	1.1 Nil 2.1 Nil 3.1 review and update manual as needed by 12/15 4.1 Improve certification process by 12/15 4.2 supplementary courses for mechanics, 03/16 5.1 Nil 5.2 All stations quality control	0.1 mln USD	Road Police	1.1 Ministry of interiorMinistr of Transport and communication, Ministry of Finance, Insurance companies, CBA

n in use 4. Trained certified mechanics doing vehicle inspections 5. Government certified/regulated workshops and inspection stations 6. Regulatory agency adequately			led effectively 6.1 Review of funding and equipment needs completed by 12/15 6.2 Recommendations of review implemented by 06/16 7.1 Periodic random roa			

funded 7. Number of defective vehicles in traffic reduced		dside checks being conducted to quantify incidence of defective vehicles by 12/15			
Internationally recognized vehicle safety regulations applied to imported vehicles 1. Imported vehicles meet Inter	100 100 30	1.1 Legislation reviewed to ensure compliance with UNECE standards for imported vehicles by 02/16 2.1 Legislation to prevent import	0,5 mln USD	Ministry of transport and Communication	2.1 Customs, Ministry of Ecology, MInistry of Interior, Car dillers, Ministry of Finance, National Asse

national (UNECE) standards 2. Legal basis exists to prevent import of unsuitable/ unsafe vehicles 3. Adequate controls to prevent import of fake spare parts		of unsafe vehicles by 09/16 3.1 Standards agency do random checks of spare part imports by 12/15 3.2 Sever penalties for importers of fake parts by 06/16			mbly, Road Police
Vehicles used to transport dang	90	1.1 All TIR members checked		3.1 Ministry of transport and Com	Road Police, Ministry of Interior,Mi

erous goods meeting the standards of all technical requirements 1. ADR certified vehicles 2. ADR certified drivers 3. Emergency services have had special training to respond to/deal with ADR	9080	and certificated by 12/15 1.2 review resources needed for control by 12/15 2.1 review and improve system of driver checking by 12/15 3.1 Police trained in ADR by 12/15 3.2 Rescue /fire crews trained in ADR by 12/15 3.3 Emergency medical personnel trained in ADR by 12/15.		munication	ministry of Finance, Ministry of Health

accid ents					

4. SAFER ROAD USERS

IMPACT INDICATORS	% ofachievement	Actions required witrh time frame	Estimated costs	Lead Stakeholder	Stakeholders involved
1	2	3	4	5	6
- Legislation in place for:			0,5mln.USD		
1. seat belts	100	Nil			
2. motorcycle helmets	100	Nil			
3. child restraints	50	3.1. Increase penalties for not using child restraints 10/15.			
4. mobile phone use	100	Nil			
5. speed	100	Nil			
6. drink/ drugs	100	Nil			
7 - Effective enforcement of safety legislation	50	7.1 Traffic police trained on new legislation 7.2 review international experience and best practices on sanctions by 12/15 7.3 Implement recommendations of review by 12/16			
Legislation					Road Police, Ministry of Finance, Ministry of Educatio, Schools and Universities, Private companies, Media
1. Safety campaigns use appropriate media	30	1.1 Assess past campaigns effectiveness by 06/15			
2. Government budget exists for road safety campaigns	20	2.1 Review funding needs for govt. campaigns by 12/15 2.2 implement recommendations by 06/16			
3. SCO (NGO) and Private Sector active in financing of road safety campaigns	30	3.1 Encouragement of private sector and NGOs to sign up to road safety charter by 12/15 3.2. Government encouraging (eg tax concessions) private companies to fund road safety activities by 12/15 3.3 hold a national workshop to mobilize private sector and NGOs to become more involved by 12/15			
4. Age appropriate education material available for children	0	4.1 Include road safety education into cirricullum of schools by 09/16 4.21 Implement improvements and age appropriate materials as needed by 04/16			
Enforcement					Ministry of Finance, World Bank or other donor Banks, Media
1. Traffic police have adequate man power and vehicles	80	1.1 Traffic police (TP)manpower to be 10-12% of total police by 12/15 1.2Traffic police patrol vehicles ratio to be 1 car per 4 traffic police by 12/15			
2. Traffic police (TP) have adequate equipment for enforcement	60	2.1 TP equipment reniewd and updated by 06/16 . 2.3TP have roadside alco testers by 06/16 2.4 TP have evidential alco testers by 06/16 3.1.TP trained on traffic legislation by 12/15			

3.Traffic police have adequate training 4. Traffic police enforcement activity is based on crash data analysis	50 50	3.2 TP Trained in 1st aid by 12/16 3.3 TP trained in crash investigation by 06/16 3.4 TP trained in managing ADR incidents 3.5 senior / supervising TP trained in data led enforcement strategies and tactics by 06/15 3.6 TP trained in use of enforcement equipment by 12/15 4.1 Relevant TP trained in crash data analyses by 06/16 4.2 All police deployment is data led by 09/15 4.3 All police enforcement activity data led by 06/16 4.4 Police cooperating with Media and NGOs to publicise activities Expand program of training Young Instructor of Road Movement.			
Public and private institutions practising internal policies of road safety behaviour 1 Government departments have road safety policies related to their employees, drivers and vehicles 2. Large private sector organizations have road safety policies related to their employees, drivers and vehicles 3. Road safety NGOs supporting Government and private sector organizations with guidance and safety materials	0 20 0	1.1 obligatory adoption of road safety policy by ministries and departments by 06/16 1.2 road safety in TOR of senior managers and part of their performance review by 06/15 1.3 Disciplinary action being taken on staff not complying with road safety policies (eg no use if phone when driving , obligatory wearing seatbelts etc) by 12/15 2.1 Road safety charter drafted and road safety policies being promoted to business leaders by 06/16 2.2 Large companies signing up to charter by 06/16 2.3 charter signing companies introducing safety policies by 09/16 3.1 NGOs promoting road safety charter and providing guidance / materials to large companies by 03/16 3.2 NGOs working with / cooperating with Govt agencies to promote road safety to smaller companies by 06/16			Prime Minister's office, Government, NGOs,Local Private companies, multinational companies

5. IMPROVED MEDICAL CARE FOR CRASH VICTIMS

IMPACT INDICATORS	% of ACH	Actions required with time frame	Estimated costs	Lead Stakeholder	Stakeholders involved
1	2	3	4	5	6
Medical care for crash victims is practi	60 80 80 50 20	1.1.review needs of emergency system by 3/16 1.2 Coordination of EMS service with other emergency services by 04/16 1.3. Systematic Training of professional dispatchers in all regions by 12/16 1.4.Systematical trainings of emergency services by 09/16 1.5. Obligatory medical insurance by 10/16 2.1. Standard established for maximum ambulance response times by 03/16 2.2. Triage system agreed / in use by 05/15); 2.3 Trained staff Levels in pre hospital activities increased to international best practice levels by 05/15) 3.1. Systematic joint Trainings on EMS, in coordination with other emergency services (Ministry of Internal Affairs Ministry of Defence , State Emergency Services by 03/15; 4.1. Training for police and rescue services on first aid, and transporting the injured by 09/15 4.2. Systematic joint training in coordination with other emergency services by 05/16 4.3 Police have adequate first aid kits in police cars by 10/15 5.1.Involve freight transport industry in programme of 1st aid training of commercial drivers by 06/16 5.2 Programme of 1 st aid training devised and being implemented by 12/16			Ministry of Emergency, Ministry of Finance, Insurance companies, Central Bank

1.	**ced** National wide EMS system exists				, Red Cross, inistry of Transport, Road Police
2.	Crash vic				

tinsgettingeffectivefirstaidtreatmentswithin30					

3.	Emergency and bulance crew shave first aid training					

4.	Policeandrescueservicesha vefirstaidtraining					

5.	Commercial (bus/taxi/truck) driver training						

aveFirstaidtraining					
Appropriatehospitaltransacar	100 800 200 10	1.1 Obligatory Medical insurance by 10/16; 1.2 Material-technical provision (till 10.2016); 2.1. Mandatory medical insurance in place by 10/16; 2.2. Regular assessment of services by 12/16 3.1 at least 1 hospital with an emergency dept. accessible within 30 minutes in each oblast by 06/16 4.1 training course available to public by 06/16 4.2 Driving schools using qualified 1st aiders to teach learner drivers by 06/15			Hospitals, Red Cross, Road Police, Insurance companies, Cent

1.	**Hospital energy efficiency and capacity building**				ral Bank, Ministry of Finance

2.	Victims receiving app to handle crash victims					

3.	Appropriate treatment 70% of hospital shall have emergency				

4.	departments First aid training available to general					

lpublic					
Appropriatehabilitationandsupportforv	10 10 10	1.1International best practice reviewed by 03/16 1.2 improvements implemented by 12/16 2.1 victims being assessed regarding needs by 12/16 2.2 appropriate treatments by 12/16 3.1 Medical training includes training in dealing with bereaved by 12/16			Hospitals, Red Cross, Road Police, Insurance companies, Central Bank, Ministry of Fina

1.	**Institutions** Rehabilitation specialists involved early on				nce

	intreatnentofcasualties					
2.	Victinsgivenappropri					

a t e t h e r a p y					
3. D o c t o r s g i v e n s p e c i a l t r a i n i n g t o d e a l w					

i t h i n j u r e d a n d b e r e a v e d					
Fair **s** **e** **t** **t** **l** **e** **n** **e** **n** **t** **s** **a** **n** **d** **j** **u** **s** **t** **i** **c** **e** **f** **o**	95 90 50 20	1.1 3 1.2 AAll vehicles carry TPP insure 1.3 Compensation payout level for victims reviewed and adjusted if appropriate by 03/16 2.1 TP trainers trained in crash investigation by 06/16 2.2 TP training other TP in investigation by 12/16 3.1 crash investigations done by trained crash investigators by 06/16 3.2. Provision exists for contesting the decisions or conclusions of police investigation and submitting an alternative expert report to court by 06/16 4.1 Court decisions generally thought to be fair and unbiased by 12/16 4.2 Court awarded compensation payments for death or injury are in line with international best practice by 12/17 u r a n c e			H os pit als , Re d Cr os s, Ro ad Po lic e, In su ra nc e co m pa ni

1.	**rinjured and bereaved** Motor vehicle insurance system					es, Central Bank, Ministry of Finance, Ministry of Justice

	nationwide operates					
2.	Crashes investigated prof					

3.	essionally by the Traffic Police Accident investig				

4.	Justicesy	ationsidentifycorrectcrashcauses			

stenprovidesfairsettlementsandjusticefor injure				

and bereaved					
"One call" emergency number 1. Single emener	10 30 60	1 1.1 Single number system extended Nationwide 12/16 2.1 Review international best practices by 12/15 2.2 Implement improvements by 12/16 3.2 Create and equip centres in accordance with international standards by. 12//17 112 to fully operate 06/16			Ministry of Health, Hospitals, Road Police, Ministry of Finance

2.	gency number established nationwide Control centre					

staff trained to provide effective client response							

3.	Necessary equipment in place for operation of shelpvictins					

r a t i o n o f c e n t r e					

6. CHANGING ATTITUDES TO ROAD SAFETY

IMPACT INDICATORS	% of ACH	Actions required with timeframe	Estimated costs	Lead Stakeholder	Stakeholders involved
1	2	3	4	5	6
Partnerships between Govt. and Civil Society Organizations 1. Legal basis for	100 100 80 80	Nil Nil 3.1 make fully operational by by 06/16 4.1 Safety NGOs / safety for um memb			Ministry fo Transport and Communication, Ministry fo Finance, Road Police, Gover

2.	CSO (NGO) CSO (NGO) active in road safety		ers represented on municipal and oblast coordinating bodies by 12/15			nment, PM's office
3.	CSO (NGO) consu		4.2 NGOs / safety forum members involved on municipal and oblast			

l t e d o r i n v o l v e d i n d e c i s i o n m a k i n g o n r o a d s a f e t y i s s u e s a		in de cisi on ma kin g re saf ety by 06 /1 6			

4.	tnationallevel CSO(NGO)consultedorinvolvedindeci				

sionmakingonroadsafetyatissueslocallevel					
Roadsafetylessonsar		1.1.rev			RoadPolic

econducted regularly in schools 1. National program (curriculum) for traf	5	iewexistingsafetyeducationinschoolsinlightofbesti			e, schools, RSA, media, NGOs

fi ca fe ty ed uc ati on ex ist s 2. Ag e ap pro pri ate ma teri als for ed uc ati on exi st an d are in		nt er na ti on al pr ac ti ce by 03 / 16 1. 2 Re vi ve th e wo rk in g gr o			

use in schools (books, etc) 3. Teacher's traffic safety		up with MoE within the RSA to develop/adapt materials by 03			

4. Reduction in child casualties or risks of crashes in the l		/161.2 National safety education integrated in schools b			

ocationswheresafetyeducationhasbeenprovided		y09/16 2.1.Ageappropriatematerialsdevelopedandpil			

		oted2.1SuitableMaterialsinuseinallschoolsby09/16			

		3.1.trainee teacher strain ed to use safety material sin			

		finalyearofteachertraininingby05/163.2trainineeteache			

		rsgiveasafetypackofmaterialstotaketo theirschools			

		3.3 In service teacher training use of child safety education			

		ionmaterialsby09/16 4.1.RoadsafetyTV-showonthenat			

		ionalchannelto beshowntwiceamonthby-03/16			
Driver rectification cours	0 50	1.1 Review intern			Ministry of Transport,

es implemented 1. Legal basis for rectification courses 2. Data b	0 0 0	ational practices in driver rectification schemes by 06/15 1.2 If required amend relevant legislation by 12/16 2.1 Driver databases to be			RSA, driving schools, Ministry of Fiance, Mayor's office

3.	ase of driver's personality exists and works Program for rect		improved and unified by 09/16. 3.1 Develop suitable driver rectification scheme by 03/16 3.2 All key stakeholders involved in design in			

	ification courses prepared 4. Rectification courses		g/reviewing scheme content by 06/16 4.1 Introduced rectifications				

5.	Course participants knowledge and abeing implemented		neafterpilottestingby09/16 5.1 Evaluations of scheme beingdoneby06/16 5.2 Improvem			

wareness of safety has been improved		entand fine tuning being done as needed by 12/16			
Good road behaviour is recognised and prom	5 0 0	1.1 Driver nomination system to be develop			Government, Road Police, Insurance compani

oted 1. God driver nomination system established 2. Reward system established 3. Winners given public recognition		ed by state and private sector to oversee RS on commercial transport by 06/16 1.2 Large fleet owners encouraged to establish driver			es, private sector, media, NGOs

		recognition schemes by 09/16 2.1 Create Common Reward system (certificates, discounts for insurance) and companies encourage			

		ment by 12/16.2.2. Companies running driver recognition schemes being offered insurance discounts as "safe companies" by 06/16			

		3.1. Information circulated on in Media and Social networks by 12/16) 3.2. Special sites, viral advertising, special themed talk			

		show. Television programming etc used to give recognition by 12/16			

Summary Total Budget for Action Plan

(euros x thousands) to be completed after further discussion and after all actions agreed

Action	Year 1	Year 2	Year 3	Total
Action Plan 1: Institutional Issues				
Action Plan 2: Infrastructure				
Action Plan 3: Safe Vehicles				
Action Plan 4: Safe road user behaviour				
Action Plan 5: Post Crash Care				
Action Plan 6: Changing Attitudes				
Total Budget (Euros x 1000)				

APPENDIX B: PERFORMANCE INDICATORS FOR INSTITUTIONAL DEVELOPMENT

Impact indicators were devised for each of the desired outcomes as follows:

Objectives and desired outcomes	Impact indicators used
1 INSTITUTIONAL IMPROVEMENTS	
1. Compliance with, accession, ratification and implementation of UNECE Conventions and EU Agreements (each assessed separately) 1.1 ADR'67, 1.2 Vehicle Regs agreement 1958 1.3 Convention of road traffic 1968 1.4 Convention of road signs/ signals 1968 1.5 AETR 1970 1.6 AGR 1976 1.7 Agreement on Technical inspections 1997	- Accede to agreements - Translation to local language - Review existing legislation - Ratify and publish - Training/capacity development - Regular check - UNECE Working parties
1.8. Established multidisciplinary Road Safety agency	1. Legislation exists 2. Coordination body established 3. Fully staffed and funded Secretariat exists 4. Reliable, sustainable safety funding mechanism in place
1.9. Implementation of National Road Safety Strategy	1. Strategy is developed 2. Stakeholder consulted 3. Strategy approved by Government 4. Implementation commenced
1.10. Realistic and long term targets for road accident reduction available	1. Realistic long term targets in place 2. Action plan prepared to deliver targets 3. Action plan being implemented 4. Progress towards targets being monitored
1.11. Long term sustainability of road safety development	1. Annual losses to economy quantified 2. Road Safety funding mechanism exists 3. Budget being allocated for road safety improvement 4. Monitoring demonstrates effectiveness of investments in road safety
1.12. Establish a mandatory road user insurance scheme	1. Compulsory third party motor insurance exists 2. Enforcement and penalties in place for uninsured vehicles 3. Number of uninsured vehicle minimized

1.13. Establish requirements for the issuing of driving licenses based on international best practice	1. Adequate theoretical testing in place 2. Adequate practical testing in place 3. Commercial drivers need to pass further tests 4. System complies with best international practices
1.14. Data collection and evaluation is unified in the region	1. Common core items to be agreed and identified 2. Agreed accident data being collected via police accident forms 3. An adequate data storage system is established 4, Adequate data retrieval and analysis system established 5. Adequate data dissemination system is established 6. Crash data accessible to all stakeholders for further analysis 7. Crash data system enables effective analysis of crash causes and remedial measures
1.15. A common system is established for monitoring and evaluating the outcome of a number of defined measures	1. Regional Working group established 2. The impacts to be monitor are agreed 3. Impact monitoring system is established 4. Quarterly monitoring progress report being circulated 5. Effective strategic management of implementation
1.16. Reviewed and improved road signing systems	1. Signing/standards reviewed 2. Needs and deficiencies identified 3. A program for improvement develop 4. The budgets needed estimated
1.17. Implemented road safety audit (RSA) principles and practices in the design and construction of the existing and new roads	1. Participation in discussions held at Regional level to establish a common RSA approach 2. Implementation of the RSA policies at national levels agreed 3. Participation in discussions for RSA accreditation system developed for region 4. Participation in discussions for preparation of Regional RSA Manual developed 5. Regional RSA Training courses developed 6. RSA trainers trained 7. In country RSA training programs established
1.18. Best practice in road safety shared throughout region	1. TRACECA Road Safety Working Group established 2. Shared database of Manuals, procedures, standards compiled

	3. Annual conferences of best road safety practice organized
1.19. Harmonized driving penalties in the region	1. Study existing penalty systems in countries
	2. Discuss possible common penalty system across the Region
	3. Establish common data system about violations
	4. Mutually recognized sanctions being applied across the Region
2 SAFER INFRASTRUCTURE	
2.1. Implementation of road safety audit/ assessment	1. Legal basis for RSA
	2. Adequate manual in use
	3. Trained road safety auditors available
	4. Road Authorities have budget to purchase RSA
	5. All new, reconstructed and rehabilitated roads being safety audited
	6. RSA Recommendations being implemented by Roads Authority
2.2. Black spot treatment (Black Spot Management - BSM)	1. Legal basis for BSM
	2. Adequate BSM Manual in use
	3. Trained black spot investigators available
	4. Annual hazardous improvement program in place
	5. Road Authorities has dedicated founds for BSM improvements
	6. BSM recommendations being implemented by
2.3. Implementation of the program to define routes for freight avoiding residential areas	1. Legal framework exists
	2. Freight traffic surveys done to access needs
	3. Alternative routes defined
	4. Signing and markings placed
	5. Effective enforcement of commercial vehicle routes
	6. Commercial through traffic in residential areas reduced
2.4. Cost effective measures by local road authorities	1. Updated cost of crashes and casualties known
	2. Cost/Benefit of safety interventions is available
	3. Ranking/Prioritization for improvement is done on basis of Cost/Benefit analysis
	4. Most hazardous locations are being systematically improved via annual programs
2.5. Availability of safe and secure off-road parking for trucks	1. Legal framework

	2. Freight transport surveys done to identify parking needs
	3. Potential parking sites identified
	4. Signing and markings placed
	5. Safe secure off-road parking for trucks available and in use on major routes
2.6. Building the capacity of engineers and technical staff	1. Adequate Manuals/Guidelines for safety engineering produced
	2. Selected Government, Consultants and Academic staff trained
	3. Curricula for University courses produced
	4. Students being taught about safe design approaches during their studies
3 SAFER VEHICLES	
3.1. Vehicles regularly checked for technical requirements	1. Int. convention ratified
	2. Legal basis for vehicle inspection
	3. Manual for vehicle inspection in use
	4. Trained certified mechanics doing vehicle inspections
	5. Government certified/regulated workshops and inspection stations
	6. Regulatory agency adequately funded
	7. Number of defective vehicles in traffic reduced
3.2. Internationally recognized vehicle safety regulations applied to imported vehicles	1. Imported vehicles meet International (UNECE) standards
	2. Legal basis exists to prevent import of unsuitable/ unsafe vehicles
	3. Adequate controls to prevent import of fake spare parts
3.3. Vehicles used to transport dangerous goods meeting the standards of all technical requirements	1. ADR certified vehicles
	2. ADR certified drivers
	3. Emergency services had special training to respond to/deal with ADR accidents
4 SAFER ROAD USERS	
4.1 – 4.7. Legislation to cover :the following are in place and enforced seat belts,	Legislation in place for: 1. seat belts
motorcycle helmets, child restraints,	2. motorcycle helmets 3. child restraints
mobile phone use,	4. mobile phone use

speed, drink, drugs	5. speed 6. drink 7. drugs - Effective enforcement of safety legislation
4.8. Improved public awareness	1. Safety campaigns use appropriate media 2. Government budget exists for road safety campaigns 3. SCO (NGO) and Private Sector active in financing of road safety campaigns 4. Age appropriate education material available for school children
4.9. Well-equipped and trained Road Police on road safety and enforcement	1. Traffic police have adequate man power and vehicles 2. Traffic police have adequate equipment for enforcement 3. Traffic police have adequate training 4. Traffic police enforcement activity is based on crash data analysis
4.10. Public and private institutions practicing internal policies of road safety behavior	1. Government departments have road safety policies related to their employees, drivers and vehicles 2. Large private sector organizations have road safety policies related to their employees, drivers and vehicles 3. Road safety organizations supporting Government and private sector organizations with guidance and safety materials
5 IMPROVED MEDICAL CARE FOR CRASH VICTIMS	
5.1. Medical care for crash victims is practiced	1. Nationwide EMS system exists 2. Crash victims getting effective first aid treatments within 30 min 3. Emergency ambulance crews have first aid training 4. Police and rescue services have first aid training 5. Commercial (bus/taxi/truck) drivers have first aid training
5.2. Appropriate hospital trauma care and capacity building	1. Hospital emergency ward equipped to handling crash victims 2. Victims receiving appropriate treatment 3. 70% of hospitals have emergency departments 4. First aid training available to general public
5.3. Appropriate rehabilitation and support for victims	1. Rehabilitation specialists evolved early on in treatment of casualties (30%) 2. Victims given appropriate therapy (40%)

	3. Doctors given special training to deal with injured and bereaved (30%)
5.4. Fair settlements and justice for injured and bereaved	1. Motor vehicle insurance system operates nationwide
	2. Crashes investigated professionally by the Traffic Police
	3. Accident investigations identify correct crash causes
	4. Justice system provides fair settlements and justice for injured and bereaved
5.5. Fully used “one call” emergency number	1. Single emergency number established nationwide
	2. Control centers trained to provide fast and efficient responses to help victims
	3. Necessary equipment in place for operation of centre
6 CHANGING ATTITUDES TO ROAD SAFETY	
6.1. Partnerships between Government and Civil Society Organizations developed	1. Legal basis for CSO (NGO)
	2. CSO (NGO) active in road safety
	3. CSO (NGO) consulted or involved in decision making on road safety issues at national level
	4. CSO (NGO) consulted or involved in decision making on road safety issues at local level
6.2. Road safety lessons are conducted regularly in schools	1. National program (curriculum) for traffic safety education exists
	2. Age appropriate materials for education exist and are in use in schools (books, etc.)
	3. Teachers trained in traffic safety
	4. Reduction in child casualties in the locations were safety education has been provided
6.3. Driver rectification courses implemented	1. Legal basis for rectification courses
	2. Database of driver's penalty exists and works
	3. Program for rectification courses prepared
	4. Rectification courses are being implemented
	5. Course participants knowledge and awareness of safety has been improved
6.4. Good road behaviour is recognized and promoted	1. Good driver nomination system established
	2. Reward system established
	3. Winners given public recognition

ПРОЕКТ

АРМЕНИЯ
ПЛАН ДЕЙСТВИЙ ПО БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ
Январь 2015 - Декабрь 2017

Апрель 2015

Подготовлен
основными заинтересованными сторонами по безопасности дорожного движения
в течение 4-дневного семинара по планированию действий по безопасности дорожного движения

3-6 февраля 2015

При технической поддержке и дополнительной помощи финансируемого ЕС Проекта по безопасности дорожного движения ТРАСЕКА

Доступ к файлу: https://www.dropbox.com/sh/1lbt0mi63vr2e2k/AAAW3LneQFddnNMCLqOfEcUEa?dl=0

Оглавление

I ПЛАН ДЕЙСТВИЙ 2015-2017 .....

1.1 Тенденции уровней смертности и травматизма за последние годы .....
1.2. Какие категории участников дорожного движения наиболее часто гибнут в дорожно-транспортных происшествиях в Армении, и каковы основные причины ДТП? .....
1.3. Типы дорожно-транспортных происшествий в Армении.....

2.1 Введение к Плану действий.....
2.2 Доказательство возможности снижения количества ДТП.....
2.3 Ожидаемые результаты повышения безопасности дорожного движения.....
2.4 Краткий обзор мероприятий, необходимых в каждом секторе.....
2.5 Заключительные положения.....

II ПРИЛОЖЕНИЯ .....

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2. БОЛЕЕ БЕЗОПАСНАЯ ИНФРАСТРУКТУРА .....
3. БОЛЕЕ БЕЗОПАСНЫЙ ТРАНСПОРТ.....
4. БЕЗОПАСНОСТЬ УЧАСТНИКОВ ДОРОЖНОГО ДВИЖЕНИЯ .....
5. СКОРАЯ МЕДИЦИНСКАЯ ПОМОЩЬ ПОСТРАДАВШИМ В ДТП.....
6. ИЗМЕНЕНИЕ ОТНОШЕНИЯ К БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ.....
Суммарный бюджет Плана действий.....
ПРИЛОЖЕНИЕ B: ПОКАЗАТЕЛИ ЭФФЕКТИВНОСТИ ИНСТИТУЦИОНАЛЬНОГО РАЗВИТИЯ .....

Комментарий к структуре и содержанию плана незамедлительных действий

План незамедлительных действий для каждой страны-бенефициара ТРАСЕКА был разработан в соответствии с общей структурой для единообразия и простоты мониторинга прогресса отдельных стран и общего прогресса всех 10 стран-бенефициаров на региональном уровне. Поскольку все страны стремятся к реализации более раннего регионального плана действий и, в частности, рекомендаций в отношении институционального развития и укрепления потенциала ключевых специалистов по одним и тем же 6 направлениям, система мониторинга и показатели воздействия, используемые для контроля, являются одинаковыми для каждой страны, т. к. они касаются прогресса, достигнутого в отношении тех же показателей более раннего регионального плана действий.

СОСТОЯНИЕ БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ В АРМЕНИИ.....

Содержание каждого плана незамедлительных действий и мероприятий по достижению результатов, как правило, различно для каждой страны, и полностью зависит от текущей стадии развития, масштаба и характеристики проблем безопасности дорожного движения, а также мнения заинтересованных сторон, которые разработали мероприятия для каждого сектора. Похоже, однако, что во всех странах существуют сходные проблемы управления, координирования и финансирования безопасности дорожного движения, и во многих из них существуют похожие барьеры, препятствующие эффективным действиям в некоторых других секторах. Следовательно, в некоторых случаях задачи и мероприятия будут похожими для всех стран. План незамедлительных действий для каждой страны нацелен на устранение препятствий развитию БДД путём укрепления потенциала местных экспертов для их дальнейшей более эффективной деятельности в области безопасности дорожного движения. Кроме того, по завершении работы над развитием потенциала в каждой стране были реализованы конкретные мероприятия с целью «институционализации» деятельности по безопасности дорожного движения, чтобы она оставалась устойчивой после проекта. Это включало в себя помощь в разработке законодательства и структур управления, рекомендации по механизмам финансирования, внедрение преподавания безопасности дорожного движения в программы университетов и инициирование исследований по безопасности дорожного движения в университетах, чтобы обеспечить основу знаний и понимания для развития лучшей политики по вопросам безопасности дорожного движения.

СХОДНЫЕ ПОЛОЖЕНИЯ .....

I

1. СОСТОЯНИЕ БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ В АРМЕНИИ

Краткая информация об Армении

Республика Армения – государство в Закавказском регионе Евразии, расположенное на севере Передней Азии. Выхода к морю не имеет. Граничит с **Азербайджаном** на востоке, с **Ираном** на юге, с Турцией на западе и с **Грузией** на севере. Армения является унитарным государством. Население Армении, по оценочным данным на 2014 год, составляет 3017100 человек, территория – 29743 км².

Существующие пограничные переходы с Турцией и Азербайджаном заблокированы. Железнодорожное сообщение осуществляется через территорию Грузии и паромом через **Чёрное море.**

Автомобильные дороги — важная составная часть транспортной системы страны. При наличии слаборазвитой железнодорожной сети, обусловленной сложным горным рельефом, автомобильные дороги Армении имеют решающее значение в социально-экономическом развитии страны. Роль магистралей Армении незаменима также и в деле международных перевозок. Сформировавшаяся в Армении автодорожная сеть общего пользования составляет 7637 км, 96,7 % которых имеет твёрдое покрытие. На каждые 1000 км² территории республики приходится 258 км дорог.

Конкретная статистическая отчётность по отдельным показателям ДТП в Республике Армения систематически не ведётся, однако при необходимости её можно составить из данных, полученных от местных подразделений Дорожной Полиции. В связи с этим планируется создание специальной базы данных о ДТП в соответствии с карточками учёта ДТП Дорожной Полиции Армении.

В данном проекте Плана действий представлены данные, полученные от Дорожной полиции. Следует отметить, что в Отчёт не включены некоторые данные за 2014 год, поскольку они ещё не внесены в базу данных, которая находится на стадии разработки.

1.1 Тенденции уровней смертности и травматизма за последние годы

Ситуация с безопасностью дорожного движения в Армении требует серьёзного внимания. Статистика дорожно-транспортных происшествий и их тяжести с 2005 г. представлена в таблице [9]. Определение промежутка времени, смертность в течение которого необходимо учитывать как связанную с ДТП, а также уровни незафиксированных ДТП для каждой страны варьируют, и потому для международного сравнения зачастую необходимо привести данные в соответствующий формат с учётом незафиксированных ДТП и различий в определениях. По оценке ВОЗ[10], проведённой в рамках периодического Отчёта о состоянии безопасности дорожного движения в мире предполагает, что уровень смертности на дорогах Армении, скорректированный для международного сравнения, должен быть примерно в 2 раза выше официальных показателей, зафиксированных полицией, т.е. 582 вместо 297 за 2014 г. Тем не

[9] Источник: Дорожная полиция Республики Армения

[10] Состояние безопасности дорожного движения в мире, ВОЗ, Женева, 2013

менее, для целей данного проекта плана действий будет использована номинальная полицейская статистика, предоставленная команде проекта.

Таблица 1 – Текущая тенденция изменения показателей зафиксированных ДТП, смертности и травматизма.

	Год	ДТП	Погибло	Ранено	Степень тяжести[11]

Таблица 1 показывает, что смертность от ДТП возрастала с 2005 по 2009 год, но затем несколько сократилась в последующие годы и, похоже, стабилизировалась на уровне 310-325 в последующие годы, хотя, по всей видимости, в 2014 году наблюдалось снижение на 6%.

За исключением 2 лет (2009-2010) уровень травматизма стабильно увеличивался из года в год. Ситуация с тяжкими травмами, по-видимому, улучшилась за последние 10 лет. Это может быть связано с более эффективной скорой медицинской помощью пострадавшим в ДТП, что позволило спасти множество жизней, либо с повышением уровня использования ремней безопасности, из-за чего пострадавшие травмировались, но не умирали, как в предыдущие годы.

Таблица 2 – Дорожно-транспортные происшествия в Армении, 2013-2014

	ДТП	Погибло	Ранено	Степень тяжести
Изменение				
Процент изменения				

По сравнению с предыдущим годом (2013) общее число зафиксированных за 2014 год ДТП увеличилось на 11,7%, количество травм – на 12,1%, а число погибших снизилось на 6%.

[11] Степень тяжести - это процент погибших от общего количества пострадавших. Количество незафиксированных ДТП не учтено, и это даёт ложный показатель тяжести

Несмотря на небольшое снижение уровня смертности за последний год, дорожная смертность и травматизм в Армении остаются высокими по сравнению с другими странами ЕЭК ООН, и выглядят более тяжёлыми (примерно 1 погибший на каждые 15 травмированных; при этом соотношение в Великобритании - 1 погибший на каждые 65 травмированных). Это можно связывать с несколькими причинами, наиболее значимая из которых – высокий уровень незафиксированных лёгких ДТП и лёгких травм.

Обязательное страхование гражданской ответственности в Армении было введено в январе 2011. В настоящее время в Армении застраховано около 430 000 транспортных средств, что составляет около 90% от общего количества зарегистрированных транспортных средств. Такое страхование гражданской ответственности может помочь решить проблему занижения уровней лёгких ДТП, ведь можно обязать водителей обмениваться информацией о своих страховых полисах в случае незначительных (без травматизма) ДТП. Следовательно, эти незначительные ДТП окажутся в системе данных о происшествиях и в полицейской статистике.

Таблица 3 - Дорожно-транспортные происшествия в Ереване, 2013-2014

	ДТП	Погибло	Ранено	Степень тяжести

Согласно данным, более 40% от общего числа дорожно-транспортных происшествий (ДТП) происходит в Ереване, в столице Республики Армения, которая имеет более миллиона жителей.

1.2. Какие категории участников дорожного движения наиболее часто гибнут в дорожно-транспортных происшествиях в Армении, и каковы основные причины ДТП?

1.2.1 Водители

Таблица 4 – Дорожно-транспортные происшествия по вине водителей, 2013-2014

	ДТП по вине водителей	Смертность по вине водителей	Травматизм по вине водителей
2013г			
2014г			

С виной водителей связывают около 80% смертей и 84% раненых за 2014 год[12]. Хотя существует немало проблем, вызванных отсутствием дисциплины водителей, особенно превышением скорости, опасным вождением и неиспользованием ремней безопасности, понятно также, что большая часть инфраструктуры не поддерживает безопасность дорожного движения и безопасное поведение водителей.

Таблица 5 – Превышение скорости (2013-2014)

				Изменение	Изменение, %
	ДТП				
	Смертность				
	Травматизм				

Превышение скорости является причиной 47% смертей и 32% травм. Такая ситуация характерна для многих стран СНГ, где превышение скорости является основной причиной дорожно-транспортных травм и смертей. Советская система – ограничение скорости до 60 км/ч в городах и до 90 км/ч вне городов – создаёт скоростной режим, который не подходит для нужд участников дорожного движения в городских или застроенных районах. Общая скорость в городе должна быть ограничена до 50 км/ч (там, где присутствуют уязвимые участники дорожного движения). В этом пределе должны быть установлены даже ещё бóльшие ограничения скорости – как правило, 30 км/ч или 20 км/ч, с физическими устройствами снижения скорости на подъездных дорогах, в жилых районах и вокруг школ. Высокий уровень смертности пешеходов (20%) в Армении требует полного пересмотра ограничений скорости. Пешеход при столкновении с транспортным средством на скорости в 20 или 30 км/ч имеет шанс на выживание около 95%, но тот же человек, сбитый на скорости в 60-80 км/ч, почти всегда погибнет. Снижение скорости будет спасать жизни.

[12] Полиция каждой страны ориентирована на обвинение и, как правило, «вменяет в вину» кому-то, вместо выяснения факторов, способствующих ДТП (например, отсутствие или плохая видимость предупреждающих знаков)

1.2.2 Пешеходы

Данные Дорожной полиции Республики Армения о ДТП с участием пешеходов представлены на рисунке 1.

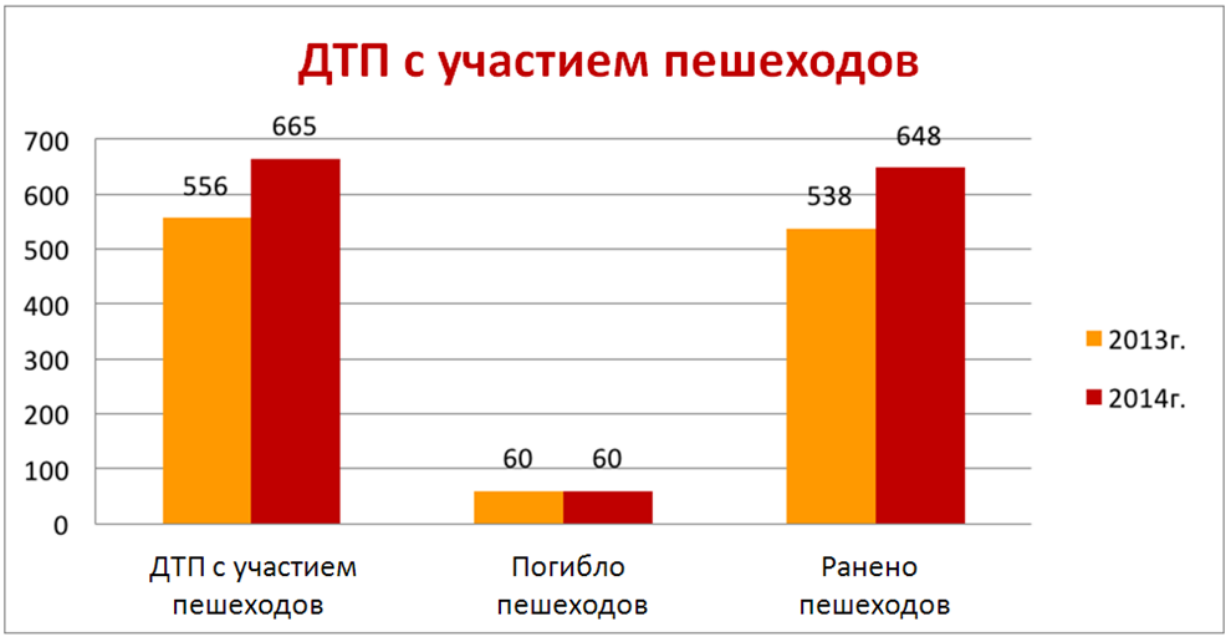

Рисунок 1. Число дорожно-транспортных происшествий с участием пешеходов, и количество погибших и раненых, 2013-2014

Пешеходы вовлечены в 21% ДТП и составляют 20% погибших; количество подобных ДТП увеличилось на 19,65% в 2014 г. Хотя уровень смертности не увеличился, и число погибших оставалось 60 человек, число раненых увеличилось на 110, а это – увеличение количества травмированных пешеходов на 20,4%. Низкий уровень городского освещения и отсутствие чётко обозначенных пешеходных объектов на основных дорогах в городских районах Армении является проблемой, как и во многих других странах СНГ. Безопасность пешеходов должна решаться путём применения соответствующих мер.

1.2.3 Дети

Таблица 6 - Дорожно-транспортные происшествия с участием детей, 2013-2014

Период	ДТП с участием детей	% от общего количества ДТП	Погибло детей	% от общего числа погибших	Ранено детей	% от общего числа раненых
2013г						

2014г						

С участием детей происходит 11% ДТП; дети составляют 5% погибших и 9% раненых в ДТП. Только за последние 2 года в ДТП погибло 35 и ранено 745 детей, некоторые из них, возможно, стали инвалидами на всю жизнь. Несмотря на то, что в 2014 г. количество погибших детей уменьшилось, произошло увеличение на 18,4% числа ДТП с участием детей, и на 16% возросло количество раненых детей. **Необходимо принять меры по снижению детской смертности и травматизма.** Создание «безопасных маршрутов в школы» и обучение маленьких детей соответствующим возрасту «навыкам выживания», а не значению дорожных знаков, может значительно повлиять на снижение дорожной смертности и травматизма детей.

1.2.4 Употребление алкоголя

Таблица 7 – Дорожно-транспортные происшествия с участием нетрезвых водителей, 2013-2014

Период	ДТП	% от общего количества ДТП
2013г		
2014г		

Воздействие алкоголя оказывает существенное влияние на риск попадания в ДТП водителей, наездников и пешеходов. Употребление алкоголя – один из самых серьёзных постоянных факторов, способствующих дорожно-транспортным происшествиям в моторизованных странах.
В 2014 г. произошло значительное увеличение числа погибших и раненых в ДТП, связанных с употреблением алкоголя. Тем не менее, имеющиеся статистические данные показывают, что в Армении процент ДТП, связанных с употреблением алкоголя, является на удивление низким – вероятно, что в Армении гораздо слабее правоохранительный контроль и меньше проверок, плюс гораздо больше незафиксированных ДТП, связанных с воздействием алкоголя, особенно в случаях, когда концентрация алкоголя в крови низкая. Целесообразным было бы усиление

правоохранительного контроля над вождением в нетрезвом виде, чтобы, как и во многих странах ЕС, проводилось около 165 придорожных тестов на алкоголь на 1000 населения. Это позволит создать необходимый уровень правоприменения, чтобы решить значительную часть проблем, связанных с вождением в нетрезвом виде.

1.2.4 Когда происходят аварии, смерти и травмы на дорогах?

Таблица 8 – Количество ДТП на дорогах Армении по часам дня

Временной интервал		
0.01 –		
6.01 –		
9.01 –		
12.01 –		
15.01 –		
18.01 –		
21.0		

1 –		

Как и ожидалось, большинство дорожно-транспортных происшествий случается в часы-пик и поздно вечером, после 18:00. Около 40% ДТП происходит в 6-часовом интервале с 18:00 до 24:00 (25% суток).

Таблица 9 - Количество ДТП на дорогах Республики Армения по дням недели

Дни недели		
Понедельник		
Вторник		
Среда		
Четверг		
Пятница		
Су		

Суббота		
Воскресенье		

Дорожно-транспортные происшествия достаточно равномерно распределены по дням недели, с некоторым незначительным повышением в выходные дни.

1.3. Типы дорожно-транспортных происшествий в Армении

В 2013-2014 гг. на дорогах и в населённых пунктах Армении произошли следующие типы ДТП.

Таблица 10 – Типы дорожно-транспортных происшествий

	Столкновение	
	Столкновение с пешеходом	
	Опрокидывание транспортн	

	ого средства	

Таблица 10 показывает, что возросло количество как ДТП с наездом на пешехода, так и столкновений двух или более транспортных средств. Следует отметить, что автопарк Армении стремительно увеличивается. Только за 2014 г. в Армению импортировано 46475 дополнительных транспортных средств, и это наибольшее число импортированных в страну ТС за один год со дня её независимости. К сожалению, многие из этих транспортных средств очень старые и подержанные, и к ним уже нет запасных частей. Необходимо гарантировать безопасность и пригодность таких транспортных средств к эксплуатации, прежде чем они могут быть использованы на общественных дорогах.

2. ИСХОДНЫЕ ПОЛОЖЕНИЯ

2.1 Введение к Плану действий

При поддержке финансируемого Европейским Союзом регионального проекта по безопасности дорожного движения ТРАСЕКА, Министерство транспорта Армении и представители других ключевых структур Армении пересмотрели все секторы безопасности дорожного движения и разработали План действий по безопасности дорожного движения для Армении.

Данный план не предназначен для замены каких-либо существующих долгосрочных стратегий безопасности дорожного движения или планов действий, которые, возможно, уже были разработаны. Вместо этого, данный План незамедлительных действий предназначен для устранения преград и помех, которые в настоящее время препятствуют эффективной деятельности в ключевых секторах безопасности дорожного движения в Армении в целях содействия более эффективным мерам и усилиям соответствующих организаций, способных повлиять на безопасность дорожного движения.

Армения все ещё находится на относительно ранней стадии развития безопасности дорожного движения, и поэтому многие базовые структуры, мероприятия и элементы, необходимые для реализации системного безопасного подхода, в данное время ещё не доступны ключевым партнёрам, и не включены в существующие правительственные системы и процедуры. Необходимо выполнить значительную работу по укреплению потенциала, практик и мероприятий, прежде чем можно будет реализовать требуемые знания и ключевые системы для продолжения дальнейшей эффективной работы по безопасности дорожного движения.

По этим причинам, данный План незамедлительных действий сосредотачивается, главным образом, на институциональном улучшении, расширении знаний и потенциала, и внедрении усовершенствованных методов и систем для обеспечения проведения более эффективной работы по безопасности дорожного движения. Анализ имеющихся данных и наблюдения показывают, что такие факторы риска, как превышение скорости, неэффективная защита пешеходов, вождение в нетрезвом виде и др. остаются основными факторами риска в Армении, как и в других странах ТРАСЕКА. План действий поэтому сосредоточен на развитии местного потенциала, а также на основных факторах риска, с целью обеспечения нынешних действий. Со временем, когда будет установлена новая или более совершенная система данных о ДТП, которые станут доступными для заинтересованных участников, и будут введены в действие другие системы поддержки безопасности, план действий может быть по необходимости перенаправлен на любые дополнительные местные факторы риска и на определённые группы участников дорожного движения повышенного риска на основе более подробного конкретного анализа местных данных.

Данный План действий:

6. Усилит нынешний механизм координирования путём усиления существующего Национального совета по безопасности дорожного движения (НС БДД) и учреждения подкомитетов для контроля имплементации данного плана действий
7. Усилит функции Секретариата и техническую поддержку, предоставляемую Национальному совету по БДД.
8. Ознакомит местных экспертов в отдельных областях с передовым международным опытом и повысит их знания и опыт, чтобы они могли быть более эффективными в решении вопросов безопасности дорожного движения в обычной рабочей деятельности.
9. Усилит способность соответствующих учреждений с обязанностями по БДД повышать безопасность за счёт сокращения количества и типов ДТП, которые чаще всего приводят к смертности и травматизму в Армении.
10. Будет стимулировать заинтересованных участников сосредоточиться в данный момент на известных факторах высокого риска, которые потенциально могут привести к снижению смертности и травматизма:
    - использование ремней безопасности

- превышение скорости
- вождение в нетрезвом состоянии
- безопасность пешеходов

Реализация данного Плана незамедлительных действий будет контролироваться Национальным советом по безопасности дорожного движения путём осуществления партнёрского подхода, который позволит различным правительственным министерствам и департаментам работать вместе с частным сектором и гражданским обществом/заинтересованными НПО. На НС БДД возлагается ответственность за общее координирование, мониторинг и реализацию плана действий по безопасности дорожного движения. Комитетам муниципального уровня в скором времени будет рекомендовано курировать разработку и реализацию планов действий по безопасности дорожного движения на уровне местных органов власти.

2.2 Доказательство возможности снижения количества ДТП

Существует множество доказательств того, что осуществление систематического, научного системного подхода к безопасности может привести к весьма значительному сокращению смертности и травматизма. Приведённая ниже таблица 2.1 показывает, как множество бывших советских стран с организационными структурами, системами и ограничениями, подобными тем, которые существуют в Армении, тем не менее, осуществили значительные улучшения в области безопасности дорожного движения. Они сделали это путём применения хорошо проверенных методов и подходов, разработанных и реализованных в ЕС в течение последних нескольких десятилетий. Достигнув некоторого снижения уровня дорожно-транспортных происшествий, Армения уже продемонстрировала свою способность принимать и эффективно применять такие подходы. Нет причин, по которым эксперты в Армении не смогут продолжить дальнейшую успешную работу путём адаптирования и применения подобных проверенных методов и подходов, чтобы Армения также присоединилась к списку постсоветских стран – образцов для других стран региона ТРАСЕКА, которые смогут достичь целевого 50%-го снижения в уровне дорожной смертности до 2020 г.

Таблица 2.1 Постсоветские страны, которые значительно повысили уровень безопасности путём применения проверенных методов и подходов ЕС к безопасности дорожного движения

Государство	Смертность на дорогах		% изменений 2001-2011	Смертность на 100 000 населения	
Болгария					
Чешск					

аяРеспублика					
Эстония					
Венгрия					
Латвия					
Литва					
Польша					
Румыния					
Словакия					
Словения					

Сербия	1275	728	-42.9%	16.99	10.06
Европейский Союз (ЕС)					

Источник: региональной Проект по безопасности дорожного движения ТРАСЕКА

Как видно из приведённой выше таблицы 2.1, многие постсоветские страны и Европейский Союз продемонстрировали возможность уверенного снижения количества летальных исходов из года в год, если правительством стимулируются и координируются эффективные и решительные действия, и если необходимые инвестиции в мероприятия по безопасности дорожного движения осуществлены. Одним из больших преимуществ Армении является то, что она не одинока в решении проблем безопасности дорожного движения, и многие другие страны ЕС, включая некоторые бывшие советские республики с системами, структурами и стандартами/нормами, подобными тем, что существуют сегодня в Армении, уже разработали и испытали инструменты и мероприятия, и определили наиболее эффективные и применимые из них. Мы можем выбирать из списка успешных мероприятий, реализованных в других странах, чтобы выбрать те, которые являются наиболее подходящими для условий Армении и современного этапа её экономического и социального развития. Как чётко видно из европейского опыта, установление далеко идущих целей приносит большую пользу[13], и даже если эти цели не достигнуты, они обеспечивают целенаправленность действий, и в общем приводят к гораздо более значительному снижению, чем в случае с неопределенными целями.

2.3 Ожидаемые результаты повышения безопасности дорожного движения

Сектор 1: Институциональные вопросы. Хорошо структурированные механизмы и административные структуры для Армении, способные управлять, координировать и контролировать безопасность дорожного движения в рамках национальных и международных контекстов.

[13] OECD/ITF, **В направлении к нулю: Амбициозные цели БДД и системный безопасный подход,** 2006

Сектор 2: Более безопасные дороги. Службы управления автомобильными дорогами и дорожные инженеры берут на себя бóльшую ответственность за безопасность дорог, которые они строят и которыми управляют, и признают, что люди совершают ошибки. Службе управления дорогами Армении необходимо принять безопасный системный подход и обеспечить, чтобы дороги и дорожные сети Армении стали более безопасными и «щадящими» для тех, кто вовлечён в дорожно-транспортные происшествия.
Сектор 3: Более безопасный транспорт. Все типы транспортных средств соответствуют нормам и стандартам, работают соответствующие системы и производится надлежащий контроль в целях обеспечения того, чтобы только исправным транспортным средствам разрешалось использовать дороги общего пользования.
Сектор 4: Безопасность участников дорожного движения. Все участники дорожного движения знают и понимают свои обязательства в соответствии с Законом о дорожном движении, знают об основных факторах риска и о том, как избежать или свести к минимуму вероятность смерти или травмы при аварии.
Сектор 5: Скорая медицинская помощь пострадавшим в ДТП оказывается своевременно и высокоэффективно в снижении тяжести и неблагоприятных последствий дорожно-транспортных происшествий.
Сектор 6: Изменение отношения правительства, частного сектора и сообществ так, чтобы все брали на себя больше ответственности за безопасность дорожного движения для себя, окружающих и тех, на кого они могут повлиять.

2.4 Краткий обзор мероприятий, необходимых в каждом секторе

Сектор 1: Управление безопасностью дорожного движения
Безопасность дорожного движения является мульти-секторной проблемой, которая требует многомерной системы управления и достаточных технических и финансовых ресурсов, которые позволяют ответственным учреждениям разрабатывать и реализовать соответствующие стратегии, положения и планы для координирования различных субъектов, вовлеченных в сферу безопасности дорожного движения на всех уровнях. Это также требует создания соответствующих систем поддержки безопасности, которые позволяют в полной мере понять эту проблему и принять соответствующие меры для сокращения числа жертв и их тяжести. Необходимы средства для координации, но не обязательно покрывающие все расходы, когда действия спускаются на уровень отдельных городских администраций. Однако средств должно быть достаточно, чтобы обеспечить необходимые мероприятия по горизонтальной и вертикальной координации, межсекторные семинары и программы по содействию безопасности на национальном уровне, а также несколько демонстрационных и пилотных проектов, чтобы стимулировать деятельность по безопасности дорожного движения на всех административных уровнях в пределах Армении, чтобы мэры и губернаторы демонстрировали лидерство, возглавляя местные комитеты по БДД и мобилизуя доступные им ресурсы для снижения смертности и травматизма в подведомственных им районах.

В 2010 году был создан Национальный совет по безопасности дорожного движения (НС БДД) при кабинете премьер-министра Республики Армения с представительством ключевых министерств, мэрии Еревана и НПО. Секретариат НС БДД возглавляется НПО, которая называется так же, как и агентство – «Национальный совет Армении по безопасности дорожного движения». В 2006-2010 гг. эта организация успешно работала над проблемами дорожного проектирования, образования в сфере безопасности дорожного движения, кампаний по информированию населения и увеличения уровня использования ремней безопасности. После учреждения НС БДД были созданы рабочие группы в различных сферах, а именно: образование и медиа кампании; анализ данных; проектирование БДД; потенциал дорожной полиции и контроль скоростного режима; здравоохранение, и отдельная рабочая группа города Ереван. Одной из основных функций НС БДД является содействие сотрудничеству основных заинтересованных сторон по безопасности дорожного движения. К сожалению, НС БДД не имеет исполнительной власти; нет также и

устойчивого финансирования, предусмотренного для безопасности дорожного движения, поэтому Совет не так эффективен, как мог бы быть.

Несмотря на существование Совета, между ключевыми министерствами по-прежнему мало координации/сотрудничества. Хотя отчёт ВОЗ (2013) указывает на наличие Национальной стратегии безопасности дорожного движения, по всей видимости, отсутствует ведущее агентство для контроля её реализации, а также отсутствует и специальное финансирование для реализации стратегии. Существует необходимость создания постоянного секретариата для поддержания работы Национального совета по безопасности дорожного движения, и необходимость создания механизма для более устойчивого финансирования безопасности дорожного движения. Целесообразным было бы создание нового законодательства о ведущем агентстве с целью управления/координирования национальных усилий по улучшению безопасности дорожного движения, чёткого обозначения обязанностей всех правительственных организаций, создания постоянного Секретариата и предоставления необходимого финансирования для реализации стратегии. Ключевыми задачами являются дальнейшее увеличение знаний и развитие потенциала среди ключевых экспертов соответствующих организаций, повышение качества полицейской базы данных о ДТП и предоставление большего доступа к её данным для заинтересованных сторон и широкой общественности/НПО, чтобы мероприятия по БДД были децентрализованы горизонтально до отдельных участников, и вертикально – до городских администраций, чтобы они могли предпринять действия в своих сферах влияния на местном уровне. Правительство Армении уже признало необходимость совершенствования системы сбора данных о ДТП. Форма отчёта о ДТП, которая используется полицией, была разработана на основе передового международного опыта.

Также необходимо инициировать более глубокое изучение безопасности дорожного движения в научно-исследовательских учреждениях Армении. Данный План незамедлительных действий должен строго контролироваться и оцениваться, чтобы гарантировать достижение целей институционального развития.

Сектор 2: Инфраструктура

Инфраструктура играет решающую роль в безопасности дорожного движения. Хорошо спроектированные дороги могут помочь людям использовать их безопасно и свести к минимуму риск возникновения ДТП. Когда аварии случаются, защитная и щадящая дорожная инфраструктура может означать разницу между жизнью и смертью. Инфраструктура, направленная на успокоение интенсивности транспортного потока и ориентированная на нужды уязвимых участников дорожного движения (пешеходов, велосипедистов и водителей мотоциклов) особенно важна в Армении, где на долю пешеходов приходится около 20% смертей и 15% травм, и где за 2014 г. число ДТП с участием пешеходов увеличилось почти на 20%. Хотя ситуация и лучше, чем во многих странах региона, эти показатели всё же слишком велики по сравнению со странами Европы, где уровень смертности пешеходов составляет 10-20% от общего уровня смертности в ДТП. Приоритетом усилий по повышению безопасности дорожного движения должна быть безопасность пешеходов, и следует обратить особое внимание на контроль скорости в населённых районах.

Внимание в этом секторе должно быть направлено на технические решения, которые снижают скорость путём «успокоения трафика» и управления скоростью, особенно в зонах с большим числом уязвимых участников дорожного движения, таких как школы и жилые зоны, на застроенных территориях и в линейных поселениях, расположенных вдоль основных дорог. На главной дорожной сети должны реализовываться программы повышения уровня безопасности мест концентрации ДТП, массовых мероприятий и маршрутов движения для повышения БДД на существующих дорогах. Рекомендации Директивы ЕС 2008/96 ЕК по управлению безопасностью инфраструктур дорожного движения должны осуществляться Дорожным управлением Армении, а для дорожных администраций всех уровней должно быть обязательным предоставление годовых отчётов о БДД на их участке дорожной сети, а также проведение аудитов и инспекций БДД на центральных и местных дорогах. Необходимо обучать большее

число дорожных инженеров для проведения подобных мероприятий по безопасности, а проведение аудитов БДД для всех проектов будущих дорог и инфраструктурных объектов должно стать обязательным. Также должен проводиться систематический анализ данных о ДТП с целью выявления наиболее опасных участков на каждом уровне дорожной сети с последующей реализацией программ по управлению местами концентрации ДТП на каждой дорожной сети ответственными дорожными администрациями.

Армения уже начала работу в этой области. В 2010 году при содействии международных экспертов было подготовлено руководство по аудиту безопасности дорожного движения. В 2010-2012 гг. стартовал ряд пилотных проектов по аудиту безопасности дорожного движения в разных районах Еревана. Выводы и рекомендации были переданы соответствующим дорожным службам для дальнейших действий.

Сектор 3: Безопасные транспортные средства

Улучшение защиты при ДТП и систем безопасности транспортных средств, как было доказано, снижают количество смертей и серьезных травм на дорогах. В последние годы были достигнуты значительные успехи в области безопасности транспортных средств, которые защищают пассажиров и других участников дорожного движения и повышают возможность упреждения аварий. Увеличение доли новых транспортных средств на дорогах с высокими стандартными функциями безопасности, как частных, так и корпоративных, существенно снижает риски для всех участников дорожного движения – водителей, пассажиров, мотоциклистов, пешеходов и велосипедистов.

Однако в данном секторе – при нынешних экономических условиях Армении – старые транспортные средства и подержанные автомобили будут оставаться основной частью транспорта в обозримом будущем, поэтому очень важно убедиться, что такие транспортные средства пригодны к эксплуатации на дорогах. В 2014 году было импортировано наибольшее со дня независимости количество подержанных транспортных средств, и большинство из них были очень старыми. Правительству Армении необходимо принять соответствующее законодательство для предотвращения импорта подержанных автомобилей в Армению, если они не пригодны к эксплуатации на дорогах, чтобы обеспечить их отсутствие на дорогах Армении. Эта система инспектирования должна включать выборочные придорожные проверки и внеплановые проверки/инспекцию станций техосмотра для минимизации коррупции и незаконности.

Сектор 4: Безопасное поведение участников дорожного движения

Все участники дорожного движения разделяют ответственность за безопасное и ответственное использование дорожной сети с учётом других участников дорожного движения. Чтобы изменить поведение различных участников дорожного движения и защитить уязвимых из них, необходимо повысить осведомлённость и изменить отношение граждан, пользующихся дорогами. Участники дорожного движения должны быть осведомлены о главных факторах риска, увеличивающих вероятность ДТП и угрозу получения серьёзных травм и смертельного исхода, чтобы они изменили свое поведение для минимизации подобных рисков.

В данном секторе необходимо сосредоточиться на основных факторах риска, выявленных в результате анализа имеющихся данных и наблюдений за использованием дорог в Армении. Как отмечалось ранее, на долю пешеходов приходится около 20% смертельных исходов от ДТП, и это слишком высокий процент. Приоритетом усилий по повышению безопасности дорожного движения должна быть безопасность пешеходов, и следует обратить внимание как на повышение дисциплины пешеходов, которая в настоящее время очень низкая, так и на контроль скорости в населённых пунктах. Общие наблюдения за использованием дорог в Армении выявили низкую дисциплинированность многих водителей. Водители ведут себя небезопасно и не оставляют шанса на ошибку другим участникам дорожного движения. Это также подтверждается тем фактом, что 80% смертей в ДТП (по данным полиции) вызваны плохим поведением водителей.

В июле 2014 года в Ереване было установлено 80 камер, фиксирующих проезд на красный свет. Существовавшая до этого система наблюдения и управления движением устарела, к тому же в ней отсутствовала возможность фотофиксации нарушений. Эта мера должна помочь идентификации транспортных средств, нарушающих правила дорожного движения, сократить число нарушений (например, проезд на красный свет, езда по полосе встречного движения) и, самое важное, спасать жизни. В то время как это поможет взять ситуацию под контроль на некоторых дорожных развязках, в районах, где нет камер или сотрудников ГАИ, безопасность по-прежнему остаётся серьёзной проблемой. Понятно, что это первый этап контроля движения, и в будущем ещё больше развязок будут оборудованы камерами, но для улучшения поведения участников дорожного движения должны быть введены в действие информационно-образовательные кампании и программы обучения безопасности дорожного движения. Проверить выполнение

Как отмечалось ранее, превышение скорости является причиной 47% ДТП и 32% травм в результате дорожно-транспортных происшествий в Армении. Уязвимые участники дорожного движения, такие как пешеходы, велосипедисты, водители мопедов и мотоциклов, имеют высокий риск получения тяжёлой или смертельной травмы при столкновении с ними транспортных средств. Вероятность того, что пешеход будет убит в результате столкновения с транспортным средством, резко возрастает со скоростью. Исследования показывают, что в то время как наиболее уязвимые участники дорожного движения выживают после столкновения с транспортным средством, движущимся со скоростью 30 км/ч, большинство из них погибнет при столкновении с ТС на скорости 50 км/ч. Следовательно, необходимо уделить внимание мерам контроля скорости. Там, где наблюдается концентрация ДТП с участием пешеходов, следует рассмотреть вариант установки искусственных неровностей, чтобы заставить водителей снизить скорость. Примеры из других стран показывают, что комплексная система камер фиксации скорости (преимущественно в местах концентрации ДТП) может внести существенный вклад в спасение жизней. Теперь в Армении установлено в общей сложности 153 камеры фиксации скорости, из них 77 камер в Ереване и 76 камер в регионах на внутренних и международных автомагистралях. В то время как расходы на установку и эксплуатацию камер фиксации скорости на каждой части дорожной сети могут быть достаточно высокими, многие страны предпочитают использовать и «фальшивые», и настоящие камеры, чтобы повлиять на водителя. Это помогает свести к минимуму затраты и контролировать скорость, ведь водители никогда не знают, какие корпусы фотосъёмки пусты, а в каких установлены настоящие камеры.

В список мероприятий необходимо включить информирование общественности через различные каналы СМИ. В дополнение к этому необходимо разработать и внедрить соответствующие возрасту учебные программы по безопасности дорожного движения для различных классов в школах. Многие из просветительских кампаний должны быть связаны с правоприменительными действиями, чтобы максимизировать их воздействие. Армения уже достигла хороших успехов в этом секторе. В 2010-2014 гг. НС БДД реализовывала программу обучения безопасности дорожного движения для учащихся всех классов в 10 школах в Армении. Она включала в себя обучение учителей, издание книг для детей и практических руководств по обеспечению безопасности дорожного движения. Были проведены специальные тренинги для представителей средств массовой информации о том, как подчеркнуть в СМИ важность безопасности дорожного движения и повысить информированность общественности.

На долю детей приходится 11,3% дорожно-транспортных происшествий, 5% смертей и 9% травм в Армении. Это связано, главным образом, с повышенным риском, с которым они сталкиваются при использовании дорожной системы, которая их не защищает. Например, чтобы добраться до школы дети часто вынуждены пересекать дороги с плотным транспортным потоком без какого-либо участка безопасности, пешеходам часто приходится идти по дороге, потому что отсутствуют пешеходные дорожки, а скорость транспортных средств часто слишком высокая на городских участках, и особенно – на линейных поселениях, расположенных вдоль основных дорог. В данном секторе необходимо сосредоточиться на решении проблем высоких рисков для уязвимых участников дорожного движения. По всей стране должны быть созданы безопасные

школьные участки для детей; необходимо установить безопасные переезды и предпринять меры по снижению скорости движения в районах, где ожидается большое число пешеходов.

Особенно следует контролировать использование ремней безопасности пассажирами автомобилей; также необходимо усилить и постоянно улучшать существующие методы обучения/тестирования водителей и обеспечить соблюдение стандартов.

Сектор 5: Скорая медицинская помощь пострадавшим в ДТП

Вероятность смерти от серьёзных ранений в результате дорожно-транспортных происшествий в Армении остаётся слишком высокой. Отсутствие единого номера экстренной службы и несогласованность действий спасательных служб может привести к задержкам в оказании неотложной медицинской помощи тяжелораненым пострадавшим. Каждые 10 минут задержки при извлечении тяжелораненого из разбитого автомобиля снижают шансы на выживание на 10%. Следовательно, многие люди умирают по причине неэффективного оказания первой помощи на месте происшествия, медленного извлечения пострадавших из поврежденного транспортного средства, медленной транспортировки в центры медицинской помощи и больницы, а в некоторых случаях – из-за недостаточной медицинской помощи в самой больнице.

Ключевым подходом для данного сектора является обеспечение первичной стабилизации потерпевшего в течение «золотого часа» (т.е. в первого часа после травмы). Следовательно, одним из подходов для Армении может быть увеличение каким-то образом числа обученных оказанию первой помощи людей путём мобилизации тех, кто чаще всего участвует в дорожном движении. Увеличение возможностей оказания первой помощи водителями коммерческого транспорта, например, или службами экстренного реагирования, такими как дорожная полиция или гражданские добровольцы, может оказать существенное влияние на своевременность оказания первой помощи потерпевшему, и потенциально спасти ему жизнь. Особенно важной инициативой была бы совместная подготовка служб скорой помощи, полиции и спасательных команд, чтобы сократить время эвакуации пострадавших.

Сектор 6: Изменение поведения

Это неотъемлемая часть более систематического подхода, при котором проблема безопасности дорожного движения становится ответственностью каждого, а не только тем, что даёт правительство. Каждый человек имеет возможность влиять на окружающих – от защиты и влияния на ближайших родственников, до воздействия на более широкий круг друзей и знакомых, соседей, сотрудников и подчинённых. Необходимо изменить отношение к безопасности правительства, частного сектора и широкой общественности.

В 2010 году было успешно проведено мероприятие, организованное НПО НС БДД, направленное на улучшение освещения безопасности дорожного движения в средствах информации. Результатом мероприятия стало формирование основной группы журналистов, заинтересованных и лучше информированных о безопасности дорожного движения, с последующим увеличением освещения вопросов БДД и посещаемости представителями прессы мероприятий по безопасности дорожного движения. Средства массовой информации могут играть очень важную роль в повышении осведомлённости общественности и изменении отношения к безопасности дорожного движения.

Безопасность должна стать всеобщим делом, ведь каждый может внести вклад в её улучшение; отношение и принятие небезопасного поведения в семье и кругу друзей и знакомых также должно измениться в сторону видимого и заявленного осуждения. Носители антисоциального поведения (например, лихачи, пьющие за рулём, игнорирующие сигналы светофора, использующие мобильные телефоны, отправляющие текстовые сообщения во время вождения) подвергают законопослушных граждан опасности, а налогоплательщиков Армении – очень высоким расходам (например, на стационарное лечение пострадавших), которые по последним данным оцениваются в 414,33 млн. долларов США/год (4,4% от годового ВВП Армении). Подобных антисоциальных личностей необходимо убедить в неприемлемости и глупости подобного поведения. В дополнение к этому, их необходимо безжалостно штрафовать и

привлекать к ответственности за то, что они подвергают риску других участников движения и провоцируют необоснованное увеличение расходов налогоплательщиков Армении.

2.5 Заключительные положения

Предложенный 3-летний план действий основан на оценке каждого сектора. Он был разработан местными специалистами Армении, отобранными из числа всех ключевых вовлечённых сторон, в сотрудничестве и при рассмотрении международными экспертами по безопасности дорожного движения проекта ТРАСЕКА. Этот План призван определить наиболее срочные потребности Армении. Приложение А представляет планы действий для каждого сектора, а Приложение В – показатели эффективности, которые могут быть использованы для оценки институционального влияния данного Плана действий. Данные индикаторы использовались в первоначальном сравнительном анализе, и далее будут использованы для мониторинга «институционального воздействия» в процессе реализации проекта.

Предполагаемый общий объём инвестиций в безопасность дорожного движения, необходимый Армении на 3-летний период, составляет около 25 миллионов евро. Это очень скромные инвестиции, учитывая очень высокие потенциальные доходы. Кроме того, следует учитывать, что дорожно-транспортные происшествия уже обходятся Армении в **более чем 414,33 млн. долларов США** ежегодно (4,4% годового ВВП). Поэтому **бездействие не может быть выходом**, ведь невозможность реагировать соответствующим образом и инвестировать в безопасность дорожного движения будет приводить к подобным потерям и в будущем, год за годом.

II ПРИЛОЖЕНИЯ

ПРИЛОЖЕНИЕ А: ПЛАНЫ ДЕЙСТВИЙ В КАЖДОМ СЕКТОРЕ

ПРОЕКТ

Сектор 1: Институциональные улучшения
Сектор 2: Более безопасная инфраструктура
Сектор 3: Более безопасный транспорт
Сектор 4: Безопасность участников дорожного движения
Сектор 5: Скорая медицинская помощь
Сектор 6: Изменение отношения

Требуют дальнейшей доработки местными заинтересованными сторонами Армении при поддержке команды проекта по безопасности дорожного движения ТРАСЕКА

1. ИНСТИТУЦИОНАЛЬНЫЕ УЛУЧШЕНИЯ

ИНДИКАТОРЫ ВОЗДЕЙСТВИЯ	% реализа-ции	Требуемые действия и временные рамки	Предполагаемые расходы	Ведущая организация	Участие заинтересованных сторон
Соблюдение, присоединение, ратификация и реализация конвенций ЕЭК ООН и соглашений ЕС **1.1 Европейское соглашение о международной дорожной перевозке опасных грузов - 1957** 1 Присоединиться к соглашениям 2 Перевод на местный язык 3 Пересмотреть действующее законодательство 4 Ратифицировать и опубликовать 5 Проводить обучение и развитие потенциала 6 Регулярная проверка 7 Рабочие группы ЕЭК ООН		 Ничего Ничего Ничего Ничего Ничего Ничего 7.1 Участие соответствующих экспертов в заседаниях рабочей группы 7.2 Работа экспертов в рабочей группе			
1.2 Соглашение транспортных правил – 1 Присоединиться к соглашениям 2 Перевод на местный язык 3 Пересмотреть действующее законодательство 4 Ратифицировать и опубликовать 5 Проводить обучение и развитие потенциала 6 Регулярная проверка 7 Рабочие группы ЕЭК ООН		 5.1 Завершить исследование потребностей в обучении до 05/16 5.2 Курсы подготовки разработаны/доступны до 05/16 5.3 Обучение соответствующего персонала в ключевых организациях до 06/16 7.1 Участие соответствующих экспертов в заседаниях рабочей группы Работа экспертов в рабочей группе			

1.3 Конвенция о дорожном движении – 1 Присоединиться к соглашениям 2 Перевод на местный язык 3 Пересмотреть действующее законодательство 4 Ратифицировать и публиковать 5 Проводить обучение и развитие потенциала 6 Регулярная проверка 7 Рабочие группы ЕЭК ООН		 Ничего Ничего Ничего Ничего Ничего Ничего 7.1 Участие соответствующих экспертов в заседаниях рабочей группы 7.2 Работа экспертов в рабочей группе			
1.4 Конвенция о дорожных знаках и сигналах – 1968 1 Присоединиться к соглашениям 2 Перевод на местный язык 3 Пересмотреть действующее законодательство 4 Ратифицировать и публиковать 5 Проводить обучение и развитие потенциала 6 Регулярная проверка 7 Рабочие группы ЕЭК ООН		 Ничего Ничего 3.1 Представить программу систематического устранения/замены несоответствующих знаков Ничего Ничего Ничего 7.1 Участие соответствующих экспертов в заседаниях рабочей группы 7.2 Работа экспертов в рабочей группе			
1.5 ЕСТР 1970 1 Присоединиться к соглашениям 2 Перевод на местный язык 3 Пересмотреть действующее законодательство 4 Ратифицировать и публиковать 5 Проводить обучение и развитие потенциала 6 Регулярная проверка 7 Рабочие группы ЕЭК ООН		 5.1 Завершить исследование потребностей в обучении до 05/16 5.2 Курсы подготовки разработаны/доступны до 05/16 5.3 Обучение соответствующего персонала в ключевых организациях до 06/16 7.1 Участие соответствующих экспертов в заседаниях рабочей группы Работа экспертов в рабочей группе			

1.6 Европейское соглашение о международных автомагистралях - 1975 1 Присоединиться к соглашениям 2 Перевод на местный язык 3 Пересмотреть действующее законодательство Ратифицировать и публиковать 5 Проводить обучение и развитие потенциала 6 Регулярная проверка 7 Рабочие группы ЕЭК ООН		 Ничего Ничего Ничего Ничего Ничего Ничего Ничего			
1.7 Соглашение о технических осмотрах - 1 Присоединиться к соглашениям 2 Перевод на местный язык 3 Пересмотреть действующее законодательство 4 Ратифицировать и публиковать 5 Проводить обучение и развитие потенциала 6 Регулярная проверка 7 Рабочие группы ЕЭК ООН		 7.1 Участие соответствующих экспертов в заседаниях рабочей группы Работа экспертов в рабочей группе			
Мультидисциплинарное агентство по БДД 1. Законодательство существует 2. Координационный орган создан 3. Существует Секретариат, полностью оснащенный персоналом и финансированием 4. Надёжный, устойчивый механизм финансирования безопасности в действии		1.1 Внесение в законодательство поправок касательно ведущего агентства, секретариата и финансирования до 03/16 1.2 Вступление законодательства в силу до конца 3/15 2.1 Координирование существующего совета пересмотрено/улучшено до 12/15 2.1 Обозначение ведущего агентства и уточнение всех обязанностей до 3/15 3.1 Создание постоянного секретариата для поддержания совета по БДД до 4/16 3.2 Создание группы технической поддержки (рабочих групп) на уровне директора для реализации решений совета до 04/16 Анализ передового международного опыта в сфере финансирования БДД до 12/15 Определить наиболее применимые модели финансирования для Армении до 4/16 4.3 Создать механизм для устойчивого финансирования БДД до 6/16		Канцелярия премьер-министра	НС БДД, все правительственные министерства, мэрия, дорожная полиция
Реализация Национальной стратегии по БДД 1. Стратегия разработана		 Ничего		НС БДД (агентство БДД)	Правительство, Министерство транспорта и коммуникаций, дорожная полиция,

2. Заинтересованные стороны проконсультированы 3. Стратегия утверждена правительством 4. Реализация началась		Ничего Ничего 4.1 Пересмотр плана действий до 11/2015 Утверждение плана действий правительством до 02/2016 4.3 Правительство помогает/содействует в установлении финансирования реализации стратегии до 06/16 4.4 Национальная ассамблея утверждает строку бюджета для агентства по БДД			Министерство здравоохранения, Министерство чрезвычайных ситуаций, НПО
Реалистичные долгосрочные цели 1. Реалистичные долгосрочные цели в действии 2. План действий подготовлен для достижения целей 3. План действий реализуется 4. Проводится мониторинг прогресса по достижению целей		Ничего принять правительством до 12/15 Создать механизм независимого мониторинга до 03/16 Приоритетные элементы существующего Плана действий (если таковые имеются) добавлены в план незамедлительных действий до 12/15 Утверждение правительством Государственной программы БДД до 12/15 Создание системы мониторинга Плана действий до конца 06/16 Комиссия по БДД предоставляет транспортному комитету Правительства ежеквартальный отчёт о проделанной работе до 9/15		НС БДД (агентство БДД)	Правительство, Министерство транспорта и коммуникаций, дорожная полиция, Министерство здравоохранения, Министерство чрезвычайных ситуаций, НПО
Долгосрочное стабильное развитие дорожно-транспортной системы 1. Оценены ежегодные потери в экономике 2. Существует механизм финансирования безопасности дорожного движения 3. Выделяется бюджет для улучшения безопасности дорожного движения 4. Мониторинг показывает эффективность инвестиций в области безопасности дорожного движения		 1.1 Завершить исследование по оценке потерь до конца 02/16 Доступны средства для анализа затрат и выгод до конца 04/16 2.1 Создать фонд БДД до 09/16 2.2 Страховой сбор за полисы страхования гражданской ответственности идёт напрямую в фонд БДД до 09 /16 2.3 Согласовать другие источники доходов для БДД до конца 6/16 2.2 Улучшить механизм решения задач. 09/16 3.1 В бюджетах министерств есть строка на БДД до 12/16 3.2 Министерства реализуют мероприятия в своих сферах до 01/17 Проведение независимого мониторинга эффективности инвестиций до 06/17 4.2 Публикация годового отчёта об эффективности мероприятий по БДД до 12/17		НС БДД (агентство БДД)	Дорожная полиция, Департамент статистики, НПО, университеты
Создание схемы обязательного страхования участников дорожного движения 1. Существует обязательное страхование третьей стороны		1. Существует страхование гражданской ответственности.		Дорожная полиция	Центральный банк, страховые компании

2. Существует правоприменение и штрафование для незастрахованных транспортных средств 3. Количество незастрахованных транспортных средств сведено к минимуму		2. Существует система правоприменения и штрафования за незастрахованные транспортные средства.			
Установить требования для выдачи водительских прав на основе передового международного опыта 1. Адекватное теоретическое тестирование в действии 2. Адекватное практическое тестирование в действии 3. Коммерческие водители должны пройти дальнейшие тестирования 4. Система соответствует лучшей международной практике		5. Требуется большее теоретическое знание. 3.1. Завершить подготовку инструкторов и экзаменаторов до **12/2015** 6. Необходимы более строгие требования. 2.3 Разработать и внедрить практические экзамены, соответствующие требованиям ЕС, до **06/2015** 2.4 Завершить подготовку инструкторов и экзаменаторов до 12/2015 7. Разработать механизмы реализации, пересмотреть законодательство 04/2016. 3.1 Нынешние водители коммерческого транспорта должны пройти сертификацию компетентности до 12/2017 3.2. Система соответствует директивам/руководствам ЕС 09/2016 8. Система соответствует международным требованиям 09/2016		Дорожная полиция	Министерство юстиций, Министерство экономики, Министерство финансов, Министерство транспорта и коммуникаций, ЕС, НС БДД (агентство БДД), Министерство образования
Единая система сбора и оценки данных 1. Общие основные пункты согласованы и определены 2. Согласованные данные об авариях собираются с помощью полицейских форм об авариях 3. Установлена адекватная система хранения данных 4. Установлена адекватная система извлечения и анализа данных 5. Установлена адекватная система распространения данных 6. Данные по аварийным происшествиям доступны всем заинтересованным сторонам для дальнейшего анализа 7. Система данных по авариям позволяет провести эффективный анализ причин аварий и предпринять меры по их предотвращению		1.1 Сотрудничество с другими партнёрами в рамках проекта ТРАСЕКА до конца 1.2 Оценка потребностей экспертом проекта ТРАСЕКА до конца 6/15 2.2 Пересмотр формы данных о ДТП на соответствие всем требованиям заинтересованных сторон до 12/16 3.1 Пересмотр системы и предложение улучшений до 12/16 4.1 Пересмотр системы и предложение улучшений до 12/16 5.1 Пересмотр системы и предложение улучшений до 12/16 6.1 Данные доступны для дальнейшего анализа заинтересованными сторонами до 12/16 7.1 Полиция и заинтересованные стороны способны проводить дальнейший анализ для определения участников дорожного движения повышенного риска и опасного поведения до 12/16		НС БДД (агентство БДД)	Министерство образования, Министерство финансов, дорожная полиция, Дорожное управление Армении, Министерство транспорта и коммуникаций, Министерство юстиций, Департамент статистики, университеты

Создана единая система мониторинга и оценки результатов определённых мероприятий 1. Создана региональная рабочая группа 2. Согласованы индикаторы воздействия для контроля 3. Установлена система мониторинга воздействия 4. Распространяется отчет о прогрессе ежеквартального мониторинга 5. Эффективное стратегическое управление реализацией		1.1 Создание региональной группы до 12/15 2.1 Согласование индикаторов эффективности для мониторинга до 03/16 3.1 Создание системы мониторинга воздействий до 03/16 4.1 Доступны/распространены квартальные отчёты до 06/16 5.1 Анализ прогресса координационной группой до 09/16		НС БДД (агентство БДД)	Правительство, Министерство транспорта и коммуникаций, дорожная полиция, Министерство здравоохранения, Министерство чрезвычайных ситуаций, НПО
Пересмотр и улучшение системы дорожных знаков 1. Стандарты по расстановке знаков рассмотрены 2. Выявлены потребности и недостатки 3. Разработана программа для улучшения 4. Необходимый бюджет подсчитан	 10 10 20 20	5. Пересмотр стандартов 12/2015 1.3 Пересмотр существующих стандартов знаков/разметки 12/15. 1.4 Выявление проблемных областей 02/16 6. Реализация программы и оценка 02/16 7. Разработана программа по реализации улучшений 12/2015 8. Бюджет подсчитан до 2016		Министерство транспорта и коммуникаций	Министерство образования, Министерство финансов, дорожная полиция, Дорожное управление Армении, НС БДД (агентство БДД)
Принципы аудита БДД, проектирование, строительство 1. Участие в обсуждениях, состоявшихся на региональном уровне для установления единого подхода по аудиту безопасности дорожного движения 2. Договорена реализация политики аудита безопасности дорожного движения на национальном уровне 3. Участие в дискуссиях по системе аккредитации аудита безопасности дорожного движения, разработанной для региона 4. Участие в дискуссиях по подготовке регионального Руководства по аудиту безопасности дорожного движения	 10 20 20 20	8. Провести обсуждения с руководителями дорожных служб касательно БДД. 1.3 Обсуждения с руководителями дорожных служб проведены до 06/15 1.4 Используются региональные практические руководства по АБДД до 09/15 9. Согласованная политика имплементирована на национальном уровне. 2.1. Реализация политики АБДД до 06/15 2.2. 2 Проведение АБДД в соответствии с политикой до 12/15SA 10. Основание для жалобы должно быть выделено в законе/ правительственном указе. 3.1 Проведено обсуждение с дорожными службами о взаимном признании инструкторов по АБДД, обученных проектом ТРАСЕКА и аккредитации аудиторов до 12/15. 11. Доступны комментарии о разработке регионального руководства по АБДД до 03/15.		Министерство транспорта и коммуникаций	Министерство образования, Министерство финансов, дорожная полиция, Дорожное управление Армении, НС БДД (агентство БДД)

5. Разработаны региональные учебные курсы по аудиту безопасности дорожного движения 6. Обучены тренера по аудиту безопасности дорожного движения 7. В стране созданы учебные программы по аудиту безопасности дорожного движения	20 20 20	12. ТРАСЕКА и специализированные учреждения для БДД. 5.1 Проведение национальных курсов обучения АБДД дважды в год до 11/15. 5.2 Доступны региональные курсы обучения АБДД подготовленными в рамках проекта ТРАСЕКА и сертифицированными инструкторами по АБДД до 12/15. 13. Инструкторы по АБДД подготовлены до 03 /16. 14. Больше информации в учебниках и больше посещений школ представителями полиции. 7.1 Проведение курса подготовки по АБДД как минимум 1 раз в год до 11/15			
Передача опыта 1 Учреждена рабочая группа ТРАСЕКА по дорожной безопасности 2. Сформирована общая база данных практических руководств, процедур, стандартов 3. Обсуждены ежегодные конференции по наилучшим практикам БДД для возможного проведения в 2016		1.1 Как минимум 3 сектор-специфичные региональные рабочие группы до 11/15 2.1 Обмен знаниями между странами ТРАСЕКА посредством региональных рабочих групп до 11/15 Создание базы данных для обмена документами и руководствами до 03/16 3.1 Как минимум 1 региональная конференция / рабочая встреча по БДД до 11/15 3.2 Региональные рабочие группы согласовали проведение ежегодных конференций до 12/15		НС БДД (агентство БДД)	Министерство финансов, Министерство транспорта и коммуникаций, Министерство образования, дорожная полиция, ЕС, другие международные организации, НПО
Гармонизированная система штрафов в регионе 1. Изучить существующие системы штрафов в государствах 2. Обсудить возможную единую систему штрафов по всему региону 3. Создать единую систему данных о нарушениях 4. Применить взаимно признанные санкции по всему региону		1.1 Запросить поддержку ЕС для пересмотра систем штрафов до 10/15 1.2 Разработать рекомендации для системы до 12/15 2.1 Провести в полицейских управлениях 10 стран обсуждение единой системы штрафов до 12/15 3.1 Обеспечить офицерам дорожной полиции и научным сотрудникам / университетам доступ к базе данных о штрафах до 11/15 3.2 Провести в полицейских управлениях 10 стран обсуждение возможности единой системы данных о нарушениях до 12/15 4.1 Обсуждение в полиции и взаимное признание санкций по всему региону до 4.2 Полиция вводит систему взаимного признания до 12/16		Дорожная полиция	Министерство юстиций, Министерство финансов, Министерство транспорта и коммуникаций

ИНДИКАТОРЫ ВОЗДЕЙСТВИЯ	% реализации	Требуемые действия и временные рамки	Предполагаемые расходы	Ведущая организация	Участие заинтересованных сторон
Периодические технические осмотры транспортных средств 1. Международная конвенция ратифицирована 2. Законодательная база для осмотра транспортных средств 3. Использование руководства по осмотру транспортных средств 4. Обученные сертифицированные механики проводят осмотры транспортных средств 5. Правительство провело сертификацию/контроль мастерских и станций техосмотра сертифицировало/ регулировало семинары и посты контроля 6. Регулирующее учреждение профинансировано 7. Сокращено количество дефектных транспортных средств на дорогах		1.1 Ничего 2.1 Ничего 3.1 Пересмотреть и обновить руководство в случае необходимости до 12/15 4.1 Усовершенствовать процесс сертификации до 12/15 4.2 Дополнительные курсы для механиков, 03/16 5.1 Ничего 5.2 Эффективный контроль качества на всех станциях 6.3 Завершить пересмотр финансирования и потребностей в оборудовании до 12/15 6.4 Реализовать рекомендации по пересмотру до 06/16 7.1 Проведение периодических выборочных придорожных проверок для выявления случаев неисправности ТС до 12/15	0,1 млн. долларов США	Дорожная полиция	1.1 Министерство внутренних дел, Министерство транспорта и коммуникаций, Министерство финансов, страховые компании,
Обеспечить применение правил безопасности, признанных на международном уровне, в отношении импортируемых транспортных средств			0,5 млн. долларов США	Министерство транспорта и коммуникаций	2.1 Таможня, Министерство экологии, Министерство внутренних дел, продавцы автомобилей, Министерство

Импортированные ТС соответствуют международным стандартам (ЕЭК ООН) 2. Правовая основа существует для того, чтобы предотвратить ввоз неподходящих/ небезопасных транспортных средств 3. Осуществляется контроль, предотвращающий ввоз поддельных запасных частей		1.1 Пересмотреть законодательство для обеспечения соответствия стандартам ЕЭК ООН к импортируемым транспортным средствам до 02/16 2.1 Законодательство для предотвращения импорта небезопасных транспортных средств до 09/16 3.1 Служба стандартизации проводит выборочные проверки импортируемых запчастей до 3.2 Высокие штрафы для импортёров поддельных запчастей до 06/16			финансов, национальная Ассамблея, Дорожная полиция
Обеспечить соответствие транспортных средств, перевозящих опасные грузы, всем техническим стандартам 1. Транспортные средства сертифицированы в соответствии с ДОПОГ 2. Водители сертифицированы в соответствии с ДОПОГ 3. Аварийные службы прошли специальную подготовку для работы в условиях ДТП с участием опасных грузов		1.1 Проверить и сертифицировать всех членов TIR до 12/15 1.2 Оценка ресурсов, необходимых для контроля, до 2.1 Пересмотр и усовершенствование системы проверки водителей до 12/15 3.1 Обучение полиции вопросам ДОПОГ до 12/15 Обучение спасательных/пожарных команд вопросам ДОПОГ до 12/15 3.3 Обучение персонала скорой медицинской помощи вопросам ДОПОГ до 12/15.	0.2 млн. долларов США	3.1 Министерство транспорта и коммуникаций	Дорожная полиция, Министерство внутренних дел, Министерство финансов, Министерство здравоохранения

4. БЕЗОПАСНОСТЬ УЧАСТНИКОВ ДОРОЖНОГО ДВИЖЕНИЯ

ИНДИКАТОРЫ ВОЗДЕЙСТВИЯ	% реали-зации	Требуемые действия и временные рамки	Предполагаемые расходы	Ведущая организация	Участие заинтересованных сторон
Законодательство в действии относительно: 1. Ремней безопасности 2. Мотоциклетных шлемов 3. Детских удерживающих устройств 4. Использования мобильных телефонов 5. Скорости 6. Употребления алкоголя/ наркотических препаратов 7. Эффективное применение законодательства в области безопасности		 Ничего Ничего 3.1. Увеличить штрафы за неиспользование детских сидений Ничего Ничего Ничего 7.1 Обучение дорожной полиции новому законодательству 7.2 Анализ международного опыта и передовой практики касательно санкций до 12/15 7.3 Реализовать рекомендации по пересмотру до 12/16	0,5 млн. долларов США	Дорожная полиция	Министерство юстиций
Медиа кампании 1. Кампании по БДД используют соответствующие средства массовой информации 2. Существует статья государственного бюджета для кампаний по БДД 3. Общественные организации и частный сектор активны в финансировании кампаний по БДД 4. Доступны учебные материалы для школьников, соответствующие их возрасту		 1.1 Оценить эффективность предыдущих кампаний до 06/15 2.1 Пересмотреть потребности в финансировании правительственных кампаний до 12/15 2.2 Реализовать рекомендации до 06/16 3.1 Стимулирование частного сектора и НПО для подписания хартии о БДД до 12/15 3.2. Правительство стимулирует (например, налоговыми льготами) частные компании для финансирования мероприятий по БДД до 12/15 Провести национальный семинар для мобилизации частного сектора и НПО, чтобы повысить их вовлечённость, до 12/15 4.1 Включить обучение по БДД в школьные программы до 4.21 Реализовать улучшения и соответствующие возрасту материалы, по необходимости, до 04/16	0.5 млн. долларов США	Агентство БДД	Дорожная полиция, Министерство финансов, Министерство образования, школы и университеты, частные компании, СМИ

Правовой контроль 1. Дорожная полиция имеет достаточное количество сотрудников и транспортных средств 2. Дорожная полиция имеет соответствующее оборудование для обеспечения порядка 3. Дорожная полиция имеет надлежащую подготовку 4. Правоохранительная деятельность дорожной полиции основана на анализе данных о ДТП		1.1 Численность персонала дорожной полиции (ДП) составляет 10-12% всей полиции до 12/15 1.2 Соотношение патрульных автомобилей к числу сотрудников ДП должно быть 1:4 до 12/15 2.1 Пересмотреть и обновить оснащение ДП до 06/16 2.3 У ДП есть придорожные алкотестеры до 06/16 2.4 У ДП есть референтные алкотестеры до 06/16 3.1 ДП обучена дорожному законодательству до 12/15 3.2 ДП обучена оказанию первой помощи до 12/16 3.3 ДП обучена расследованию ДТП до 06/16 3.4 ДП обучена работе в условиях ДТП с опасными грузами 3.5 Старшие сотрудники/ офицеры ДП обучены стратегии и тактике правоприменения на основе анализа данных до 06/15 3.6 ДП обучена применению средств принудительного воздействия до 12/15 Соответствующе сотрудники ДП обучены анализу данных о ДТП до 4.2 Размещение полицейских основано на результатах анализа данных о ДТП до 09/15 4.3 Вся правоприменительная деятельность полиции основана на результатах анализа данных о ДТП до 06/16 4.4 Сотрудничество полиции со СМИ и НПО для обнародования деятельности. Расширить программу подготовки молодых инструкторов дорожного движения.		Дорожная полиция	Министерство финансов, Всемирный банк или другие финансирующие банки, СМИ
Общественные и частные организации практикуют безопасное поведение во время дорожного движения 1. Политика в сфере БДД правительственных учреждений касается их работников, водителей и транспортных средств.		1.1 Обязательное принятие политики БДД министерствами и правительственными департаментами до 06/16 1.2 БДД входит в сферу решений старшего руководства и является частью анализа эффективности работы до 06/15 1.3 Предпринимать дисциплинарные меры в отношении сотрудников, которые не выполняют требования БДД (например, запрещено пользоваться телефоном во время вождения, или употреблять спиртное, использование ремней безопасности является обязательным, и т.д.) до 12/15	0.3 млн. долларов США	Агентство БДД	Офис премьер-министра, Правительство, НПО, местные частные компании, транснациональные компании

2. Политика в сфере БДД крупных организаций частного сектора касается их работников, водителей и транспортных средств. 3. Неправительственные организации по БДД поддерживают правительство и организации частного сектора рекомендациями и материалами по безопасности		2.1 Информирование руководителей бизнеса о проекте хартии о БДД и политике реализации дорожной безопасности до 2.2 Подписание хартии крупными компаниями до 06/16 2.3 Компании, подписавшие договор, внедряют практику безопасности до 09/16 3.1 НПО продвигают хартию о БДД и предоставляют руководство/ материалы крупным компаниям до 03/16 3.2 НПО работают/ сотрудничают с правительственными службами для продвижения идей БДД в меньших компаниях до 06/16			

5. СКОРАЯ МЕДИЦИНСКАЯ ПОМОЩЬ ПОСТРАДАВШИМ В ДТП

ИНДИКАТОРЫ ВОЗДЕЙСТВИЯ	% реализации	Требуемые действия и временные рамки	Предполагаемые расходы	Ведущая организация	Участие заинтересованных сторон
Медицинская помощь пострадавшим в ДТП 1. Существует национальная система скорой медицинской помощи 2. Жертвы аварий получают эффективную первую помощь в течение 30 минут 3. Аварийные бригады скорой помощи имеют навыки оказания первой помощи 4. Полиция и спасательные службы имеют навыки оказания первой помощи		1.1 Анализ потребностей системы скорой помощи до 3/16 Координирование службы скорой медицинской помощи с другими экстренными службами до 04/16 Систематическая подготовка профессиональных диспетчеров во всех регионах до 12/16 Систематическая подготовка экстренных служб до 09/16 1.5. Обязательное медицинское страхование до 10/16 Ввести стандарт максимального времени реагирования службы скорой помощи до 03/16 Согласовать/ ввести в действие систему сортировки пострадавших до 05/15; 2.3 Повысить уровень подготовки персонала, оказывающего доврачебную помощь, до высокого международного уровня до 05/15 Систематические совместные учения по оказанию скорой медицинской помощи, скоординированные с другими экстренными службами (Министерство внутренних дел, Министерство обороны,		Министерство здравоохранения	Министерство чрезвычайных ситуаций, Министерство финансов, страховые компании, Центральный банк, Красный крест, Министерство транспорта, дорожная полиция

5. Водители коммерческого транспорта (автобусов/ такси/грузовиков) имеют навыки оказания первой помощи		государственные экстренные службы), до 03/15 Подготовка полиции и спасательных служб оказанию первой медицинской помощи и транспортировке больных до Систематические совместные учения, скоординированные с другими экстренными службами, до 05/16 В полицейских автомобилях имеются соответствующие стандартам аптечки скорой помощи до 10/15 Индустрия грузового транспорта вовлечена в программу обучения водителей коммерческого транспорта оказанию первой помощи до 06/16 Разработать и реализовать программу обучения оказанию первой помощи до 12/16			
Травматологическая помощь Отделение скорой помощи больницы оснащено необходимым для ухода за жертвами ДТП 2. Пострадавшие получают соответствующее лечение 3. 70% больниц имеют отделения скорой помощи		Обязательное медицинское страхование до 10/16; Материально-техническое обеспечение (до 10.2016); Обязательное медицинское страхование до 10/16; 2.2. Регулярная оценка служб до Не менее 1 больницы с отделением скорой помощи в		Министерство здравоохранения	Больницы, Красный крест, дорожная полиция, страховые компании, Центральный банк, Министерство финансов

4. Обучение оказанию первой помощи доступно общественности		радиусе 30 минут для каждой области до 06/16 К В автошколах квалифицированные специалисты по оказанию первой помощи обучают начинающих водителей до 06/15			
Качественная реабилитация и поддержка пострадавших 1. Специалисты по реабилитации способны оказывать раннюю медицинскую помощь пострадавшим 2. Пострадавшим предоставляется соответствующее лечение 3. Врачи прошли специальное обучение для работы с жертвами ДТП		Реализация улучшений до н 2.1 Изучение потребностей пострадавших до 12/16 2.2 Соответствующее лечение до 3.1 Медицинская подготовка включает обучение работе с людьми, потерявшими близких, до 12/16		Министерство здравоохранения	Больницы, Красный крест, дорожная полиция, страховые компании, Центральный банк, Министерство финансов
Справедливое урегулирование 1. Система страхования транспортных средств действует по всей стране 2. ДТП профессионально расследуются дорожной полицией 3. Расследования аварий определяют истинные причины ДТП		1.4 Действует обязательное страхование гражданской ответственности 1.5 Уровень выплат компенсаций пострадавшим пересматривается и регулируется в случае необходимости до 03/16 Инструкторы ДП прошли подготовку по расследованию ДТП до 06/16 Инструкторы ДП обучают других сотрудников расследованию ДТП до 12/16		Дорожная полиция	Больницы, Красный крест, дорожная полиция, страховые компании, Центральный банк, Министерство финансов, Министерство юстиций

4. Система правосудия обеспечивает справедливые условия для жертв ДТП		3.1 Расследования ДТП проводятся обученными специалистами до 06/16 Существует положение об оспаривании решения или заключения полицейского расследования и представлении альтернативного доклада экспертов в суд до 06/16 Решения суда считаются в общем справедливыми и объективными до 12/16 Назначенные судом компенсации за смерть или травму являются справедливыми и соответствуют передовому международному опыту до 12/17			
Единый номер телефона экстренной помощи 1. Создан единый номер службы экстренной помощи по всей стране 2. Сотрудники диспетчерского центра обучены предоставлению быстрых и эффективных ответов для помощи пострадавшим 3. Наличие необходимого оборудование для работы центра		1.1 911 и 112 полностью функционируют к 06/16 1.2 Система единого номера распространена на всю страну до 2.1 Анализ передового международного опыта до 12/15 2.2 Реализация улучшений до Создать и оборудовать центры в соответствии с международными стандартами до 12//17		Министерство чрезвычайных ситуаций	Министерство здравоохранения, больницы, дорожная полиция, Министерство финансов

6. ИЗМЕНЕНИЕ ОТНОШЕНИЯ К БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ

ИНДИКАТОРЫ ВОЗДЕЙСТВИЯ	% реализации	Требуемые действия и временные рамки	Предполагаемые расходы	Ведущая организация	Участие заинтересованных сторон
Партнёрство между правительством и НПО 1. Законодательная база для общественных организаций 2. Общественные организации принимают активное участие в БДД 3. Общественные организации консультируют или участвуют в принятии решений по вопросам безопасности дорожного движения на национальном уровне 4. Общественные организации консультируют или участвуют в принятии решений по вопросам безопасности дорожного движения на местном уровне		Ничего Ничего 3.1 Полностью функционирует до 06/16 4.1 Члены НПО по БДД/форума по безопасности представлены в городских и областных органах координирования до 12/15 4.2 Члены НПО по БДД/форума по безопасности вовлечены в принятие решений о БДД на городском и областном уровне до 06/16		Агентство БДД	Министерство транспорта и коммуникаций, Министерство финансов, дорожная полиция, Правительство, Офис ПМ
Образование 1. Существует национальная программа (учебная программа) для обучения безопасности дорожного движения		Пересмотреть существующее школьное образование по вопросам безопасности в соответствии с передовым международным опытом до 1.2 Восстановить рабочую группу в Агентстве БДД с		Министерство образования	Дорожная полиция, школы, Агентство БДД, СМИ, НПО

2. Существуют образовательные материалы, соответствующие по возрасту, и они используются в школах (книги, и т.д.) 3. Преподаватели подготовлены в области безопасности дорожного движения 4. Снижение количества детей среди жертв ДТП в местах, где проводится обучение БДД		участием Министерства образования для разработки / адаптации материалов до Интегрировать обучение дорожной безопасности в систему школьного образования до 09/16 Разработать и проверить соответствующие возрасту материалы для детей 2.1 Подходящие материалы используются во всех школах до 09/16 Обучить учителей использованию материалов по дорожной безопасности в течение последнего года их подготовки до 05/16 Выдать начинающим учителям пакет материалов по дорожной безопасности для распространения в их школах На курсах повышения квалификации обучать учителей применению образовательных материалов по БДД до 09/16 Дважды в месяц показывать на национальном канале телепередачу о БДД до 03/16			
Курсы переподготовки водителей 1. Законодательная база для курсов переподготовки		1.1 Анализ международного опыта касательно схем		Дорожная полиция	Министерство транспорта, Агентство БДД, школы вождения, Министерство финансов, Мэрия

2. База данных о штрафных баллах водителей существует и работает 3. Подготовлена программа для курсов переподготовки 4. Проводятся курсы переподготовки 5. Улучшение знаний и осведомлённости в сфере БДД участников курса		переподготовки водителей до 1.2 Внести поправки в соответствующее законодательство, по необходимости, до 12/16 2.1 Усовершенствовать и унифицировать базы данных о водителях до 09/16. 3.1 Разработать подходящую схему переподготовки водителей до 03/16 3.2 Все ключевые стороны вовлечены в процесс разработки / пересмотра содержания схемы подготовки до 06/16 4.2 Начать реализацию схемы переподготовки водителей после пробного тестирования до 09/16 5.1 Провести оценку схемы до 5.2 Улучшить и наладить схему, по необходимости, до 12/16			
Поощрение правомерного поведения 1. Установлена система номинации водителей, выполняющих ПДД 2. Установлена система наград		Правительству и частному сектору необходимо разработать систему номинации водителей для обеспечения контроля дорожной безопасности на коммерческом транспорте до Владельцам крупных автопарков рекомендуется внедрить схемы поощрения водителей до 09/16		Агентство БДД	Правительство, дорожная полиция, страховые компании, частный сектор, СМИ, НПО

3. Победители признаются обществом		Создать единую систему наград (сертификаты, скидки на страховые полисы) и корпоративных поощрений до Компаниям, реализующим схемы поощрения водителей, предоставляются скидки на страховые полисы (как «безопасным компаниям») до Распространение информации посредством СМИ и социальных сетей до 12/16 Использование специальных сайтов, вирусной рекламы, специальных тематических ток-шоу, телевизионных программ и т.п. для популяризации и общественного признания до			

Заключение. Общий необходимый бюджет

Действие Год	2015	2016	2017	Всего
План действий 1: Институциональные улучшения				
План действий 2: Более безопасные дороги				
План действий: Более безопасный транспорт				
План действий: Безопасное поведение участников движения				
План действий: Скорая медицинская помощь				
План действий: Изменение отношения				
Всего (Евро)				

ПРИЛОЖЕНИЕ B: ПОКАЗАТЕЛИ ЭФФЕКТИВНОСТИ ИНСТИТУЦИОНАЛЬНОГО РАЗВИТИЯ

Показатели воздействия были разработаны для каждого из желаемых результатов следующим образом:

1. ИНСТИТУЦИОНАЛЬНЫЕ УЛУЧШЕНИЯ

ЗАДАЧИ	ПОКАЗАТЕЛИ ВОЗДЕЙСТВИЯ
Соблюдение следующих Соглашений / Конвенций ЕЭК ООН:	Европейское соглашение о международной дорожной перевозке опасных грузов - - Присоединиться к соглашениям - Перевод на местный язык - Пересмотреть действующее законодательство - Ратифицировать и публиковать - Проводить обучение и развитие потенциала - Регулярная проверка - Рабочие группы ЕЭК ООН
1.1. Европейское соглашение о международной дорожной перевозке опасных груз	Соглашение транспортных правил - 1958 - Присоединиться к соглашениям - Перевод на местный язык Пересмотреть действующее законодательство - Ратифицировать и публиковать - Проводить обучение и развитие потенциала - Регулярная проверка - Рабочие группы ЕЭК ООН Конвенция о дорожном движении -1968 - Присоединиться к соглашениям - Перевод на местный язык - Пересмотреть действующее законодательство - Ратифицировать и публиковать - Проводить обучение и развитие потенциала - Регулярная проверка - Рабочие группы ЕЭК ООН Конвенция о дорожных знаках и сигналах - 1968 - Присоединиться к соглашениям - Перевод на местный язык - Пересмотреть действующее законодательство - Ратифицировать и публиковать - Проводить обучение и развитие потенциала - Регулярная проверка - Рабочие группы ЕЭК ООН **Европейское соглашение, касающееся работы экипажей транспортных средств,**

ов, заключено в 1957	**осуществляющих международные автомобильные перевозки -** 1970 - Присоединиться к соглашениям - Перевод на местный язык - Пересмотреть действующее законодательство - Ратифицировать и публиковать - Проводить обучение и развитие потенциала - Регулярная проверка - Рабочие группы ЕЭК ООН
1.2. Соглашение о принятии единообразных технических предписаний для колесных транспортных средств, предметов оборудования и частей, которые могут	**Европейское соглашение о международных автомагистралях** - 1975 - Присоединиться к соглашениям - Перевод на местный язык - Пересмотреть действующее законодательство - Ратифицировать и публиковать - Проводить обучение и развитие потенциала - Регулярная проверка - Рабочие группы ЕЭК ООН Соглашение о технических осмотрах - 1997 - Присоединиться к соглашениям - Перевод на местный язык - Пересмотреть действующее законодательство - Ратифицировать и публиковать - Проводить обучение и развитие потенциала - Регулярная проверка - Рабочие группы ЕЭК ООН

быть установлены и/или использованы на колесных транспортных средствах, и об условиях взаимного признания официальных утверждений, выдаваемых на основе этих предписаний,

заключено в Женеве 20 марта 1958

1.3. Конвенция о дорожном движении, Вена 1968 г.

1.4. Конвенция о дорожных знаках и сигналах, Вена 1968г.

1.5. Европейское согл

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1.8. Создание агентства по безопасности дорожного движения	1. Законодательство существует 2. Координационный орган создан 3. Существует Секретариат, полностью оснащенный персоналом и финансированием 4. Надежный, устойчивый механизм финансирования безопасности в действии
1.9. Разработка национ	1. Стратегия разработана Заинтересованные стороны проконсультированы 3. Стратегия утверждена правительством 4. Реализация началась

альной стратегии безопасности дорожного движения	
1.10. Реалистичные и долгосрочные цели	1. Реалистичные долгосрочные цели в действии 2. План действий подготовлен для достижения целей 3. План действий реализуется 4. Проводится мониторинг прогресса по достижению целей
1.11. Обеспечение долгосрочной стабильности безопасности дорожного движения	1. Оценены ежегодные потери в экономике 2. Существует механизм безопасности дорожного движения 3. Выделяется бюджет для улучшения безопасности дорожного движения 4. Мониторинг показывает эффективность инвестиций в области безопасности дорожного движения
1.12. Создать схем	1. Существует обязательное страхование третьей стороны по двигателям 2. Существует правоприменение и штрафование для незастрахованных транспортных средств 3. Количество незастрахованных транспортных средств минимизировано

у обязательного страхования участников дорожного движения	
1.13. Установить требования к выдаче водительских прав на основе передового международного опыта	1. Адекватное теоретическое тестирование в действии 2. Адекватное практическое тестирование в действии Коммерческие водители должны пройти дальнейшие тестирования 4. Система соответствует лучшей международной практике
1.14. Унифицировать стандарты сбора и анал	1. Общие основные пункты будут согласованы и определены 2. Согласованные данные об авариях собираются с помощью полицейских форм об авариях 3. Установлена адекватная система хранения данных 4. Установлена адекватная система извлечения и анализа данных 5. Установлена адекватная система распространения данных 6. Данные по аварийным происшествиям доступны всем заинтересованным сторонам для дальнейшего анализа

иза данных ДТП в регионе	7. Система данных по авариям позволяет провести эффективный анализ причин аварий и предпринять меры по их предотвращению
1.15. Разработать единую систему мониторинга и оценки результатов внедрения ряда мер	1. Создана региональная рабочая группа 2. Согласованы воздействия для мониторинга 3. Установлена система мониторинга воздействия 4. Распространяется отчет о прогрессе ежеквартального мониторинга 5. Эффективное стратегическое управление реализаций
1.16. Пересмотреть и улучшить систему расстановки дорожных знаков	1. Подписание / стандарты рассмотрены 2. Выявлены потребности и недостатки 3. Разработана программа для улучшения 4. Необходимые бюджеты оценены
1.17. Внедрить принципы и	1. Участие в обсуждениях, состоявшихся на региональном уровне для установления единого подхода по аудиту безопасности дорожного движения 2. Договорена реализация политики аудита безопасности дорожного движения на национальном уровне 3. Участие в дискуссиях по системе аккредитации аудита безопасности дорожного движения разработана для региона

практику аудита безопасности дорог в проектировании и строительстве существующих и новых дорог любой категории	4. Разработано участие в дискуссиях по подготовке регионального Руководства по аудиту безопасности дорожного движения 5. Разработаны региональные учебные курсы по аудиту безопасности дорожного движения 6. Обучены тренера по аудиту безопасности дорожного движения 7. В стране созданы учебные программы по аудиту безопасности дорожного движения
1.18. Обеспечить доступ к передовому опыту дорожной безопасности по всему региону	1. Учреждена рабочая группа ТРАСЕКА по дорожной безопасности 2. Соблюдены общая база данных Руководств, процедур, стандартов 3. Организованы ежегодные конференции по наилучшей практике дорожной безопасности

1.19. Общий подход к штрафам по нарушениям правил дорожного движения в регионе	Изучить существующую систему штрафов в государствах 2. Обсудить возможную единую систему штрафа по всему региону 3. Создать единую систему данных о нарушениях 4. Применить взаимно признанные санкции по всему региону

2. БОЛЕЕ БЕЗОПАСНАЯ ИНФРАСТРУКТУРА

ЗАДАЧИ	ПОКАЗАТЕЛИ ВОЗДЕЙСТВИЯ
2.1. Внедрить программы оценки\аудита безопасности дорог	1. Правовая основа для аудита дорожной безопасности 2. Адекватное руководство в использовании 3. Доступны обученные аудиторы дорожной безопасности 4. Дорожная администрация имеет бюджет на покупку аудита дорожной безопасности 5. Все новые, восстановленные и реабилитированные дороги проходят аудит безопасности 6. Рекомендации аудита безопасности дорожного движения реализуется со стороны дорожной администрации
2.2. Устранение «черных мест»	1. Правовая основа для управления черных пятен 2. Адекватное руководство по управлению черными пятнами в использовании 3. Доступны обученные исследователи по черным пятнам 4. Годовая программа по предотвращению опасностей в действии 5. Дорожные власти распределили средства на улучшение управления по черным пятнам. 6. Рекомендации по УЧП выполняются со стороны Дорожных властей.
2.3. Осуществление программы определения маршрутов передвижения грузов в объезд населенных пунктов	1. Существует правовая база 2. Проведены опросы по грузовым движениям, чтобы оценить потребности 3. Определены альтернативные маршруты

	4. Размещены подписания и маркировка 5. Обеспечено эффективное исполнение торговых путей транспортных средств 6. Уменьшена реклама через транспортные средства в жилых районах
2.4. Применение экономически эффективных мер местными властями	1. Обновлена стоимость аварий и известных несчастных случаев 2. Доступны затраты/выгоды интервенции безопасности 3. Проделаны работы по рейтингу/приоритетности для улучшения на базе анализа затрат/выгод 4. Многие опасные зоны систематически улучшаются с помощью ежегодных программ.
2.5. Обеспечение безопасных и надежных внедорожных стоянок для грузовых автомобилей	1. Правовая основа 2. Проведены опросы грузовых перевозок для выявления потребностей по парковкам. 3. Выявлены потенциальные площадки для парковки 4. Размещены подписания и маркировка 5. Доступны безопасные парковки на бездорожьях для грузовых автомобилей, и они используются на основных маршрутах.
2.6. Укрепление кадрового потенциала инженеров и технического персонала	1. Выпущены адекватные Инструкции/Руководства по технике безопасности 2. Обучены выбранные правительство, консультанты и академический персонал 3. Произведены учебные программы для университетских курсов 4. Во время учебы, ученики обучаются безопасным подходам проектирования

ЗАДАЧИ	ПОКАЗАТЕЛИ ВОЗДЕЙСТВИЯ
3.1. Проводить регулярный технический осмотр транспортных средств	1. Международная конвенция ратифицирована 2. Правовая основа для осмотра транспортных средств 3. Руководство для осмотра транспортного средства в использовании 4. Обученные сертифицированные механики проводят осмотры транспортных средств 5. Правительство сертифицировало/ регулировало семинары и посты контроля 6. Регулирующее учреждение адекватно профинансировано 7. Сокращено количество дефектного транспорта в движении

3.2. Обеспечить применение правил безопасности, признанных на международном уровне, в отношении импортируемых транспортных средств	1. Импортированные автомобили соответствуют международным стандартам (ЕЭК ООН) 2. Правовая основа существует для того, чтобы предотвратить ввоз неподходящих/ небезопасных транспортных средств 3. Осуществляется адекватный контроль, не позволяющий ввоз поддельных запасных частей
3.3. Обеспечить соответствие транспортных средств, перевозящих опасные грузы всем техническим стандартам	1. Транспортные средства, сертифицированные ДОПОГ 2. Водители, сертифицированные ДОПОГ 3. Аварийные службы прошли специальную подготовку, чтобы реагировать на/ иметь дело с несчастными случаями ДОПОГ

БОЛЕЕ БЕЗОПАСНЫЕ ТРАНСПОРТНЫЕ СРЕДСТВА

БЕЗОПАСНОСТЬ УЧАСТНИКОВ ДОРОЖНОГО ДВИЖЕНИЯ

ЗАДАЧИ	ПОКАЗАТЕЛИ ВОЗДЕЙСТВИЯ
4.1- 7. Наличие и соблюдение законодательства, охватывающего: ремни безопасности, мотоциклетные шлемы, детские сиденья, использование мобильных телефонов, скорость, алкоголь, наркотики	- Законодательство в действии для: 1. ремней безопасности 2. мотоциклетных шлемов 3. детских удерживающих устройств 4. использования мобильных телефонов 5. скорости 6. алкогольных напитков 7. наркотических препаратов - Эффективное применение законодательства в области безопасности
4.8. Повысить уровень осведомленности населения	1. Кампании дорожной безопасности используют соответствующие средства массовой информации 2. Существует государственный бюджет для кампаний дорожной безопасности 3. SCO -(НПО) и частный сектор активны в финансировании кампаний дорожной безопасности 4. Доступен учебный материал для школьников соответствующий их возрасту

5. УЛУЧШЕННАЯ МЕДИЦИНСКАЯ ПОМОЩЬ ДЛЯ ЖЕРТВ ДТП

ЗАДАЧИ	ПОКАЗАТЕЛИ ВОЗДЕЙСТВИЯ
5.1. Практиковать медицинское обслуживание жертв ДТП	1. Существует национальная система аварийного медицинского обслуживания (EMS)

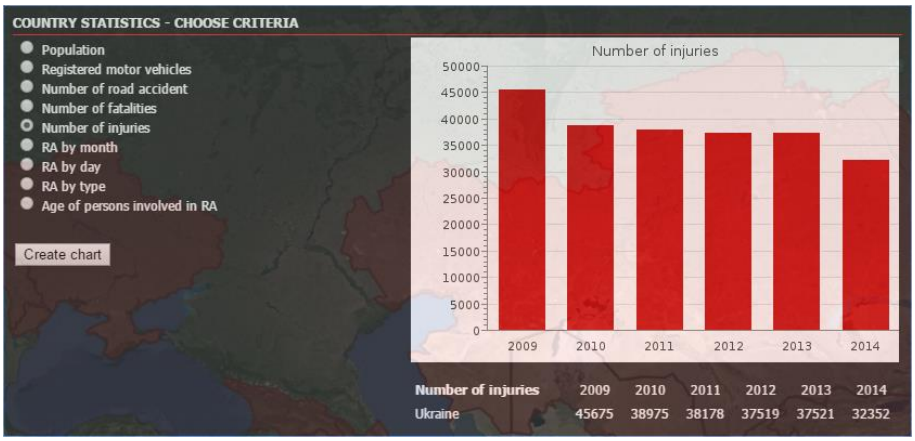
	2. Жертвы аварий получают эффективную первую помощь в течение 30 минут 3. Аварийные бригады скорой помощи имеют навыки оказания первой помощи 4. Полиция и спасательные службы имеют навыки оказания первой помощи 5. Коммерческие водители (автобусов/такси/грузовиков) имеют навыки оказания первой помощи
5.2. Развитие систем стационарной помощи и улучшение их потенциала	1. Отделение скорой помощи больницы оснащено для ухода за жертвами аварий 2. Пострадавшие получают соответствующее лечение 3. 70% больниц имеют отделения скорой помощи 4. Обучение по первой помощи доступно для широкой публики
5.3. Надлежащая реабилитация и поддержка пострадавшим в ДТП	1. Специалисты по реабилитации рано оказали медицинскую помощь пострадавшим (30%) 2. Пострадавшим были предоставлены соответствующие терапии (40%) 3. Доктора получали специальное обучение, чтобы иметь дело с травмированными и погибшими
5.4. Справедливое урегулирование претензий и судебное расследование для пострадавших в ДТП	1. Система страхования транспортных средств действует по всей стране 2. Аварии профессионально исследованы со стороны дорожной полиции 3. Исследования по авариям определяют правильные причины аварий 4. Система правосудия обеспечивает справедливые условия для травмированных и погибших
5.5. Круглосуточно функционирующий номер службы экстренной помощи “один звонок”	1. Создан единый номер службы экстренной помощи по всей стране 2. Центры по контролю обучены для обеспечения быстрых и эффективных реагирований по оказанию помощи жертвам 3. Существует необходимое оборудование для работы центра

6. ИЗМЕНЕНИЕ ОТНОШЕНИЯ

ЗАДАЧИ	ИНДИКАТОРЫ ВОЗДЕЙСТВИЯ

6.1. Развитие партнерских отношении между Правительством и общественными организациями	1. Правовая основа для Общественной социальной организации CSO – (НПО) 2. CSO (НПО) активно принимает участие в области дорожной безопасности 3. CSO (НПО) консультировала или участвовала в принятии решений по вопросам безопасности дорожного движения на национальном уровне 4. CSO (НПО) консультировала или участвовала в принятии решений по вопросам безопасности дорожного движения на местном уровне
6.2. Организация обучения безопасности дорожного движения в школах на систематической основе	1. Существует национальная программа (учебная программа) для обучения безопасности дорожного движения 2. Существуют образовательные материалы, соответствующие по возрасту, и они используются в школах (книги, и т.д.) 3. Преподаватели подготовлены в области безопасности дорожного движения 4. Были обеспечены обучения по безопасности для снижения аварий со вмешательством детей на местах
6.3. Применение исправительных курсов для водителей	1. Правовая основа для исправительных курсов 2. База данных наказания водителя существует и работает 3. Программа для исправительных курсов подготовлена 4. Исправительные курсы реализуются 5. Знания и осведомленность участников курса о безопасности были улучшены
6.4. Поощрение и признание хорошего поведения на дорогах	1. Установлена система номинаций хороших водителей 2. Установлена система наград 3. Победители были признаны обществом

3. CRASH DATA SYSTEM



Crash data is collected by traffic police in most countries but the completeness of the data at the completeness of the data and its accessibility to other key stakeholders varies markedly. This report outlines the situation and needs in Armenia.

3.1

COUNTRY: ARMENIA

TEAM: CRASH DATABASE TEAM

TOPIC: ANALYSIS OF CRASH DATA SYSTEM

DATE: 25 – 26 JUNE 2015

REPORT PREPARED BY

Crash Database Team

Team member/s:

1. Dragoslav Kukić, Team leader
2. Marko Jovanović

Collection of information and data for the report were done in 25th and 26th June, 2015

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3.	**Current situation (present practices)/deficiencies requiring attention and recommendations (suggested way forward)**	
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* * *

1. Introduction

In accordance with project ToR for Component 2: "Regulatory and institutional reforms" Crash Database and Inception report task 2.1.5. Review of current crash data systems and analysis, 2.1.6. Recommendations for improvement of country crash databases/data analysis, 2.1.7. Workshop + Recommendations on a centralised crash database (RS Observatory) the Team realized a three day visit to Armenia 25-26 June 2015. The Team had a task to ascertain the current situation in terms of database on road accidents, as well as the available data and analyses that are performed on the basis of available data. In addition to this task, the Team has made a review of the existing crash data systems in Armenia. The task was also to facilitate a better understanding of the importance of collecting, storing and publishing data on traffic safety and their importance for traffic safety system in its entirety. Also there are perceived possibilities of Armenia for delivery of existing data into a single database on road accidents for all TRACECA countries.

During the visit, the Team had meetings with representatives of the most important institutions and organizations responsible for individual segments of road safety, especially organizations responsible for establishing a database on road accidents, defining the structure of accident data collected, conducting analyses based on available data and publishing the results. In this context, theTeam had a meeting with representatives from the Ministry of Internal Affairs – Traffic Police department and Ministry of Transport – Road Directorate.

2. Activities undertaken

25, June, Yerevan: Reviewing of current crash data system in Armenia, analysing the field questionnaires about crash data system, analysing of crash accident publications and availability of road accident statistical data on existing public web sites.

25, June, Yerevan: Meeting with representatives from Ministry of Internal Affairs – Traffic Police Department. At this meeting it was discussed about current situation with collecting road accident data and current situation with existing road accident database in Armenia, availability of road accident data, obligation on the defining the structure of road accident data, role and tasks of TRACECA project especially crash data system and crash data analysis mission of TRACECA.

At the same meeting, Crash database team going through existing police road accident database. This database is internal, established by Traffic police Department with data collected by traffic policemen on the place of road accident.

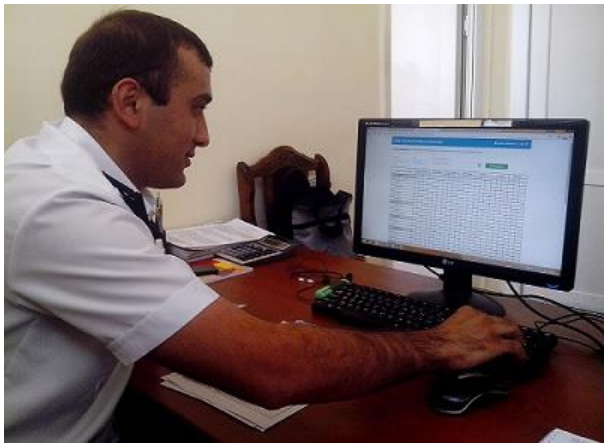
25, June, Yerevan: Meeting on Polytechnic University where we are discussed about importance of including many institutions in road safety system in one country, and about place of University in the improvement of knowledge for collecting and analysing road accident data which are important for monitoring of the road safety.

26, June, Yerevan: Meeting with representatives from Ministry of Transport – Road Directorate. At this meeting, it was discussed about:

- Database of black spots (importance, good and quality road accident data for identifying black spots),

26, June, Yerevan: Meeting with representatives from Ministry of Internal Affairs – Traffic Police Department. At this meeting, it was discussed about:

- Structure of existing road accident data in Armenia.
- Importance of harmonizing national road accident data structure with recommendation from European Commission – CADaS (Common Accident Data Set).
- Best practice in open and unique database of road safety – example from Road Traffic Agency from Serbia.
- Next steps for improving existing colleting of road accident data and improving the existing road accident database.



Picture 1 and 2 – Direct work in road accident database, Traffic Police Department, Yerevan

3. Current situation (present practices)/deficiencies requiring attention and recommendations (suggested way forward)

3.1. Current situation

Ministry of Internal Affairs – Department of Traffic Police is responsible for collecting road accident data. Department of traffic police is obliged to define structure of road accident data that will be collected on the place of accident.

After accident occurs, traffic police is obliged to go on the place of road accident and make crash investigation. As a part of crash accident, investigation traffic police collect data on the scene of road accident. Traffic police officer is obliged to collect data and send data to the traffic police centre. Filling the road accident database is done by traffic police centre on the regional level directly to road accident database on national level. New database was established in 2015.

Traffic police produce all reports of road accidents in Armenia (annually or periodically). These reports are not published on the web site, but every institution, organization or person who is interested in road accident data (except personal data) can apply for data by traffic police.

Road accident data are collected in two separate road accident cards:

1. Road accident card for road accident with material damage only,
2. Road accident card for road accident with casualties (injured and killed).

In their analysis, they consider just road accident with casualties. In accordance with their opinion they give the road accident data to everyone who ask for the data, but representatives from Polytechnic University do not think the same. In their opinion, they have problem to get data from traffic police. Traffic police are obliged by the Law on road safety to give road accidents data to the institutions and organizations asking for data, but it is not prescribed what these data must contain.

Ministry of Transport – Road Directorate is responsible for dealing and managing with black spot database in Armenia. They have some kind of black spot database which has internal character. Black spot database is established on the Microsoft platform. It is Microsoft Access database. They put data into database one by one and this process is not automatic. They point to the problem of obtaining and data structures that are obtained by the traffic police. On the other side, traffic police send all accident cards to the Road Directorate, but sending data is on the personal level, based on previous connection and together work in the same institutions.

For the black spot database, they collect just road accident with casualties. Road Directorate is obliged to collect data about black spots and road accident at all by their own regulation.

3.2. Deficiencies requiring attention

*Very high importance – VHI, High importance – HI; Importance – I

Collection of road accident data		
1	They cannot produce separate data about number of road accident with injured and number of road accident with killed (accident with fatalities).	VHI
2	They do not have or they do not collect separate data about number of serious and slight injuries (they have just a total number of injuries).	VHI
3	They do not collect police department or division code.	HI
4	They do not collect geographical coordinates from the place of road accident	HI
5	They do not collect data about road class.	HI
6	They do not collect data about with of road (street).	HI
7	They do not collect data about speed limit on the place of road accident.	HI
8	They do not collect data about domestic or foreign vehicle.	I
9	They do not collect data about vehicle year production.	I

10	They do not collect data about whacked object on the road, for example: bridge, bridge-side, parked vehicle, previous accident, open door of vehicle, etc.	HI
11	They do not collect data about whacked objects out of the road, for example: road sign, tree, electricity, crash barrier, bridge, petrol stations, submerged in water, etc.	HI
12	They do not collect country birth data for persons involved in accident.	I
13	They do not collect data about cause of road accident.	HI
14	They do not collect data about Breath test for alcohol.	HI
15	They do not collect data about Drug test.	HI
16	They do not collect data about other psychological condition of person involved in accident except alcohol, for example: fatigue, illness, sudden death…etc.	HI
17	They do not collect data about helmet use.	HI
18	They do not collect data about journey purpose.	I
19	They do not collect data about pedestrian crossing control (authorized person, pedestrian traffic light, without control…etc.).	HI
20	They do not collect separate data if pedestrian is the worker in the work zones or in the road environment.	I
21	They do not collect data about existing the child seats in road accident with children.	HI
22	They do not collect data from which transport unit are injured or killed passengers.	HI
23	They do not specifically collect data on whether the person died on the place of road accident or in the transport from the place of accident to the hospital, or up to 30 days after the road accident.	HI
24	There are differences in the structure of the road accident data currently collected in relation to the CADaS recommendations of the European Commission (CADaS – Common Accident Data Set).	VHI

Exchange of road accident data – Road accident data policy		
1	They are not obliged by Law to share road accident data and other road safety data between other institutions and organizations in Armenia.	HI
2	They cannot produce separate data about number of road accident with injured and number of road accident with killed (accident with fatalities).	HI
3	Traffic police produce all reports of road accidents in Armenia (annually or periodically).	HI
4	There is no electronic connection between Road accident database and Health sector in Armenia.	HI
5	There is no electronic connection between Road accident database and Road authorities.	HI

Usage of road accident data for black spot analysis and other road safety analysis		
1	Ministry of Transport – Road Directorate is responsible for dealing and managing with black spot database in Armenia, but this is just internal regulation not covered by Law on road traffic safety.	VHI
2	They do not have clear definition of black spot.	VHI

3	Exchange of road accident data for black spot database is on the personal level and not systematically arranged.	VHI
4	They do not have differences between black spot and black section.	VHI
5	They do not collect geographical coordinates of road accident.	HI
6	In statistical way, they do not consider number of injuries on slight and serious injuries, which can be important for usage of the methodology of black spot identification.	VHI

3.3. Recommendations (suggested way forward)

- Improving the existing road accident database and road safety analysis including new data into road accident database (e.g. road class, geographical coordinates or speed limit on the place of road accident, etc.).

- Start of publishing the road accident reports and road safety reports to the official website of some government institution or organization, for example Ministry of Internal Affairs or Ministry of Transport. The first statistical year could be 2015.

- Start of collecting separate data about number of road accident with injured and number of road accident with fatalities.

- Start of dividing data about slight and serious injuries sustained in road accidents.

- Improving the exchange of road accident data with other stakeholders, especially Traffic Police Department and Polytechnic University in Yerevan.

- It could be very important and useful if they made a step forward and start to collect a set of data recommended by CADaS protocol from European Commission[14]. CADaS structure is providing many of high importance (and very high importance) differences which required attention and which are highlighted in the table "Road accident data".

- Main activities in implemented CADaS structure must be directed to collecting next set of data: (1) Types of road accident, (2) Vehicle manoeuvres in accordance with CADaS and (3) Pedestrian manoeuvres in accordance with CADaS. It is also important to make improvements on collecting the contributory factors according to the best European practice (e.g. British model of Contributory factors). Training the traffic police forces in charge of collecting data on the place of road accident will be very useful.

4. Conclusions

Having good and quality data of road accidents is a very important step in establishing a road safety system in one country. With European Commission Decision 93/704 EC, the obligation for exchanging data about road accidents between EU countries and unique European road accident database was defined. In addition, the working group of the European Commission was formed which will make recommendations regarding the collection and exchange of data.

[14] The differences between current structures of Armenian road accident data (Accident data form) and CADaS recommendation from the European Commission are presented in Chapter 3 of this report.

Adjusting to the recommendations of the European Commission is a good basis for high quality monitoring data on characteristics of traffic safety, reliably identifying problems and proposing measures to resolve the problems.

Existing road accident database in Republic of Armenia has new database established in 2015. Crash database has established on the modern web oriented application. For database management system Microsoft SQL has been used, which is good basis for upgrading with recommended CADaS structure. Armenian crash data system is now in the developing phase and can be improved by best European practice and by recommendation from European Commission. Parallel to this process it is important to work on the establishment of an open database which will provide access to all institutions and organizations in Armenia that are included in the system of data exchange and system of traffic safety in general.

The first step could be a written road safety and road accidents statistical report prepared by Department of traffic police. Statistical report could be prepared for 2014 at the end of 2015 and published on the website of Ministry of Internal Affairs.

According to all available Armenian road accident data to Crash database team, it will be possible to include Armenia into centralised crash database of all TRACECA countries. General road accident data from Armenia for centralised TRACECA crash database could be available from 2009.

Annex A

PERSONS MEET OR CONSULTED

No.	Name and Surname	Institution (Organization) and Position	Contact telephone E-mail
1.	**Yegor Karapetyan**	Deputy Head of Road Police, Central of Road Police	
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5.	**Gasik Yeritsyan**	Professor of Polytechnic University	094008640
6.	**Sargis Sahakyan**	Leading Specialist of Armenian Road Directorate, Ministry of Transport	077355389
7.	**Norik Sorgesyan**	Head of Patrol Police, Central of Road Police	093040002
8.	**Arman Chilingaryan**	Head of Legislative Department, Central of Road Police	093885000 armanchilingaryan@gandex.ru
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3.2

Benchmarking of crash data system in TRACECA countries

Introduction

Impact indicator for Crash database system analysed within project are: (1) Willingness to share data, (2) Data analysis available by internet, (3) Exchange of data between institutions, (4) Road accident data available since which year, (5) Road accident database available by internet, (6) Quality of the database software platform, (7) Similarity with CADaS and (8) Effective analysis.

1. Willingness to share the road accident data

The existence of the will for displaying data on road accidents is a necessary condition for the development of crash database system. The biggest problem could be with the unwillingness of the Ministry of Interior - Traffic Police to make available road accident data to all interested stakeholders, scientists and to the other individuals. The data need to be available with the same conditions to the all interested for road accident data. In most cases, this depend by the will of country to share and make available road accident and other road safety data.

2.Data analysis available by internet

The existence of available analysis of the state of road safety (road accidents analysis) on the internet shows a willingness to point out the problem of road safety in the country. Also, detailed analysis of the situation of road safety that are available on the internet shows the will of the state to be analytical and treat the area of road safety professionally.

3.Exchange of data between institutions

Data exchange between institutions of road safety is very important argument in assessing the current state of the crash data system in a one country. If each institution keeps the data that collects only for themselves and not share this data with other stakeholders involved in road safety system, it means there is no quality system of monitoring of the road safety, and means there is no quality road safety database.

4.Road accident data available since which year

A longer period of availability of road accident data indicates that the country is in a large period of years recognized the need for collecting the road accident data and their consequences. Also, this means recognition of the importance of collecting and storing the road accidents data, not just for an overview of the current situation but also for monitoring trends over a longer period of time.

5.Road accident database available on internet

The greater availability of road safety and road accident data means greater development of the state. The availability of a road accident database on the internet is the most powerful argument confirming that the country understood the importance of the availability of road accident data to widest range of users. It is a great sign that the state recognized the need to involve other stakeholders in the road safety system.

6.Quality of the database software platform

Quality of the software platform is an important precondition for a quality road accident database. Also, it is important to make corrections to the data structure in a simple manner, as well as customize the software application for easy data input with the possibility of analysis and easy exporting of data for further analysis and processing. Compatibility with other software packages and tools is also of huge importance.

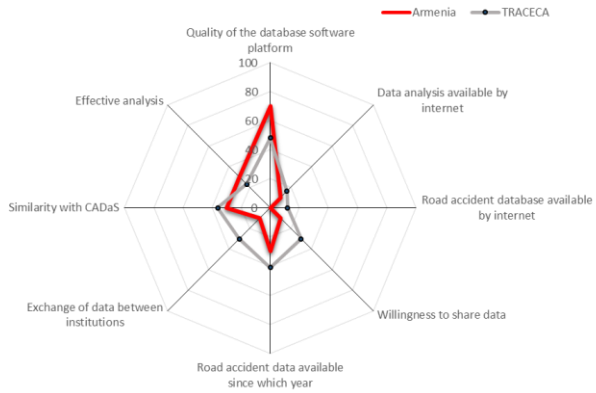
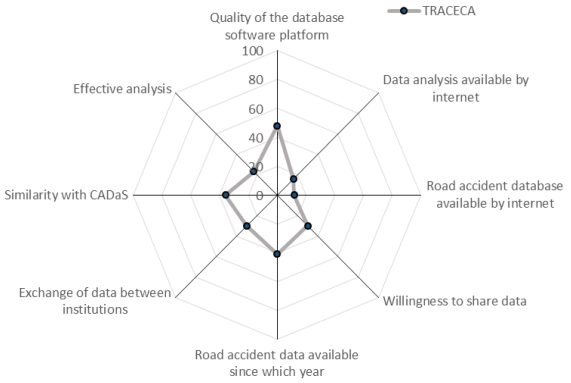
7.Similarity with CADaS

The CADaS is Common Accident Data Set recommended by the European Commission. The Team of road safety experts worked on scope and structure of data presented in CADaS. The scope and structure of data recommended by CADaS has sufficient quality to cover the most of needs and expectations from the road accident database. The database which contains the structure and scope of data recommended by CADaS is a very high quality road accident database.

8.Effective analysis

Efficient and useful analyses in the field of road safety are necessary product of the road accident database. The road accident database with effective analysis and additional information of the road safety features (such as: exposure, road casualty risks, safety performance indicators, social attitudes to the risk of road safety, vehicles data, black spot data, dangerous sections data, etc.) grows into unique road safety database. Effective analysis of road accidents and effective analysis of road safety features are essential for such a transformation.

9.Benchmarking of crash database system – Countries review

Armenia 	Institution responsible for road accident database is Ministry of Interior – Traffic Police Department. Electronic road accident database is established. Type of software platform is Microsoft SQL. General road accident data are available on the internet, but road accident database is not available on the internet. There is the obligation of an official request for road accident data. The road accident data are available since 2013. There is no systematic exchange of road safety data with other institutions. Definition of road death is up to 30 days.
TRACECA 	Generally, the quality of the crash database system in TRACECA countries is on the low level. The worst cases are with availability of road accident database, availability of any kind of road accident analysis and existence of effective road safety analysis. Also, the willingness to share the road accident data is on the very low level. A little better situation is with quality of the database software platform, which is necessary condition for any kind of database, but still there are countries that do not have any kind of software platform for road accident database.

3.3

Comparison of the structure of road accident data of TRACECA countries with CADaS recommendation of the European Commission

Introduction

The recommendation for a Common Accident Data Set (CADaS) consists of a minimum set of standardised data elements, which will allow comparable road accident data to be available in Europe[15]. The CADaS proposes a minimum set of standardized road accident data that needs to be collected in the Member States of the European Union, which will enable the comparability of road accident data between European countries. Variables that were proposed by CADaS recommendations form European Commission are organized into four groups:

1. **Accident related variables – "A";**
2. **Road related variables – "R";**
3. **Traffic Unit (vehicle and pedestrian) related variables – "U";**
4. **Person related variables – "P".**

In the following text, for each of the four groups of variables that are defined in CADaS were compared with a groups of variables based on structure of road accident data which are collects in observed country.

Legend

+	The variable is recorded in the crash data form of observed country on the same way as proposed in CADaS recommendations of the European Commission, or it is need the minimum of necessary adjustments to achieve collection in the required form.
+	The variable is not recorded in the crash data form of observed country as a separate variable, and in the same way as proposed by CADaS recommendations of the European Commission, but the variable is contained in the framework of other variables. In these variables, it is necessary to make a transformation in order to made adaptation to the CADaS.
-	The variable is not recorded in the crash data form in the observed country.

[15] CARE Database – CADaS (Common Accident Data Set), Directorate-General for Mobility and Transport, European Commission, Brussel, 2013.

ARMENIA

I – ROAD ACCIDENT DATA

CADaS „A“ Accident	ROAD ACCIDENT DATA	
	CADaS variable	**Comparison CADaS vs ARM**
1	Accident ID	+
2	Accident Data	+
3	Accident Time	+
4	NUTS	-
5	LAU	-
6	Weather conditions	+
7	Light conditions	+
8	Accident with pedestrians	+
9	Accident with parked vehicles	+
10	Single vehicle accidents	+
11	At least two vehicles – no turning	+
12	At least two vehicles – turning or crossing	+

II – ROAD INFORMATION

CADaS „R“ Road	ROAD INFORMATION	
	CADaS variable	**Comparison CADaS vs ARM**
1	Accident ID	+
2	Latitude	-
3	Longitude	-
4	E-Road	-
5	E-Road kilometer	-
6	Road functional class – first road	-
7	Road functional class – second road	-
8	Speed limit – first road	-
9	Speed limit – second road	-
10	Motorway	+
11	Urban area	+
12	Junction (crossroad, roundabout, T or staggered junction, multiple junction, interchange)	+
13	Relation to junction/Interchange	-
14	Junction Control	+
15	Surface Conditions	+
16	Obstacles	-
17	Carriageway type	+
18	Number of lanes	-
19	Emergency lane	-

20	Markings	-
21	Tunnel (Yes/No)	-
22	Bridge (Yes/No)	+
23	Work zone	+
24	Road Curve (Yes/No)	+
25	Road Segment Grade (Yes/No)	+

III – TRAFFIC UNIT INFORMATION

CADaS „U“ Unit	TRAFFIC UNIT INFORMATION	
	CADaS variable	**Comparison CADaS vs ARM**
1	Accident ID	+
2	Traffic unit ID	+
3	Traffic unit type	+
4	Vehicle special function	-
5	Trailer	-
6	Engine power	-
7	Active Safety equipment	-
8	Vehicle drive	+
9	Make	-
10	Model	-
11	Registration year	-
12	Traffic unit manoeuvre	+
13	First point of impact	+
14	First object hit in carriageway	-
15	First object hit out of carriageway	-
16	Vehicle insurance for driver	-
17	Hit and Run	+
18	Registration Country	-

IV – PERSON INFORMATION

CADaS „P“ Person	PERSON INFORMATION	
	CADaS variable	**Comparison CADaS vs ARM**
1	Accident ID	
2	Traffic unit ID	
3	Person ID	
4	Date of Birth	
5	Gender	+
6	Nationality	-
7	Injury severity as reported	+
8	Road user type	+

9	Alco test	+
10	Alco test sample type	-
11	Alco test result	-
12	Alcohol level	+
13	Drug test	-
14	Driving license issue data	+
15	Driving license validity	+
16	Safety equipment	+
17	Seating position in vehicle	-
18	Distracted by device	-
19	Psychophysical/Impairment or condition	-
20	Trip/Journey purpose	-
21	Injury MAIS Scale	-

REGIONAL ROAD SAFETY PROJECT

CRASH DATA SYSTEM v.1

(User manual for TRACECA countries)

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March 2016

1. Introduction

Crash Data System (CDS) is intended for all participants in TRACECA regional road safety project, as well as for all stakeholders. This User manual is intended for TRACECA countries.

Using CDS, TRACECA countries will be able to deliver all crash data which have been identified as relevant by TRACECA project team.

CDS is available at address: http://78.27.185.155/ (Figure 1.) via “Visitor area” option.

In order to access CDS, each user should have a user account provided by TRACECA project team.

Figure 1. CDS main page

2. TRACECA countries login

Each Team member can register using the available registration form. On the “Main page” click on “Team members area” and then click on the link “Don’t have account? Register”. Registration form will be shown as below.

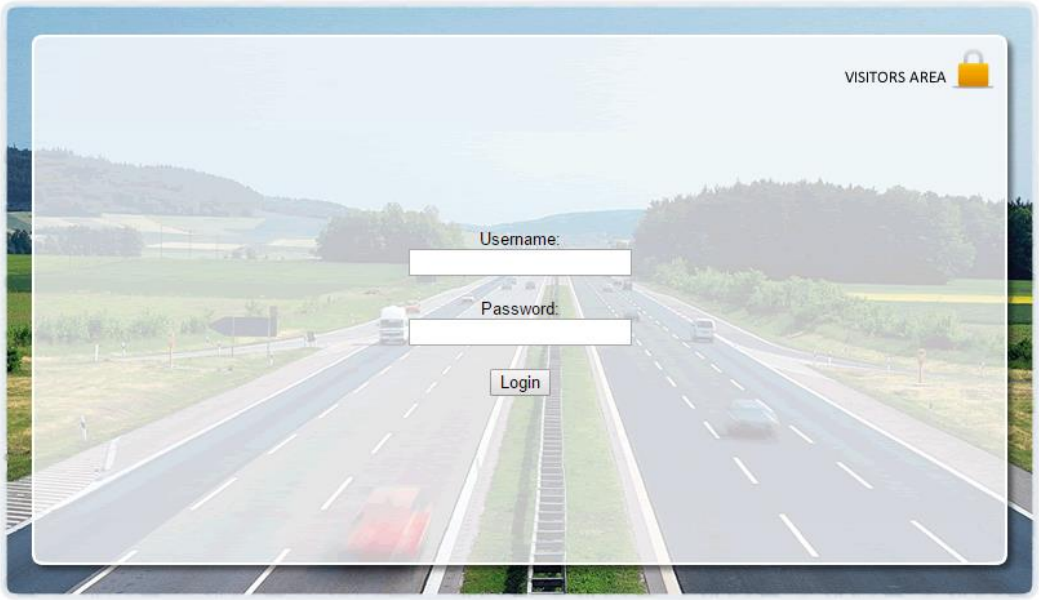

Figure 2. Login page for TRACECA countries

3. CDS Home page

After successful login, you will be redirected to Home page area related to your Country (Figure 3).

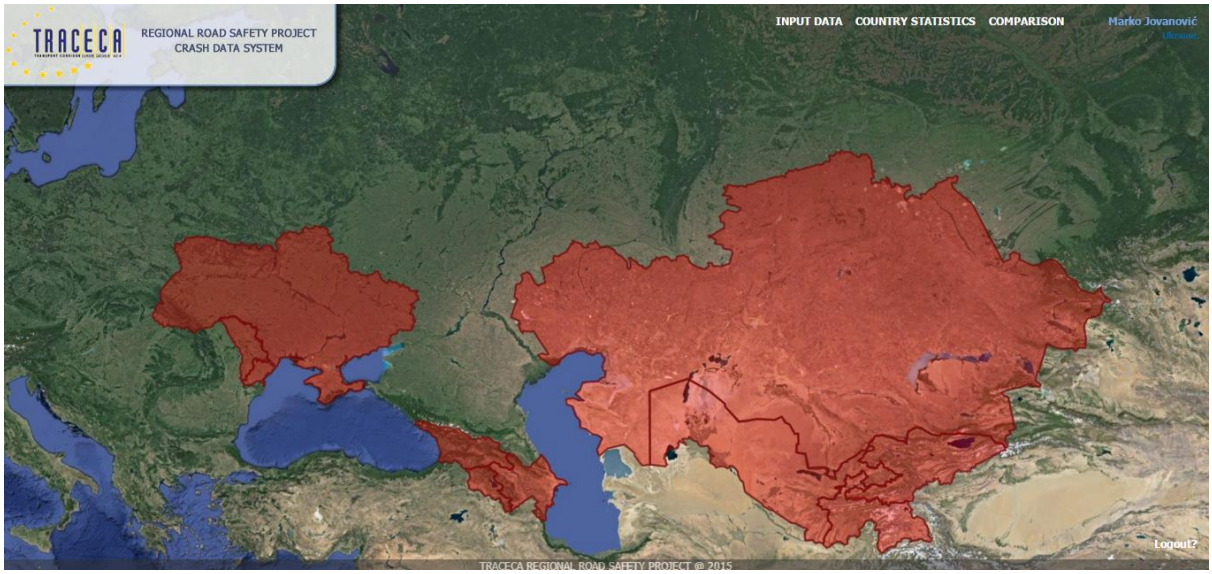

Figure 3. CDS Home page

CDS is consisted of three parts:

- Input data
- Country statistics
- Comparison

3.1 Input data

The purpose of this section is entering data (Figure 4) related to relevant crash data types identified by TRACECA project team:

- Population
- Registered motor vehicles
- Number of road accident
- Number of fatalities
- Number of injuries
- Road accident by month
- Road accident by day
- Road accident by type
- Age of persons involved in road accident

After entering data, user has to submit input form via button “Save data”. It is possible to enter data in fazes but we are strongly recommend to enter all data at once because of better results in country comparison section.

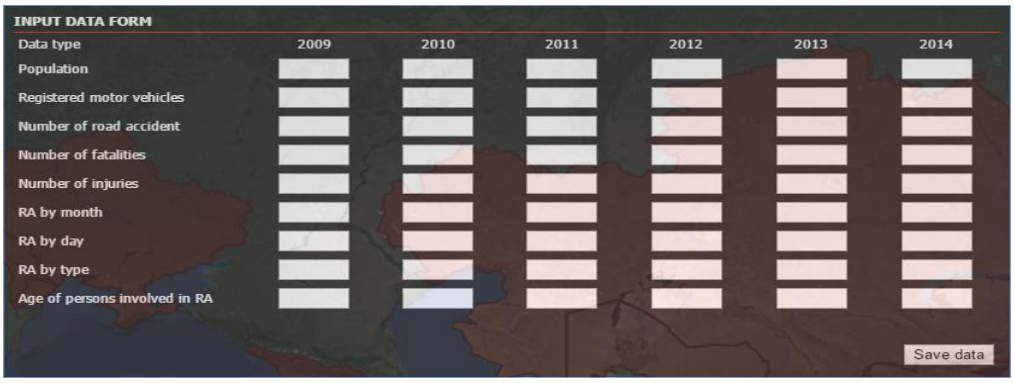

Figure 4. CDS input data

3.2 Country statistics

The purpose of this section is to create a chart and tabular form of the data related to your Country. After selecting data type, user has to submit query via “Create chart” button. Result will be like in the Figure 5.

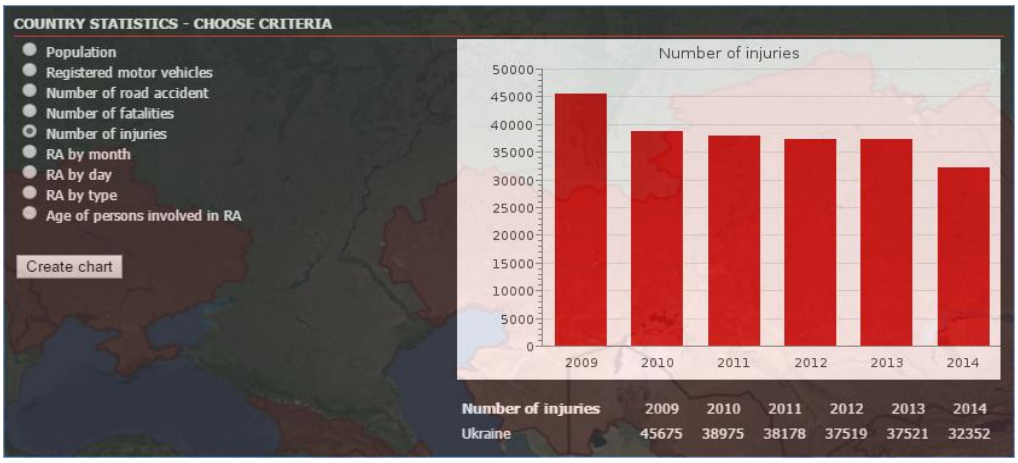

Figure 5. CDS country statistics

3.3 Comparison

The purpose of this section is to create a chart and tabular form of the data related to comparison between countries. After selecting data type, year and countries of interest user has to submit query via “Create chart” button. Result will be like in the Figure 6.

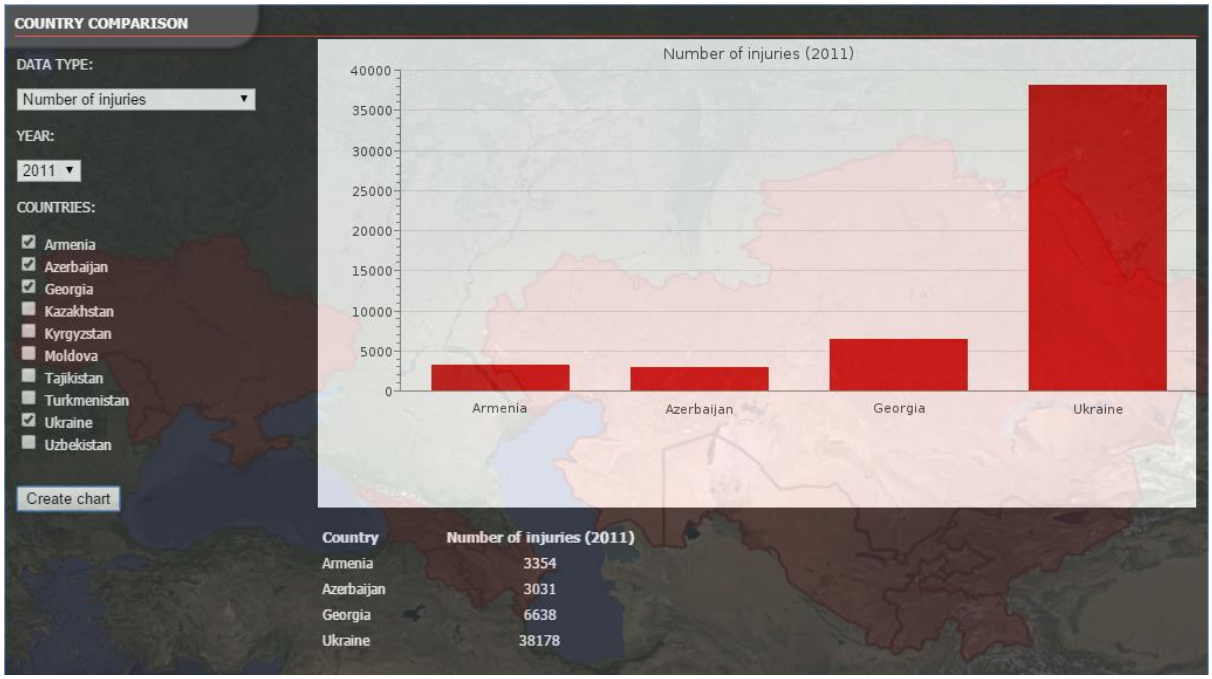

Figure 6. CDS comparison

4. Logout

After finishing your work in CDS it is recommended to logout by “click” on the button “LOGOUT” as shown in Figure 7.

Figure 7. CDS logout button

3.4.2

REGIONAL ROAD SAFETY PROJECT

Regional crash data system v.1

(USER MANUAL FOR STAKEHOLDERS)

This provides possible structure for the proposed TRACECA Regional Crash Database. Discussions are continuing with individual countries about uploading data to thee database. Each country will have its own unique password for entering data.

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March 2016

1. Introduction

Crash Data System (CDS) is intended for all participants in TRACECA regional road safety project, as well as for all stakeholders. This User manual is intended for all stakeholders.

Using CDS, TRACECA countries will be able to deliver all crash data which have been identified as relevant by TRACECA project team.

Public CDS is available at address: http://78.27.185.155/public_cds (Figure 1).

Figure 1. CDS main page

2. Countries comparison and statistics

Using the option “Countries comparison and statistics” in the top right corner of the screen, user will be redirected to the page where he can make queries in accordance with available attributes. The purpose of this section is to create a chart and tabular form of the data related to comparison between countries. After selecting data type, year and countries of interest user has to submit query via “Create chart” button. Result will be like in the Figure 2.

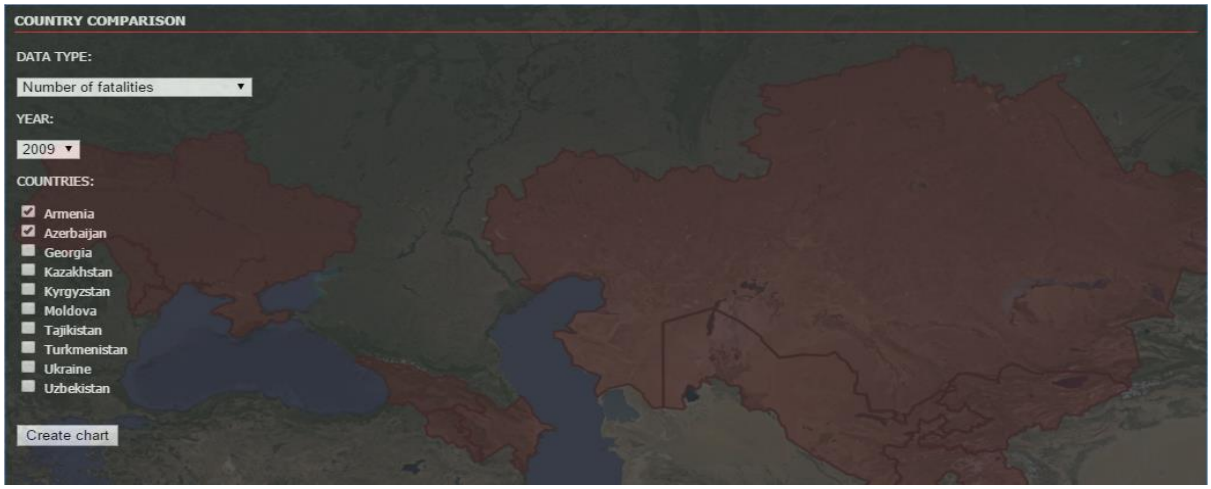

Figure 2. CDS Countries comparison and statistics menu

Option “Countries comparison and statistics” is consisted of three parts:

- Data type
- Year
- Countries

2.1 Data type

Attribute “Data type” includes:

- Population
- Registered motor vehicles
- Number of road accident
- Number of fatalities
- Number of injuries
- Road accident by month
- Road accident by day
- Road accident by type
- Age of persons involved in road accident

2.2 Year

After choosing data type attribute, user has to choose a year related to his analysis. Currently available years are:

- 2009
- 2010
- 2011
- 2012
- 2013
- 2014

2.3 Countries

After choosing data type attribute and relevant year, user has to choose a countries of interest to his analysis. TRACECA countries are:

- Armenia
- Azerbaijan
- Georgia
- Kazakhstan
- Kyrgyzstan
- Moldova
- Tajikistan
- Turkmenistan
- Ukraine
- Uzbekistan

After selecting data type, year and countries of interest user has to submit query via “Create chart” button. Result will be like in the Figure 3.

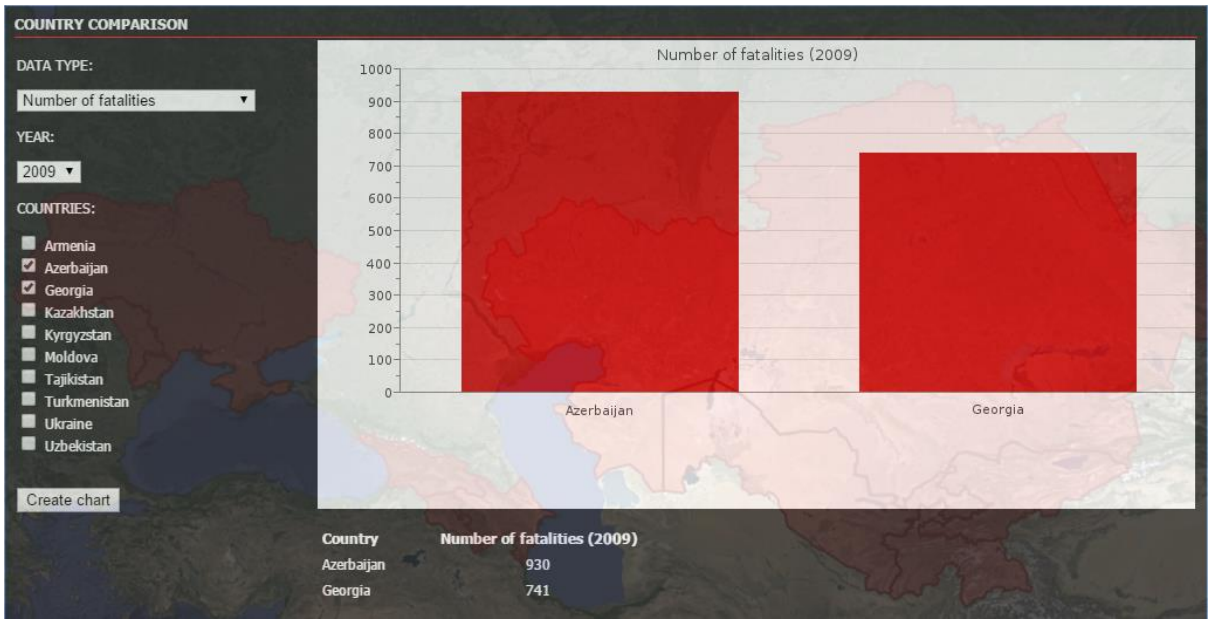

Figure 3. CDS Countries comparison and statistics

4. SAFETY ENGINEERING ROADS

It is important that the road network is as safe as it can be for the users of the network. This report outlines the extensive work undertaken on the issue in Armenia and the tasks remaining to be done.

4.1

COUNTRY: ARMENIA

TEAM: RSA/BSM TEAM

TOPIC: INSTITUTIONALIZATION OF RSA/BSM IN ARMENIA

DATE: JUNE 25-26 JUNE 2015

REPORT PREPARED BY

ROAD SAFETY AUDIT AND BLACK SPOT MANAGEMENT TEAM

Team members:
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June 29th, 2015

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* * *

1. Introduction

In accordance with project ToR for Component 3: "Safer infrastructure and vehicles" and Inception Report, tasks No.: 3.1.6 Support the implementation of "in country" road safety audit training courses and 3.1.7 Support programmes on Road Safety Audits, the Black Spot Management and inspection, Road Safety Audit (RSA) and Black Spot Management (BSM) team make a two day visit to Armenia 25-26 June 2015.

The main RSA/BSM team task was to help local experts to institutionalize of RSA/BSM as regular procedures in Armenia.

2. Activities undertaken

The Project Team made a two-day visit to Yerevan and invited number of relevant participants to be present at two separate meetings. The both meetings were held at the Ministry of Transport and Communication of the Republic of Armenia.

On the first day (25.06.2015), the participants had a discussion on full implementation of RSA procedure into the Armenian Road Safety practice. The RSA/BSM team discussed with Armenian experts (see Annex A: Persons met or consulted) the possibilities and necessary steps to introduce the RSA into the general and obligatory practice.

On the second day (26.06.2015), there was a discussion on full implementation of BSM procedure. The RSA/BSM team discussed with local experts (see Annex A: Persons met or consulted) about possibilities and necessary steps to introduce the BSM into the general and obligatory practice. Since Armenia did not sent participants to the Workshop on Road Safety Audit and Black Spot Management held in Tbilisi, Georgia in October 2014, there was no meeting with relevant staff which were supposed to be trained as a Road Safety Auditors.

The following topics were discussed at meetings:

1. International best practices on RSA and BSM procedures (methodologies)
   - Short presentation of RSA/BSM procedures with questions (Q) and answers (A). Introduction of Crash Database Team and short presentation of crash database needed for successful Black Spot management (international best practice and practical example of usage of crash database for black spot improvement).

2. Current situation in Armenia with RSA and BSM (existing bottlenecks and problems in implementation)
   - Long discussion among participants about RSA/BSM + Q & A on different steps of RSA/BSM procedures and how it can be implemented in Armenia.
3. Improvements of existing situation in accordance with best international practice
   - Identification of obstacles (impediments) in each phase necessary for implementation and institutionalization of RSA/BSM procedures.
4. Project deliverables were presented (Regional RSA Manual, Proposal of Road Safety Audit policy, legislation changes and Training Courses and Regional BSM Guidelines). They will help Armenia to institutionalize the RSA/BSM procedures.
   - Short presentation and discussion of project deliverables (and its implementation) that can help in RSA/BSM institutionalization.
5. Discussion and agreement about necessary steps and defining of impact indicators necessary to enable RSA and BSM institutionalization and which will be monitored in next missions.

   Implementation of RSA - Impact assessment factors:
   - Legal basis for RSA exists?
   - Adequate manual (with RSA Methodology) in use?
   - Trained road safety auditors available?
   - Road Authorities have budget to conduct procurement procedure of RSA and implement RSA proposals?
   - All new, reconstructed and rehabilitated roads being safety audited
   - RSA Recommendations being implemented by Roads Authority

   Implementation of BSM - Impact assessment factors:
   - Legal basis for BSM exists?
   - Adequate BSM Manual (with BSM Methodology) in use?
   - Trained black spot investigators available
   - Annual hazardous improvement program in place
   - Road Authorities has dedicated founds for BSM improvements
   - BSM recommendations being implemented by Road Administration

3. Current situation (present practice), deficiencies requiring attention and recommendations (suggested way forward)

Discussion with RSA/BSM relevant stakeholders, based on identified performance indicators identifies current situation (present practice) and major deficiencies (obstacles and impediments) which can prevent implementation of RSA/BSM procedures in country. At the same time, defined impact indicators will be monitored at next missions as a way to follow up progress.

A) Implementation (institutionalization) of different impact indicators for RSA:

	Selected Impact indicator (current situation)	Deficiencies requiring attention	Recommendations (suggested way forward)
1	**Does Legal basis for RSA exist?** - Current legal system does not recognize RSA procedure. - Road design standards missing some of road safety solutions.	- Current law does not recognize the RSA procedure, and therefore it cannot be implemented. - Proposed measures by auditors in some extent cannot be implemented due to road standard limitations (some proposals will not be in compliance with existing standards). Also, there is a misunderstanding of local experts on the role of Road Safety Auditors related to the standard implementation.	- Implementation of project deliverable "Simple template on Road Safety Audit Policy and proposal of legal changes to make RSA mandatory at national level". This Report gives guidance on legal (law) amendments that will introduce RSA as obligatory tool in Armenia.
2	**Adequate manual (with RSA Methodology) in use**? - Not officially. Note: There is developed methodology for RSA in country made by Australian consultant Mr. Phillip Jordan. Manual is not used in practice.	- Developed RSA methodology is known but not in use. - Resistance to RSA exists, because of lack of knowledge. Some of stakeholder's wrongly think that they already perform road safety checking by so called "state revision commission" or by the Traffic Police, and some of them are thinking that the existence of the Standards and their full implementation is enough to perform better.	- Implementation of project Deliverable "Regional Road Safety Audit Manual". This will explain systematic procedure for RSA and introduce unique RSA methodology in auditors work.
3	**Trained road safety auditors available?** - No officially certified auditors.	- No established unified system (RSA training curriculum) for education and licensing of auditors in Armenia.	- Implementation of project Deliverable "Simple template on Road Safety Audit Policy and proposal of legal changes to make RSA mandatory at national level". This Report contain proposal for an auditors training courses (with detailed curriculum). It is foreseen that relevant University will be the education point and another agreed organization, such as Ministry of Transport and Communication, would be the licensing body future auditors.
4	**Road Authorities have budget to procure RSA and implement RSA proposals?** - No dedicated budget for procurement of RSA and implementation of proposed measures.	- No dedicated budget, this can cause a serious problem and collapse whole RSA procedure. Much bigger problem is financing of output of RSA in terms of implementation of recommendations.	- Further discussion and in accordance future law improvements and RSA as mandatory tools, some relatively small financing for the preparation of RSA Reports should be planned. - More funds should be dedicated for the implementation of auditor's recommendations. These amounts can vary and are hard to predict (the level of necessary funds are

			connected with number and intensity of identified design deficiencies and proposed counter measures).
4	**All new, reconstructed and rehabilitated roads being safety audited** - RSA is not mandatory; therefore no obligation for RSA of reconstructed and rehabilitated roads.	- No legal basis for undertaking RSA.	- Making of RSA mandatory (explained in row No. 1).
5	**RSA Recommendations being implemented by Roads Authority** - RSA not established and no implementation of proposed measures (no monitoring).	- No obligation for RSA, therefore no implementation of RSA proposals. - No monitoring tools established.	- Making of RSA mandatory (explained in row No. 1) - Establish permanent monitoring of RSA recommendations. This can be done by Road Administration reports to the responsible Ministry (or even Government).

B) Implementation (institutionalization) of different impact indicators for BSM:

	Selected Impact indicator (current situation)	Deficiencies requiring attention	Recommendations (suggested way forward)
1	**Does Legal basis for BSM exist?** - Current legal system recognizes BSM procedure in some extent.	- Current law does not support BSM as sustainable procedure so the law provisions should be more in detailed (what is Black Spot and BSM, who is responsible to perform it, who should collect, deliver and improve road accident database system).	- BSM related articles should be improved (what is Black Spot and BSM, who is responsible to perform it, who should collect, deliver and improve road accident database system).
2	**Adequate manual (with BSM Methodology) in use**? - Experts met or consulted claims that there is developed methodology for BSM in country, but it was not available to the BSM team.	- Existing Black Section definition is not consistent with the EC/96/2008 and foreseen Network Safety Management. - Data base of black spots does not exist. - No cost benefit analysis for black spots.	- Implementation of project deliverable "Regional Black Spot Management Guidelines". This will explain BSM and introduce improved methodology for black spot identification, analysis, treatment and monitoring. - Database of black spots needs to be implemented upon the above-mentioned Methodology. - Cost benefit analysis should be introduced in future ranking of black spots.
3	**Trained black spot investigators available?** - No officially trained staff for conducting BSM.	- No established unified system (BSM training curriculum) for education of BSM staff. - No knowledge about cost benefit analysis needed for ranking of black spots.	- BSM staff should get similar training as auditors. - Both training courses will be given to the responsible Universities. - Cost benefit procedure should be spread and widely accepted.
4	**Annual hazardous improvement program in place?** - Some activities exist, but not based on best	- There is no systematic approach to Black Spot removal.	- Annual black spot removal program should be introduced based upon adopted BSM methodology, which will lead to real implementation of measures developed by national experts.

	International BSM practice.		
5	**Road Authorities has dedicated funds for BSM improvement?** - No dedicated budget for BSM improvements.	- Nщ dedicated budget, which can cause a serious problem and degrade whole BSM process. Road Administration will implement just measures which can be done under maintenance (cheap ones) and expect that with rehabilitation Black Spots will be eliminated.	- Responsible Ministry should ensure that each Road Administration at each level has specified dedicated money for black spot remedy programs in their annual budget.
6	**BSM Recommendations being implemented by Roads Authority** - BSM remedy measures partly been implemented upon the documents received from Traffic police by Road Administration (under maintenance and rehabilitation/ reconstruction work).	- Partial implementation of BSM proposals. - No monitoring tools established.	- Establish permanent monitoring of BSM improvements. This can be done by Road Administration at State and Municipal level by provision of annual reports to the responsible Ministry (or even Government).

Note: For an effective BSM process, an accessible and quality crash database is essential. A crash database exists in some form, but there is a need for improvement and making it accessible to various stakeholders.

4. Conclusions

RSA and BSM are important road safety tools that are stipulated in EC Directive 96/2008 and should be implemented in Armenia. There is a need for urgent action to introduce Road Safety Audit and Black Spot Management as the procedures described in the Law in order to get proficient implementation start. The Project team has developed RSA and BSM Manual and Guidelines. These documents present modern methodology (approach) for RSA and BSM that should be used in future. Proposed training courses should be established, in order to get sustainable results in future.

Next important steps concerns implementation of proposed measures, is establishing of dedicated and stable funding. Need of new road safety funding mechanism is visible and needs to be discussed and decided.

For BSM improvements, there is a need for harmonization of existing road accident database with the EU Common Accident Data Set (CADaS) protocol. One of the proposed activities would be an implementation of one unified Road Safety Database, which will be consisted from different databases interesting from Road Safety perspective. Nevertheless, the existing databases should be user friendly and open for use, except for the data that could breach privacy rights.

There is need for more proficient and intensive education of local experts both in RSA and BSM procedures. In addition, there is a need in introduction of cost benefit analysis in the BSM process. Special Road Safety Fund should be established, which will serve a need for implementation of comprehensive RSA and BSM program.

All presented documents (project deliverables) were sent to all the participants of the meetings.

ANNEX:
A: Persons meet or consulted

Road Safety Audit and Black Spot Management team
Working visit to Yerevan from 25th to 26th June 2015 as part of the
European Union financed Project "TRACECA ROAD SAFETY II"

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4.2

COUNTRY: ARMENIA

TEAM: SAFE DESIGN TEAM

TOPIC: INSTITUTIONALIZATION OF RSA/BSM IN ARMENIA VIA IMPROVED DESIGN STANDARDS

DATE: OCTOBER 22-23, 2015

REPORT PREPARED BY

SAFE DESIGN TEAM

Team member/s:

1. Rajko Branković (STE 9-1)
2. Dejan Jovanov (KE2)

November 20th, 2015

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A: Persons met or consulted

* * *

Introduction

In accordance with project ToR for Component 3: "Safer infrastructure and vehicles" and Inception Report, tasks No.: 3.1.1 Review and enhance safety engineering aspects of road design standards, 3.1.6 Support the implementation of "in country" road safety audit training courses and 3.1.7 Support programs on road safety audits, black spot management and inspection, Safe Design team made a two day visit to Armenia on 22-23 October, 2015.
The main Safe Design team task was to help local experts to overcome problems related to road standards that may occur when they try to implement some of Road Safety Audit recommendations. Problems exist because of the outdated ex-Soviet SNiP and GOST standards and norms. Some of important auditor's recommendations might not survive "compliance checking" with SNiP and GOST and these, obviously much safer solutions (based on best International practice), will be rejected and not implemented. Secondly, team task was to support the implementation of "in country" road safety audit training courses by improving the knowledge of previously trained staff which will be part of future in country RSA trainers. Third task was to support development of National road safety audit and black spot programs. Second and third activity are also supported with Academics country missions (e.g. introducing RSA/BSM and safe design curriculum into regular student educations or as separate courses at University).

Activities undertaken

The Project Team made a 2 day visit to Yerevan and invited a number of relevant participants to participate at the two-day WS (meetings).

The first day meeting (22.10.2015) was held at Ministry of Transport and Communication (see Annex A. Persons met or consulted) in the safety subcommittee room. The following discussion took place:

1. Assessing the current situation about usage of СНиП construction norms and ГОСТ standards
   - Presentation of RSA-BSM project activities and delivered Manuals and Guidelines
   - Presentation of different RSA improvement recommendations that cannot be implemented due to outdated standards/norms
   - Discussion of current standards/norms in use
   - Brief standards/norms road safety gap analysis (What are the blockages in standards/norms)
2. Discussion of procedures for standards/norms improvement (amendment) + changes
3. What can be done as an intermediate solution?

- Discussion of possible road safety gaps and what is needed to rectify deficiencies
- How to amend standards/norms to meet best international road safety practice as an interim solution

At the meeting, live discussion was established among participants about the main problems concerning road safety in design and how situation could be improved.

Pictures from first day at the Ministry of Transport and Communication

First part of the second day (23.10.2015) was spent on field trip to the Road M1 (Nor Yerznka and Nerkin Bezmaberd) where group undertook a part of brief RSA (RSI) of existing road and road under construction. After identification of actual road safety deficiencies at selected locations, team discussed risk assessment and proposed measures for improving of road safety. Proposed measures were checked for compliance with the existing standard. After field trip, discussions were continued at Ministry of Transport and Communication. The following topics were discussed:

1. Discussion of observed actual problems of road safety and how they can be overcome in future (based on auditors proposal)
   - Analysis of specific (observed) road safety problems in road safety features
   - Presentation of possible solutions within and beyond existing standards
   - Proposed improvements of specific, road safety oriented parts of standards.

Current situation (present practice), deficiencies requiring attention and recommendations (suggested way forward)

Discussion with WS participants identifies current situation of main road safety aspects in design and enables brief gap analysis (shown in Table 3.1). Existing standards are basically from Soviet Union and partially adapt in past years.

Table 3.1. Gap analysis of road design standards from road safety point of view

<table>
<tr><th></th><th>Analysed topic of SNiP (current situation)</th><th>International best practice</th><th>Recommendations (suggested way forward)</th></tr>
<tr><td>1</td><td>Speed
<table><tr><td rowspan="2">Road Category</td><td colspan="3">Estimated speeds, km/h</td></tr><tr><td>base speeds</td><td colspan="2">allowable in rough terrain conditions</td></tr><tr><td></td><td></td><td>uneven terrain</td><td>mountainous terrain</td></tr><tr><td>I-a</td><td>150</td><td>120</td><td>80</td></tr><tr><td>I-b</td><td>120</td><td>100</td><td>60</td></tr><tr><td>II</td><td>120</td><td>100</td><td>60</td></tr><tr><td>III</td><td>100</td><td>80</td><td>50</td></tr><tr><td>IV</td><td>80</td><td>60</td><td>40</td></tr><tr><td>V</td><td>60</td><td>40</td><td>30</td></tr></table></td><td>Speed limits in most countries lower than the max. speed for category Ia-roads.
e.g. In German guidelines the comparable design speed is 130 km/h.</td><td>- reduction of speed for the highest road category
- In road categories II –IV there have to be speed limits of 70 km/h in front of intersections

PROPOSAL:
Reduction of design speed is possible on Ia and before intersections on less frequent road routes.</td></tr>
<tr><td>2</td><td>Speed difference of highway sections

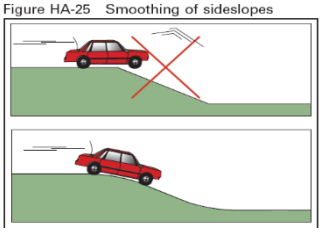
4.2.4 The estimated speeds for adjacent highway sections shall not differ by more than 20 %.</td><td>Design speed of a road is constant. If an exception, i.e. reduction of design limits is necessary, measures for reducing the actual speed must be foreseen.</td><td>- description of measures in the case of required speed reduction

PROPOSAL:
When designing a road section it is necessary to keep the same design speed. If changes of design speeds are frequent and big, it has impact on design road elements and frequent changes of driving rhythm thus increasing the number of traffic accidents.</td></tr>
<tr><td>3</td><td>Speed for roads without median

Medians are foreseen only for roads of category I (see chapter 5.1). That allows speed of 120 km/h for opposite traffic without separation in category II.</td><td>Most countries reduce speed for roads without median to 90 km/h and less.</td><td>- reduction of speed for the category II-roads

PROPOSAL:
Accidents occurring on roads without median at speeds higher than 90 km/h are with fatal outcome, as a rule. It is necessary to limit the speed on the roads without median to max 90 km/h and reconsider the limit of 70 km/h.</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

	Analysed topic of SNiP (current situation)	International best practice	Recommendations (suggested way forward)
1	**Width of Lane** 3.75 m for categories I and II 3.50 m for category III 3.00 m for category IV 4.5 m for category V (one lane)	Wider lanes lead to higher severity of accidents but reduce the number of accidents. The width of lanes complies with the international experiences.	- reduction of overpass lanes of category I roads to 3.50 m is possible **PROPOSAL: *YES*,** **to be implemented in next revision of design standards** On the roads with more than 1 lane per direction, there is high probability that overspeeding will occur. Accidents are with fatal outcome. Therefore, it is necessary to decrease the width of the overtaking lane so that drivers would feel unsafe at high speeds when they start overtaking.
2	**Width of hard shoulder** 3.75 m for categories I and II 2.50 m for category III 2.00 m for category IV 1.75 m for category V	For roads with two carriageways, hard shoulders shall be provided for emergency cases. On one-carriageway-roads, hard shoulders shall not be provided because they allow illegal overpassing. It may lead to severe accidents if the width of the shoulders is much smaller than the traffic lanes. For emergency cases passable verges shall be provided.	- shoulders for roads with one carriageway (category II to V) shall be avoided - consideration of 2+1-cross section to allow safe overpass on one-carriageway-roads **PROPOSAL:** Width of hard shoulder should be reduced in order to prevent vehicles from moving on that surface. It should be only for stopping of vehicles.
3	**Median without barriers** >6 m for Ia-category-roads >5 m for Ib-category-roads	In medians, barriers must be provided if the width of medians does not allow the stop of a run-off car without endangering opposite traffic.	- obligation of barriers in medians **PROPOSAL:** Barriers should be **mandatory** in medians in standard, especially because there is a tendency not to obey the existing standard and to execute narrower medians.
4	**Median with barrier** 2 m + width of the barrier for Ia- and Ib-category-roads	The median must allow the move of the barrier without endangering the opposite traffic in case of run-off of a car. Width of the median and kind of barriers strongly depend on each other. Width of the median shall be at least 4 m.	- widening of the median up to at least 4 m - best width would be between 5 m and 7 m **PROPOSAL:** Width of the median should be such to protect the vehicles which hit the barrier and prevent them from going onto the lane for opposite traffic. Depending on the applied class of barrier

	Analysed topic of SNiP (current situation)	International best practice	Recommendations (suggested way forward)
1	**Cross fall in straight lines** Category Ia und Ib roads with two carriageways: - 15‰ to 25‰ (depending on climatic zone) Category Ia und Ib roads with one carriageway: - 20‰ to 15‰ for the first two lanes from the medium (depending on climatic zone) - 25‰ to 20‰ for the following lanes from the median (depending on climatic zone)	The cross fall recommendations range from 15‰ to 25‰. It is not recommended to change the cross fall inside a carriageway.	- implement constant cross fall inside a carriageway **PROPOSAL:** Recommendation is to implement constant one side crossfall, because it is noticed during field visits that designs are executed with camber, and on some locations even without crossfall, so aquaplaning occurs.
2	**Cross fall in curves** Horizontal curves radii, m / Carriageway cross-fall at superelevations, ‰ (basic, the most commonly encountered / In regions known for frequent icy condition of roads) 3000 to 1000 for Category I roads: 20-30 / 20-30 2000 to 1000 for Category II-V roads: 20-30 / 20-30 1000 to 800: 30-40 / 30-40 800 to 700: 30-40 / 30-40 700 to 650: 40-50 / 40 650 to 600: 50-60 / 40 600 and below: 60 / 40 N o t e - Lesser values of cross-falls at superelevations are in line with the larger horizontal curves radii and vice versa	Cross fall is defined depending on speed and radius of the curve. The lower limit is given by ASSHTO with 20‰ and by the German guideline with 25‰. ASSHTO gives an upper limit of 40‰, German guidelines of 60‰.	**PROPOSAL:** Strong proposal to implement constant cross fall into all design solutions. If changeable crossfall is applied, drivers easily lose control of the vehicle and the vehicle runs off in the curve
3	**Embankments** Embankment soils / Maximum steepness of slopes at the embankment slopes height, m (up to 6 / up to 12: in bottom portion (0-6) / in top portion (6-12)) Blocks of slightly slacking rocks: 1:1 - 1:1.3 / 1:1.3 - 1:1.5 / 1:1.3 - 1:1.5 Macrofragmental and sandy (except for fine sands and dust sands) soils: 1:1.5 / 1:1.5 / 1:1.5 Sandy, fine, dust, clay and loessial soils: 1:1.5 1:1.75 / 1:1.75 1:2 / 1:1.5 1:1.75	Standard steepness in Germany is 1:1.5. Often flatter steepness is used.	- It is important to smooth the shape of the embankment to reduce accident risks. Figure HA-25 Smoothing of sideslopes  **PROPOSAL:** Although smoothing the shape is not indicated in the standard, it should be executed without sharp edges in order to prevent overturning of vehicles.
4	**Cuts** Soils / Slope height, m / Maximum steepness of slopes Rocky grounds: - slightly slacking: up to 16 / 1:0.2 - readily slacking: - non-softening: up to 16 / 1.05-1:1.5 - softening: up to 6 / 1:1; 6 to 12 / 1:1.5 Macrofragmental: up to 12 / 1:1-1:1.5 Sandy, clayey, homogeneous hard, half-hard and low-plastic: up to 12 / 1:1.5 Fine barchan sands: over 2 / 1:4; 2 to 12 / 1:2	Standard steepness in Germany is 1:1.5. Often flatter steepness is used.	- no recommendation **PROPOSAL: None.** The same standard solution is used in all ex-Soviet countries.

<table>
<tr><th></th><th>Analysed topic of SNiP
(current situation)</th><th>International best practice</th><th>Recommendations
(suggested way forward)</th></tr>
<tr><td>1</td><td>Horizontal curves
<table><tr><td>Design speed [km/h]</td><td>Min. radius Basic[m]</td><td>Min. radius Mt. ar. [m]</td></tr><tr><td>150</td><td>1.200</td><td>1.000</td></tr><tr><td>120</td><td>800</td><td>600</td></tr><tr><td>110</td><td>700</td><td>500</td></tr><tr><td>100</td><td>600</td><td>400</td></tr><tr><td>80</td><td>300</td><td>250</td></tr><tr><td>60</td><td>150</td><td>125</td></tr><tr><td>50</td><td>100</td><td>100</td></tr><tr><td>40</td><td>60</td><td>60</td></tr><tr><td>30</td><td>30</td><td>30</td></tr></table></td><td>The international experiences comply with the regulation of SNiP. But the min. radius does not depend on the kind of area.</td><td>- setting the limits independent from the kind of area
- in case of mountainous areas reducing the allowed speed reduces accident risks

PROPOSAL:
In the next revision of the standards, minimum radii of horizontal curves should be revised.
In practice, it is necessary to apply the same values of minimum radii so that the drivers could believe the designer.</td></tr>
<tr><td>2</td><td>Vertical curves
<table><tr><td>Design speed [km/h]</td><td>convex

[m]</td><td>concave

[m]</td></tr><tr><td>150</td><td>30.000</td><td>7.000</td></tr><tr><td>120</td><td>15.000</td><td>5.000</td></tr><tr><td>110</td><td>13.000</td><td>4.000</td></tr><tr><td>100</td><td>10.000</td><td>3.000</td></tr><tr><td>80</td><td>5.000</td><td>2.000</td></tr><tr><td>60</td><td>2.500</td><td>1.500</td></tr><tr><td>50</td><td>1.500</td><td>1.200</td></tr><tr><td>40</td><td>1.000</td><td>1.000</td></tr><tr><td>30</td><td>600</td><td>600</td></tr></table></td><td>The international experiences comply with the regulation of existing SNiP.</td><td>- no recommendation

PROPOSAL: None
No need to be changed in standards. Minimum radius should not be mixed with higher one in design and implementation.</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>Barriers at edges of category I-roads

Implementation of barriers depends on all of the following features:
- highway portion
- head-fall
- prospective traffic volume
- embankment height</td><td>The international experiences comply with the regulation of SNiP. But it is unusual to implement barriers depending on all features at the same time.</td><td>- defining conditions for the implementation of barriers from traffic volume and one additional feature

PROPOSAL: None
Existing standard solution complies with international standards. Request that the barriers are used in the system, not as individual elements, should be implemented in all designs.</td></tr>
<tr><td>2</td><td>Barriers at medians

Implementation of barriers depends on median width and traffic volume</td><td>Barriers are implemented in medians always.</td><td>- obligation of barriers in medians

PROPOSAL:
Always demand implementation of barriers in the median. Transition of vehicles into the opposite direction leads to accidents with fatal outcome.</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

	Analysed topic of SNiP (current situation)	International best practice	Recommendations (suggested way forward)
1	**Sign poles** Sign poles are required for horizontal and vertical curves under defined conditions and on special points of roads (e.g. culverts). Sign poles are not required in general.	In German guideline sign poles are defined with a constant distance between. On dangerous segments (e.g. sharp curves), the distance is reduced.	- implementation of sign poles on all roads in all segments with distances depending on the risk **PROPOSAL:** Driving in night conditions largely depends on well marked roads, especially in the curves where the vehicles change their moving pattern. It is necessary to introduce obligatory use of sign poles.

Additional topics discussed during mission

During the mission and visit of road sections in rehabilitation phase, problems regarding traffic safety were noticed and discussed as well as possible countermeasures for the elimination of consequences and the possibility to apply measures within the legislation and existing standards.

Since there were no representatives of Armenia present on the RSA/BSM training organized during the project implementation, a lot of time was spent to explain the advantages of conducting RSA in design phase, the most important findings which could be expected from RSA as well as the problems regarding the implementation of findings in the project and compliance with the standards.

Some of the noticed and discussed lacks regarding traffic safety:

- **Work zones**. Unmarked work zones, traffic signage is not appropriate for the field, no clearly defined advance warning zone, transition zone, lateral safety zone from construction site, closing work zone area. Works are stochastic on the entire length of the section. Construction machines are parked or working on the road and immediately next to live traffic without any protective barriers and without any flagship man giving warning about the work of the machines. Vehicle restraint systems (barriers) are not working in the system, i.e. they do not have the capacity to keep the vehicles in case they run off the pavement or they are standalone elements which can't protect vehicle from runoff accidents. Generally speaking, traffic signage is not sufficient for the traffic conditions in terms of their number and quality. Traffic signage frequently changes during the execution of works. Significantly higher speeds of vehicles are noticed through work zones than the allowed and safe speeds in such zones.

Road authority has to pay much more attention to the manner of works execution. There is no indication of plans for execution of works and that the contractors follow such plans. It is necessary to consider the possibility to execute the works in phases or stages, so that the works are translationally moved along the section. Traffic calming measures should be applied especially in the zones where works are executed in close vicinity or on the pavement itself. Road authority should have impact on the quality of supervision. It is noticeable that work zone design is frequently changed during the execution without approval of the line authorities.

- **Institutional problems**. A lot of various financiers in road industry, as well as a lot of contractors and designers and producing designs in short period of time lead to applying lower level of standards in safe road designing. It is a frequent case that different financiers of road rehabilitation apply different standards. Supervision is a separate segment which should be of significantly higher quality and should pay much more attention to traffic safety.

Control of the entire process of roads rehabilitation starting from designing to execution and supervision should be within the Road authority.

- **Traffic lanes**. Wide traffic lanes enable more vehicles moving on the same traffic lane, which leads to increased risk of traffic accidents especially head on collisions. These accidents on the roads with speeds exceeding 90 km/h have fatal outcome.

Widths of traffic lanes should be smaller and also it is necessary to apply traffic calming measures especially near junctions.

- **Billboards next to the road**. Presence of solid obstacles next to the road is not safe because the vehicles can hit them, and also large structures holding billboards can fall on the pavement. Additionally, billboards in the vicinity of the road distract the concentration of participants in traffic on daily basis and also disrupt the visibility on the road.

Placement of billboards and issuing of permits should be under the jurisdiction of the road authority, or the entity in charge of managing road safety. All billboards immediately next to the road and disturbing the visibility should be removed.

- **Drainage system**. No quality drainage system has been noticed especially on the existing roads, where the lack of drainage system is noticeable. Due to the lack as well as poor maintenance of the drainage system on the existing road network, aquaplaning can occur, which has negative impact on the safety of vehicles as well as pedestrians. Owing to large amounts of water on the pavement, pedestrians cannot approach sidewalks and footpaths and they are forced to move along the pavement, which causes them to be exposed to traffic accidents.

It is necessary to increase the standard regarding maintenance and routine cleaning of the drainage system. Maintenance quality should be controlled by the road authority.

- **Roundabout**. Execution of a roundabout with movement deflection does not lead to the reduction of vehicle speed, which is the main task of the roundabout. Placement of priorities in the roundabout leads to the reduction of safety and traffic flow on the roundabout itself.

It is necessary to improve the design of roundabouts so that they become safe.

Conclusions

In close cooperation with two-day WS participants Design team reviewed most usual Road Safety Audit recommendations and analysed how they complied with existing SNiP and GOST standards/norms.

Main conclusion concerning road safety part of interurban road design standards (safe design approach) is that the situation in Armenia need to be changed in field of road safety.

This means standards from the USSR are partially applied and that standards should be upgraded in the field of safe roads design. The main lacks referring to the standard and the possibility of applying safe road design refer to the width of traffic lanes, medians and guard rails in the medians.

The need was expressed to complete the training and implement RSA in the projects regarding roads upgrading. It can be seen that there is a lack of knowledge regarding the role of RSA in the process of rehabilitation and upgrade of roads. Consequently, a need arises to train a bigger number of designers, supervisors and representatives of road authority for RSA and RSI so that traffic safety could be implemented during roads rehabilitation (upgrade).

Also, it is desirable to do the training for Black Spot Management, so that the road authority could improve the state of traffic safety on the roads in Armenia.

Important Note:
Beside discussion of road design standards, Design team noticed huge road safety problem with some parts of Institutional problems concerning road safety. Different International Financing Institutions and a lot of different Contractors in road sector lead to different level of road safety in Armenia. This means there is no unique approach to the road safety and more importantly low level of applied safety standards.
On the other hand, supervision of Construction (Work zones, quality of applied materials, etc.),

maintenance (routine and winter with focus on drainage system) and design (roundabouts, guardrails, signage, etc.) should be focused on the road safety.

Connection between interurban and urban road condition (passing through traffic in cities/villages) has negative influence on road safety. This topic is more connected with planning of roads or urban planning, but if not treated well, it will cause a lot of road safety problems. Simply, design of interurban roads is not adjusted to urban road surroundings. Frequently interurban design is used in through roads without transition and modifications to urban surrounding.

All presented documents (already produced project deliverables and WS presentations) were shared with WS participants.

ANNEX:
A: Persons meet or consulted

Safety in Design mission
Time and place: Armenia, 22-23 October 2015
"TRACECA ROAD SAFETY II" SAFEGE Consortium

LIST OF PARTICIPANTS

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FREIGHT ROUTE / PARKING

No country report prepared on this topic

4.4.1

Regional
Road Safety Audit
Guidelines

TRACECA Regional Road Safety Project

Safety Engineering Team

December 2014

The European Union TRACECA programme

For

Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

PREFACE
TO THE DRAFT REGIONAL ROAD SAFETY AUDIT MANUAL FOR
TRACECA COUNTRIES

After almost two decades of experience with Road Safety Audit (RSA) all over the world, this procedure is now recognized as one of the most efficient engineering tools. With its EU Directive no. 2008/96 on road infrastructure safety management, published in October 2008, the European Union has made a clear decision that the RSA will be mandatory for the Trans-European Road Network in forthcoming years. RSA is highly effective and cost effective engineering tool for improvement of safety on roads. It is much cheaper to identify road safety deficiencies in the process of design than later after construction has been done. Therefore, RSAs are amongst the most cost-beneficial investments a Road Authority can undertake.

Unfortunately, in reality there is little application of RSA at present in TRACECA Region. RSAs that are implemented are mostly pushed by IFIs and implemented by foreign consulting companies. Even when RSAs are undertaken the RSA recommendations are not always implemented by the road authorities.

This is why the Project has tried to develop capacity in each country for RSA. The Project team in cooperation/consultation with concerned stakeholders have produced this Regional RSA Manual. This RSA Manual for TRACECA Countries is based on best international theory and practice and it offers a unified approach across the Region. As TRACECA Region contains important transport links (corridors) from China to Europe, the importance of harmonization and elimination of potential risks to the road users is of great importance. This is why the Regional RSA Manual is built on existing Manuals from the Region and tries to apply a common approach to RSA. This will ensure similar approaches are applied for RSA related improvement of road infrastructure in all TRACECA Countries.

Special attention has been given to try to make the Manual and accompanying Checklists user friendly. This RSA Manual has six chapters followed by three Appendices (Checklists).

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4. Rajko Branković

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6 REFERENCES

Annex 1: Checklists for the Draft (Preliminary) Design (Stage 1)
Annex 2: Checklists for the Detailed Design (Stage 2)
Annex 3: Checklists for the Pre-Traffic Opening of road and Road in Early Operation (Stage 3 and 4)

ABBREVATIONS AND ACRONYMS

BSM	Black Spot Management
EC	European Commission
EU	European Union
IBRD	International Bank for Reconstruction and Development (World Bank)
IFI	International Financing Institutions
IDS	In Depth Studies of Traffic Accidents with fatalities
MoIA	Ministry of Internal Affairs
MoI	Ministry of Interior
MoTC	Ministry of Transport and Communications
NSM	Network Safety Management
RAP	Road Assessment Program
RIA	Road Safety Impact Assessment
PIARC	World Road Association (PIARC actually means Permanent International Association of Road Congresses but this name is rarely used)
RSA	Road Safety Audit
RSI	Road Safety Inspection
SEETO	South-East Europe Transport Observatory
TL	Team Leader
ToR	Terms of Reference
TP	Traffic (Road) Police
TRACECA	Transport Corridor Europe-Caucasus-Asia
WE-WC	Western Europe – Western China International Transit Corridor
WHO	World Health Organization

1 INTRODUCTION

Today, all around the world it is well known that road crashes are a big social and economic problem. Different measures and programs have been developed to reduce the number of casualties on roads. On an international level, the United Nation, World Health Organization, International financial institutions (especially IBRD or ADB, EIB, etc.) and some specialized NGOs (PIARC, ETSC, PRI, SEETO, etc.) represent high quality stakeholders of global road safety improvements. Recently, in the autumn of 2009, ministers and stakeholders from all over the world approved the Moscow Declaration on Road Safety (First Global UN Ministerial Conference on Road Safety). Within 2 years this matter was discussed at UN Decade for Action on Road Safety was announced for the period 2011-2020 with a target to reduce the worldwide total of deaths by 50% by 2020.

In most countries, road design guidelines are applied which, in most cases include implementation of road safety issues. Despite this, crashes still occur on new roads. There are several reasons for this. Firstly, design standards often contain minimum requirements regarding road safety and a combination of these elements can sometimes lead to dangerous situations. Furthermore, it is not always possible to comply with the standards. Sometimes, especially in built-up-areas or in difficult terrain, there are reasons which make the application of the standards impossible.

One common misunderstanding is that drivers fault or bad behaviour is the single and only cause of road traffic crashes[16]. As a result of international understanding from various research it is clear that the whole system (driver, road with its environment and the vehicles) is strongly connected and usually at least two of these contributory factors are involved.

This is why "The Safe System Approach" is not focusing anymore on single elements of the transport system but on their interfaces, especially on the Human Factors and the interface between road users and the road which has to be adapted to road users abilities and limitations.

A number of techniques and processes have been developed in last two decades. One of them is Road Safety Audit which is now recognized as one of the most efficient engineering tools. With the Directive of the European Parliament and of the Council no. 2008/96 on road infrastructure safety management, published in October 2008, the European Union clear decision and direction that road safety is important. It is clear that RSA will be mandatory for the trans-European Road Network in the forthcoming years and European Investment Bank is already extending application of the Directive via its lessons to the neighbourhood countries. In this directive, RSA is part of a package of road safety measures, including:

- Road safety impact assessment (RIA),
- **Road safety audit for the design stages of roads (RSA)**,
- Safety ranking and management of the road network in operation, including management of high risk road sections (BSM),
- Road safety inspections of existing roads (RSI) and
- In-depth studies (IDS).

[16] This occurs because in most countries Traffic Police tend to blame the driver for driving too fast, for illegal manoeuvres etc. without asking, "Why the driver may have made that error?" Because they generally do not have understanding of the road engineering and vehicle factors. They do not identify such defects and police statistics always show that "Driver error" is the main factor in 70-90% of road crashes.

These measures are an integrated part of the wider road safety management system, as shown at **Ошибка! Источник ссылки не найден.**.

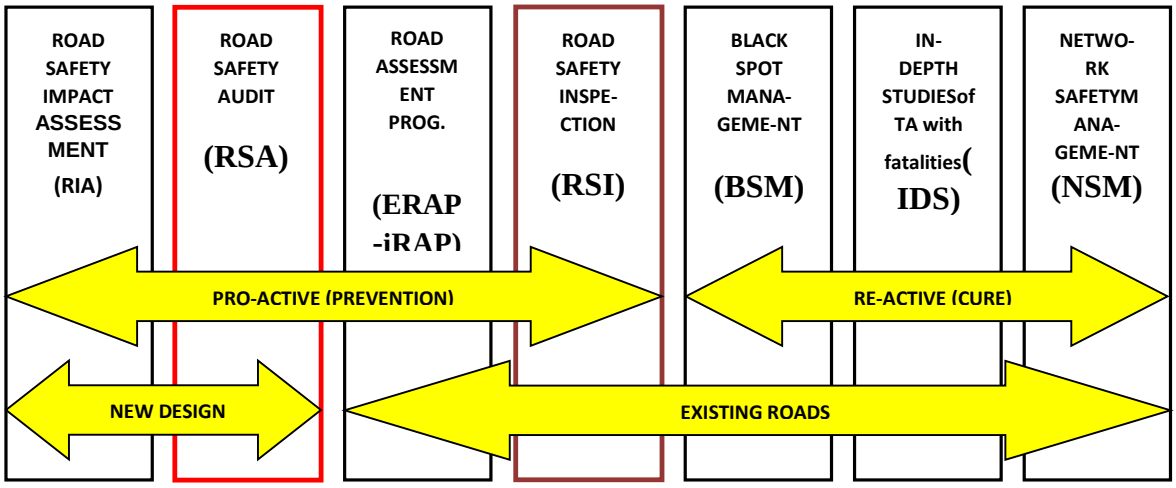

Figure 1-1 RSA as part of the Road Safety Management (Source: SEETO Road Safety Audit Manual, 2009)

It can be seen from **Ошибка! Источник ссылки не найден.** that **RSA** represents a pro-active (preventive) element that should be included in the road design process.

Furthermore, the RSA procedure is:

- A formal process,
- An independent process,
- Carried out by someone with appropriate safety experience and training,
- Restricted to road safety issues of the road and making it safer for all road users.

The outcome of a RSA is a formal Report, which identifies existing and potential road safety deficiencies and, if appropriate, makes recommendations aimed at removing or reducing these deficiencies. With the audit process, it is possible to reduce the number and severity of traffic crashes by improving the road safety performances.

According to the best practice, as well as the previously mentioned EU directive, there are four different stages during which Road Safety Audits are most commonly[17] conducted:

- Stage 1: **draft design**,
- Stage 2: **detailed design**,
- Stage 3: **pre-opening of the road** and
- Stage 4: **early operation, when the road is in use**.

[17] In some countries a 5th stage "planning" is added at the beginning or "Feasibility" stage. Often safety critical decisions can be made even before draft design starts. For example, the route that is selected, junction strategy, future developments all affect safety of the road. If for example it is known that a new government will be built, it may result in huge increase in trucks using certain parts of the road and junctions. This may affect the type of junction that should be selected

The RSA has a lot of similarity with another road safety management procedure and that is the **Road Safety Inspection** (**RSI**). The output of RSI is also a formal report, and the form is slightly different from RSA report.

2 ROAD SAFETY AUDIT BASICS

2.1 What is Road Safety Audit?

RSA is a well- known term used internationally to describe an independent review of a road project to identify road or traffic safety concerns. It can be regarded as part of a comprehensive quality management system. It is a formal examination of a road or a traffic project. The systematic application of RSA increases the safety of all road users. RSA is a pro-active approach with the primary aim of identifying potential safety problems as early as possible in the design process so that decisions can be made about eliminating or reducing the problems, preferably before a scheme is implemented or crashes occur.

The most common definition of RSA is: "**A formal road safety examination of the road or traffic project, or any other type of project which affects road users, carried out by an independent, qualified auditor or team of auditors who reports on the project crash potential and safety performance for all kinds of road users**".

The latest EU Directive presents the following definition of RSA: "**RSA means an independent, detailed, systematic and technical safety check relating to the design characteristics of a road infrastructure project and covering all stages from planning to early operation**".

As part of the road safety engineering process, the Road Safety Audit (RSA) has a strong relationship and a lot of similarities with the Road Safety Inspection (RSI). Therefore, processes and phases explained in the **Ошибка! Источник ссылки не найден.**.

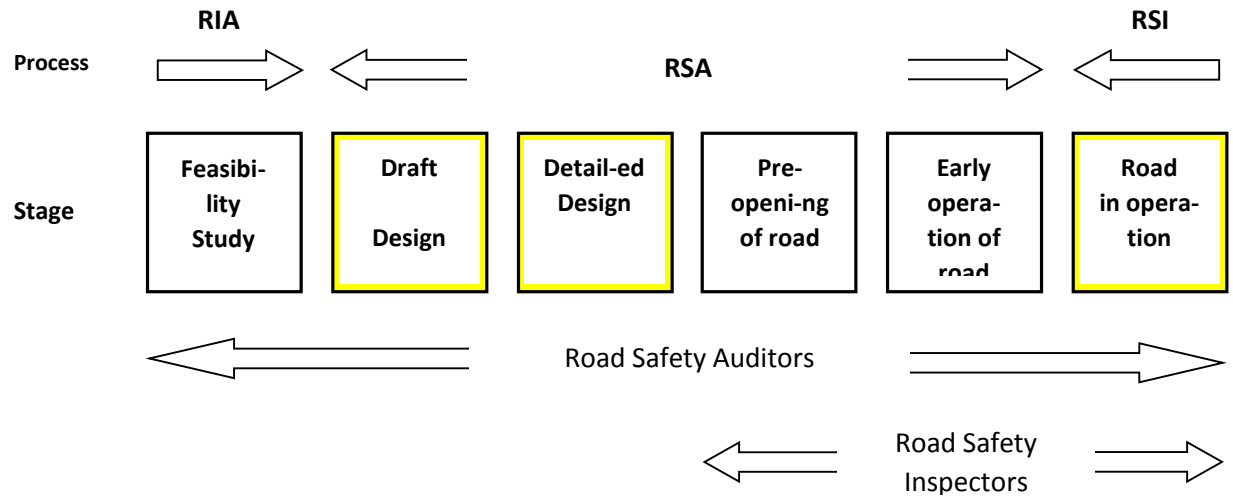

Figure 2-1 Process and phases of RSI and RSA

Bearing in mind similarities between RSA (phases 3 and 4) and RSI, for the production of the Report, the same checklists can be used.

Ошибка! Источник ссылки не найден. explains the interaction between RSA and RSI procedures.

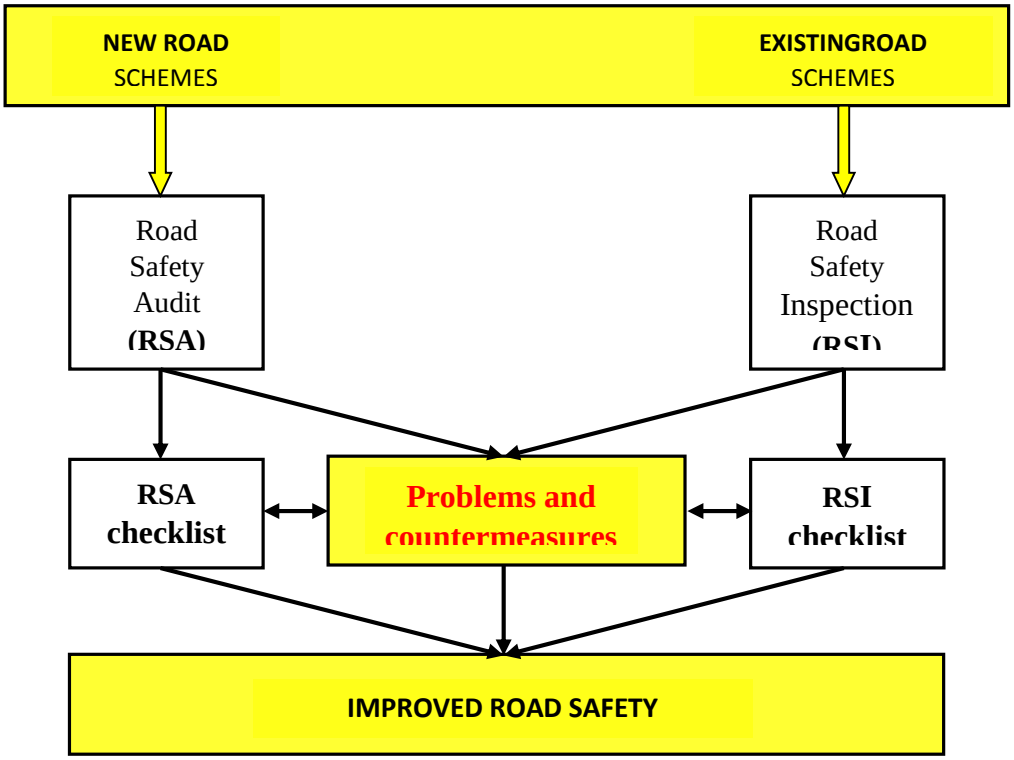

Figure 2-2 Interaction between the RSA and RSI procedures

The outcome of a RSA is a formal report and the time required to undertake a RSA is very short compared to the individual planning stages. It is better if RSA is implemented in the early stages of the design process, before expensive construction begins – after which changes can be costly.

For maximum effectiveness, it is very important that RSA is carried out by independent auditors from private companies, the road administration or some "audit centre", not involved in the actual project design team. All auditors have to be trained and fully qualified.

2.2 Why do we need Road Safety Audit?

Over the last decades, road crashes casualties have specially increased in many countries and road safety has become a serious concern for many national level government stakeholders (usually Ministry of Transport and Communication, Ministry of Interior – Traffic Police, Road Administrations, Ministry of Health, Ministry of Education, etc.). The rapid growth of the road network, the increasing vehicle population, different types of vehicles on the roads, technological advances, etc. have contributed to an environment with significantly increased risks of crashes. Furthermore, the system of the three principal elements which contribute to road crashes: driver, vehicle and road, are also affected by the social and political environment under which they interact. Alongside these changes, road (traffic) experts have been looking at ways of decreasing the risks of road crashes.

In the first phase of the development of road safety, the concentration of most experts was focused on the drivers as this was a general tendency to think "driver error" was the only cause whereas (as earlier explanations indicate) this was simply because the need for "safe system" was not understood. After decades of improvement work a lot was achieved. The same was achieved with cars. Car safety was dramatically increased, and it is still improving.

After these improvements, the remaining factor was the road and its improvement.

The first action was made in establishing the road design standards. While attempting to reduce costs of building roads, engineers take into account a number of different factors during the design process (capacity requirements, right-of-way availability, geotechnical conditions, archaeological considerations, environmental constraints, socio-economic impacts, budget constraints, etc). Designers therefore have a substantial responsibility and difficult task to balance the opposing interests (costs vs improved road safety) that are relevant to any modern road design project. This may lead to compromises sometimes at the expense of safety.

On the other hand, road safety requirements for planning, construction and maintenance of roads, as well as for operation and equipment are inadequately addressed in existing and outdated Standards and norms, such as GOST and SNIP standards which are still in use in ex-soviet countries. Therefore, it often happens that along newly constructed and rehabilitated road sections, a great number of traffic crashes still occur. Sometimes the number of crashes is increased along rehabilitated road comparing to the road before improvements since much higher speeds are now possible on such "improved" roads. This can have a negative impact on linear villages which the new rehabilitated road passes through.

It is not likely that all necessary road safety improvements will be achieved only by using design standards, having in mind how slowly standards are improved or changed. In some of TRACECA Countries old Soviet standards and norms are still in use. Added to this, new scientific findings take some time to find their way into the technical standards and specifications, because they need to be verified and accepted.

Because of previously mentioned reasons, RSA as an approved road safety tool can be used for improvement of the road environment. With the expert knowledge of the Road Safety Audit, it is possible to reduce the number and severity of traffic crashes by improving the road safety performance and safety elements of the road.

2.3 Area of Application (Type of projects)

An RSA should be undertaken on a wide range of projects varying in size, location, type, and classification. The types of projects that can be audited are categorized under the following headings:

- function in the network (International roads, Corridor roads, Regional and Local roads)
- traffic (motor vehicles only or mixed traffic with non-motorized and/or slow agricultural traffic)
- position - locality (outside or inside built up areas).

It is recommended that RSA is implemented for projects that have the value of technical documentation more than 30.000 Euro. RSA is an integral part of the design process but independent from the actual design. The designer[18] of a new road project (or other applicable project) remains responsible for the design. The designer should make regular checks of the implications for safety work as the design progresses.

This manual is applicable for:

- new roads, motorways, state roads of I and II order and other road traffic facilities,
- reconstruction and rehabilitation,

[18] Is a considerable merit in introducing design engineers to concepts of safe design and how to avoid typical safety problems that can occur. The TRACECA regional road safety Project is training 6 design engineers in each country and exploring how the design engineer most actively involved in national regional and municipal road design, whether in government, design institutes or consultations can be given such awareness raising training.

- inside and outside built-up areas.

The types of projects to be mandatorily audited will be defined according to the legal (law or by-law) regulations.

For example, RSA could be implemented for:

- Major projects, i.e. motorways, Highways and other road facilities.
- State roads of I and II order, bypass roads etc.
- Medium-sized projects, i.e. reconstruction and rehabilitation projects
- Minor improvements, i.e. bicycle pathways, footpaths', major maintenance works, etc.
- Traffic management schemes (both permanent and temporary)

RSA can be used for interurban roads as well as for urban arterials.

There is a great chance that in some of TRACECA Countries in the future RSA will be regulated by the Law on Road Traffic.

2.4 Value and Costs of Road Safety Audit

Benefits of RSA are based on pro-active management of road safety, by identifying and preventing the risks associated with road safety deficiencies.

Namely, values of RSA are:

- Safer roads through crash prevention and crash severity reduction.

  Research in the United Kingdom has indicated that up to 1/3 of collisions may be prevented on a road that has been audited. The Austrian Road Safety Board (KfV) estimates that the financial benefit of the RSA in Austria is 50 times higher than the costs. A Danish study in 1995 came to the result of a benefit to cost ratio of 16,8. Scotland has estimated a benefit/cost ratio of 15:1. Germany Insurance Institute for Traffic Engineering (VTIV) has made some case studies about the benefit of the RSA, and benefit/cost ratio was in a range from 4 to 99. New Zealand has estimated the ratio to be closer to 20:1. Other research indicated a 1 to 3 percent reduction in injury collisions.

- Enhancement of road safety engineering.
- Reduced whole life costs of road construction.
- Reduced need to modify new roads after construction.
- A better understanding and documentation of road safety engineering.
- Safety improvements to standards and procedures in the future.
- More explicit consideration of the safety needs of vulnerable road users.
- Encouragement of other institution/personnel's involvement in road safety.
- Foster a principle of safety conscious design among owners and designers.
- Cost savings, lower health care and societal costs due to reduced crashes.
- To improve the awareness of safe design practices of everyone involved in the design.
- Enhancement of the corporate safety culture.
- Cross-fertilization between specialists within a highway department (e.g. Design, Maintenance, Traffic, etc.).

The earlier the project is audited within the design and development processes, the more effects and benefits are achieved. Early auditing can lead to the early elimination of problems and, consequently, minimization of time and cost of redesign at later stages.

In addition it has to be mentioned, that the implementation of RSA leads to intensive discussion between the auditors, client and designer. This discussion is helpful to increase the knowledge of all involved parties and is also helpful to improve the daily work, design procedures and would also be helpful in the process of the renewing of the standards.

The cost of audits is divided into three categories:

- consultant fees,
- the client's time costs to manage the audit, and
- costs associated with implementing recommendations that are adopted.

Some experiences show that a safety audit of a new facility costs approximately the same as a geotechnical survey. Another experience places the average cost of a conventional audit for small to mid-sized projects between $1,000 and $5,000. In other research, fees range vary from $700 to $6,000, with most falling in the $2,000 to $3,600 range. The actual cost depends greatly on the size and complexity of the project and composition of the required audit team.

Some consultants find that audits add approximately 5 to 10 percent to design costs, or less than 0.5 percent to construction expenses. Another approximates that audits will add 4 to 10 percent to the road design costs. As design costs are roughly 5 to 6 percent of the total project sum, road safety benefits far outweigh these small costs.

On smaller projects (traffic calming or retrofits), the costs may be a higher percentage of the overall capital cost. Costs of redesign/rectification should be considered which will vary on a project-to-project basis. The cost of rectifying deficiencies depends on how early in the design process the problem is identified as well as the amount of time required to redesign the area.

2.5 Structure of the Manual

This manual is divided into five chapters as the follows:

The first Chapter introduces the RSA and explains the rationale for existence of RSA procedures.

Chapter 2 presents basics about RSA. This Chapter contains answers to the following questions: What is Road Safety Audit? Which definitions exist? Why do we need RSA? Where can RSA be applied? and What are the values and costs of RSA?

Chapter 3 discusses the stages of RSA. Detailed explanations are provided for: Draft (or Preliminary) Design, Detailed Design, Pre-Opening and Early Operation. The chapter also discusses the methodology used when conducting audits at different project stages.

Chapter 4 presents the RSA process and explains how RSA should be performed. It describes the complete process from the selection of the audit team to the completion meeting and follow-up.

Chapter 5 provides a discussion about the training of the auditors and about legal issues associated with road safety audit.

Annexes 1-3 contain the checklists for road safety audits (for all stages).

3 STAGES OF ROAD SAFETY AUDIT

RSA can be effective for most projects, regardless of size, and at any or all key milestones in the development of a road project. According to the latest international experience, as well as EU Directive 2008/96, there are typically 4 different stages during which Road Safety Audits are conducted:

- Stage 1: **draft (or preliminary) design**,
- Stage 2: **detailed design**,

- Stage 3: **pre-opening of the road** and
- Stage 4: **early operation** - when the road is in use.

The complexity and level of effort of the audit process changes with each stage. An overview of what each of the audit stages entails is provided below.

The audit of the very early design stage (feasibility study or planning) should be made by using the road safety impact assessment method, not by RSA procedure. But in cases of rehabilitations, widening or just major maintenance projects of existing roads Road Safety inspections shoud be performed to detect existing safety deficiencies and the elaboration of countermeasures in the following design and construction phases.

The RSA stage 1 and 2 will be conducted on the basis of the design documentation (drawings, technical reports, explanatory notes, etc.) of the project. Site visits may also be needed, especially for rehabilitation schemes on existing alignments. To ensure an adequate accuracy of the RSA, the design documentation must have sufficient quality and content.

Before opening the new road to traffic with the stage 3, the audit should be made to check if the scheme has been constructed as designed, with full respect to road safety and whether any other road safety deficiencies that were not previously discovered increase the road safety risks after construction. Daylight and darkness checks should also be done for Stage 3 and 4. The final stage 4 of the RSA process is checking the road during early operation. It is important that an evaluation /assessment of actual safety situation is made after some months.

A detailed overview of each of the audit stages is provided below.

3.1 Draft (or Preliminary) Design

During the draft (or preliminary) design stage, the audit team evaluates the general design principles. Primary objectives are to evaluate the relative safety of intersection or interchange types and layout, horizontal and vertical alignment, cross section, sight distance, lane and shoulder widths, super elevation, provisions for pedestrians and other vulnerable road users and other design elements. Audits conducted at this stage should be completed before the finalization of land acquisition to avoid complications if significant alignment changes are required.

3.2 Detailed Design

All elements of the final design should be in place during the detailed design stage. During this stage, the audit team reviews the final geometric design features proposed traffic signing and pavement marking plans, lighting plans, drainage, guardrails and other roadside objects, landscaping, intersections and interchange details (such as tapers, lengths of acceleration and deceleration lanes, and turning radii). The team also reviews provisions for specific users such as motorcyclists, pedal

cyclists, pedestrians (including the particular needs of children and the elderly) and the mobility-impaired.

3.3 Pre-Opening of the road

Immediately before opening a road or facility, the audit team should conduct a site inspection to ensure that the safety needs of all road users (*i.e.*, pedestrians, cyclists, motorists, and others) are adequately satisfied. The audit team should conduct day and night drive and walk through inspections and, if possible, perform the inspection in different weather conditions. This type of audit attempts to determine if hazardous conditions exist which were not evident in the previous audits.

3.4 Early operation – when the road is in use

RSA can be undertaken soon after opening a new or reconstructed/rehabilitated road or facility to the public traffic. When a road "attracts" traffic previously using other routes, some problems may be observed which may not have been detected as road safety deficiencies. Corrective measures, although much more expensive to carry out at this stage, may still be cost effective. RSA can also be conducted on any section of an existing road network to identify safety related deficiencies.

4 ROAD SAFETY AUDIT PROCESS (HOW TO PERFORM A RSA?)

4.1 The participants in the audit process and their roles

In most cases, three different parties are involved in the audit process: the client, the designer and the auditor. The roles and responsibilities of the different parties are similar in different countries.

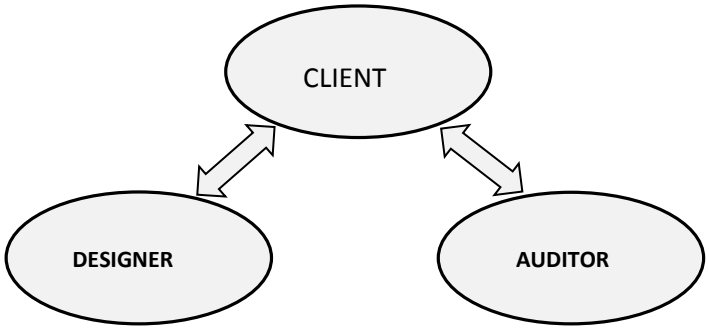

Figure 4-1 The participants in the audit process

The typical roles and responsibilities of all parties involved in the safety audit process are outlined in the following sections.

Client: The organization responsible for the project, sometimes also called the project manager, or project investor. This is often the road authority, or in some cases local stakeholders.

Road safety audit should be considered an integral component of the road design process. It is therefore essential that clients/road authorities allocate sufficient funding and resources to support the road safety audit process. Clients/road authorities should:

- require road safety audits as a part of quality management,
- allocate funds in budget to hire consultants for safety audit work

- commission audits at the proper project stages and

- review the formal audit report and act upon recommendations whenever appropriate and feasible.

Without the client's full commitment to the process, particularly by giving genuine consideration to recommendations, the audit process becomes ineffective. Furthermore, the client/road authority should provide training at all levels within the own organization to ensure that safety is an integral component of all phases of a road project (i.e., planning, design, construction, and maintenance). Correct training of personnel increases the potential of safety issues being identified by the audit team.

It is the responsibility of the client/road authority to:

- select an audit team with the appropriate training and experience,
- provide project documentation;
- ensure that the auditors have satisfied the requirements described in the terms of reference,
- analyse the auditor's report and forward accepted suggestions to designers with request to incorporate them into design,
- attend the initial and completion meetings and
- follow up design work.

At the end of the RSA procedure, the client is supposed to provide the audit team with a written response addressing all safety issues. This includes either accepting the proposed measures and providing a design solution for them, or rejecting the measures and stating the reasons for this action.

Designer: A person or team commissioned by the client to develop the road schemes. The design team can be an independent or part of the client's organization. The designer is fully responsible for the design.

It is the responsibility of the design team/project manager to attend the initial and completion meetings. The responsibility of developing or adopting corrective solutions, suggested by the audit team and accepted by the client, lies with the design team/project manager. The design team/project manager is responsible for all design decisions; however, decisions may sometimes require the involvement of the client/road authority (if design changes increase the project budget significantly).

Auditor: A person or team commissioned (or approved) by the client to carry out the audit. The auditors should be independent from the design team.

The primary role of the audit team is to identify potential safety problems of a road project by reviewing project documentation and drawings and/or conducting site inspections. They typically do not redesign the project or implement changes. The audit team may use a developed set of checklists to assist them while conducting the audit (Annexes 1-3). Checklists identify issues and problems that can arise at the relevant stages of an audit. These checklists are more like guides and should not be used as a substitute for experience. They also provide continuity from audit to audit by ensuring core aspects are checked on every scheme.

The audit team is required to submit a report to the client, identifying critical issues based on safety engineering experience. A completion meeting is held between the audit team, the design team and the client to discuss the audit findings. The audit team is required to review the design team's response to the audit report, if any. It is not the role of the audit team to approve of or agree with the obtained response, this is the client's responsibility.

4.2 Audit team

The size of the audit team will vary depending upon the size and type of project. It is recommended that the team consists of two to five multi-disciplinary individuals. The use of at least two individuals provides cross-fertilization of ideas. It is much better if the audit team is bigger and contains experts with different specialties. There are a few requirements that an audit team must fulfill:

- **Independence**

Road safety auditors should be independent of the project design team to ensure impartiality and so that the proposals are reviewed solely from a road-user's perspective. Audit teams can be established within large organizations or by using consultant firms. It is essential that an environment exists which fosters good communication between the audit team and the client/design team to ensure that the audit is effective.

- **Qualifications**

Road safety audits should be conducted by an individual or team with adequate experience in road safety engineering principles and practices, crash investigation and prevention, traffic engineering and road design. Additionally, members with experience in enforcement, maintenance and human factors can be added to the team on a project by project basis and at different audit stages. Human factor expertise may, in selected areas, contribute to a road safety audit by providing an understanding of the interactive nature of user behavior with the road environment.

- **Experience**

It is imperative that the audit team has substantial collective experience in the key areas noted in the previous section. While audit checklists serve to identify critical items/areas to be considered, they should only be considered memory reminders for individuals with experience and not an exhaustive listing of issues. In some countries, auditors should be accredited (certified) at national level. Accredited auditors must have undertaken a specified course in road safety audits and have participated in a defined number of audits per year. If it is necessary additional expertise may be added to the project team at different stages of the audit process (*i.e.*, police officers, maintenance personnel, human factor experts, and others).

4.3 The practical RSA workflow (How to perform a RSA?)

As a relatively new road safety tool, RSA has to be organized with an effective structure and with clear responsibilities.

The general RSA procedure will include three main phases:

- **ordering**,
- **undertaking** and
- **completion**.

The **Ошибка! Источник ссылки не найден.** describes the typical audit process.

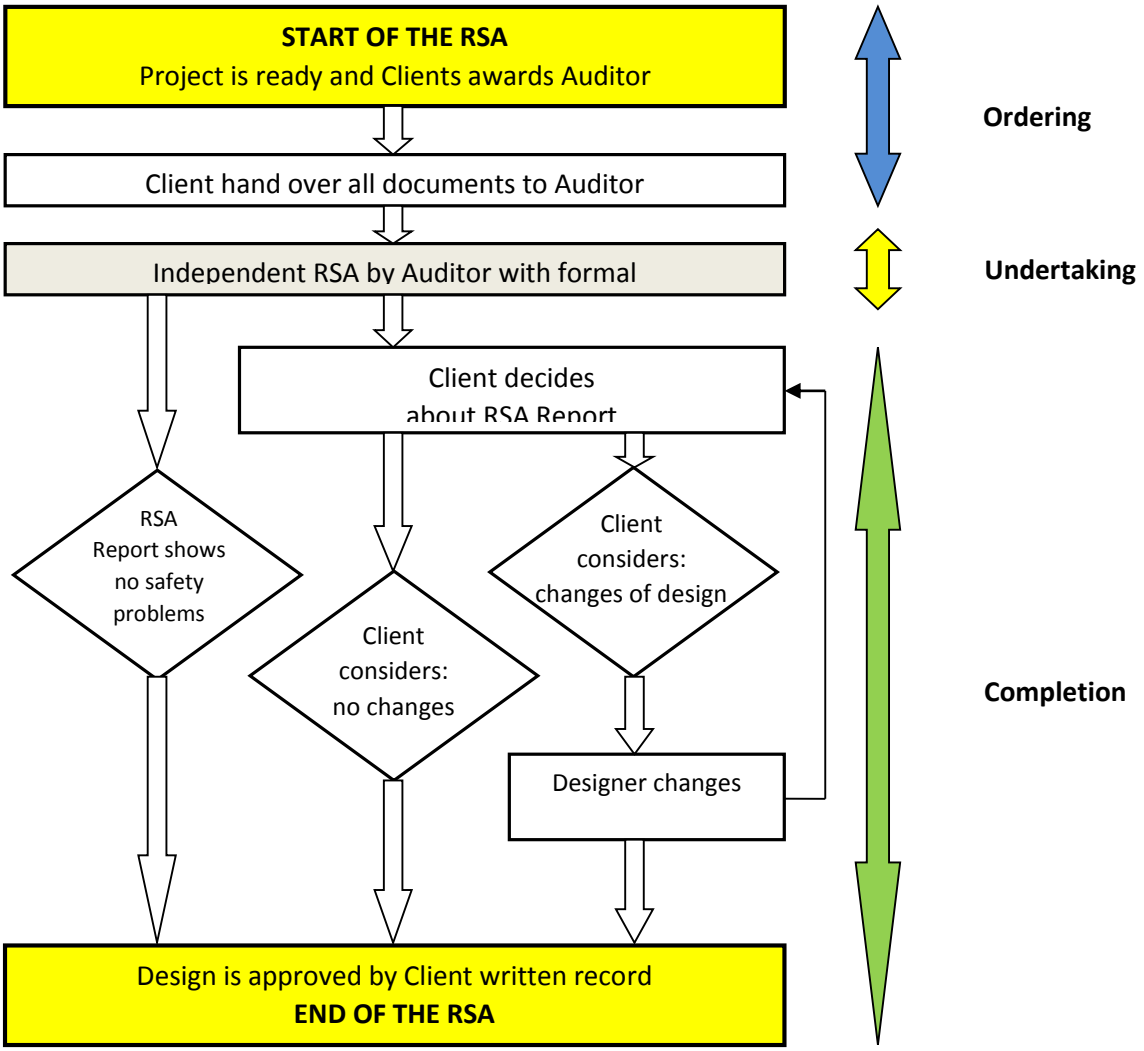

Figure 4-2 The RSA workflow (main steps)

Bearing in mind the scope and nature of a road infrastructure project, and regardless of audit stage, it is possible to conduct the RSA on the basis of this diagram.

It has to be mentioned, that in the RSA stage 3 and 4 in most cases no design work would be necessary. Often the changes can be organized directly by the construction company (contractor) for the stage 3 or the maintenance unit of the client for stage 4.

Depending on type of changes in design, sometimes it may be necessary to have a partial repetition of the RSA, to check the changed documentation. In case of doubt the client should send the auditor the relevant documents.

4.3.1 Ordering a Road Safety Audit

Ordering the audit

Usually, the decision to start the audit is taken by the client/road authority. But it may be regulated by Ministry decision or by law as well as by the financing institutions. In this phase the client hands over all necessary documentation to the Auditor.

Selecting the team

It is the responsibility of the client to select the audit team. As previously noted the audit team should be independent of the design team and should have appropriate experience and training in road safety engineering. A list of potential auditors, including qualifications, would be beneficial to the client when selecting the audit team. The audit team leader should be someone who has experience in road safety engineering and has participated in previous audits. The client should exercise caution when selecting the audit team. The team with the lowest bid is not always the most experienced. In road safety audits, experience is paramount, and cost is secondary.

The nature and composition of the team depends upon the complexity, size and type of the scheme being audited. It can also vary for each audit stage.

The first two design stages should be undertaken by experienced auditors including road safety specialists, crash investigation specialists and road design engineers.

At the detailed design stage, it is beneficial to have an audit team with members having expertise in road design, traffic signals, lighting and drainage, non-motorized users etc., depending on the type of scheme being audited. A person with knowledge of human behavioral aspects of road safety could also be very useful.

At the pre-opening and post-opening stages, it is important to have in the team members with experience in aspects of facility maintenance including signage, lighting, traffic controls, vegetation, snow removal etc. It may be useful to include a Police officer who is experienced in road safety and crash investigation.

Collection of background information and Audit Brief

The client is responsible for providing all relevant project documentation, including reports, data, drawings, contract documents and, where required, traffic volumes. This information will be used by the audit team to assess the project from a safety perspective.

It is important that the audit team is given all required documents at the beginning. Incomplete documents lead to questions and additional demands, resulting in more time and work being necessary for the audit.

The Audit Brief (or Initial meeting) is the meeting with all parties involved in the audit, where the audit team gets instructions describing the scheme to be undertaken. The meeting must provide sufficient background information to enable the audit to be successfully carried out.

As a minimum, the brief should include:

- a brief project description,
- an account of project conditions and design parameters (design speed, radii of curves, super elevation, sight criteria, traffic volume, vehicle types, crash data, etc.),
- set of drawings (hard copies are essential),
- details and reasons for any deviation from road standards,
- any previous RSA or RSI reports,

- for reconstruction or rehabilitation schemes on existing roads, crash statistics should be provided.

The number of documents required increases as the design phases proceed. A complete recommendation about the minimum requirements for contents of the documentation is shown in the **Ошибка! Источник ссылки не найден.**.

Table 4.3.1.1 Recommended minimum of documentation for RSA

Preliminary Design	Detailed Design	Traffic Opening
Explanatory report with: Traffic analysis with traffic volume estimates Crash diagrams and maps with dangerous locations and road sections highlighted Overview map: Site plans with types of junction Overview of vertical alignment Cross sections Horizontal alignments Vertical alignments Construction sketches Site plans of accompanying landscape measures Any existing signing and marking plans	Result of previous audit stage with Client's decision Explanatory report Overview map Cross sections Horizontal alignments Vertical alignments Construction plans Site plans of landscaping detail Signing and marking plans Site plans with road equipment Junction drawings with all signs, markings and traffic signal installations Documents for traffic signals	Result of previous audit stage with Client's decision Explanatory report Horizontal alignments Vertical alignments Site plans of landscaping detail Signing and marking plans Site plans with road equipment Signal installation plans Documents for traffic signals

4.3.2 Undertaking the Road Safety Audit

After the Brief or initial meeting, it is the responsibility of the audit team to assess the project documentation and to conduct the RSA. If it is possible, it is useful to organize field studies to help determine the safety related issues of the project. The following sub-sections present the process used when conducting road safety audits.

Analysis of background information

Once all the background information is collected, the audit team needs to assess/evaluate and analyse all the available information.

For audits at the draft (preliminary) design or detailed design stage (stages 1 & 2), the audit team should examine the details about the proposed project, details of plans and background information on a section by section basis. This provides an opportunity to consider the road safety impact of the design on all road users. Auditors should be given sufficient time to carry out a RSA.

If the audit is being conducted at the pre-opening or early-operation stage (stages 3 & 4), the team should analyse all relevant and available information such as for example crash reports (this does not apply to pre-opening stage). The analysis of crash reports is not intended to be used as analysis at dangerous locations, but as an aid for the auditors in identifying potential areas with safety problems.

Field studies

Field studies (inspections) are required at all stages because they provide the team with a feeling for the existing conditions. A field inspection allows the auditor to see how the proposal interacts with surrounding and nearby roads.

Before going to the field, the audit team should become familiar with the drawings and checklists to ensure that the inspection is productive and relevant concerns are raised.

For audits at the stages 1 & 2, the team should conduct site inspection, including “green field” sites, upon completion of the preliminary assessment. The audit team should examine the correlation and transition between any new and existing roads to ensure consistency. This includes all types of road users.

Audits at stages 3&4 review the physical characteristics of the project by conducting site inspections. These inspections involve assessing the furniture, signs, lighting, markings, delineation, and geometric features from a multi-modal perspective. The team should identify issues that may affect the road users’ perception of the road or restrict sight lines.

The audit team should conduct the inspection by driving and walking (if feasible) through the project in all directions. In addition, site inspections should be conducted at night and in adverse weather conditions if possible.

Photographs, video and voice memos, with GPS co-ordinates where possible, can be useful for later discussions.

Reviewing documentation

The auditor carries out the Safety Audit on the basis of his personal experience and his knowledge of road safety. To ensure that safety aspects have not been overlooked during this experience-based procedure, checklists (Appendix 1-3) can be used to assist in this.

The auditors must have the following basic questions in mind:

- Who can be hurt and in what way?
- Is the proposed solution safe for all potential road users?
- Is the design that has been selected the best for traffic safety, within the framework of the regulations?
- Do new findings concerning traffic safety and road design make a different design seem advisable?

Checklists

Different checklists have been developed for different stages of a project’s development process and they are attached as Appendix 1-3 to this Manual. The checklists present different questions regarding the safety of all users and they should help the auditor to identify issues and problems that can arise at the relevant stage of an audit.

Checklists are based on experience collected from earlier audits, findings from crash investigations, knowledge from experience with black spot management, road safety follow up, best practice, etc.

Audit findings and report

At the end of analysis process, the audit report is prepared. The report should clearly and concisely describe the project, the audit stage, the audit team members, the process of the audit, any safety deficiencies identified and proposed countermeasures. These countermeasures are conceptual in nature and should not provide the design team with design solutions. There is, for example, the possibility to give clear advices in the RSA report with cross references to guidelines and norms. On the other hand, some sketches with ideas about improvements in the audited design, as an annex to the main text of the report, can be helpful. It is not within the auditor's task to create a new design .That is the task and responsibility of the design engineer

The RSA report for phases 1 and 2 should contain the following information:

General or detailed project details: Name of project, audit stage, date of audit and dates and times of any inspection, weather conditions during inspections, etc. A statement regarding which stage of the audit process the report relates to. Details of the team involved. An overview about the content of the audited documentation.

Audit results: Details of the specific deficiencies identified, with reasons why these are regarded as deficiencies. Recommendations for actions to remove or reduce the impact of these deficiencies.

To give the client a better understanding of the audit results, the RSA report for phases 1 and 2 should be structured as follows:

- **Problems** are findings that clearly affect road safety. That means that a noticed deficiency will increase the crash risk or severity. With the proposed changes (measures), crashes and risks should be reduced. The auditor can illustrate his recommendations verbally or with sketches, but it is never the auditor's job to design the change.

- **Remarks** should be made regarding findings which will probably not lead to more crashes and severity, but could improve the overall road safety situation and sustainability of the project or can ease the demands on the road user. Contents of the remarks can also be related to the next project steps, so that it could help and lead the designer how to improve safety at that point.

It is very important to write down findings on the drawings or other working documents and this must be kept as evidence. In this way, the checklists can be helpful as working documents. In the last checklist row "comments" the auditor could make remarks which will help if the client later asks for some more explanation. Also, in the case of findings which are not deemed to be as relevant and therefore not part of the formal report, it may be useful to note them there.

During the audit procedure the auditor may find deficiencies in the project documentation which are not safety related. It is recommended not to include these findings in the audit report. Instead it is recommended to mention them in a cover letter or in a separate (informal) annex to the report.

The final report is sent to the Client.

A typical table of contents of RSA for phases 3 and 4:

1. **Introduction** including details about road sections of the road being inspected and the composition of the inspection team, date, times and conditions at the time of the inspection.
2. **Part A.** Project data (road function, traffic situation, road standards and surroundings). This part should outline the background data obtained during the preparatory work in the office and a description of the activities undertaken.

3. **Part B.** Investigation results with the deficiencies specified, the content should be sorted in a formal way, following the headings in the checklist. This part describes the shortcomings or deficiencies which were found and an assessment of these deficiencies. It should contain the completed investigation form and the documentation with pictures. The part B should be finished with a conclusion about the findings ("Assessment of deficits")
4. **Part C.** Proposals and options for countermeasures – short term (e.g. low cost measures which could be as part of a maintenance program), medium term (e.g. small investments, e.g. adding guardrails) and long term (larger investments).

The RSA report for phases 3 and 4 needs to contain an introduction, three main parts and appendices with maps, pictures and illustrations as necessary.

To clarify the proposals and their locations, maps, illustrations, photos and sketches of countermeasures may be included as separate Annex, or could included in Part B.

4.3.3 Completion of the Road Safety Audit

Upon receipt of the RSA report, the client must consider the problems and proposals and make a decision how the project should proceed. The client refers the audit report to the designer, with his request what should be accepted and changed in design.

Completion meeting

Once the audit report has reached the stage where all findings are clearly documented, a completion meeting should be held to allow all interested parties a chance to interact and discuss the results. This meeting should precede the development of client responses to the audit team's findings. The completion meeting should involve the audit team, the client, the design team, and any other employees who might be involved in formulating responses to the audit findings.

The meeting provides an opportunity to:

- informally present the audit findings and clarify or elaborate their meaning,
- suggest improvements to the report structure,
- discuss possible remedial measures for the problems identified, and
- set a timetable for completion of client responses.

It must be noted that it is crucial that a positive, constructive, and cooperative tone pervades on the meeting. The meeting should commence with a reminder that the intent of an audit is simply to enhance safety of the final project and that it is not a critique of individual or design team performances. It is essential for those involved to understand that the audit is a beneficial part of project development. Special effort therefore should be made to ensure that those involved have been informed about the audit process and positive experiences associated with it. Meeting facilitators should be careful to maintain an atmosphere for positive exchange of views and not permit animosity or unfounded disagreement.

Response to the Audit report

The client reviews the formal audit report and considers the indicated problems and proposals. The client can ask the designer to comment and give response to the report's recommendations, but the client has the final decision whether recommendations are to be adopted or not. He has to determine if, and to what extent, the remarks and proposals in the audit report will lead to design modifications. All recommendations must be given due consideration. Those that are accepted should be implemented without delay.

The client response should be given directly to the auditor. It is important that this formal response contains a clear and complete account of the reasons why any recommendations are not accepted. This response acts as an evidence trail through the decision making process.

Following the client's decision, the designer modifies the scheme in accordance with the accepted amendments. The client then decides whether if it is necessary to have a partial repetition of the RSA to check the changed documentation. This will depend on the nature and extent of the changes in design. In case of doubt, the client should send the relevant documents to the auditor.

The client's written response to the audit report will become part of the project documentation.

Follow up

The follow up process is led by the client. The client reviews the audit report and prepares a written response to each problem. Each measure proposed by the auditor in the audit report can be accepted or rejected by the client. Then, the designer makes the changes in the scheme to diminish the safety hazards. The client will check that the designer has made the agreed changes.

For each audit suggestion rejected, justification should be documented in the report by the client. Both the audit report and the client's response become part of the final audit record. All relevant documents should be kept as evidence.

5 TRAINING OF THE AUDITORS AND LEGAL ASPECTS

5.1 Training of the auditors

It is important that the auditor has extensive experience in road safety issues.

Proposal is that RSA team leader (TL) should have completed relevant university education preferably with Master degree and have significant experience in road safety engineering (design) and/or road traffic crash investigation. About three years of working with RSA and more than 3 RSA Reports produced would be minimal requirement for an RSA Team Leader.

RSA Team Members (TM) should have at least a bachelor education and about three years of experience in road safety engineering (design) and/or road traffic crash investigation.

Auditors should possess driving licenses and have good knowledge about Road Design Standard, the Traffic Safety Law and the Law for roads. The knowledge of other road standards is highly desirable.

To ensure the quality of the audit, auditors should undergo initial training, resulting in the award of a certificate of competence and should then take part in additional periodic training courses. Where audits are undertaken by teams, at least one member of the team shall hold a certificate of competence.

The content of training should include road safety related topics like crash investigation, road safety network management, road safety engineering and design. In several European countries like Germany, Denmark and Great Britain developed and well respected RSA training courses.

Two alternative approaches exist in Europe with regard to how road safety audit is done. The first is to have qualified staff as employees of the public administration, public road safety institute or similar. In the literature this solution is often called "internal auditor". The other possibility is to have contracts with RSA experts from private consultants - "external auditor".

In addition, the creation of a national Audit Centre (preferably inside some of existing organization) can be helpful for long-term sustainability. Such an institution could organize the training, certification and refresher courses for the authorized auditors. The association or Society of road engineers or similar body can be a suitable body to organise regular courses.

5.2 Legal aspects

Safety audits are a way to identify deficiencies or problems which have the capacity to impact on the safety of road infrastructure. They also identify remedial actions that could reduce or eliminate the potential safety problems. Sometimes audits can raise legal issues which the auditor should consider.

Experience in many countries indicates that claims related to the use of RSA have not been a problem. RSA provide a means to check that all reasonable safety initiatives have been taken in the design, construction and operation of schemes. The auditors are simply identifying safety issues or concerns that have the potential to reduce the safety level of a future road or existing road.

It should be stressed that the correct undertaking of RSA should not expose those authorities that adopt them to undertake a greater liability. With regard to legal liability, the following main principles can be expressed:

- If the road safety audit procedures are deemed to be an asset to the public, the fears of legal liability should not be used to prevent their use,Documentation is essential. The client's response to an audit report must provide reasons for not accepting the auditor's recommendation, where applicable. The response should be detailed and defendable,
- The audit report and formal response report must be placed in the project file. They could be used for any future legal investigation, and
- A follow up procedure of the actions or inactions taken by the client/road authority and identifying what was said and done at the time of responding to the audit is helpful.

A simple answer to the question: Will the undertaking of RSA expose road safety authorities to a greater responsibility than the one they already have?, would be: "No" .

Some legal experts have even more advanced opinions, that consideration should be given to the possibility that the non-use of road safety audits in an environment where they are being applied could raise another question: "*Will the absence of the use of a road safety audit which could have identified the safety problem under consideration be considered in a negative context by the courts*?". They believe that the answer to this question will eventually be: "*yes"*.

Furthermore, it should be kept in mind that the EU has published the Directive 2008/96 on road infrastructure safety management, which made a clear decision that the RSA will be mandatory for the trans-European Road Network in the next few years. In addition, the eight multilateral development banks have now agreed a joint approach to emphasizing road safety in all their infrastructure activities and this will put more pressure to have road safety audit on all roads that they finance.

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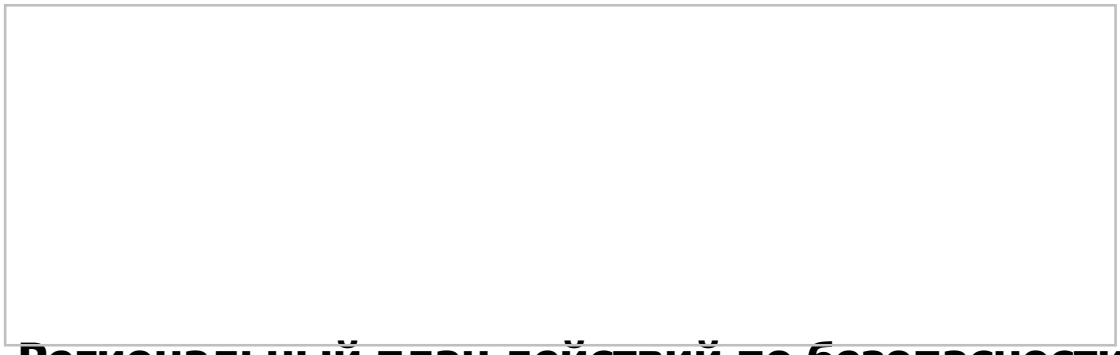
ПРОЕКТ

Техническое примечание 2

РЕГИОНАЛЬНОГО РУКОВОДСТВА ПО АУДИТУ БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ



Региональный план действий по безопасности дорожного движения ТРАСЕКА

Команда по технике безопасности

Март 2015

Финансируемый ЕС проект по безопасности дорожного движения ТРАСЕКА

для

Армении, Азербайджана, Грузии, Казахстана, Киргизстана, Молдовы, Таджикистана, Туркменистана, Украины, Узбекистана

ПРЕДИСЛОВИЕ
К ПРОЕКТУ РЕГИОНАЛЬНОГО РУКОВОДСТВА ПО АУДИТУ БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ ДЛЯ СТРАН TRACECA

По прошествии почти двух десятилетий применения во всём мире аудита безопасности дорожного движения (АБДД) сегодня данная процедура признана одним из наиболее эффективных инструментов инжиниринга. Путём принятия Европейским Парламентом и Советом опубликованной в октябре 2008 года Директивы № 2008/96 по управлению безопасностью дорожной инфраструктуры Европейский Союз принял чёткое решение, согласно которого проведение АБДД в последующие годы будет обязательным на трансъевропейской сети автомагистралей. АБДД является высокоэффективным и экономически выгодным инструментом для повышения уровня безопасности автодорог. Найти недостатки в безопасности дорожного движения на стадии проектирования намного дешевле, чем выявить их по завершению строительства. Поэтому АБДД является одним из наиболее экономически выгодных направлений инвестирования, которые может применять собственник автодороги.

К сожалению, в реальности в регионе TRACECA в настоящее время АБДД применяется мало. Реализованные проекты АБДД в подавляющем большинстве выполнены по инициативе международных финансовых учреждений иностранными консалтинговыми компаниями. При этом рекомендации АБДД не всегда учтены собственниками автодорог.

Именно по этой причине в рамках настоящего проекта предпринимается попытка создать возможности по проведению АБДД в каждой из стран. Командами проекта совместно с заинтересованными сторонами стран создаётся Региональное руководство по АБДД.

Руководство по АБДД для стран TRACECA основывается на передовых мировых теоретических основах и опыте и использует унифицированный подход по всему региону. Поскольку через регион TRACECA проходят важные транспортные коридоры между Китаем и Европой, то важно сделать акцент на унификации потенциальных рисков для участников дорожного движения. Именно поэтому Региональное руководство по АБДД построено на основе существующих в регионе руководств и является попыткой создать единый подход к АБДД. При таком подходе будут созданы аналогичные условия для улучшения дорожной инфраструктуры с помощью АБДД во всех странах TRACECA.

Особое внимание уделяется удобству использования Руководства и прилагающихся контрольных списков.

Руководство по АБДД включает шесть разделов и три приложения (контрольные списки).

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Аббревиатуры и сокращения

УМК	Управление местами концентрации ДТП
ЕК	Европейская Комиссия
ЕС	Европейский Союз
МБРР	Международный банк реконструкции и развития (Мировой банк)
МФУ	Международные финансовые учреждения
МВД	Министерство внутренних дел
МТС	Министерство транспорта и связи
PIARC	Всемирная дорожная ассоциация (PIARC фактически означает Постоянно действующую международную ассоциацию дорожных конгрессов, но такое название употребляется редко)
АБДД	Аудит безопасности дорожного движения
ИБДД	Инспекция безопасности дорожного движения
SEETO	Юго-восточная европейская транспортная обсерватория
РГ	Руководитель группы
ТЗ	Техническое задание
ДП	Дорожная полиция
TRACECA	Транспортный коридор Европа – Кавказ - Азия
ЗЕ-ЗК	Международный Транзитный Коридор «Западная Европа – Западный Китай»
ВОЗ	Всемирная организация здравоохранения

1. ВВЕДЕНИЕ

Широко известно, что дорожно-транспортные происшествия представляют собой огромную социальную и экономическую проблему. Для сокращения количества смертей в результате несчастных случаев на дорогах были разработаны различные меры и программы. На международном уровне Организация Объединенных Наций, Всемирная организация здравоохранения, международные финансовые институты (особенно ВБ, АБР, ЕБРР, ЕИБ и т.д.), а также ряд специализированных неправительственных организаций (PIARC, ETSC, PRI, SEETO, и т.д.) представляют собой высококвалифицированных участников, заинтересованных в повышении безопасности дорожного движения на глобальном уровне. В недавнем прошлом, осенью 2009 года, министрами и участниками со всего мира была принята Московская декларация по безопасности дорожного движения (Первая всемирная министерская конференция по безопасности дорожного движения). После 2 лет обсуждения данного вопроса ООН на 2011-2020 годы было объявлено Десятилетие действий по безопасности дорожного движения, имеющее целью снижение на 50 % общего количества смертей в ДТП в мире к 2020 году.

В большинстве стран, применяются руководства по проектированию, которые в большинстве случаев включают в себя реализацию задач безопасности дорожного движения Несмотря на это, дорожно-транспортные происшествия продолжают происходить на новых автодорогах, чему имеется несколько причин. В первую очередь, нормы проектирования зачастую содержат минимальные требования в отношении дорожной безопасности, и сочетание таких элементов способно привести к созданию опасных ситуаций. Более того, соблюдение норм не всегда представляется возможным. В ряде случаев, особенно на застроенных участках или в труднопроходимой местности, существуют причины, делающие применений норм невозможным.

Существует распространенное ошибочное представление, что вина водителя или его ненадлежащие поведение является единственной причиной, приводящей к дорожно-транспортным происшествиям [19]. В результате полученных на основании различных исследований международных знаний, была выявлена целая система, заключающаяся в том, что помимо вины водителя, присутствуют влияние автодороги и окружающих ее условий, а также автотранспортных средств.

Именно поэтому «Принцип безопасной системы» больше не основывается на данных отдельных элементах транспортной системы, а на их областях взаимодействия, особенно на человеческом факторе при взаимодействии между участниками дорожного движения и автодороги, которая должна отвечать способностям и ограничениям ее пользователей.

За последние двадцать лет были разработаны ряд технологий и процедур. Одной из них является аудит безопасности дорожного движения, который сегодня признан одним из наиболее эффективных инструментов инжиниринга. Путём принятия Европейским Парламентом и Советом опубликованной в октябре 2008 года Директивы № 2008/96 по управлению безопасностью дорожной инфраструктуры Европейский Союз принял чёткое решение о важности безопасности дорожного движения. Проведение АБДД в ближайшие годы станет обязательным на трансъевропейской сети автомагистралей, а Европейский инвестиционный банк через свои проекты уже распространяет применение

[19]Это происходит из-за того, что во многих странах дорожная полиция склонна обвинять водителя в превышении скорости, неправильном маневрировании и т.д., не задаваясь вопросом «А почему водитель сделал эту ошибку?», поскольку обычно работники ДП не имеют понимания о инжиниринге автодорог и факторах транспортных средств. Подобные недостатки не выявляются и полицейская статистика всегда демонстрирует, что «Ошибка водителя» является главным фактором в 70-90 % ДТП.

Директивы на страны Восточного партнёрства. Согласно директивы АБДД является частью комплекса мер по безопасности дорожного движения, включающего:

- Оценку воздействия на безопасность дорожного движения (ОВБДД),
- **Аудит по безопасности дорожного движения на разных стадиях проектирования автодорог (АБДД)**,
- Оценку безопасности и управление дорожной сетью на стадии эксплуатации, включая управление аварийно-опасными участками дороги (УМК),
- Инспекцию безопасности дорожного движения на существующих автодорогах (ИБДД), а также
- Детальный анализ дорожно-транспортного происшествия (ДАДТП).

Данные меры являются неотъемлемой частью обширной системы управления безопасностью дорожного движения, как показано на Рисунке 1.1.

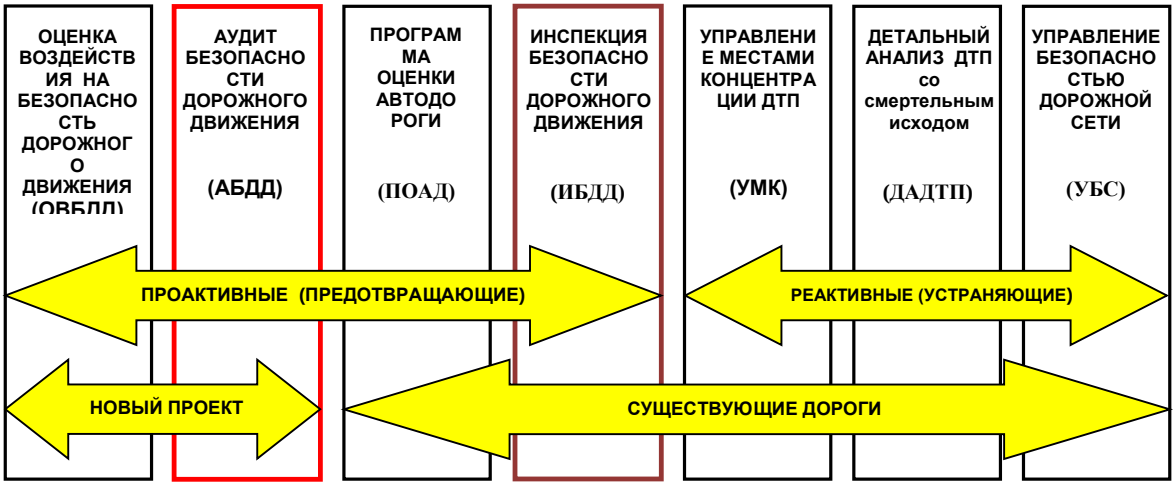


Рисунок 1.1. АБДД как часть Управления безопасностью дорожного движения (Источник: Руководство SEETO по аудиту безопасности дорожного движения, 2009 год)

Из рисунка 1.1 становиться понятно, что **АБДД** является проактивным элементом, который должен включаться в процесс проектирования автодорог.

Более того, процедура АБДД является:

- формализованным процессом,
- независимым процессом,
- выполняется лицом, обладающим соответствующим опытом и знаниями,
- ограниченной вопросами безопасности дорожного движения и делающей дорогу более безопасной для всех участников движения.

Результатом проведения АБДД является официальный отчет, определяющий существующие и потенциальные недостатки безопасности дорожного движения и, в случае необходимости, содержащий рекомендации по устранению и сокращению таких недостатков. При проведении аудита становится возможным сокращение количества и

смягчение тяжести дорожно-транспортных происшествий за счет улучшения характеристик дороги, касающихся безопасности дорожного движения.

В соответствии с передовым опытом, а также согласно ранее упомянутой директиве ЕС, АБДД обычно проводится в ходе четырёх различных стадий[20]:

Стадия 1: **эскизный проект**,
Стадия 2: **рабочий проект**,
Стадия 3: **предэксплуатационная стадия**, и
Стадия 4: **начальная эксплуатация, когда автодорога уже используется**.

АБДД имеет множество общих элементов с другими процедурами управления безопасностью дорожного движения, например с **Инспекцией безопасности дорожного движения (ИБДД)**. Результатом ИБДД также является официальный отчет, однако по форме он немного отличается от отчета по АБДД.

2. ОСНОВНЫЕ СВЕДЕНИЯ ОБ АУДИТЕ БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ

2.1. Что такое аудит безопасности дорожного движения?

АБДД – это широко известный термин, используемый на международном уровне и представляющий независимый обзор проекта с целью определения проблем в области безопасности дорожного движения, и может считаться частью всеобъемлющей системы управления качеством. АБДД является официальной проверкой проектов в области управления дорожным движением или строительства дорог. Систематическое применение АБДД повышает уровень БДД для всех участников движения. АБДД представляет собой проактивный подход, основная цель которого заключается в определении потенциальных проблем в области дорожной безопасности на как можно более ранней стадии процесса проектирования с тем, чтобы имелась возможность принять решение по устранению и сокращению проблем, предпочтительно до начала реализации проекта или наступления несчастного случая.

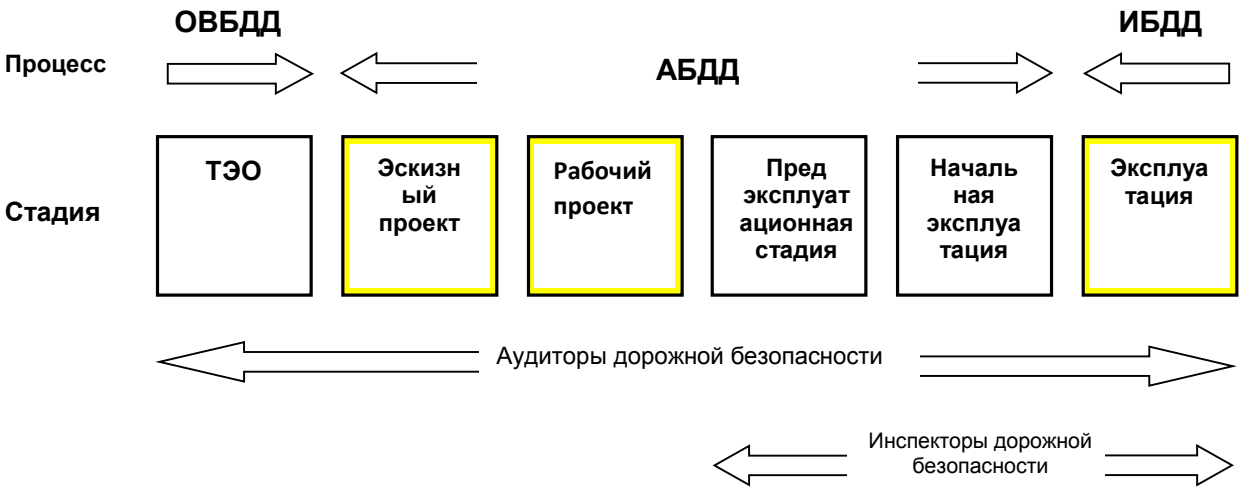
Самое распространенное определение АБДД звучит так: “**Официальная проверка проекта строительства автодороги, дорожного движения, или проекта какого-либо другого типа, затрагивающих пользователей автодорог, проводимая независимым, квалифицированным аудитором или группой аудиторов, которые подготавливают отчеты по возможности наступления несчастного случая в рамках проекта и показателям безопасности в отношении всех типов участников дорожного движения**”.

Последняя директива ЕС даёт следующее определение АБДД: “**АБДД означает независимую, детальную, систематическую и техническую проверку безопасности, относящуюся к характеристикам проекта дорожной**

[20] В некоторых странах в начале процесса или на стадии технико-экономического обоснования добавляется 5-я стадия «Планирование». Нередко важные решения по БДД могут быть приняты ещё до начала разработки эскизного проекта. Например, и выбор трассы, и стратегия устройства пересечений, и планирующаяся застройка влияют на уровень безопасности автодороги. Если, к примеру, известно, что будет строиться новый порт или объект, то это может привести к значительному росту объёмов движения грузовых ТС на определённых участках дороги и развязках. Данный фактор может повлиять на выбор типов развязок.

инфраструктуры и покрывающую все стадии строительства от планирования до начала эксплуатационного периода".

Будучи частью процесса проектирования безопасности дорожного движения, Аудит (АБДР) имеет прочную связь и множество схожих элементов с инспекцией безопасности дорожного движения (ИБДД). Таким образом, процессы и фазы отражены на Рисунке 2.1.1.



Принимая во внимание сходства между АБДД (фазы 3 и 4) и ИБДД, при составлении отчета могут применяться схожие контрольные списки.

Рисунок 2.1.1 Процессы и фазы АБДД и ИБДД

Рисунок 2.1.2. демонстрирует взаимодействие между процедурами АБДД и ИБДД.

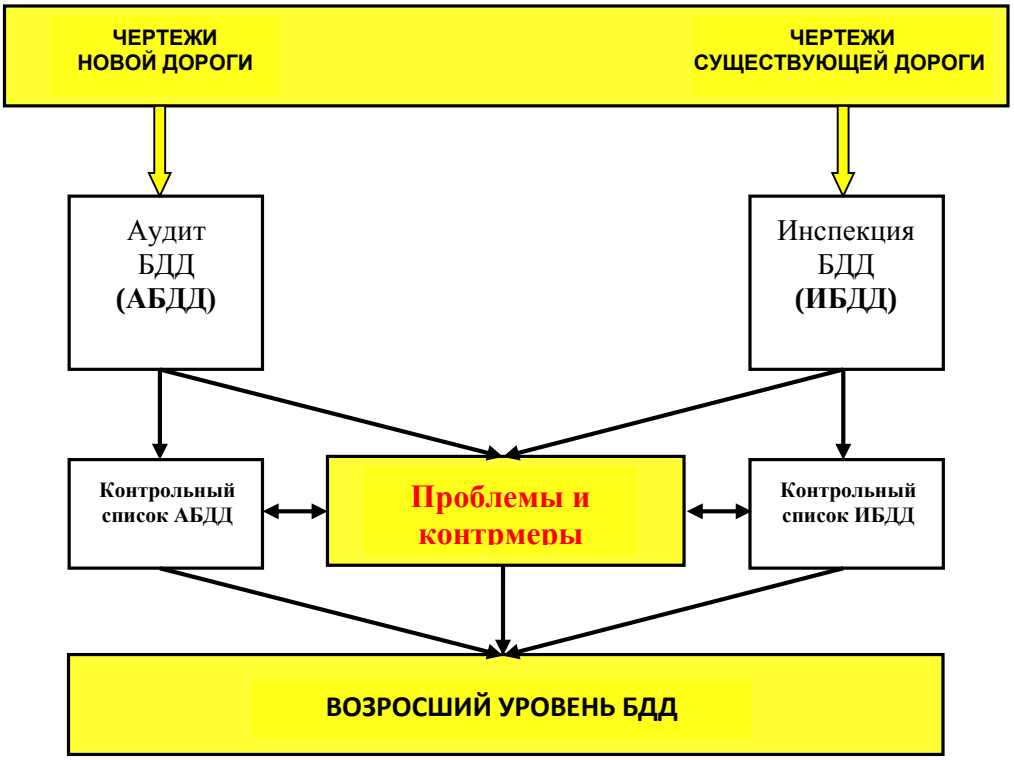


Рисунок 2.1.2. Взаимодействие между процедурами проведения АБДД и ИБДД

Результатом проведения АБДД является официальный отчет, и время, необходимое для проведения аудита, довольно ограничено по сравнению, с тем, что отводится для стадий индивидуального планирования. Правильнее проводить АБДД на ранних стадиях процесса проектирования, до начала дорогостоящего строительства, после начала которого изменения способны повлечь большие расходы.

Для достижения максимальной эффективности весьма важно проведение аудита независимыми аудиторами из частных компаний, дорожных администраций либо из «аудиторских центров», не задействованных в разработке проекта. Все аудиторы должны быть квалифицированными и полностью обученными.

2.2. Почему нам необходим аудит по безопасности дорожного движения?

За последние десятилетия смертность в ДТП во многих странах значительно возросла и безопасность дорожного движения стала серьёзным вопросом для многих заинтересованных участников на национальном уровне (обычно это министерство транспорта и связи, министерство внутренних дел – дорожная полиция, автодорожная администрация, министерство здравоохранения, министерство образования и т.д.). Быстрое развитие сети автодорог, растущая автомобилизация населения, появление различных видов автотранспорта на дорогах, технологический прогресс и т.д. способствуют развитию условий, значительно повышающих опасность дорожно-транспортного происшествия. Кроме того, система трех основных элементов, способствующих дорожно-транспортному происшествию: водитель, транспорт и дорога, также испытывает влияние социальной и политической сред, в условиях которых они

взаимодействуют. Наряду с этими изменениями, эксперты в области автодорог (дорожного движения) разрабатывали способы снижения вероятности возникновения дорожно-транспортного происшествия.

На первом этапе развития безопасности дорожного движения, основное внимание экспертов было направлено на водителей, поскольку существовала тенденция воспринимать «ошибку водителя» как единственную причину, хотя скорее, как показывают исследования того времени, дело было в непонимании необходимости в «безопасной системе». В результате десятилетий работы по улучшению ситуации много было достигнуто. То же самое было достигнуто в отношении автомобилей. Безопасность автомобиля была существенно повышена, и до сих пор продолжает совершенствоваться.

После достижения улучшений в данных компонентах, остается дорога и ее усовершенствование.

Первое действие было предпринято в утверждении норм проектирования автодорог. При попытке сократить расходы на строительство дорог, инженеры учитывают ряд различных факторов в ходе процесса проектирования (требуемая пропускная способность, наличие полосы отвода, геотехнические условия, археологические аспекты, социально-экономическое воздействие, бюджетные ограничения и т.д.). На проектировщиков, таким образом, возлагается значительная ответственность по достижению баланса противоположных интересов (затрат и уровня безопасности дорожного движения), которые сопутствуют любому современному проекту автодороги, что может привести к компромиссам, иногда в ущерб безопасности.

С другой стороны, требования к безопасности дорожного движения при проектировании, строительстве и эксплуатации автодорог, а также при их использовании и к технике, в существующих и устаревших стандартах и нормах (таких как ГОСТы и СНИПы, всё ещё используемые в постсоветских странах), рассмотрены недостаточно. Таким образом, ситуация такова, что на только что построенных и реконструированных участках автодороги до сих пор имеет место огромное количество дорожно-транспортных происшествий. В ряде случаев на участках реконструированной дороги количество ДТП увеличивается по сравнению с дорогой до реконструкции, поскольку на такой «усовершенствованной» дороге возможны значительно более высокие скорости. Подобная ситуация может негативно влиять на уровень жизни в расположенных вдоль реконструированной дороги населённых пунктах.

Маловероятно, что все необходимые улучшения в области безопасности дорожного движения будут достигнуты только за счет применения норм проектирования, принимая во внимание медленный процесс внедрения изменений и улучшений в систему стандартов. В некоторых из стран TRACECA до сих пор используются старые советские стандарты и нормы. Кроме этого, требуется некоторое время, чтобы новые научные открытия нашли свой путь к техническим стандартам и спецификациям, потому что их необходимо проверить и принять.

По причинам, перечисленным выше, АБДД в качестве утвержденного инструмента в области безопасности дорожного движения может применяться для улучшения окружающих условий автодорог. . С применением экспертных знаний, заложенных в АБДД, становится возможным сократить количество и уменьшить тяжесть дорожно-транспортных происшествий за счет улучшения показателей безопасности.

2.3. Области применения (типы проектов)

АБДД следует применять в широком спектре проектов, различающихся по масштабу, типу, и классификации. Типы проектов для проведения аудита разделены по категориям, озаглавленным следующим образом:

- действия с дорожной сетью (международные дороги, транзитные дороги, дороги регионального и местного значения)
- дорожное движение (только движение автотранспорта или смешанное движение с безмоторными ТС и/или медленной сельскохозяйственной техникой)
- положение – месторасположение (в пределах либо вокруг застроенных зон).

Рекомендуется проводить АБДД в проектах со стоимостью технической документации более 35 000 Евро. АБДД является неотъемлемой частью процесса проектирования, но независимой частью от самого проекта. Проектировщик[21] проекта новой дороги (или другого применимого проекта) несет ответственность за разработку проекта, и ему следует на регулярной основе проводить проверки выполнения задач по безопасности в ходе разработки проекта.

Настоящее руководство применяется в:

- строительстве новых автодорог, автомагистралей, дорог государственного значения I и II категории, а также прочей придорожной инфраструктуры,
- реконструкции и капитальном ремонте автодорог,
- в пределах и вокруг застроенных зон.

Типы проектов, для которых аудит будет являться обязательным, будут определены в соответствии с правовыми нормами (законом и подзаконными актами).

Например, АБДД может применяться для:

- Крупных проектов, в т.ч. автомагистралей и других объектов дорожной инфраструктуры.
- Дорог государственного значения I и II категории, объездных дорог и т.д.
- Среднемасштабных проектов, т.е. проектов реконструкции и капитального ремонта
- Небольших улучшений, т.е. устройства велосипедных дорожек, тротуаров, при проведении работ по эксплуатации, и т.д.
- Схем организации дорожного движения (постоянных и временных).

АБДД может проводиться при строительстве междугородних дорог, а также городских магистральных улиц.

Есть вероятность, что в будущем применение АБДД в некоторых странах TRACECA будет регулироваться Законом о дорожном движении.

[21]От уровня инженеров-проектировщиков значительно зависит внедрение концепций безопасного проектирования и предотвращения типичных проблем с БДД, которые могут наблюдаться. Проектом региональной БДД TRACECA проводится обучение 6 инженеров-проектировщиков в каждой стране и изучение того, каким образом инженер-проектировщик может наиболее активно вовлекаться в проектирование национальных, региональных и муниципальных автодорог независимо от того, будет проводиться подобное обучение для государственных органов, проектных институтов или компаний-консультантов.

2.4. Ценность АБДД и затраты на его проведение

Преимущества АБДД основаны на проактивном управлении безопасностью дорожного движения за счет определения профилактики рисков, связанных с пробелами в области дорожной безопасности.

То есть, ценность АБДД заключается в:

- Создании безопасных дорог путём предотвращения ДТП и смягчения их тяжести.
  Проведенное в Великобритании исследование показало, что на дорогах, при строительстве которых проводился АБДД, может быть предотвращено до 1/3 всех столкновений. Австрийский комитет по безопасности дорожного движения (KfV) подсчитал, что финансовые выгоды от АБДД в Австрии в 50 раз превышает затраты. Исследование в Дании в 1995 году пришло к результату, что коэффициент рентабельности равен 16,8. В Шотландии такой коэффициент был оценен как 15:1. Немецким страховым институтом по организации дорожного движения (VTIV) были проведены исследования в области рентабельности АБДД, и было выяснено, что значение коэффициента варьировалось от 4 до 99. В Новой Зеландии показатель выгода/затраты имеет значение около 20:1. Другие исследования показали уменьшение количества столкновений, приводящих к травмам, на 1-3 процента.
- Усовершенствовании организации дорожного движения.
- Сокращении общих затрат жизненного цикла на строительство автодорог.
- Уменьшении необходимости улучшения новых дорог после строительства.
- Более четком понимании и лучшем документировании организации безопасности дорожного движения.
- Внедрении в будущем усовершенствований по БДД в стандарты и процедуры.
- Более четком рассмотрении потребностей уязвимых участников движения.
- Стимулировании привлечения других институций/специалистов в сферу БДД.
- Продвижении принципов безопасного проектирования среди собственников и проектировщиков.
- Экономии средств, сокращении социальных расходов и расходов на медицинское обслуживание за счет сокращения ДТП.
- Повышении информированности о практике безопасного проектирования для каждого участника проекта.
- Повышении корпоративной культуры в области безопасности.
- Взаимном плодотворном сотрудничестве между специалистами разных сфер управления автодорогами (т.е. Проектирование, Эксплуатация, Организация движения и т.д.)

Чем раньше будет выполнен АБДД проекта в ходе процессов проектирования и разработки, тем больше результатов и выгод будет достигнуто. Своевременный аудит позволит раньше устранить проблемы, а, следовательно, минимизировать время и средства, затраченные на перепроектирование на более поздних стадиях строительства.

Кроме того, необходимо отметить, что реализация АБДД приводит к активной дискуссии между аудиторами, заказчиком и проектировщиком. Подобное обсуждение оказывается целесообразным для повышения осведомленности всех задействованных сторон, улучшения исполнения ежедневных задач, процедур проектирования, а также процесса обновления стандартов.

Затраты на проведение аудита делятся на три категории:

- оплата услуг консультанта,
- временные затраты заказчика на организацию проведения аудита, и
- расходы, связанные с выполнением принятых рекомендаций.

Опыт показывает, что расходы на аудит БДД нового объекта приблизительно равен расходам на проведение инженерных изысканий. Другие примеры показывают, что средняя стоимость условного аудита для небольших и средних проектов варьируется между $1000 и $5000. В других исследованиях стоимость аудита варьировалась от $700 до $6000, при этом большинство проектов находились в интервале между $2000 и $3600. Фактическая стоимость во многом зависит от масштабов и сложности проекта, а также от требуемого состава группы аудиторов.

Некоторые консультанты определили, что аудит добавляет приблизительно 5 - 10 % к затратам на проектирование, или менее 0,5 % к затратам на строительство. Другими выяснено, что приблизительная стоимость аудита добавляет 4 - 10 % к расходам на проектирование автодороги. Так как затраты на проектирование составляют примерно 5 - 6 % от общей суммы проекта, то выгоды от безопасного дорожного движения значительно перевешивают такие небольшие затраты.

В небольших проектах (ограничение скорости движения или отдельные улучшения) затраты могут составлять более высокий процент от общих капиталовложений. Затраты на повторное проектирование / устранение недостатков должны рассматриваться как изменяющиеся от проекта к проекту. . Стоимость устранения недостатков зависит от этапа процесса проектирования, на котором была выявлена проблема, а также количества времени, необходимого на перепроектирование участка.

2.5. Структура Руководства

Настоящее руководство состоит из следующих пяти разделов:

В первом Разделе представлен АБДД и объясняется необходимость в существовании процедур проведения АБДД.

В Разделе 2 представлены основные сведения об АБДД. Раздел содержит ответы на следующие вопросы: Что такое Аудит безопасности дорожного движения? Какие существуют определения? Почему нам необходим АБДД? Где АБДД может применяться? Какова ценность АБДД и расходы на его проведение?

В Разделе 3 описываются этапы АБДД. Подробные разъяснения предоставлены для: эскизного (предварительного) проекта, рабочего проекта, предэксплуатационной стадии и начальной эксплуатации. В разделе также обсуждается методология, применяемая в проведении аудитов на разных стадиях проекта.

В Разделе 4 представляется процесс проведения АБДД и поясняется процедура проведения аудита. В разделе описывается полный процесс от подбора группы аудиторов до проведения совещания по завершении процедуры и последующим мероприятиям.

Раздел 5 отражает обсуждение проведения обучения для аудиторов и правовых вопросов, связанных с аудитом безопасности дорожного движения.

Приложения 1-3 содержат контрольные списки для аудита безопасности дорожного движения (для всех этапов).

3. ЭТАПЫ АУДИТА БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ

АБДД может быть эффективным для большинства проектов, независимо от масштаба, и на любом или на все ключевых этапах разработки проекта автодороги. В соответствии с последним международным опытом, и на основании директивы 2008/96 ЕС, существуют четыре типовых этапа, на которых проводится АБДД:

- Стадия 1: **эскизный (предварительный) проект**,
- Стадия 2: **рабочий проект**,

- Стадия 3: **предэксплуатационная стадия,** и
- Стадия 4: **начальная эксплуатация** – когда дорога используется.

Сложность и затрачиваемые усилия в ходе АБДД меняются на каждом этапе. Далее представлен обзор того, что влечет за собой аудит на каждой стадии.

Аудит на самой ранней стадии проектирования (ТЭО или планирование) должен проводиться с применением метода оценки воздействия на безопасность дорожного движения, а не по процедуре АБДД. Но в случае капитальных ремонтов, уширения или просто крупных проектов по эксплуатации существующих автодорог, должна быть проведена инспекция БДД для выявления существующих недостатков в безопасности движения и разработки контрмер на последующих стадиях проектирования и строительства.

АБДД на стадиях 1 и 2 должны проводиться на основе проектной документации проекта (чертежи, технические отчеты, пояснительные записки и т.д.). Может понадобиться посещение участка, особенно для изучения чертежей капитального ремонта существующих покрытий. Для обеспечения необходимой точности в проведении АБДД, проектная документация должна иметь достаточно качественное содержание.

До запуска новой дороги в эксплуатацию на стадии 3 должен быть проведен аудит с целью проверки соответствия строительства проектным чертежам в полном соответствии с требованиями безопасности, а также выявления, не проявились ли после строительства какие-либо невыявленные ранее недостатки в безопасности автодороги, которые повышают риски безопасности. Также на стадиях 3 и 4 должны проводиться проверки безопасности в дневное и темное время суток. Финальная стадия 4 АБДД заключается в проверке автодороги в ходе начального этапа эксплуатации. Важно, чтобы оценка фактической ситуации с безопасностью дорожного движения была проведена спустя несколько месяцев.

Ниже представлен детальный обзор каждой стадии проведения аудита.

3.1. Эскизный (или предварительный) проект

В ходе разработки эскизного (или предварительного) проекта, команда аудиторов проводит оценку общих принципов проекта. Основной целью является оценка относительной безопасности типов и планов перекрестков или развязок, плана трассы и вертикальных кривых, поперечного профиля, дальности видимости, ширины полос и обочин, подъема виражей, средств для пешеходов и других уязвимых пользователей автодорог и прочих элементов проекта. Аудит, проводимый на данной стадии, должен быть завершён до окончания процесса отвода земель во избежание осложнений в случае, если потребуются существенные изменения в плане трассы.

3.2. Рабочий проект

На стадии рабочего проекта в наличии должны быть все элементы окончательного проекта. На данном этапе группа аудиторов рассматривает окончательные геометрические параметры проекта, предложенные схемы установки дорожных знаков, нанесения дорожной разметки и устройства освещения, водоотводы, барьерные ограждения и другие придорожные объекты, озеленение, детали перекрестков и развязок (например, сужения, протяженность полос разгона и торможения, радиусы поворота). Группа также рассматривает средства для особых участников движения, таких как мотоциклисты, пешеходы (включая особые потребности детей и пожилых людей) и лица с ограниченной подвижностью.

3.3. Предэксплуатационная стадия

Непосредственно перед запуском автодороги или объекта в эксплуатацию, группе аудиторов необходимо провести проверку участка, чтобы удостовериться в том, что потребности безопасности всех пользователей (т.е. пешеходов, велосипедистов, мотоциклистов и прочих) в достаточной степени удовлетворены. Группа аудиторов должна провести проверки на основе вождения в дневное и ночное время суток, а также, при возможности, в различных погодных условиях. . Данный тип аудита призван попытаться выяснить, существуют ли опасности, не выявленные при проведении предыдущих аудитов.

3.4. Начальная эксплуатация – когда дорога используется

АБДД может проводиться непосредственно после запуска новой или реконструированной / отремонтированной дороги или объекта в эксплуатацию. Когда дорога «привлекает» участников движения, пользующихся другими маршрутами, могут быть замечены некоторые проблемы, которые ранее, возможно, не казались недостатками безопасности дорожного движения. Корректирующие мероприятия на данной стадии намного более дорогостоящие, но всё ещё могут быть экономически выгодными. АБДД также может быть проведен на любом участке существующей дорожной сети для выявления недостатков в области безопасности.

4. ПРОЦЕСС ПРОВЕДЕНИЯ АУДИТА БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ (КАК ПРОВОДИТЬ АБДД?)

4.1. Участники процесса аудита и их роли

Главным образом, в процессе задействованы три стороны: заказчик, проектировщик и аудитор. Роли и обязанности сторон схожи в разных странах.

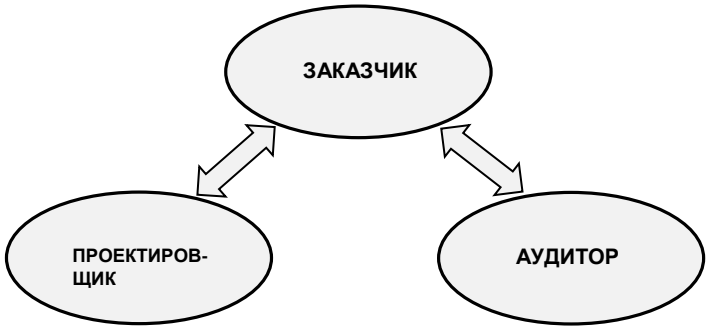


Рисунок 4.1.1: Участники процесса аудита

Типичные роли и обязанности всех задействованных в процессе аудита сторон отражены в следующих параграфах.

Заказчик: Организация, ответственная за проект, иногда также называется менеджер проекта или инвестор проекта. Зачастую это орган управления автодорогами, или в некоторых случаях местный заинтересованный участник.

Аудит БДД должен рассматриваться как неотъемлемый компонент процесса проектирования автодороги. Таким образом, необходимо, чтобы заказчик / орган управления автодорогами выделил достаточно средств и ресурсов для проведения аудита безопасности дорожного движения. Заказчик / орган управления автодорогами должен:

- требовать проведения АБДД как части процесса управления качеством,
- предусмотреть в бюджете средства для найма консультантов, выполняющих работы по аудиту БДД
- назначать выполнение аудита на соответствующих стадиях проекта, и
- рассмотреть официальный отчет и действовать в соответствии с рекомендациями там, где это целесообразно и возможно.

Без полноценного участия заказчика в процессе, особенно без подлинного внимания к рекомендациям, аудиторский процесс становится неэффективным. Более того, заказчик / орган управления автодорогами должны обеспечить проведение обучения на всех уровнях в рамках собственной организации с целью подтвердить то, что безопасность является неотъемлемым компонентом всех стадий проекта (планирование, проектирование, строительство и техническое обслуживание). Правильное обучение персонала повышает потенциал аспектов БДД, выявленных группой аудиторов.

Обязанностями заказчика / органа управления автодорогами являются:

- подбор группы аудиторов с соответствующим опытом и знаниями,
- предоставление проектной документации;
- проверка соответствия аудиторов требованиям, описанным в ТЗ,
- анализ отчета аудитора и передача согласованных предложений проектировщикам для включения их в проект,
- присутствие на стартовом и заключительном совещаниях, и
- отслеживание проектных работ.

По завершении процедуры АБДД, заказчик должен предоставить группе аудиторов письменный ответ, отвечающий на все вопросы по безопасности. Ответ должен включать в себя как принятие предложенных мер и предоставление проектного решения, так и отказ в принятии мер с указанием причин.

Проектировщик: Лицо или группа лиц, нанятые заказчиком для разработки чертежей автодороги. Команда проектировщиков может быть независимой либо входить в состав организации заказчика. Проектировщик несет полную ответственность за проект.

Ответственностью проектной группы / менеджера проекта является присутствие на стартовом и заключительном совещаниях. Ответственность за детальную разработку или включение корректив, предложенных группой аудиторов и согласованных заказчиком, возлагается на проектную группу / менеджера проекта. Проектная группа / менеджер проекта несёт ответственность за принятие всех проектных решений, однако иногда решения могут потребовать участия заказчика / органа управления автодорогами (в случае, если изменения в проекте значительно увеличивают бюджет).

Аудитор: Лицо или группа лиц, нанятые (или утверждённые) заказчиком для

проведения аудита. Аудиторы должны быть независимы от проектировщиков.

Основная роль группы аудиторов заключается в определении потенциальных проблем в части БДД в проекте автодороги на основании изучения проектной документации и чертежей и/или проведения полевых проверок. Обычно аудиторы не перерабатывают проект и не вносят изменения. Аудиторы могут воспользоваться разработанным комплектом контрольных списков, помогающих в проведении аудита (Приложения 1-3). В списках определены вопросы и проблемы, которые могут возникать на соответствующих этапах процесса аудита. Списки служат скорее руководством, но не заменой опыту. С их помощью также обеспечивается непрерывность процесса аудита по стадиям, обеспечивающая проверку ключевых аспектов для каждого чертежа.

Группа аудиторов должна представить заказчику отчет, в котором на основании опыта в разработке средств обеспечения безопасности определены критические проблемы. По завершению аудита для обсуждения выявленных в его ходе проблем проводится совещание с участием аудиторов, проектировщиков и заказчика. Группа аудиторов должна рассмотреть ответ проектировщиков на аудиторский отчёт при наличии такового. Аудиторы не обязаны утверждать либо согласовывать полученный ответ, это является обязанностью заказчика.

4.2. Группа аудиторов

Количество аудиторов в группе может изменяться в зависимости от масштаба или типа проекта. Рекомендуемое количество участников - от двух до пяти специалистов разного профиля. Участие как минимум двух аудиторов обеспечивает возможность обмена идеями. Но намного выгодней, когда группа состоит из большего количества экспертов с разными специальностями. Существует несколько требований, которым должна соответствовать группа аудиторов:

- **Независимость**

Аудиторы безопасности дорожного движения должны быть независимы от проектной группы с тем, чтобы сохранить беспристрастность и рассматривать предложения исключительно с точки зрения участников движения. Группы аудиторов могут быть созданы в рамках крупной организации либо при участии консалтинговых фирм. Важно создать обстановку, способствующую плодотворному общению между группой аудиторов и заказчиком / проектировщиками для обеспечения эффективности аудита.

- **Квалификация**

Аудит безопасности дорожного движения должен проводиться лицом либо группой, обладающими соответствующим опытом относительно принципов и практики в области разработки средств обеспечения безопасности дорожного движения, проведения расследований несчастных случаев и их предотвращения, организации дорожного движения и проектирования автодорог. Кроме того, к группе на проектной основе и на разных этапах аудита могут присоединяться участники с опытом в обеспечении контроля соблюдения, эксплуатации и в области человеческих факторов. Профессиональные знания о человеческих факторах могут в выбранных областях внести вклад в аудит дорожной безопасности путём понимания интерактивной природы человеческого поведения в придорожном окружении.

- **Опыт**

Обязательным является то, чтобы у группы аудиторов имелся значительный коллективный опыт работы в ключевых сферах, указанных в предыдущем разделе. Контрольные списки аудита служат для определения ключевых моментов / областей для рассмотрения и должны восприниматься исключительно как памятки для аудиторов с опытом, а не как исчерпывающие перечни проблем. В некоторых странах аудиторы должны быть аккредитованы (сертифицированы) на государственном уровне. Для прохождения аккредитации, аудиторы должны пройти специализированный курс по аудиту безопасности дорожного движения и ежегодно принимать участие в определенном количестве аудиторских проверок. При необходимости, в проектную группу на разных этапах процесса аудита могут привлекаться дополнительные специалисты (например, офицеры полиции, эксплуатационный персонал, эксперты в области человеческих факторов и другие).

4.3. Практическое проведение АБДД (Как проводить АБДД?)

Как относительно новый инструмент в области безопасности дорожного движения, АБДД должен иметь эффективную структуру с четко обозначенными обязанностями.

В целом процедура проведения АБДД включает в себя три этапа:

- **заказ**,
- **проведение** и
- **завершение**.

На рисунке 4.3.1. описан типичный процесс аудита.

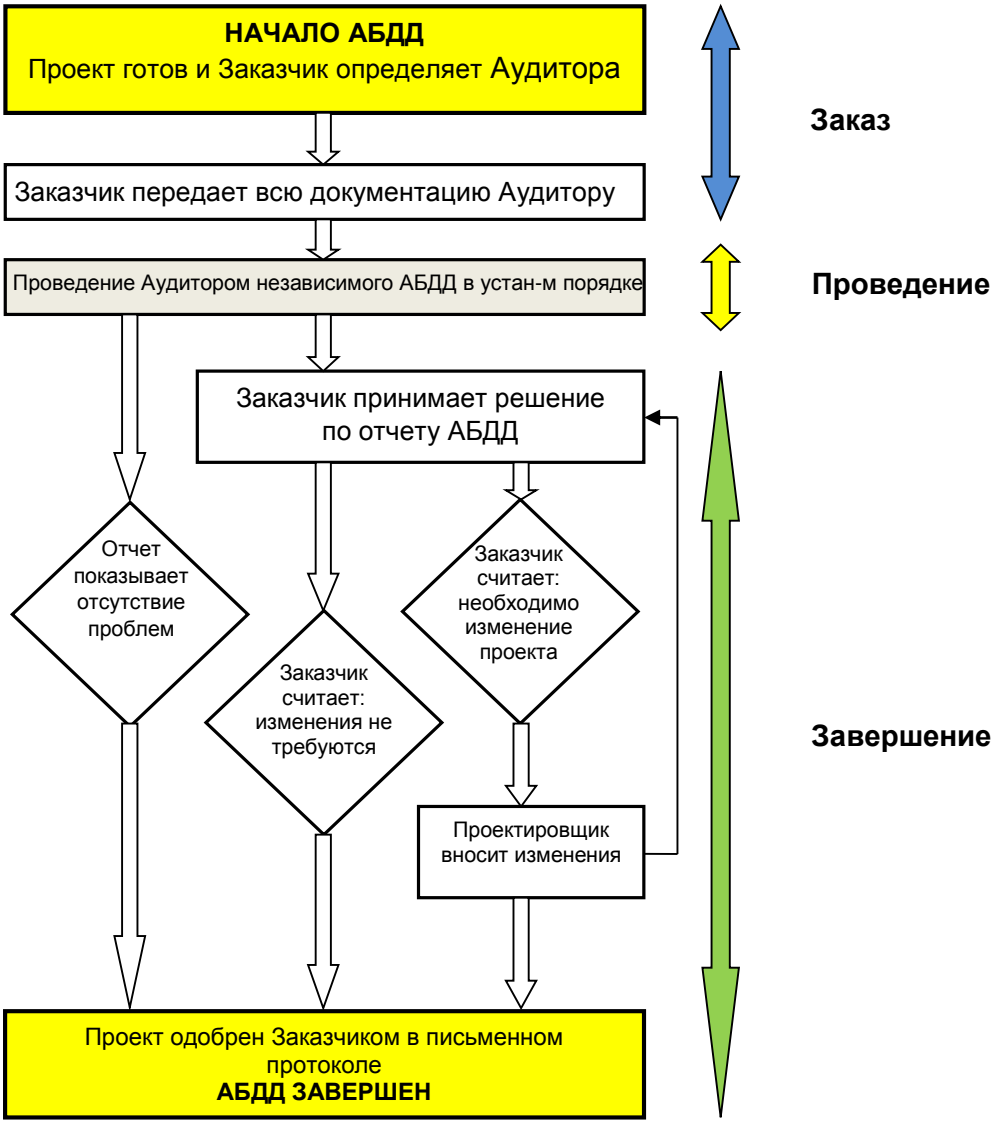


Рисунок 4.3.1: Процесс проведения АБДД (основные шаги)

Принимая во внимание объем и характер проекта строительства дорожной инфраструктуры, независимо от стадии аудита, существует возможность провести аудит на основе указанной схемы.

Необходимо отметить, что на этапах 3 и 4 процесса аудита в большинстве случаев потребность в проектной работе отсутствует. Нередко изменения могут быть выполнены непосредственно строительной компанией (подрядчиком) на этапе 3 либо эксплуатационным подразделением заказчика на этапе 4.

В зависимости от вида изменений в проекте, иногда может возникнуть необходимость в частичном повторном проведении АБДД для проверки изменённой документации. В случае возникновения сомнений заказчик должен направить аудитору соответствующие документы.

4.3.1. Заказ проведения аудита безопасности дорожного движения

Заказ аудита

Как правило, решение о проведении аудита принимается заказчиком / управлением дорожного хозяйства. Однако проведение аудита может регулироваться решением Министерства либо законодательством, а также финансовыми институтами. На данной стадии заказчик передает аудитору всю необходимую документацию.

Выбор группы аудиторов

Выбор участников группы является обязанностью заказчика. Как было сказано ранее, аудиторы должны быть независимы от проектировщиков, и должны обладать соответствующим опытом и знаниями по разработке средств обеспечения безопасности дорожного движения. Список потенциальных аудиторов, с указанием квалификации, будет полезным для заказчика при укомплектовании группы аудиторов. Руководителем группы аудиторов должен стать кандидат, обладающий опытом в разработке средств обеспечения безопасности, а также принимавший участие в предыдущих аудитах. Заказчик должен проявить аккуратность при выборе аудиторов. Группа, подавшая самое экономное предложение, не всегда обладает лучшим опытом. В аудите безопасности дорожного движения опыт имеет первостепенное значение, а стоимость - на втором месте.

Характер и состав группы зависят от сложности, масштаба и типа проекта для проведения аудита, а также может варьироваться на каждом этапе аудита.

Первые два этапа должны проводиться опытными аудиторами с участием специалистов в области безопасности дорожного движения, расследования ДТП и проектирования автодорог.

На стадии рабочего проекта полезно иметь в группе аудиторов специалистов в области проектирования автодорг, дорожных знаков, освещения и систем водоотвода, безмоторных ТС и т.д. в зависимости от типа проекта для проведения аудита. Также будет весьма полезен участник, обладающий знанием аспектов человеческого поведения в области безопасности дорожного движения.

На предэксплуатационной и эксплуатационной стадиях важно, чтобы в состав группы входили участники, обладающие опытом эксплуатационной работы включая установку дорожных знаков, содержание освещения, светофоров, озеленения, снегоуборку и т.д. Полезным может быть привлечение офицера полиции, обладающего опытом в области безопасности дорожного движения и расследовании ДТП.

Сбор исходной информации и аудиторский инструктаж

Заказчик несёт ответственность за предоставление всей документации по проекту, включая отчеты, данные, чертежи, контрактные документы и, при необходимости, данные по интенсивности дорожного движения. Данная информация будет полезной в процессе оценки аудиторами проекта с точки зрения безопасности.

Важно, чтобы группе аудиторов были предоставлены все необходимые документы в самом начале. Неполный комплект документов ведет к возникновению вопросов и дополнительных запросов, что в результате потребует большего количества времени и работы на проведение аудита.

Аудиторский инструктаж (стартовое совещание) – это совещание с участием всех сторон, задействованных в аудите, на котором аудиторы получают инструкции, описывающие схему для начала аудита. На совещании предоставляется достаточный объем исходной информации для успешного проведения аудита.

Как минимум, инструктаж должен включать:

- краткое описание проекта,
- отчёт об условиях проекта и проектных параметрах (проектная скорость, радиусы поворотов, подъем виража, дальность видимости, интенсивность движения, типы автотранспорта, данные по ДТП и т.д.),
- комплект чертежей (обязательны печатные экземпляры),
- детали и причины любых отклонений от дорожных стандартов,
- отчеты любых предыдущих АБДД и ИБДД,
- в случае реконструкции или капитального ремонта должны быть предоставлены чертежи существующих автодорог и статистика ДТП.

Количество необходимых документов возрастает с переходом к следующим стадиям проекта. Сводная рекомендация по минимальным требованиям к содержанию документации отражена в Таблице 4.3.1.1.

Таблица 4.3.1.1. Рекомендуемый минимум документации для проведения аудита

Эскизный проект	**Рабочий проект**	**Открытие движения**
Пояснительная записка с Анализом условий движения с оценкой интенсивности движения Схемы ДТП и карты с выделенными опасными участками дороги Обзорная карта: планы отдельных мест с указанием типов примыканий Обзор продольного профиля Поперечные профили План трассы Продольный профиль Технологические схемы Планы с обустройством окружающего ландшафта Все существующие схемы расположения дорожных знаков и разметки	Результат предыдущего этапа аудита с решением Заказчика Пояснительная записка Обзорная карта Поперечные профили План трассы Продольный профиль Строительные планы Планы ландшафтных работ Схемы установки дорожных знаков и нанесения разметки Планы с расположением элементов обустройства дороги Чертежи примыканий со всеми дорожными знаками, разметкой и установкой светофоров	Результат предыдущего этапа аудита с решением Заказчика Пояснительная записка План трассы Продольный профиль Планы ландшафтных работ Схемы установки дорожных знаков и нанесения разметки Планы с расположением элементов обустройства дороги Планы установки светофоров Документы на установку светофоров

	Документы на установку светофоров	

4.3.2. Проведение аудита безопасности дорожного движения

После инструктажа или стартового совещания группа аудиторов обязана провести оценку проектной документации, а затем аудит БДД. При возможности полезной будет организация полевых исследований для определения вопросов в проекте, относящихся к безопасности. В следующих подразделах представлен процесс, применяемый при проведении аудита БДД.

Анализ исходной информации

По завершении сбора информации, аудиторам необходимо провести оценку и анализ всей имеющейся информации.

Для аудита на стадии эскизного (предварительного) и рабочего проектов (стадии 1 и 2), группа аудиторов должна изучить детали предлагаемого проекта, детали планов и исходной информации шаг за шагом, что даст возможность рассмотреть воздействие проекта в части безопасности дорожного движения на всех участников движения. Аудиторам должно быть предоставлено достаточное количество времени на проведение АБДД.

В случае если аудит проводиться на предэксплуатационной или эксплуатационной стадиях (стадии 3 и 4), аудиторы должны проанализировать всю соответствующую и имеющуюся информацию, такую как отчеты о ДТП (не относится к предэксплуатационной стадии). Анализ отчетов о ДТП применяется не для изучения аварийно-опасных мест, а как вспомогательное средство для аудиторов при определении потенциальных зон, имеющих проблемы с безопасностью.

Полевые исследования

Полевые исследования (инспекции) необходимы на всех этапах, поскольку они дают аудиторам понимание существующих условий. Полевое исследование позволяет аудитору увидеть, как предложенное решение взаимодействует с окружением и пролегающими дорогами.

Перед посещением объекта аудиторы должны ознакомиться с чертежами и контрольными списками для обеспечения продуктивности осмотра и рассмотрения всех соответствующих вопросов.

Для проведения аудита на стадиях 1 и 2 аудиторы должны провести осмотр объекта, включая участки «чистого поля», до завершения предварительной оценки. Группа должна изучить взаимодействие и переход между новой и существующими дорогами для обеспечения согласованности, в том числе и все типы участников движения.

При аудите на стадиях 3 и 4 рассматриваются физические характеристики проекта путём проведения инспекций на объекте. Такие проверки включают в себя оценку обустройства дороги, дорожных знаков, освещения, разметки, потоков и геометрических характеристик с точки зрения разных видов транспорта. Аудиторы должны определить проблемы, способные оказать воздействие на восприятие пользователей автодороги либо ограничить поля зрения.

Группе аудиторов следует провести инспекцию путём езды за рулём и хождения (по возможности) по объекту во всех направлениях. Кроме того, инспекция участка при возможности должна быть проведена в тёмное время суток и при неблагоприятных погодных условиях.

Фотографии, видеозаписи и голосовые заметки, по возможности с указанием GPS координат, будут весьма полезны на последующих совещаниях.

Изучение документации

Аудитор проводит проверку безопасности дорожного движения основываясь на собственном опыте и знаниях в области безопасности дорожного движения. Чтобы удостовериться в том, что в ходе данной основанной на опыте процедуры не были пропущены какие-либо аспекты безопасности, могут использоваться **контрольные списки** (Приложения 1 - 3).

Аудиторы должны держать в памяти следующие основные вопросы:

- Кто может пострадать и каким образом?
- Является ли предложенное решение безопасным для всех потенциальных участников движения?
- Является ли выбранное проектное решение лучшим с точки зрения дорожной безопасности в рамках норм?
- Можно ли рекомендовать применение другого проектного решения с точки зрения последних разработок в сфере БДД и проектирования автодорог?

Контрольные списки

Разработаны отдельные контрольные списки для разных стадий проекта, приведённые в Приложениях 1 - 3 к данному руководству. Контрольный список включает различные вопросы относительно безопасности всех участников движения и помогает аудитору определить проблемы, которые могут возникать на соответствующем этапе аудита.

Контрольные списки основаны на опыте предыдущих аудитов, выводах из расследований ДТП, опыте управления местами концентрации ДТП, мониторинге БДД, передовом опыте и т. д..

Выводы аудита и отчет

По завершении анализа составляется отчёт об аудите. В отчёте должны содержаться в четкой и сжатой форме описание проекта, стадия проекта, список участников группы аудиторов, процесс проведения аудита, выявленные недостатки в БДД и предлагаемые меры по их устранению. Такие меры должны носить концептуальный характер и не предоставлять проектной группе проектные решения. Существует, например, возможность дать чёткие советы в отчёте об АБДД со ссылками на руководства и нормы. С другой стороны, могут быть полезными отдельные эскизы с идеями по усовершенствованию проекта как приложение к основному тексту отчёта. Создание нового проектного решения не входит в задачи аудитора. Это задача и обязанность инженера-проектировщика.

Отчёт об АБДД для стадий 1 и 2 должен содержать следующую информацию:

- **Детали генерального или рабочего проекта**: Название проекта, стадия аудита, дату аудита, даты и время каждой проверки, погодные условия в ходе проверок и т.д.. Пояснение относительно стадии аудита, к которому относится отчёт.

Информация о задействованной группе аудиторов. Обзор содержания проверенной документации.

- **Результаты аудита**: детали выявленных конкретных недостатков, с указанием причин, по которым они рассматриваются как недостатки. Рекомендации к действию по устранению или сокращению влияния данных недостатков.

Для лучшего понимания результатов заказчиком отчёт АБДД на стадиях 1 и 2 должен иметь следующую структуру:

- **Проблемы –** это полученные результаты, которые прямо воздействуют на безопасность дорожного движения. Т.е. указанные недостатки ведут к росту риска ДТП или его тяжести. С помощью предлагаемых изменений (мер) количество ДТП и рисков должно сократиться. Аудитор может пояснить рекомендации устно либо в виде эскизов, но внесение изменений в проект не является его задачей.
- **Примечания** делаются в отношении обнаруженных факторов, которые не обязательно приведут к росту числа ДТП или степени их тяжести, но способны улучшить общую ситуацию в области безопасности дорожного движения, обеспечить устойчивое функционирование проекта или упростить действия участников движения. Содержание примечаний также может относиться к последующим этапам реализации проекта, с тем, чтобы подвести проектировщика к повышению безопасности в конечном итоге.

Важно изложить выводы письменно на чертежах или других рабочих документах, что будет служить их доказательством. В этом отношении контрольные листы могут быть полезны в качестве рабочих документов. В последней строке проверочного списка «комментарии» аудитор может оставить примечания, которые позднее пригодятся, если заказчику потребуются дополнительные пояснения. Также, в случае обнаружения факторов, не относящиеся к вопросу и, таким образом, не являющиеся частью официального отчета, они могут быть отмечены в данной строке.

В ходе процесса аудита могут быть обнаружены недостатки в проектной документации, не относящиеся к вопросу безопасности. Рекомендуется не включать такие выводы в отчёт, а вместо этого изложить их в сопроводительном письме или в отдельном (неофициальном) приложении к отчету.

Заключительный отчёт направляется Заказчику.

Типовое содержание АБДД на стадиях 3 и 4:

5. **Введение,** включающее информацию о инспектируемом участке дороги, о составе инспекционной группы, даты, времени и условий на момент проверки.
6. **Часть А.** Данные о проекте (назначение автодороги, условия дорожного движения, автодорожные стандарты и окружение). В этой части должна быть очерчена исходная информация, полученная в процессе подготовительных работ в офисе и описаны предпринимаемые действия.
7. **Часть Б.** Результаты исследования с указанием недостатков, содержание должно быть формально структурировано согласно разделам контрольных списков. . В этой части содержится описание выявленных недостатков и недочетов, их оценка, а также заполненная форма исследования и документация с фотографиями. Часть В должна заканчиваться выводом по полученным результатам (Оценка недостатков).
8. **Часть В.** Предложения и варианты мер по устранению – краткосрочные (т.е. малозатратные меры, способные стать частью программы по эксплуатации),

среднесрочные (т.е. небольшие капиталовложения, например дополнительные барьерные ограждения), и долгосрочные (крупные капиталовложения).

Отчет АБДД для третьего и четвертого этапов должен состоять из введения, трех основных частей и приложений с картами, рисунками и иллюстрациями при необходимости.

С целью пояснения предложенных решений и места их применения карты, иллюстрации, фотографии и эскизы контрмер могут быть приложены в отдельном Приложении либо включены в Часть Б.

4.3.3. Завершение аудита безопасности дорожного движения

По получении отчета АБДД заказчик должен рассмотреть проблемы и предложения, а затем вынести решение о дальнейшем ходе проекта. Заказчик направляет отчет по аудиту проектировщику с указанием того, что должно быть принято и изменено в проекте.

Заключительное совещание

Как только отчёт по аудиту достиг этапа, когда все выявленные недостатки чётко задокументированы, должно быть созвано совещание, на котором все заинтересованные стороны получат возможность взаимодействовать и обсудить результаты. Данное совещание должно предшествовать подготовке ответа заказчика на выводы группы аудиторов. В заключительном совещании должны принимать участие группа аудиторов, заказчик, проектная группа и другие сотрудники, задействованные в составлении ответа на выводы аудитора.

Совещание предоставляет возможность:

- неофициально представить результаты аудита и прояснить или проработать их значение,
- вынести предложения по улучшению структуры отчёта,
- обсудить возможные меры по устранению выявленных проблем, и
- установить сроки подготовки ответов заказчиком.

Необходимо отметить крайнюю важность проведения совещания в позитивном, конструктивном и открытом для сотрудничества тоне. Совещание должно начаться с напоминания о том, что целью аудита является именно повышение безопасности окончательного проекта, а не критика в отношении качества работы кого-либо или проектной группы в целом Всем участникам крайне необходимо понимать, что аудит представляет собой весьма выгодную часть разработки проекта. Особое усилие должно быть приложено для заблаговременного информирования задействованных лиц о процессе аудита и связанных с ним положительных результатах. Организаторам совещания следует внимательно поддерживать атмосферу позитивного обмена мнениями и не допускать враждебности и необоснованных разногласий.

Ответ на отчет по проведенному аудиту

Заказчик рассматривает официальный отчет и изучает указанные проблемы и предложения. Заказчик может обратиться к проектировщику с просьбой прокомментировать и дать ответ на рекомендации в отчете, но решение о принятии либо отклонении рекомендаций остается за заказчиком. Он должен определить приведут ли и в какой степени предложения в отчете по аудиту к изменениям в проекте. Все

рекомендации должны быть должным образом рассмотрены. Принятые рекомендации должны быть исполнены безотлагательно.

Ответ заказчика направляется напрямую аудитору. Важно, чтобы в данном официальном ответе содержалось чёткое и полное перечисление причин, по которым какие-либо из рекомендаций не согласованы. Данный ответ служит свидетельством, фиксирующим процесс принятия решения.

Следуя решению заказчика проектировщик вносит изменения в чертежи в соответствии с согласованными корректировками. Затем заказчик принимает решение о необходимости (или ее отсутствии) в частичном повторном проведении АБДД для проверки скорректированной документации. Это будет зависеть от характера и степени изменений в проекте. В случае возникновения сомнений заказчик должен направить соответствующие документы аудитору.

Письменный ответ заказчика на отчет по аудиту входит в состав проектной документации.

Контроль исполнения

Последующая процедура проводится под руководством заказчика. Заказчик рассматривает отчет по аудиту, затем подготавливает письменный ответ по каждой проблеме. Каждое предложенное аудитором в отчете по аудиту мероприятие может быть принято либо отклонено заказчиком. Далее проектировщик вносит изменения в чертежи для снижения рисков БДД. Заказчик проверяет внесение согласованных изменений проектировщиком.

Заказчик должен документально оформить обоснование для каждого отклонённого предложения из отчета по аудиту. Как отчёт по аудиту, так и ответ заказчика входят в состав окончательного протокола аудиторской проверки. Все соответствующие документы должны храниться в качестве подтверждения.

5. ОБУЧЕНИЕ АУДИТОРОВ И ПРАВОВЫЕ АСПЕКТЫ

5.1. Обучение аудиторов

Важно, чтобы аудитор обладал обширным опытом в вопросах БДД.

Руководитель группы аудиторов (РГ) должен иметь полное профильное высшее образование, предпочтительно на уровне магистра, и обладать значительным опытом в области безопасности дорожного движения (или проектирования автодорог) и/или расследования ДТП. Минимальными требованиями для руководителя группы является более 3-х лет работы в АБДД и более 3-х составленных отчётов по АБДД.

Участники группы аудита (УГ) должны иметь как минимум образование на уровне бакалавра и более 3-х лет работы в области безопасности дорожного движения (или проектирования автодорог) и/или расследования ДТП.

Аудиторы должны иметь удостоверение водителя, хорошо знать стандарт на проектирование автодорог, закон о безопасности дорожного движения и закон об автомобильных дорогах. Знание других стандартов по автомобильным дорогам крайне приветствуется.

Для обеспечения качественного аудита аудиторы должны пройти начальное обучение, в результате которого им выдаётся свидетельство о присвоении квалификации, затем они должны принимать участие в дополнительных периодических курсах. Если аудит проводиться группой аудиторов, то как минимум один участник группы должен обладать свидетельством о присвоении квалификации.

В программу обучения должны входить темы, относящиеся к БДД, например расследование ДТП, управление безопасностью дорожной сети, разработка и проектирование средств обеспечения БДД. В некоторых европейских странах, таких как Германия, Дания и Великобритания, разработаны и хорошо зарекомендовали себя учебные курсы по АБДД.

На сегодняшний день в Европе представлены два подхода к проведению АБДД. Первый заключается в том, чтобы в аудите участвовал квалифицированный персонал, например сотрудники государственной администрации, института по безопасности дорожного движения и т.п.. В литературе такое решение зачастую называется «внутренний аудитор». Второй подход состоит в заключении контрактов с экспертами по проведению АБДД из частных консалтинговых фирм – «внешний аудитор».

В дополнение, для долгосрочного развития может быть целесообразным создание национального Аудиторского центра (предпочтительно внутри какой-либо из существующих организаций). Подобная структура могла бы организовывать обучение, сертификацию и курсы повышения квалификации для сертифицированных аудиторов. Ассоциация или общество дорожных инженеров или другая подобная организация может быть подходящим организатором регулярных курсов.

5.2. Правовые аспекты

Аудиты БДД являются одним из способов выявить недостатки или проблемы, потенциально способные влиять на безопасность дорожной инфраструктуры. В их ходе также определяются меры по исправлению положения, которые могут уменьшить или устранить потенциальные проблемы безопасности. Иногда аудит может коснуться правовых вопросов, которые аудитор должен принять во внимание.

Опыт многих стран показывает, что претензии, связанные с применением АБДД, не являются проблемой. АБДД предоставляет средства проверки того, чтобы все обоснованные инициативы по БДД были предприняты в проекте, при строительстве и эксплуатации. Аудиторы только определяют вопросы или проблемы безопасности, способные снизить уровень безопасности будущей или существующей дороги.

Необходимо указать, что при правильном проведении АБДД на применяющий его орган управления не налагается дополнительная ответственность. Принимая во внимание правовую ответственность, можно выделить следующие основные принципы:

- В случае, если процедуры аудита БДД могут считаться общественным активом, то опасения в отношении юридической ответственности не должны использоваться как препятствие к их применению,
- Документация имеет большое значение. Ответ заказчика на аудиторский отчет должен содержать причины отклонения рекомендации аудитора, если это имеет место. Ответ должен быть подробным и обоснованным,
- Отчёт по аудиту и официальный ответ должны быть подшиты к проектной документации, так как они могут быть использованы в рассмотрении какого-либо дела в будущем, и
- Целесообразными являются последующие действия или их отсутствие, предпринятые заказчиком / органом дорожного хозяйства, а также фиксация того, что было сказано и выполнено в ответ на аудит.

Краткий ответ на вопрос «Приведет ли проведение АБДД к дополнительной ответственности органа управления безопасностью?» может быть «нет» .

Некоторые юристы придерживаются более прогрессивного мнения, что в случае отказа от проведения аудита БДД там, где он может быть проведен, необходимо рассмотреть возможность появления другого вопроса: “*Может ли отказ от проведения аудита безопасности дорожного движения, способного выявить проблемы безопасности, рассматриваться в суде в негативном контексте*?”. Юристы уверены, что ответом на этот вопрос в конечном итоге может быть «*да*».

Кроме того, необходимо учитывать, что ЕС опубликована Директива № 2008/96 по управлению безопасностью дорожной инфраструктуры, содержащая чёткое решение об обязательном проведении АБДД на сети трансъевропейской автомагистралей в ближайшие годы. Также, восемь многоотраслевых инвестиционных банков сейчас пришли к соглашению о едином подходе в отношении акцента на безопасности дорожного движения во всех своих инфраструктурных проектах и это решение усиливает давление на необходимость проведения аудита БДД на всех дорожных проектах, финансируемых ими.

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4.4.2

SIMPLE TEMPLATE ON ROAD SAFETY AUDIT POLICY AND PROPOSAL OF LEGAL CHANGES TO MAKE RSA MANDATORY AT NATIONAL LEVEL

TRACECA Regional Road Safety Project

Safety Engineering Team

March 2015

EU funded road safety project
For
Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

PREFACE
TO THE TEMPLATE ON ROAD SAFETY AUDIT POLICY
AND
PROPOSAL OF LEGAL CHANGES TO MAKE RSA MANDATORY
AT NATIONAL LEVEL

With EU Directive no. 2008/96 on road infrastructure safety management, published in 2008, the European Union has made a clear decision that the Road Safety Audit (RSA) will be mandatory for the Trans-European Road Network in forthcoming years. It is well known fact that RSA is highly effective and cost effective engineering tool for improvement of safety on roads.

Unfortunately, in reality there is little application of RSA at present in TRACECA Region. RSAs that are implemented are mostly pushed by IFIs and implemented by foreign consulting companies. Even when RSAs are undertaken the RSA recommendations are not always implemented by the road authorities.

This is why the Project was requested to develop capacity in each country (at National level) for undertaking of RSA. The Project team in cooperation/consultation with concerned stakeholders on Workshops have produced this, simple template on Road Safety Audit Policy and proposal of legal changes to make RSA mandatory at National level.

RSA Policy has been developed for all TRACECA countries to address the common road safety problems related of planning, design and operation of road infrastructure and therefore some localization should be done (empty places should be fulfilled with local specific national data from each specific country).

Similar situation is with proposed legal changes that should be undertaken for full implementation of RSA at National level.

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A) TEMPLATE ON ROAD SAFETY AUDIT POLICY

1. PURPOSE OF ROAD SAFETY AUDIT POLICY

This Policy sets out how the (*name of the country*) and responsible Ministry (name of the responsible Ministry) or Road Administration (name of Road Administration) will organize and implemented Road Safety Audits (RSA) as a regular procedure for increasing the road safety of infrastructure.

2. WHAT IS ROAD SAFETY AUDIT

RSA is a well known term used internationally to describe an independent review of a project to identify road or traffic safety deficiencies. It is a formal examination of a road or a traffic project and can be regarded as part of a comprehensive quality management system.

RSA is a pro-active approach with the primary aim of identifying potential safety problems as early as possible in the process so that decisions can be made about eliminating or reducing the problems, preferably before a scheme is implemented or accidents occur.

The most common definition of RSA is: "A formal road safety examination of the road or traffic project, or any other type of project which affects road users, carried out by an independent, qualified auditor or team of auditors who reports on the project accident potential and safety performance for all kinds of road users".

3. AREA OF APPLICATION

A RSA should be undertaken on a wide range of projects varying in size, location, type, and classification. The types of projects that can be audited are categorized under the following headings:

- function in the network
  (International roads, Magisterial roads, Regional and Local roads)
- traffic
  (motor vehicles only or mixed traffic with non motorized or slow agricultural traffic)
- position - locality
  (outside or inside built up areas).

A RSA is recommended to be taken for any design of new roads.

In nearby future, RSA could be extended on any proposal for changes in existing roads or road environment which are likely to alter interactions between different road users, or between road users and their environment. It is recommended in the Regional Road Safety Audit Manual for TRACECA Countries (2014) that RSA should be undertaken for all projects that have the value of technical documentation more than 30.000 Euro.

Therefore, RSA could be conducted on:

- new roads, motorways, highways and other road traffic facilities,
- reconstruction and rehabilitation,
- inside and outside built-up areas.

The types of projects to be mandatorily audited will be defined according to the legal (law or by-law, or Ministry decree) regulations.

4. STAGES OF ROAD SAFETY AUDIT

According to the International best practice and Regional Road Safety Audit Manual for TRACECA Countries, RSA should be conducted in four different stages:

Stage 1: draft (or preliminary) design,
Stage 2: detailed design,
Stage 3: pre-opening of the road and
Stage 4: early operation, when the road is some time in operation.

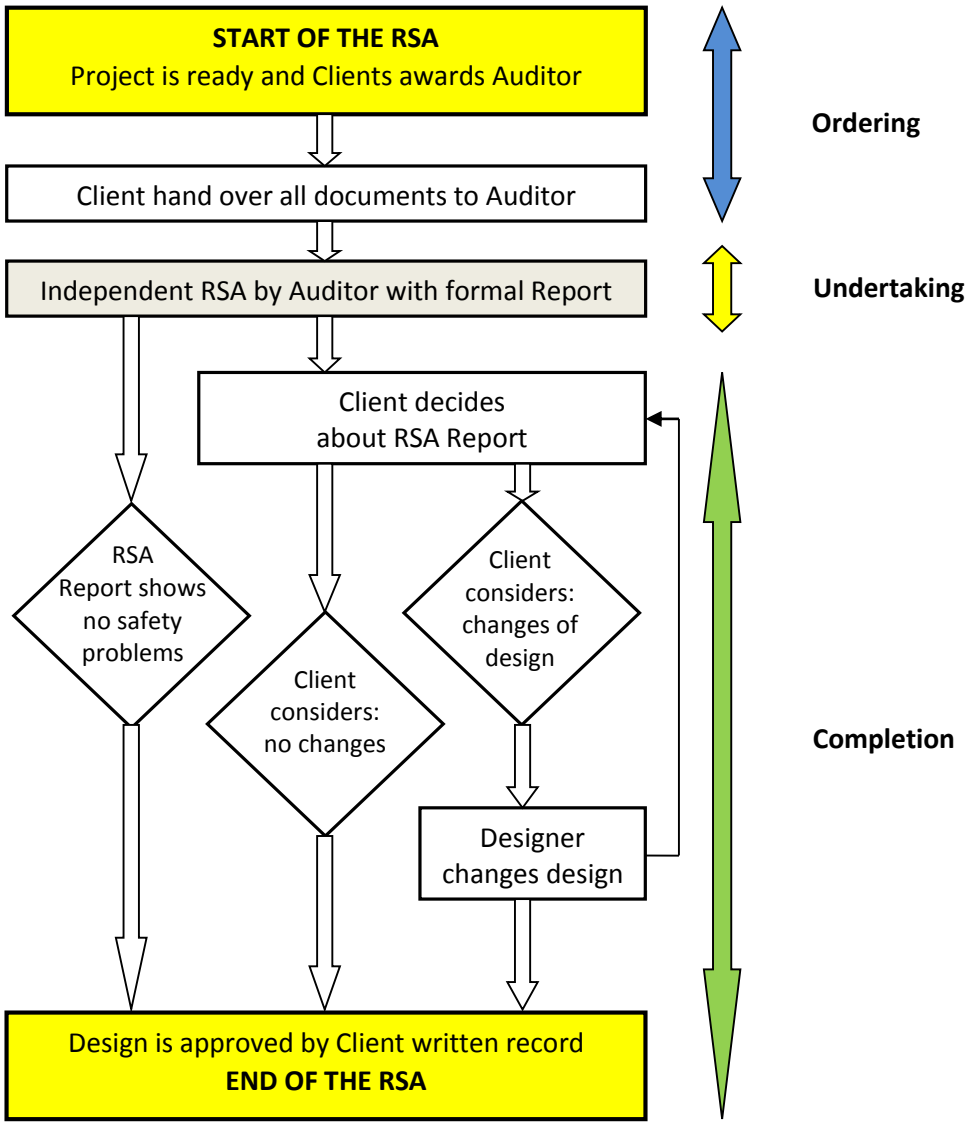
5. ROAD SAFETY AUDIT PROCESS

As a relatively new road safety procedure, RSA has to be organized with an effective structure and with clear responsibilities.

The general RSA procedure will include three main phases:

- ordering,
- undertaking and
- completion.

The following picture (Figure A.5.1.) describes the typical RSA process.



Financing for RSA should be provided from the different resources:

- for Internationally financed road project, RSA costs should be calculated and integrated in whole project costs,
- for National road projects, RSA costs should be provided from local Road Administration budget.

Road Administration* *(specify exact unit. E.g. Road Safety Audit Unit)*, are responsible for implementation of RSA procedures on all roads under their responsibility.

* or equivalent organization

6. QUALIFICATION OF ROAD SAFETY AUDITORS

It is important that the auditor has extensive experience in road safety issues.

Proposal is that RSA team leader (TL) should have completed relevant university education preferably with Master degree and have significant experience in road safety engineering (design) and/or road traffic crash investigation. About three years of working with RSA and more than 3 RSA Reports produced would be minimal requirement for an RSA Team Leader.

RSA Team Members (TM) should have at least a bachelor education and about three years of experience in road safety engineering (design) and/or road traffic crash investigation.

Auditors should possess driving licenses and have good knowledge about Road Design Standard, the Traffic Safety Law and the Law for roads. The knowledge of other road standards is highly desirable.

To ensure the quality of the audit, auditors should undergo initial training, resulting in the award of a certificate of competence and should then take part in additional periodic training courses. Where audits are undertaken by teams, at least one member of the team shall hold a certificate of competence.

The content of training should include road safety related topics like crash investigation, road safety network management, road safety engineering and design.

Road Safety Audits are required to be carried out generally in accordance with the Regional Road Safety Audit Manual for TRACECA Countries (2014), which is developed within TRACECA Road Safety II Project.

7. ACCREDITATION PROCESS

Responsible Ministry (*name of Ministry*) is encouraged to support the accreditation process for Road Safety Auditors.

The National accreditation of Road Safety Auditors should be implemented preferably in accordance with the model provided by TRACECA Road Safety II Project.

In _____

Date: _____

Signed by: _____

ANNEX 1:

ROAD SAFETY AUDIT POLICY STATEMENT

The following Road Safety Audit Policy has been developed with the aim of having adopted it as a formal Policy of main road safety stakeholders in each TRACECA country.

ROAD SAFETY AUDITS POLICY

Policy Objective

To strengthen the usage and implementation of a Road Safety Audit procedures inside the (Name of the country).

Policy Statement

RSA policy requires that the following actions will be adopted as part of a increasing the road safety level within the (Name of the country).

a) Ministry of Transport *(or equivalent)* will include Road Safety Audit goals and objectives in its business (financial) plans.
b) Adopted RSA procedures shall be in accordance with the TRACECA Road Safety Audit Manual and accompanying Checklists (2014).
c) Ministry of Transport *(or equivalent)* will initiate amendment to the legalisation which will makes Road Safety Audit obligatory (e.g. Law amendment or Ministry Decree for mandatory usage of Road Safety Audit).
d) Ministry of Transport *(or equivalent)* acknowledges that all new road projects that have the value of technical documentation more than 30.000 Euro will be subject to a Road Safety Audit.
e) Sections of existing state owned road network with high risk of road accidents will be subject to audit within a defined timeframe (every 5 years).
f) Ensure that appropriately trained, experienced and independent Road Safety Auditors are used in undertaking of Road Safety Audits.
g) Ministry of Transport *(or equivalent)* will push and stimulate the local municipalities to undertake the Road Safety Audit for the roads under their responsibility.

B) PROPOSAL OF LEGAL CHANGES TO MAKE RSA MANDATORY AT NATIONAL LEVEL

1. INTRODUCTION TO LEGAL CHANGES FOR MAKING RSA MANDATORY

Having in mind different situations regarding the road safety legislations in TRACECA countries Project team discussed on workshops possible and efficient ways of implementing the Road Safety Audit as mandatory procedure at national levels and comes to the following solution - proposal of three way approach**.**

Proposal for Law and Regulation for implementing mandatory RSA was prepared in accordance with EU Directive 2008/96/EC, fact findings in TRACECA countries and best practice worldwide.

Main goal of this proposal is to support all TRACECA Countries in implementing the RSA as mandatory routine via legislation system.

Three way approach, for implementing the RSA as mandatory routine is presented at Figure B.1.1.

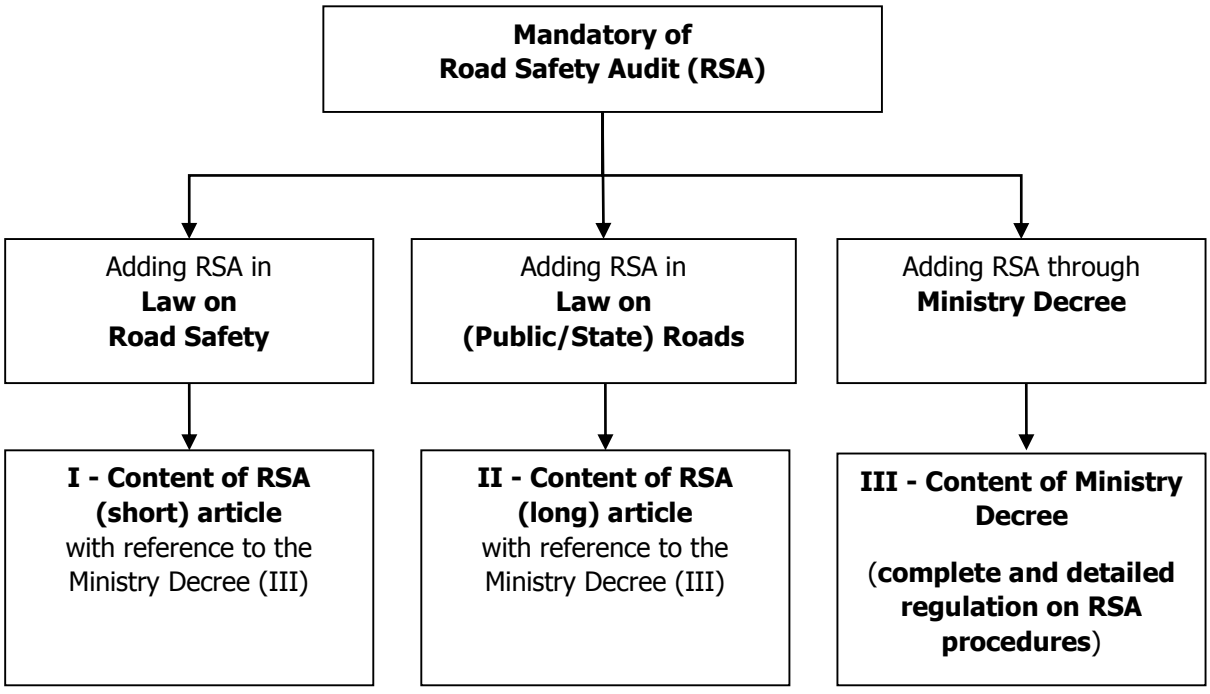


Figure B.1.1. Possible approach for implementing mandatory RSA

Road Safety Audit is concentrated on the improvements of the safety of road infrastructure. RSA concerns all four stages of road design and operation, e.g. preliminary (draft) design, detailed design, pre-opening of the road and the road being in early operation.

Project team in cooperation with national experts at workshops find out that most efficient ways of implementing the RSA as a mandatory routine at national levels could be adding the

specific article into the concerning laws (Law on Road Safety or Law on Roads) with a full description of RSA procedure in responsible Ministry (most usual Ministry of Transport or equivalent) Decree.

Note: This is just a proposal how implementation of mandatory RSA at National level could look like. If decided, this proposal should be reviewed and improved (localised) by national legal experts.

2. PROPOSAL OF LEGAL CHANGES (3 Way Approach)

2.1. Amendment to the Law on Road Safety (short) article - (I)

Art. No. ___

In order to improve infrastructure road safety there shall be established and implemented a mandatory Road Safety Audit system (RSA). The details of RSA procedure are regulated by Ministerial Decree.

2.2. Amendment to the Law on Roads (long) article - (II)

Art. No. ___

(1) In order to improve road safety of infrastructure there shall be established and implemented a systematic and independent assessment of the safety performance of a road infrastructure project on TRACECA Core Network. In the stage of design, construction including reconstruction, rehabilitation and major maintenance of the road infrastructure, a certified auditor shall verify independently whether the infrastructure requirements in relation to the road safety were met (this procedure is called Road Safety Audit-RSA). RSA is restricted on projects that have the value of technical documentation more than 30.000 Euro.

(2) The MoT (or equivalent) shall adjust the application of Article 1 in Ministerial Decrees, and RSA Manuals. The MoT (or equivalent) is entitled to extent by Ministerial Decree the application of this law also for cases of design and construction work on other roads than those of the TRACECA Core Network.

(3) There shall be installed a Road Safety Audit (RSAU) in the Road Administration (or equivalent organisation). The RSAU shall be in charge for RSA procedures which are applied by the MoT (or equivalent). Overall control of RSA process implementation should be under MoT (or equivalent). The RSAU, under the control of MoT, shall form the model of contract which should be used for contracts concerning the performing the RSA. The RSAU can impose fees for the audit activities.

(4) RSA auditors can get the certificate of competence as an auditor in compliance with the following conditions:

(a) Relevant experience or training in road design, road safety engineering and accident analysis;

(b) Undergoing an initial training course, passing successfully a final and examination course.

(c) To keep his certificate of competence the auditor has to take part in periodic further training courses.

(5) Certificates on national, regional and international level awarded before the entry into force of this law shall be recognized, if they meet the requirements for the new auditors. The certificates shall be organized in accordance to the requirements of RSA Law (and upon the manuals). National, regional and international experts can be auditors if they meet the requirements. Certificates can be organized at the different ways (by Governmental organization, Universities or Engineer associations).

(6) For the purpose of the road project audited the auditor shall not at the time of the audit be involved in the conception or operation of the relevant road constructing project. There shall be a continuous improvement of safety management practices and the improvement of the road safety regulations, standards and norms. Regarding this aim there shall be a constant exchange of best practices in the Region.

(7) Infringements against this Article by the members of the auditors of the RSAU and MoT, if not petty have to follow sanctions. Infringements by the investor, designer or contractor, if not petty have to been fined up to 5 % of the total sum of the contract.

(8) A contract concerning all sorts of road design or construction shall be void if it doesn't contain a regulation about a mandatory road safety audit in the sense of this law, the Ministry Decrees and Road Safety Audit Manuals there from.

(9) The details of RSA procedure are regulated by Ministerial Decree.

2.3. Proposal for a Ministerial Decree (MoT or equivalent) regarding the Road Safety Audit - (III)

Based on the article _____ of the *Law on Road Safety* or *Law on Roads* the Minister of Transport (or equivalent) gives the following decree:

Chapter I - General provisions

Art.1
Scope and Subject matter

(1) The application of this decree concerns exclusively improvement of road safety in design, construction and operation of TRACECA Core Road Network, including the National roads which are the part of the TRACECA Core Network.
(2) Based on the *Law on Road Safety* or *Law on Roads*, this decree

- establishes the procedures for the road safety audit activities,
- determines the conditions for acting as an auditor,
- enables to impose fees for the audit activities and for the training courses and examinations and
- establishes responsible bodies in the field of road safety audit.

Art. 2
Definitions

For the purposes of this decree, the following definitions shall apply:
a) *Audit (Road Safety Audit - RSA)*

means an independent detailed systematic and technical safety check of design characteristics of a road infrastructure project covering the four stages draft design, detailed-design, pre-opening of the road and early operation of roads.
b) *Auditor* (*Road Safety Auditor)*
is a natural person who is certified in accordance with this decree and who discharges his functions according to this decree independently;
c) *Audit Report*
is a written report which contains the results of the audit with identified safety deficiencies and recommendations;
d*) Client*
is the road Road Authority or the private road operating company which constructs the road on own account, and who orders the project work from the designer resp. from the contractor. This body is the natural or legal person who is obligated by law or by contract to overtake the responsibility for the construction or the maintenance of a road on a defined quality level also concerning road safety;
e) *Contractor*
is a natural or a legal person who is obligated by law or by contract (i.e. building contractor) to build a road or an engineering structure on a defined level also concerning road safety;
f) *Core Network*
means the national core network (national roads) including the Core Network described in the TRACECA official road map
g) *Designer*
is the natural or legal person who is obligated by law or by contract to plan or design a road or an engineering structure on a defined quality level also concerning road safety;
h) *Guidelines or Manuals*
means measures, which lay down the steps to be followed and the elements to be considered in applying the road safety audit procedures set out in this decree;
i) *Road Safety Audit Unit - RSAU*
is the unit in the Road Administration (or equivalent) designated by *Law on Roads* (alternative: by decision based on this decree) to be in charge for RSA procedures;

Chapter II - Road Safety Audit

Art. 3

Mandatory Execution, Nullity of a contract

(1) The audit is an integral part of a comprehensive quality management system during the flowing of the draft design, detailed design, pre-opening of the road and of the road being in early operation.
(2) The execution of the audit corresponding to this decree is mandatory.
(3) According to Art. No. ___ Para (1) of the Law on Roads, a contract on design/construction and execution of a projects that have the value of technical documentation more than 30.000 Euro, between the client on one side and any other contracting party on the other side is void if it does not contain an explicit term about the implementation of an audit according to this decree.

Art. 4
Principles and Aims of the Road Safety Audit - RSA

The principles governing the audit are:

a) Preventing human and material damages resulting from traffic accidents on the assessed road
a) Avoiding a later necessary reconstruction of newly built public roads due to the noncompliance with traffic safety regulations.
b) The audit shall be carried out exclusively by certified auditors. In general the audit shall be carried out by at least two auditors; at least one member of this team shall hold a certificate of competence as referred to in Art. 11.
c) The selecting and contracting of the performing auditors by the RSAU shall be carried out without any discrimination.
d) The auditors shall be independent in relation to the client, the designer and the contractor. They shall be independent in relation to the RSAU and to the road administration as far as the audit is concerned.
e) The audit will be carried out in compliance with the regulations and the best practice in the field, on national and international level, in what regards the training and the certification of the auditors and the execution of the audit. When carrying out an audit, the auditors shall endeavour to meet the criteria set out in ministerial decrees, manuals and guidelines.
f) The auditors shall set out safety critical design elements in an audit report for each stage of the road construction project.
g) The auditors shall give the results to no other person and to no other institution than to their client, to the road administration, to the RSAU (Art. 5). They have to observe absolutely confidentiality to third parties.
h) On demand of the RSAU the auditors shall support the road administration to develop and propose guidelines and regulations in the field of road safety aspects; this is a subject to possible additional payment.

Art 5
Road Safety Audit and Inspection Unit - RSAU

(1) There is established at the XX.XX.XXXX. the RSAU as a special unit of the Road Administration (alternative: RSAU can be installed differently in accordance with local conditions)
(2) The RSAU shall be the only competent institution in the field of audits for national roads (alternative: and local roads) and private roads open for public traffic.
(3) The tasks of the RSAU are in particular

a) To verify the requirements to a person who wants to become an auditor / inspector (art.10)
b) To elaborate its own procedures of designation of the road safety auditors together with the MoT (or equivalent); the procedure of designation shall be published on the internet site of the MoT (or equivalent);
c) To designate the auditor;
d) To keep the register (Art.13). The registry of road safety auditors shall be published on the internet site page of the MoT (or equivalent);

e) To regulate the contractual aspects with the clients, to contract and to pay the road safety auditors for having performed the road safety audit, to regulate the information and documents flow between the parties involved in the process of audit;
f) To supervise the performing of the audits inclusive the independence of the auditor according to this decree;
g) To organize meetings for auditors regarding the results of research and practice in this field;
h) To make proposals on the updating of the legislation, norms, standards and technical guidelines in accordance with UN Resolutions, EU Directives and International best practice;
i) To participate in specific activities at national and international level;

(4) The RSAU may offer its services to entities outside Country.
(5) The RSAU is endorsed for these tasks by the MoT (or equivalent).
(6) The RSAU gives a yearly progress report inclusive the situation of the annual budget to the MoT (or equivalent) on every 1. March of the year (or another nationally accepted day).
(7) The RSAU should be supervised by MoT (or equivalent).

Art. 6
Controlling function inside MoT (or equivalent)
The Controlling function inside MoT (or equivalent) shall get the full responsibility for monitoring and controlling the whole auditing process.

Art. 7
Guidelines and Manuals
(1) In order to support the competent entities in the application of this law the MoT (or equivalent) will adopt guidelines and manuals by 2 month after the publishing of the law in the official journal.
(2) These guidelines should be in compliance with Regional Road Safety Audit Manual develop for the TRACECA Region.

Art. 8
Audit part of implementation period
The client shall calculate the time period necessary for performing the audit as being part of the project's implementation period. The costs of the performance of the audit shall be paid by the road administration (in the case of national financing) or out of the project budget (in the case of international projects).

Chapter III - Road Safety Auditors

Art. 9
Members of the road administration or or private organizations
(1) Auditors may be
a) members of the staff of the road administration, or
b) members of a university charged with audits, or
c) Consultants experienced in audits.

(2) As far as auditors are members of the staff of a state authority or of a local authority they have to carry out the audit in special units charged with audits; they shall not be involved in the further planning, designing and execution work concerning the road which is to be audited by them. As much as their audit work is concerned they are independent.
(3) Auditors shall not be members of the staff of the designer and of the contractor.

Art. 10
Requirements for the Auditor
(1) Any person who wants to become an auditor has to meet the following requirements cumulatively:

a) A university degree in the field of traffic/road engineering;
b) Professional experience in the field of road design, road safety engineering and accident analysis for at least three years;
c) A graduation of the training courses for auditors (Art.11) and successful examination with a certificate as auditor under conditions laid down in this decree;
d) Physical ability to execute the task ;
e) Full capacity to exercise the civil rights;
f) No legal prohibition on practicing an audit.

Art. 11
Training Courses; Examination; Certificate
(1) A person who wants to become an auditor and who fulfils the requirements (Art. 10), has to undergo an initial training. The person has to pass successfully an examination to get a certificate of competence as an auditor. The auditor has to take part in periodic further training courses (minimum one per two years).
(2) The MoT (or equivalent) in co-operation with the RSAU, Universities and Engineers Associations lay down the requirements for the training courses (e.g. the number of days of the training courses; the number of teachers; the teaching material, fees), for the examination and for publishing the results within 45 days since the publication date of this decree; these requirements are content of the RSA manuals. The procedure of designation of the auditors shall be published on the internet site of the MoT (or equivalent).
(3) Certificates awarded before the entry into force of this degree shall be recognized provided the person fulfils the requirements of this decree.

Art. 12
Trainer, Collaboration
(1) A person granted with the quality of auditor under the conditions of this decree may also fulfil the position of a trainer for trainin**g** courses and improvement in the field of audits.
(2) The MoT (or equivalent) shall collaborate with accredited universities, institutions and professional bodies that are experienced and authorized in the field of professional training of adults for carrying out the training courses and improvement programs in the field of audits. The list of institutions provided for cooperation in the field of audits shall be made available to the public at the head quarters of MoT (or equivalent) and on MoT internet sides, for being consulted by any interested person.

Art. 13
Register of Road Safety Auditors
(1) The MoT (or equivalent) in accordance with the RSAU records the name and identification dates of persons graduating the examination provided in the "Register of Road Safety Auditors part 1".
(2) The dates of a person that has been granted the quality of auditor abroad and that wishes to perform the audit activity in this country are recorded in the "Register of Road Safety Auditors part 2" on conditions that he presents the documents that prove the quality of an auditor.
(3) The MoT (or equivalent) in accordance with the RSAU records the name and identification dates of persons who work as trainers in the "Register of Road Safety Auditors part 3".

Art. 14
Frame Contract; No refusal
(1) Between the RSAU and the auditors shall be made a frame contract about the expected performances.
(2) The RSAU decides on every performance of the auditor.
(3) Auditors cannot refuse the designation by the RSAU to perform an audit within a construction contract but only for objective reasons or for incompatibility situations.

Art. 15
Termination
(1) The capacity of auditor shall terminate:
a) by request of the auditor; the auditor shall send a letter to the RSAU in which he declares his resignation;
b) by decision of the RSAU in the case that the conditions mentioned in Art. 10 are no longer met;
c) by notice because of contract breaching

In case of termination of the capacity of auditor the dates of the respective person shall be radiated from the register of auditors.
(2) Para. 1 is applicable analogously to the termination of the capacity of the trainer.

Chapter IV
The Road Safety Audit's field of Application and Performance

Art. 16
Contract with a client
(1) The client on one side and the RSAU on the other side shall make a contract to ensure the involvement of an auditor in concrete terms.
(2) The RSAU shall nominate the auditors within 5 working days from signature date of the contract according to Para. 1.

Art. 17
Technical documentations to the auditor
(1) The client shall submit to the RSAU the documentation of the project to be audited within maximum 10 working days from the signature date of the contract and notify accordingly the designated auditors.

(2) The client, the designer and the contractor shall submit to the RSAU, at request, the further technical documentation of the project, containing written and drawn pieces, as well as any information, documents, schemes, maps or graphics necessary for performing the audit under good conditions. The RSAU shall give the documents as fast as possible to the auditors.
(3) The auditors shall keep the confidentiality over the information acknowledged during the activity of performing the audit, as well as over the documents elaborated, or documents he was handed-over, even after terminating the assignment, except for such cases in which the law provides otherwise.
(4) For the RSA stage 4 the RSAU shall deliver to the auditor the accident data and data about the traffic volume.

Art. 18
Incompatibility and arbitration
(1) The auditor shall inform the RSAU of any circumstance that may prejudice the principle of the auditor's independence in relation with the client, designer or contractor involved in the project subject to the audit, as soon as he acknowledged existence of such a case.
(2) In cases the rejection of the audit requirements by the client with serious disadvantages for the road safety, the auditor shall inform the RSAU in a written way and can ask MoT (or equivalent) for arbitration.

Art. 19
Audit Report
The results of the audit shall be presented by the auditors in a written and hand signed audit report, at the end of each project stage, in compliance with the time periods stipulated in the methodology for the audit performance. The audit report gives hints on identified safety deficiencies and gives recommendations.
Art. 20
Conclusions of the audit report
(1) It is the obligation of the client to undertake the necessary actions out of the report's results, in relation with the designer and the contractor, in order to ensure the necessary implementation before completion of the respective stage of the project subject.
(2) In case the client does not contest the demands and recommendations of the audit report he has to give an immediately written justification to every single argument.
(3) The road safety audit report and written justification of the client have to be given within 10 days to the MoT (or equivalent). These documents shall make part of the project documentation.

Chapter V
Costs
(Art. 21 - 23 on request!)
Art. 21
Levy for the Audit / Inspection
(1) For performing the audit for the big-seized projects (over 100.000 Euro), a tariff of 1‰ from the total value of investment shall be levied for the projects for constructing public roads and, of 2‰ from the total value of investment for the projects for rehabilitation and/or modernization of the public roads. The levy for RSA should not be less than the equivalent of 800 EURO per stage.

(2) For performing the audit for the small-sized projects (bellow 100.000 Euro), a fix tariff of 3‰ from the total value of the investment shall be levied, but not less than the equivalent of 800 EURO per stage.
(3) The afferent percentages of the tariffs requested for each project stage shall be established through the contract signed by the client and the RSAU according to provisions.
(4) The terms and the modality of tariff payment by the client shall be established through the contract signed by the client and the institution responsible in the field of audit according to provisions.

Art. 22
Auditor's claims

The amounts collected under the provisions of art. 21 shall be spent by the Client in order to pay the auditors for the activities developed and to finance its own activities established by this decree in the field of the audit.

Art. 23
Auditors' honorarium

(1) For the activities developed under the contract concluded with the decree the auditor has the right to a honorarium and to be reimbursed for the expenditures made to fulfil the respective activities.
(2) The honorarium of the auditors shall be of 80% from the tariff levied by the RSAU in accordance with the provisions of art. 21.
(3) The honorarium amount and the conditions of payment shall be established in the contract concluded between the auditor and the RSAU.

Chapter VI
The responsibility of the client, designer and contractor

Art. 24
Petty offences

(1) The following deeds shall represent petty offences:
a) non-compliance with the provisions of art. 9 by the client;
b) non-compliance with the provisions of art. 12 para. (2), by the client, designer and contractor.

(2) The petty offences provided under para. 1 shall be sanctioned as follows:
a) with fine between 10.000 € for the deed provided under let. a)
b) with fine between 20.000 € for the deed provided under let. b).

(3) The ascertaining of the petty offences provided under para 1 and applying the sanctions provided under para. 2 shall be made by the authorized personnel of the Road Authority, State Inspection in constructions, public works, urbanism and land-use planning, and of the MoI (or equivalent).
(4) The provisions of the penal code shall be applicable to petty offences.

Chapter VII – The road safety auditor's/inspector's responsibility

Art. 25
Breach of contract

The contractual responsibility of the road safety auditor is drawn by the following infringements :

a) infringement of the obligation of confidentiality
b) performance of the road safety audit in non-compliance with the obligation provided
c) performance of the road safety audit in non-compliance with the methodology for the road safety audit performance
There can be contractual penalties.

Chapter VIII– Final and transitory provisions

Art. 26
Regulations for the RSAU
(1) The MoT (or equivalent) and the Road Authority shall take all the necessary measures in order to ensure the budget, personnel and office space necessary for the Controlling function at the MoT (or equivalent) and the RSAU to perform its activities, in accordance with provisions of this decree.
(2) The persons who attended training courses for road safety auditors with a duration specified in RSA Manual, in the country or abroad, until commencement date of this decree, and who meet the conditions provided under Art. 10 can require the certification of the capacity of road safety auditor quality and for registration in the registry of road safety auditors.
(2) The application shall be submitted in written form to the RSAU within 60 days from commencement date of the Ministerial Order together with the documents that certify fulfilment of conditions.
(3) The RSAU shall verify the fulfilment of the conditions and shall decide upon awarding the certification of the capacity of road safety auditor, within 15 working days from registration date of the application.

Art. 27
Endorsement
The award of the endorsement provided under Art ___ by the MoT (or equivalent) shall become applicable on commencement date of the ministerial order provided under Art. 5 para. 5.

Art. 28
Enter into force
This law shall enter into force within 90 days from date of publication in the Official Journal of _____ date _____ .

ANNEX 2:

PROPOSAL OF RSA ACCREDITATION SYSTEM AND RSA TRAINING CURRICULUM

A. PROPOSAL OF RSA ACCREDITATION SYSTEM

The most common way for establishing road safety audit accreditation system is to use existing or slightly changed organizations and institutions within country, such as: University, Association of Engineers, Ministry of Transport (MoT) or equivalent, National Council for Road Safety if exists, Institutes, etc.

MoT (or equivalent) should accept Road Safety Audit Policy (document developed TRACECA Road Safety II Project) and become the main road safety audit stakeholder. After that, MoT (or equivalent) could use or build the necessary RSA institutions.

- TRAINING for road safety auditors

At the beginning of establishment of RSA system, trainings of auditors could be done by using external resources (International consultants). The professors from relevant Universities, Institutes (or similar institution) should be between the first one who pass this training courses. After that Universities/Institutes, by itself or in cooperation with some international RSA experts should establish its own program of RSA training courses. With this, sustainable system for education of road safety auditors will be established within country.

- ACCREDITATION (CERTIFICATION) of road safety auditors

Accreditation (certification) could be done at few different ways, depending on available country resources and existing practice with similar licenses (for example, if similar certifications exist for road designers, road work supervisors, etc.).

The certification of auditors could be done, by the same institutions which provide the training, or by other institution which is authorised for providing licences and which will define all necessary documentation for getting RSA licence (E.g. certification of passed exam on RSA training course + another prescribed documents).

Certified auditors should be accepted and recognized by Ministry of Transport (or equivalent) and Road Administration, as major users of road safety auditors.

- DATABASE OF AUDITORS

It is most logical to develop database of auditors by the main user of their services - Road Administration, which are most usual under MOT (or equivalent)

B. PROPOSED RSA TRAINING CURRICULUM

For best results on RSA Training specific Curriculum is proposed. Training Curriculum is based on different training modules aiming to provide trainees with relevant road safety knowledge necessary for undertaking the Road Safety Audits.

In the following figure training concept is presented.

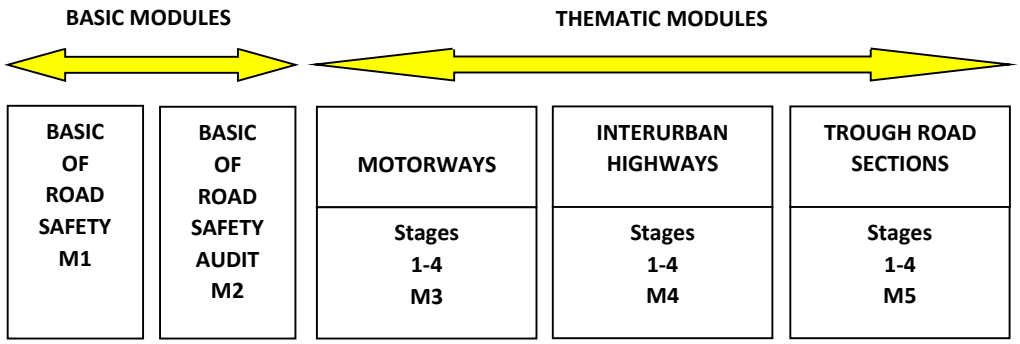


Figure A2-B.1. Modular training procedure for RSA

In this concept, training is performed in two time separate training blocks - workshops combined with additional time for homework.

Trainees are obliged to present 2 of their own RSA reports, (one after the first training block M1+M2+M3 and another after second training block M4+M5), as a part of the homework and pre-requirements for getting the Certificate.

Only candidates who take the classes and successfully finished all two RSA Reports will have an opportunity to pass the final exam and get the Certificates of basic RSA competence.

Having in mind that RSA training suppose to be extension of all previously knowledge collected by candidates, there are some of preconditions that trainees are must satisfy:

- they need to posses basic knowledge in the design of roads and road safety (usually a University degree in traffic engineering or in civil engineering of road traffic) and
- some professional practice in road design or in the field of accident analysis (e.g. as court expert for accident analysis, etc.) is needed.

Figure A2-B.2. shows the general workflow of the proposed training procedure.

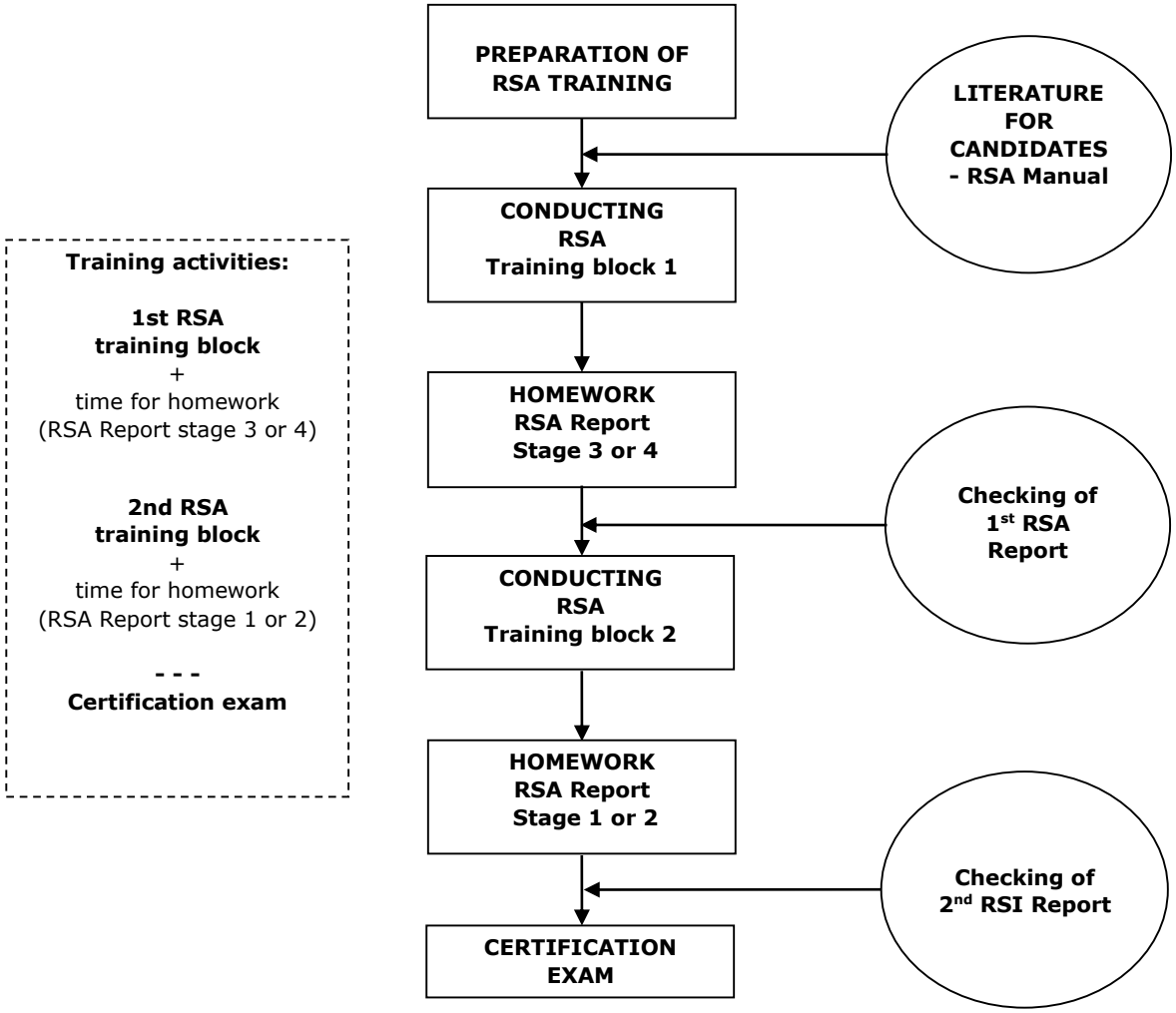


Figure A2-B.2. General workflow of the proposed training curriculum

DETAILS OF PROPOSED RSA TRAINING

In Table A2-B.3. Basic RSA course is presented with two week (10 working days) of intensive training and additional two weeks for homework.

Table A2-B.3. Basic RSA Training details

Module	Duration	Core topics (subjects)
Block 1		
M1 Basics of road safety	**2 days**	- Basics about road safety and road safety engineering, - Phases of road safety, - Road Safety Indicators, - Global approach to road safety (road safety factors), - William Headon's matrix, - Road Safety Procedures for improving the road (EU Directive 96/2008),

		- Speed influence on road accidents, - Roadside hazard management, - Safety barriers, - Accident records and collision diagrams and - Potential Crash Savings. - - - - - Principles of Road Safety Engineering. Analysis and discussion of road safety problems and solutions inside following sections: - Function, - Cross Section, - Alignment, - Intersections, - Public and Private Services, - Vulnerable Road Users, - Traffic Signing, Markings, Lighting and - Roadside Features.
M2 Basics of Road Safety Audit	**1 day**	- What is Road Safety Audit? (Definition), - Why do we need Road Safety Audit?, - Area of Application (Types of projects), - Value and Costs of Road Safety Audit, - Stages of RSA, - Road Safety Audit process (How to perform a RSA?) - Checklists, - Reporting, - Models of RSA Report - Typical road safety deficiencies (safe road design), etc.
M3 Motorways	**2 days** + homework: finalization of 1st RSA	Training with lecture about safety issues of the motorway design and most usual RS deficiencies: - Function of the road (Design and operating elements), - Cross section, - Alignment, - Intersections (Interchanges, Traffic signals and ITS measures, ...), - Public and Private Services (Rest areas, Toll stations, Public transport stops, ...), - Vulnerable Road Users, - Traffic Signing, Marking, Lighting, - Road side features and passive safety installations. - - - - - - Practical training of a RSA (stage 1 or 2) in team work, - Case Study with preparing of 1st RSA Report.
Block 2		
M4 Interurban highways	**2 days**	Training with lecture about safety issues of the Interurban highway design and most usual RS deficiencies: - Function of the road (Design and operating elements), - Cross section,

		- Alignment, - Intersections (Roundabouts, Traffic signals, Railway crossings , ...), - Public and Private Services, access control (Public Transport stops, Other needs of Pedestrian, Bicyclists, ...), - Vulnerable Road Users, - Traffic Signing, Marking, Lighting, - Road side features and passive safety installations - - - - - - Practical training of a RSA in team work
M5 Through road sections of interurban highways	**2 days** + homework: finalization of 2nd RSA	Training with lecture about safety issues of the through road sections design and most usual RS deficiencies: - Function of the road (Design and operating elements), - Cross section, - Alignment, - Intersections (Roundabouts, Traffic signals, Railway crossings , ...), - Public and Private Services, access control (Public Transport stops, Other needs of Pedestrian, Bicyclists, ...), - Vulnerable Road Users, - Traffic Signing, Marking, Lighting, - Road side features and passive safety installations - - - - - - Field study, - - - - - - Practical training of a RSA (stage 3 or 4) in team work, - Case Study with preparing of 2nd RSA Report.
1 day		**Certification exam**

This kind of training is adjusted to be run at the University (or similar institution) level, which means that it could be easily implemented as one of after graduate programs or as specialization courses.

Note: PowerPoint presentations, for all modules, used in RSA Trainings are attached on accompanying CD ROM

ПРОЕКТ

Техническое примечание 1

УПРОЩЁННЫЙ ШАБЛОН ПОРЯДКА ПРОВЕДЕНИЯ АУДИТА БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ

И

ПРОЕКТ ЗАКОНОДАТЕЛЬНЫХ ИЗМЕНЕНИЙ ДЛЯ ОБЕСПЕЧЕНИЯ ОБЯЗАТЕЛЬНОСТИ АБДД НА НАЦИОНАЛЬНОМ УРОВНЕ

Проект по безопасности дорожного движения ТРАСЕКА

Команда по технике безопасности

Март 2015

Финансируемый ЕС проект по безопасности дорожного движения для Армении, Азербайджана, Грузии, Казахстана, Кыргызстана, Молдовы, Таджикистана, Туркменистана, Узбекистана, Украины

ПРЕДИСЛОВИЕ
К ШАБЛОНУ ПОРЯДКА ПРОВЕДЕНИЯ АУДИТА БДД
И
ПРОЕКТУ ЗАКОНОДАТЕЛЬНЫХ ИЗМЕНЕНИЙ ДЛЯ ОБЕСПЕЧЕНИЯ ОБЯЗАТЕЛЬНОСТИ АБДД НА НАЦИОНАЛЬНОМ УРОВНЕ

Директивой ЕС № 2008/96 об управлении безопасностью дорожной инфраструктуры, опубликованной в 2008 году, Европейский Союз принял чёткое решение о том, что аудит безопасности дорожного движения (АБДД) будет обязательным для Трансъевропейской дорожной сети в ближайшие годы. Это хорошо известный факт, что АБДД является высокоэффективным и экономически выгодным инструментом для улучшения безопасности на дорогах.

К сожалению, АБДД практически не применяется в странах региона ТРАСЕКА. Осуществление АБДД поддерживается в основном МФИ, и применяется иностранными консалтинговыми компаниями. Даже в случае проведения АБДД соответствующие рекомендации не всегда выполняются дорожными властями.

Именно поэтому был запрошен Проект по укреплению потенциала для реализации АБДД в каждой стране (на национальном уровне). Команда Проекта, в сотрудничестве и консультациях с заинтересованными сторонами, на совещаниях рабочей группы разработала данный упрощённый шаблон порядка проведения аудита БДД и проект законодательных изменений для обеспечения обязательности АБДД на национальном уровне.

Порядок проведения АБДД был разработан для всех стран ТРАСЕКА для решения общих проблем БДД, связанных с планированием, проектированием и функционированием дорожной инфраструктуры, и поэтому необходимы локальные поправки (необходимо заполнить пробелы конкретными местными национальными данными для каждой страны).

Подобное касается также предложенных законодательных изменений, которые должны быть осуществлены для обеспечения обязательности АБДД на национальном уровне.

Оглавление:

ПРЕДИСЛОВИЕ

A) ШАБЛОН ПОРЯДКА ПРОВЕДЕНИЯ АУДИТА БДД

1. ЦЕЛЬ ПОРЯДКА ПРОВЕДЕНИЯ АУДИТА БДД

2. ЧТО ТАКОЕ АУДИТ БДД

3. ОБЛАСТЬ ПРИМЕНЕНИЯ

4. УРОВНИ АУДИТА БДД

5. ПРОЦЕСС АУДИТА БДД

6. КВАЛИФИКАЦИЯ АУДИТОРОВ БДД

7. ПРОЦЕСС АККРЕДИТАЦИИ

ПРИЛОЖЕНИЕ 1: ИЗЛОЖЕНИЕ ПОРЯДКА ПРОВЕДЕНИЯ АБДД

*** * ***

B) ПРОЕКТ ЗАКОНОДАТЕЛЬНЫХ ИЗМЕНЕНИЙ ДЛЯ ОБЕСПЕЧЕНИЯ ОБЯЗАТЕЛЬНОСТИ АБДД НА НАЦИОНАЛЬНОМ УРОВНЕ

1. ВСТУПЛЕНИЕ К ЗАКОНОДАТЕЛЬНЫМ ИЗМЕНЕНИЯМ ДЛЯ ОБЕСПЕЧЕНИЯ ОБЯЗАТЕЛЬНОСТИ АБДД

2. ПРОЕКТ ЗАКОНОДАТЕЛЬНЫХ ИЗМЕНЕНИЙ (3-сторонний подход)

2.1. Поправки к закону о БДД: статья I (краткая)

2.2. Поправки к закону о дорогах: статья II (подробная)

2.3. Проект указа министерства (МТ или равносильного), касающегося аудита БДД - III

ПРИЛОЖЕНИЕ 2: ПРОЕКТ СИСТЕМЫ АККРЕДИТАЦИИ АБДД И УЧЕБНАЯ ПРОГРАММА ПО АБДД

C) ШАБЛОН ПОРЯДКА ПРОВЕДЕНИЯ АУДИТА БДД

1. ЦЕЛЬ ПОРЯДКА ПРОВЕДЕНИЯ АУДИТА БДД

Порядок проведения устанавливает, каким образом *(название страны)* и ответственное министерство (название ответственного министерства) либо дорожное управление (название дорожного управления) будут организовывать и осуществлять аудиты безопасности дорожного движения (АБДД) в качестве регулярной процедуры для повышения безопасности дорожной инфраструктуры.

2. ЧТО ТАКОЕ АУДИТ БДД

АБДД – это широко известный термин, используемый на международном уровне для описания независимого анализа проекта с целью выявления недостатков безопасности дороги или транспортного потока. Это официальная экспертиза проекта дороги или дорожного движения, которая может рассматриваться как часть комплексной системы управления качеством.

АБДД является упреждающим подходом с первостепенной целью наиболее раннего выявления потенциальных проблем безопасности, обеспечивая возможность принятия решений об устранении или уменьшении проблем, желательно до реализации проекта или возникновения ДТП.

Наиболее распространённым определением АБДД является следующее: это «официальная экспертиза безопасности проекта дороги или дорожного движения, или любого другого проекта, влияющего на участников дорожного движения, осуществляемая независимым, квалифицированным аудитором или командой аудиторов, которые представляют отчёт об аварийном потенциале проекта и показателях безопасности участников дорожного движения всех типов».

3. ОБЛАСТЬ ПРИМЕНЕНИЯ

АБДД должны проводиться для многих проектов, различающихся по масштабу, расположению, типу и классификации. Ниже представлены категории проектов, для которых может быть проведён аудит:

- функциональные элементы дорожной сети (международные дороги, магистрали, региональные и локальные дороги)
- дорожный поток (только моторные транспортные средства – либо смешанный дорожный поток с немоторизованными или медленными сельскохозяйственными транспортными средствами)
- расположение – локализация (вне или внутри застроенных участков).

Рекомендуется проведение АБДД для любого проекта новой дороги.

В скором времени АБДД могут быть распространены на любые предложения по изменению существующих дорог или дорожных условий, которые могут изменить взаимодействие между различными участниками дорожного движения, или между последними и их окружением. Региональное Руководство по аудитам БДД для стран ТРАСЕКА (2014) рекомендует проведение АБДД для всех проектов, стоимость которых по технической документации превышает 30 000 евро.

Следовательно, АБДД должны проводиться для проектов:

- новых дорог, трасс, шоссе и других объектов дорожного движения,
- по ремонту и восстановлению,
- внутри и вне застроенных участков.

Типы проектов, для которых проведение АБДД является обязательным, определяется в соответствии с законодательством (законы, подзаконные акты, указы министерств).

4. УРОВНИ АУДИТА БДД

В соответствии с передовой международной практикой и Региональным Руководством по аудитам БДД для стран ТРАСЕКА, АБДД должны проводиться на четырёх различных уровнях:

Уровень 1: предварительный (технический) проект,
Уровень 2: детализированный проект,
Уровень 3: предварительный ввод дороги в эксплуатацию,
Уровень 4: ранняя эксплуатация, когда дорога уже некоторое время функционирует.

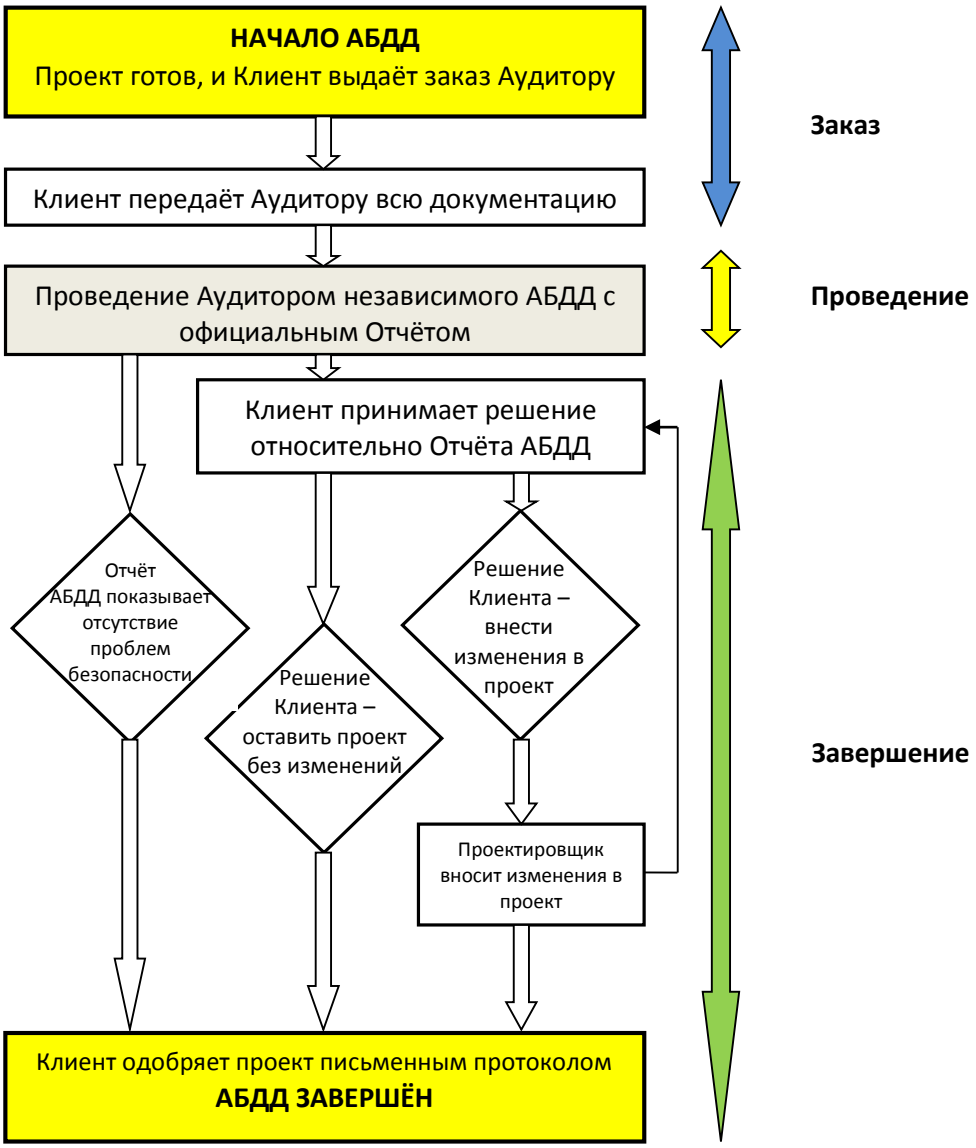
5. ПРОЦЕСС АУДИТА БДД

Как относительно новая процедура в сфере БДД, АБДД должен быть эффективно структурирован и организован с чётким определением обязанностей.

Обобщённая процедура АБДД включает три основных стадии:

- заказ,
- проведение и
- завершение.

Следующая схема (рисунок А.5.1.) описывает типичный процесс АБДД.



Финансирование АБДД следует осуществлять за счёт нескольких источников:

- для международных дорожных проектов расходы на проведение АБДД должны быть рассчитаны и включены в смету всего проекта,
- для национальных дорожных проектов расходы на проведение АБДД должны быть покрыты за счёт местного бюджета Дорожного управления.

Дорожное управление* и (*уточнить конкретное подразделение, например, Отдел аудита БДД)*, несут ответственность за осуществление процедур АБДД на всех дорогах под собственную ответственность.
* либо эквивалентная структура

6. КВАЛИФИКАЦИЯ АУДИТОРОВ БДД

Важно, чтобы аудитор имел большой опыт в вопросах безопасности дорожного движения.

Предложение заключается в том, чтобы руководитель группы (РГ) АБДД имел соответствующее высшее образование, желательно степень магистра, а также значительный опыт в области планирования (проектирования) безопасности дорожного движения и/или расследования дорожно-транспортных происшествий. Минимальное требование для руководителя группы АБДД – около трёх лет работы в области АБДД с более чем 3 отчётами по АБДД.

Эксперты группы (ЭГ) АБДД должны иметь как минимум степень бакалавра и около трёх лет опыта работы в области планирования (проектирования) безопасности дорожного движения и/или расследования дорожно-транспортных происшествий.

Аудиторы должны иметь водительские удостоверения и хорошие знания стандартов дорожного проектирования, закона о безопасности дорожного движения и закона о дорогах. Знание других дорожных стандартов крайне желательно.

Для обеспечения качества аудита, аудиторы должны пройти начальную подготовку, по результатам которой выдаётся сертификат компетентности, и в дальнейшем должны проходить дополнительные периодические обучающие курсы. Если аудит осуществляется группами, по крайней мере один эксперт из группы должен иметь сертификат компетентности.

Программа обучения должна включать темы, связанные с дорожной безопасностью, такие как расследование ДТП, управление безопасностью дорожной сети, планирование и проектирование БДД.

Аудиты БДД необходимо проводить в соответствии с общими требованиями Регионального Руководства по аудитам БДД для стран ТРАСЕКА (2014), разработанного в рамках Проекта ТРАСЕКА Безопасность дорожного движения II.

7. ПРОЦЕСС АККРЕДИТАЦИИ

Ответственному министерству (*название министерства*) предлагается поддержать процесс аккредитации аудиторов БДД.

Национальную аккредитацию аудиторов БДД желательно проводить в соответствии с моделью, предоставленной Проектом ТРАСЕКА Безопасность дорожного движения II.

Место_____
Дата: _____

Подписано: _____

ПРИЛОЖЕНИЕ 1:

ИЗЛОЖЕНИЕ ПОРЯДКА ПРОВЕДЕНИЯ АУДИТА БДД

Нижеследующий Порядок проведения аудита БДД был разработан с целью его принятия главными заинтересованными участниками в каждой стране ТРАСЕКА в качестве официального Порядка проведения.

ПОРЯДОК ПРОВЕДЕНИЯ АУДИТОВ БДД

Цель Порядка проведения

Усилить использование и реализацию процедур аудита БДД в (название страны).

Изложение Порядка проведения

Порядок проведения АБДД требует принятия следующих мер в рамках повышения уровня БДД в (название страны).

h) Министерство транспорта *(или равносильное)* включит цели и задачи аудитов БДД в свои финансовые (бизнес) планы.
i) Принятые процедуры АБДД должны соответствовать Руководству по аудитам БДД для стран ТРАСЕКА и прилагаемым контрольным спискам (2014).
j) Министерство транспорта *(или равносильное)* должно инициировать внесение поправок в законодательство с целью обеспечения обязательности аудитов БДД (например, поправка к закону или указ министерства об обязательном проведении аудитов БДД).
k) Министерство транспорта *(или равносильное)* признаёт правомерность нормы о том, что проекты новых дорог, стоимость которых по технической документации превышает 30 000 евро, должны подвергаться аудиту БДД.
l) Участки существующих дорог с повышенным риском ДТП, находящиеся на государственном балансе, должны подвергаться аудиту в чётко установленные сроки (каждые 5 лет).
m) Следует обеспечить проведение аудитов БДД независимыми аудиторами, имеющими соответствующую подготовку и опыт.
n) Министерство транспорта *(или равносильное)* должно стимулировать и поощрять проведение аудитов БДД городскими властями под их ответственность.

1. ВСТУПЛЕНИЕ К ЗАКОНОДАТЕЛЬНЫМ ИЗМЕНЕНИЯМ ДЛЯ ОБЕСПЕЧЕНИЯ ОБЯЗАТЕЛЬНОСТИ АБДД

Учитывая различия в состоянии законодательства о БДД в странах ТРАСЕКА, команда проекта обсудила на семинарах возможные и эффективные способы внедрения аудитов БДД как обязательной процедуры на национальном уровне, и пришла к следующему решению – проекту трёхстороннего подхода.

Проект законодательных норм, имплементирующих обязательный аудит БДД, был подготовлен в соответствии с Директивой ЕС 2008/96/ЕС, установленными фактами в странах ТРАСЕКА и передовой мировой практикой.

Основная цель данного проекта – поддержать все страны ТРАСЕКА в имплементации АБДД как обязательной процедуры посредством законодательной системы.

Трёхсторонний подход к имплементации АБДД как обязательной процедуры представлен на рисунке В.1.1.

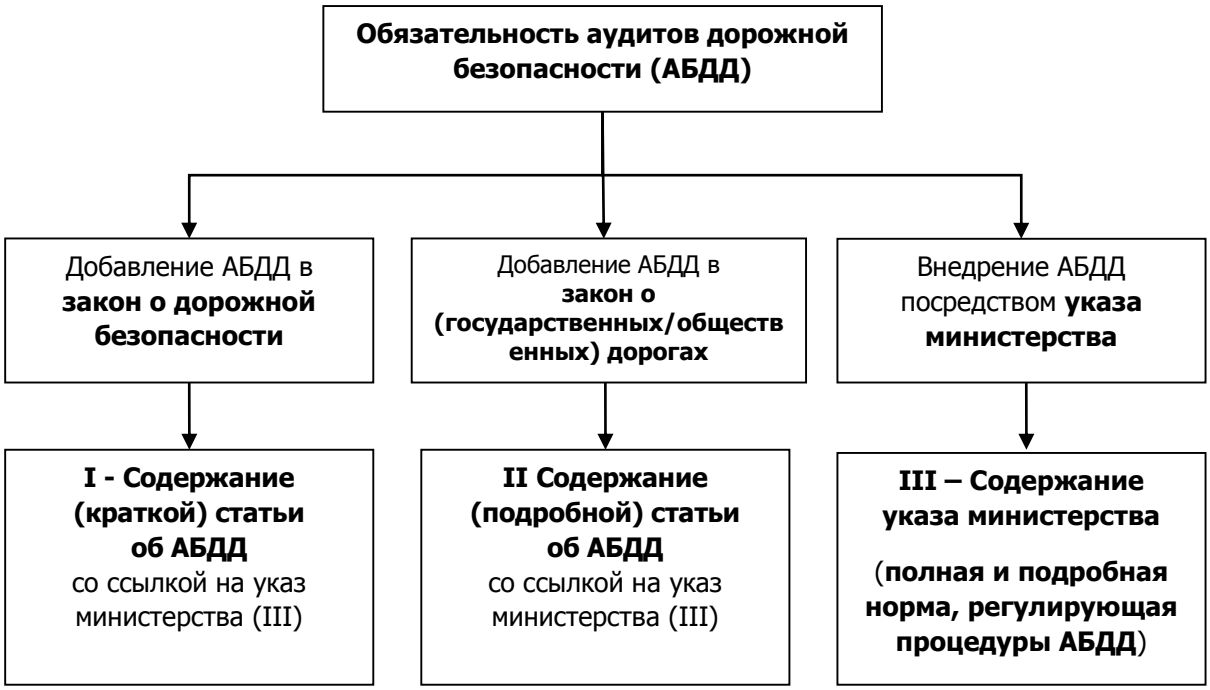


Рисунок В.1.1. Возможный подход к имплементации обязательного АБДД

Аудит БДД направлен на повышение безопасности дорожной инфраструктуры. АБДД касается всех четырёх уровней проектирования и эксплуатации дороги, а именно: предварительного (технического) проекта, детализированного проекта, предварительного ввода дороги в эксплуатацию и ранней эксплуатации дороги.

Команда проекта в сотрудничестве с национальными экспертами выяснила на семинарах, что наиболее эффективным способом имплементации АБДД как обязательной процедуры на национальном уровне может быть добавление конкретной

статьи в соответствующие законы (закон о БДД или закон о дорогах) с полным описанием процедуры АБДД в указе ответственного министерства (чаще всего – Министерство транспорта или равносильное).

Примечание: Это лишь возможный проект имплементации обязательных АБДД на национальном уровне. Если будет принято соответствующее решение, данный проект должен быть пересмотрен и улучшен (с учётом локальной специфики) национальными экспертами.

2. ПРОЕКТ ЗАКОНОДАТЕЛЬНЫХ ИЗМЕНЕНИЙ (3-сторонний подход)

2.1. Поправки к закону о БДД: статья I (краткая)

Статья № ___

С целью повышения безопасности дорожной инфраструктуры должна быть создана и внедрена система обязательного аудита БДД (АБДД). Детали процедуры АБДД регулируются соответствующим Указом Министерства.

2.2. Поправки к закону о дорогах: статья II (подробная)

Статья № ___

(10) С целью повышения безопасности дорожной инфраструктуры должна быть создана и внедрена система независимой оценки показателей безопасности проекта дорожной инфраструктуры основной сети ТРАСЕКА. На стадии проектирования, строительства, включая реконструкцию и ремонт, и основного обслуживания дорожной инфраструктуры, сертифицированный аудитор должен убедиться самостоятельно, соблюдены ли инфраструктурные требования в отношении БДД (данная процедура называется «аудит БДД – АБДД»). АБДД распространяется только на проекты, стоимость которых по технической документации превышает 30 000 евро.

(11) Министерство транспорта (или равносильное) обязано регулировать применение Статьи 1 посредством указов министерства и руководств по проведению АБДД. Министерство транспорта (или равносильное) посредством Указа Министерства уполномочено расширить применение настоящего Закона также на все случаи проектных и строительных работ на дорогах, не входящих в основную сеть ТРАСЕКА.

(12) В Дорожном управлении (или равносильной организации) должен быть создан Отдел аудитов БДД (ОАБДД). ОАБДД осуществляет руководство процедурами АБДД, применяемыми Министерством транспорта (или равносильным). Общий контроль над процессом реализации АБДД осуществляет Министерство транспорта (или равносильное). ОАБДД, под руководством Министерства транспорта, обязан разработать типовой договор, который должен использоваться для контрактов по осуществлению АБДД. ОАБДД может устанавливать плату за аудиторскую деятельность.

(13) Аудиторы, осуществляющие АБДД, могут получить сертификат компетентности в случае выполнения следующих условий:

(а) соответствующий опыт или подготовка в проектировании дорог, планировании и проектировании безопасности дорожного движения и анализе ДТП;
(б) прохождение курса начальной подготовки, успешное прохождение экзаменационного курса и финальной проверки;
(в) для сохранения сертификата компетентности аудитор обязан проходить дальнейшие периодические курсы повышения квалификации.

(14) Сертификаты национального, регионального и международного уровня, выданные до вступления в силу данного закона, должны быть признаны, если они соответствуют требованиям, выдвигаемым к аудиторам. Сертификаты должны быть организованы в соответствии с требованиями законодательства в области БДД (и соответствующих руководств). Национальные, региональные и международные эксперты могут быть аудиторами, если они соответствуют критериям. Сертификаты могут быть организованы различным способом (правительственная организация, университеты или инженерные ассоциации).

(15) Для проведения аудита дорожного проекта аудитор не должен в это время участвовать в разработке или реализации соответствующего дорожно-строительного проекта. Должно осуществляться постоянное совершенствование методов управления безопасностью и улучшение правил, стандартов и норм безопасности дорожного движения. С этой целью в регионе должен проводиться постоянный обмен передовым опытом.

(16) Значительные нарушения данной Статьи аудиторами – сотрудниками ОАБДД и Министерства транспорта караются санкциями. Значительные нарушения инвестором, проектировщиком либо подрядчиком должны караться штрафом в размере 5% от общей суммы договора.

(17) Договор, касающийся всех видов дорожного проектирования или строительства, должен считаться недействительным, если в нём отсутствует пункт об обязательном аудите БДД в объёме, установленном настоящим Законом, Указами Министерства и Руководствами по аудитам БДД.

(18) Детали процедуры АБДД регулируются соответствующим Указом Министерства.

2.3. Проект указа министерства (МТ или равносильного), касающегося аудита БДД - III

В соответствии со Статьёй _____ *Закона о БДД* либо *Закона о Дорогах* Министр транспорта (или равносильного министерства) издаёт следующий Указ:

Глава I – Общие положения

Статья 1
Сфера применения

(1) Применение данного Указа касается исключительно повышения БДД на уровнях проектирования, строительства и эксплуатации дорожной инфраструктуры основной сети ТРАСЕКА, включая национальные дороги, являющиеся частью инфраструктуры основной сети ТРАСЕКА.

(2) Основываясь на *Законе о БДД* либо *Законе о Дорогах*, данный Указ

- устанавливает процедуры деятельности в области аудита БДД,
- определяет условия для деятельности аудитора,

- позволяет установить плату за деятельность, связанную с аудитом, а также за подготовительные курсы и экзамены, и
- устанавливает ответственные органы в области аудита БДД.

Статья 2
Определения

Для целей данного Указа применяются следующие определения:
а) *Аудит (аудит безопасности дорожного движения – АБДД)*
независимая детальная систематическая и техническая проверка безопасности конструктивных характеристик дорожно-инфраструктурного проекта, охватывающая четыре уровня: предварительный проект, детализированный проект, предварительный ввод дороги в эксплуатацию и раннюю эксплуатацию дорог.
б) *Аудитор* (*аудитор БДД)*
физическое лицо, сертифицированное в соответствии с данным Указом и самостоятельно выполняющее свои функции в соответствии с данным Указом;
в) *Аудиторский отчёт*
письменный отчёт, содержащий результаты аудита, включая установленные недостатки безопасности и рекомендации;
г) *Клиент*
государственная структура дорожного управления либо частная дорожно-эксплуатационная компания, которая осуществляет строительство дороги за собственный счёт, и заказывает проектные работы у соответствующего подрядчика. Это физическое или юридическое лицо, которое по закону или договору несёт ответственность за строительство и техническое обслуживание дороги на определённом уровне качества, включающем дорожную безопасность;
д) *Подрядчик*
физическое или юридическое лицо, обязанное по закону или по договору (например, строительный подрядчик) строить дорогу или инженерное сооружение на определённом уровне, включающем дорожную безопасность;
е) *Основная сеть*
основная национальная дорожная сеть, которая включает Основную сеть, описанную в официальной дорожной карте ТРАСЕКА;
ж) *Проектировщик*
физическое или юридическое лицо, обязанное по закону или по договору планировать или проектировать дорогу, или инженерное сооружение на определённом уровне качества, включающем дорожную безопасность;
з) *Руководства или инструкции*
перечень основополагающих мер, шагов и элементов, которые следует учесть при реализации процедур аудита БДД, установленных данным Указом;
и) *Отдел аудита БДД – ОАБДД*
структурная единица Дорожного управления (или равносильной структуры), специально назначенная *Законом о Дорогах* (альтернатива: решением, основанным на данном Указе) для руководства процедурами АБДД.

Глава II – Аудит БДД

Статья 3

Обязательное исполнение, недействительность договора

(1) Аудит является неотъемлемой частью комплексной системы управления качеством на уровнях предварительного проекта, детализированного проекта, предварительного ввода дороги в эксплуатацию и ранней эксплуатации дороги.
(2) Проведение аудита, соответствующего данному Указу, является обязательным.
(3) В соответствии со Статьёй №___ Параграфа (1) Закона о Дорогах, договор между клиентом с одной стороны и любой другой договаривающейся стороной – с другой стороны о проектировании/ строительстве и реализации проектов, стоимость которых по технической документации превышает 30 000 евро, признаётся недействительным,
если в нём отсутствует конкретный пункт об обязательном аудите, соответствующем данном Указу.

Статья 4
Принципы и цели аудита БДД – АБДД

Принципами, регулирующими аудит, являются:

а) Предотвращение человеческих потерь и материальных убытков от дорожных происшествий на анализируемой дороге.
б) Предотвращение дальнейшей необходимости реконструкции вновь построенных дорог общего пользования из-за несоблюдения правил безопасности движения.
в) Аудит должен осуществляться исключительно сертифицированными аудиторами. Как правило, аудит должен проводиться по меньшей мере двумя аудиторами; по крайней мере один член этой команды должен иметь сертификат компетентности, как указано в Статье 11.
г) Отбор и заключение договора между исполнителями аудита и ОАБДД должны осуществляться без какой-либо дискриминации.
д) Аудиторы должны быть независимыми от клиента, проектировщика и подрядчика. Они должны быть независимыми от ОАБДД и дорожного управления по всем вопросам, касающимся аудиторской деятельности.
е) Аудит должен проводиться в соответствии с правилами и передовой мировой практикой в данной сфере, на национальном и международном уровне, касающимися подготовки и сертификации аудиторов и осуществления аудита. При проведении аудита аудиторы должны стремиться к соответствию критериям, изложенным в министерских указах, методических пособиях и рекомендациях.
ж) В аудиторском отчёте аудиторы должны указывать критические проектные элементы, касающиеся БДД, для каждой стадии проекта по строительству дороги.
з) Аудиторы обязаны предоставить результаты исключительно заказчику, дорожному управлению, ОАБДД, и никакому другому лицу или организации (Статья 5). Они обязаны соблюдать абсолютную конфиденциальность по отношению к третьим сторонам.
и) По требованию ОАБДД аудиторы должны оказывать поддержку дорожной администрации по вопросам разработки и предложения рекомендаций и методических указаний по БДД; это является предметом для возможной дополнительной оплаты.

Статья 5
Отдел аудита БДД – ОАБДД

(1) XX.XX.XXXX г. создан ОАБДД – специальный отдел Дорожного управления (альтернатива: ОАБДД может быть создан в соответствии с другим механизмом, учитывая местные условия).
(2) ОАБДД является единственной уполномоченной структурой в сфере аудита национальных дорог (альтернатива: и местных дорог) и частных дорог, открытых для общественного движения.
(3) Заданиями ОАБДД являются, в частности:

а) Проверка требований к лицу, желающему стать аудитором (Статья 10).
б) Разработка собственного порядка назначения аудиторов БДД совместно с Министерством транспорта (или равносильным); порядок назначения должен быть опубликован на интернет-сайте Министерства транспорта (или равносильного)
в) Назначение аудитора.
г) Ведение реестра (Статья 13). Реестр аудиторов БДД должен быть опубликован на интернет-сайте Министерства транспорта (или равносильного).
д) Регулирование договорных аспектов с клиентами, заключение договора и оплата работы аудиторов БДД, регулирование оборота документов и информации между сторонами, вовлечёнными в процесс аудита.
е) Контроль над процессом проведения аудитов, в том числе независимость аудиторов соответственно с данным Указом.
ж) Организация совещаний для аудиторов касательно результатов исследований и практики в данной сфере.
з) Внесение предложений по обновлению соответствующего законодательства, норм, стандартов и технических рекомендаций в соответствии с резолюциями и директивами ООН, а также передовой международной практикой.
и) Участвовать в соответствующих мероприятиях на национальном и международном уровне.

(4) ОАБДД может предлагать свои услуги организациям за пределами данного государства.
(5) Одобрение данных заданий ОАБДД осуществляется Министерством транспорта (или равносильным).
(6) ОАБДД представляет Министерству транспорта (или равносильному) ежегодный доклад о проделанной работе, включающий данные о годовом бюджете, 1 марта каждого года (либо в другой международно признанный день).
(7) Деятельность ОАБДД контролируется Министерством транспорта (или равносильным).

Статья 6
Контролирующие элементы Министерства транспорта (или равносильного)
Контролирующие элементы Министерства транспорта (или равносильного) несут полную ответственность за мониторинг и управление всем процессом аудита.

Статья 7
Руководства и инструкции

(1) С целью поддержки компетентных служб по реализации данного закона Министерство транспорта (или равносильное) должно принять руководства и инструкции через 2 месяца после публикации данного закона в официальном вестнике.
(2) Эти руководства должны соответствовать Руководству по аудитам БДД, разработанному для региона ТРАСЕКА

Статья 8
Аудит как часть периода имплементации
Клиент должен рассчитать временной период, необходимый для проведения аудита, являющийся частью периода по имплементации проекта. Расходы, связанные с проведением аудита, должны быть покрыты Дорожным управлением (в случае национального финансирования) либо из бюджета проекта (в случае международных проектов).

Глава III - Аудиторы безопасности дорожного движения

Статья 9
Члены дорожной администрации или частных организаций
(1) Аудиторами могут быть:
а) сотрудники дорожной администрации; или
б) члены университетов (организаций) ответственных за аудит; или
в) консультанты, имеющие опыт в аудите.
(2) Поскольку аудиторы являются представителями государственной или местной власти, они должны проводить аудит в составе отдельного подразделения, ответственного за аудит; они не должны принимать участие в дальнейшем планировании, проектировании и проведении работ в отношении дороги, которая ими проверяется. Они должны быть независимыми настолько, насколько позволяет их деятельность.
(3) Аудиторы не должны быть сотрудниками компаний проектировщика и/или подрядчика.

Статья 10
Требования к аудитору
(1) Любой человек, желающий стать аудитором должен отвечать всем нижеперечисленным требованиям:
а) Высшее образование в области дорожного движения / дорожного строительства;
б) Опыт работы не менее трех лет в области проектирования дорог, безопасности дорожного движения и анализа ДТП;
в) Прохождение учебных курсов для аудиторов (ст. 11) и успешное прохождение проверки знаний с последующим получением сертификата, в соответствии с условиями, изложенными в этом документе;
г) Физическая возможность выполнить задачу;
д) Способность полностью соблюдать гражданские права;
е) Не иметь правового запрета на занятие аудиторской деятельностью.

Статья 11
Учебные курсы; Проверка знаний; Сертификат
(1) Человек, желающий стать аудитором и соответствующий всем требованиям (ст. 10), должен пройти начальное обучение. Ему необходимо успешно пройти проверку знаний,

чтобы получить аудиторский сертификат компетентности (соответствия). Впоследствии аудитор также должен принимать участие в курсах повышения квалификации (не менее, чем один раз в два года).
(2) В течение 45 дней с даты публикации настоящего документа Министерство транспорта (или другая соответствующая организация) в сотрудничестве с ОАБДД (отдел аудита безопасности дорожного движения), университетами и инженерными ассоциациями должна определить требования к учебным курсам (например, продолжительность курсов, количество преподавателей; учебный материал; оплата), к проверке знаний и к оглашению результатов; Эти требования должны соответствовать руководящим принципам по АБДД (аудит безопасности дорожного движения). Порядок назначения аудиторов должен быть опубликован на интернет-сайте Министерства транспорта (или другой соответствующей организации).
(3) Сертификаты выданные до вступления в силу данного руководства должны быть подтверждены для лиц, соответствующих требованиям настоящего документа.

Статья 12
Инструктор, Сотрудничество
(1) Человек, получивший сертификат аудитора в соответствии с условиями настоящего документа, может также выполнять обязанности инструктора на учебных курсах и курсах повышения квалификации в области аудита.
(2) Министерство транспорта (или другая соответствующая организация) должно сотрудничать с аккредитованными университетами, институтами и самостоятельными специалистами, которые имеют соответствующий опыт и необходимые разрешения в области профессионального обучения, с целью проведения учебных курсов и курсов повышения квалификации в области аудита. Перечень учреждений, подходящих для сотрудничества в области аудита, должен быть обнародован перед руководящим составом Министерства транспорта (или другой соответствующей организации) и Министерством транспорта на интернет-странице, для того, чтобы любое другое заинтересованное лицо также могло получить консультацию.

Статья 13
Регистрация аудиторов безопасности дорожного движения
(1) Министерство транспорта (или другая соответствующая организация) совместно с ОАБДД вносит имена и идентификационные данные лиц, успешно прошедших проверку знаний, в "Реестр аудиторов безопасности дорожного движения Часть 1".
(2) Данные о человеке, которому был выдан сертификат аудитора за рубежом и который желает выполнять аудиторскую деятельность в этой стране, отражаются в "Реестре аудиторов безопасности дорожного движения Часть 2" при условии предоставления им документов, подтверждающих его квалификацию аудитора.
(3) Министерство транспорта (или другая соответствующая организация) совместно с ОАБДД вносит имена и даты следующих проверок знаний лиц, которые работают в качестве инструкторов в "Реестр аудиторов безопасности дорожного движения Часть 3".

Статья 14
Предварительное соглашение; Безотказность
(1) Между ОАБДД и аудиторами должно быть заключено предварительное соглашение об ожидаемых рабочих задачах.
(2) ОАБДД выбирает аудитора для каждого конкретного задания.

(3) В случае назначения его ОАБДД, аудитор не может отказаться от проведения аудита в рамках договора подряда, исключением могут являться лишь объективные причины либо несовместимость ситуаций.

Статья 15
Прекращение полномочий
(1) Полномочия аудитора аннулируются:

а) по запросу аудитора; аудитор должен отправить письмо в ОАБДД, в котором он заявляет об отказе от должности;

б) по решению ОАБДД в случае, если условия, указанные в ст. 10 более не выполняются;

в) по уведомлению, в случае нарушения условий контракта

В случае аннулирования полномочий аудитора данные соответствующего лица должны быть исключены из реестра аудиторов.
(2) Прекращение полномочий инструкторов происходит при тех же условиях, которые определены в параграфе (1).

Глава IV Порядок подачи заявлений и выполнения работ по аудиту безопасности дорожного движения

Статья 16
Договор с заказчиком
(1) Заказчиком с одной стороны и ОАБДД с другой стороны должны заключить договор для обеспечения участия аудитора в конкретные сроки.
(2) ОАБДД назначает аудиторов в течение 5 рабочих дней с даты подписания договора в соответствии с параграфом (1).

Статья 17
Техническая документация для аудитора
(1) Заказчик должен предоставить в ОАБДД документацию проекта, подлежащего аудиту в течение не более 10 рабочих дней с момента подписания договора и уведомить об этом назначенных аудиторов.
(2) Заказчик, проектировщик и подрядчик должны представить в ОАБДД, по запросу, дальнейшую техническую документацию проекта, включая как письменную, так и графическую части, а также любую информацию, документы, схемы, карты и графики, необходимые для качественного выполнения аудита. ОАБДД должен максимально быстро предоставлять эти документы аудиторам.
(3) Аудиторы должны сохранять конфиденциальность информации, полученной в процессе деятельности, а также конфиденциальность документов, составленных или полученных ими в течение работы, даже после истечения срока договора, если законодательство не предусматривает иного.
(4) Для четвертой стадии АБДД отдел аудита безопасности дорожного движения должен предоставить аудитору данные о ДТП и об объемах трафика.

Статья 18
Несоответствие и арбитраж
(1) Аудитор должен проинформировать ОАБДД о любых обстоятельствах, которые могут нанести ущерб принципу аудиторской независимости в отношениях с заказчиком,

проектировщиком или подрядчиком, участвующими в проекте, как только он определил наличие таких обстоятельств.
(2) В случае отклонений от аудиторских требований к заказчику, подразумевающих серьезные недостатки в отношении безопасности дорожного движения, аудитор должен проинформировать ОАБДД в письменной форме и может попросить Министерство транспорта (или другую соответствующую организацию) об арбитраже.

Статья 19
Аудиторский отчет
Результаты аудита должны быть представлены аудиторами в письменной форме в виде собственноручно подписанного аудиторского заключения, в конце каждой стадии проекта, в соответствии с временными промежутками, предусмотренными в методологии проведения проверок. Аудиторский отчет показывает выявленные недостатки в обеспечении безопасности и дает рекомендации по их устранению.

Статья 20
Выводы по аудиторскому отчету
(1) Обязанностью заказчика является принятие всех необходимых действий, указанных в отчете, совместно с проектировщиком и подрядчиком, и убедиться в их полной реализации до завершения соответствующего этапа проекта.
(2) В случае, если заказчик не оспаривает требования и рекомендации, содержащиеся в аудиторском отчете, он должен дать немедленное письменное объяснение к каждому конкретному аргументу.
(3) Аудиторский отчет по безопасности дорожного движения и письменное объяснение заказчика должны быть переданы в течение 10 дней в Министерство транспорта (или другую соответствующую организацию). Эти документы становятся частью проектной документации.

Глава V
Расходы
(Статья 21 - 23. По запросу)

Статья 21
Сбор за аудит / инспекцию
(1) Для проведения аудита крупных проектов (дороже 100,000 евро), взимается тариф в 1‰ от общей стоимости инвестиций для проектов по строительству автомобильных дорог общего пользования и 2‰ от общей стоимости инвестиций для проектов по реконструкции и / или модернизации автомобильных дорог общего пользования. Сбор за АБДД не должен быть меньше 800 евро (или эквивалента этой суммы) на каждой стадии проекта.
(2) Для проведения аудита малых проектов (дешевле 100,000 евро), взимается тариф 3‰ от общей стоимости инвестиций, но не менее, чем 800 евро (или эквивалент этой суммы) на каждой стадии проекта.
(3) Афферентные проценты тарифов, запрашиваемых для каждой стадии проекта должны быть определены договором, подписанным клиентом и ОАБДД в соответствии с положениями.
(4) Условия и модальность тарифной оплаты заказчиком должны устанавливаться договором, подписанным клиентом и организацией, ответственной за проведение аудита, в соответствии с положениями.

Статья 22
Требования аудиторов
Суммы, взимаемые в соответствии с положениями ст. 21 должны быть потрачены Заказчиком для оплаты аудиторам за разработанные ими мероприятия и для финансирования их деятельности в области аудита, установленной настоящим документом.

Статья 23
Гонорар аудитора
(1) За мероприятия, разработанные аудитором в рамках заключенного контракта, он имеет право на гонорар и компенсацию за расходы, связанные с выполнением соответствующих работ.
(2) Гонорар аудиторов должен составлять 80% от тарифа, взимаемого ОАБДД в соответствии с положениями ст. 21.
(3) Сумма гонорара и условия оплаты должны быть определены в договоре, заключенном между аудитором и ОАБДД.

Глава VI Ответственность заказчика, разработчика и подрядчика

Статья 24
Мелкие правонарушения
(1) Следующие действия являются мелкими правонарушениями:
а) несоблюдение заказчиком положений ст. 9;
б) несоблюдение заказчиком, проектировщиком и подрядчиком положений ст. 12 пар. (2).
(2) Мелкие правонарушения, описанные в пар. 1, влекут за собой наложение штрафов в размере:
а) Не более 10,000 € за действия, предусмотренные в пункте а)
б) Не более 20,000 € за действия, предусмотренные в пункте б).
(3) Установление факта мелкого правонарушения, предусмотренного в пар. (1) и применение санкции, предусмотренной в пар. (2) производится уполномоченными сотрудниками дорожной администрации, Государственной инспекции по строительству, общественным работам, урбанизму и планированию землеустройства, и Министерство внутренних дел (или другая соответствующая организация).
(4) Положения Уголовного кодекса могут применяться к мелким правонарушениям.

Глава VII Ответственность аудитора/инспектора по безопасности дорожного движения

Статья 25
Нарушение договора
Договорная ответственность аудитора по безопасности дорожного движения заключается в следующих нарушениях:
а) нарушение обязательств конфиденциальности;
б) проведение аудита безопасности дорожного движения в несоответствии с установленными обязательствами;
в) проведение аудита безопасности дорожного движения в несоответствии с методологией проведения данного аудита.
За данные нарушения контрактом могут быть предусмотрены штрафы.

Глава VIII Заключительные и переходные положения

Статья 26
Предписания для ОАБДД

(1) Министерство транспорта (или другая соответствующая организация) и Дорожное управление должны принимать все необходимые меры для обеспечения бюджета, персонала и офисных помещений, необходимых для работы Отдела контроля в Министерстве транспорта (или другой соответствующей организации) и ОАБДД для осуществления своей деятельности, в соответствии с положениями настоящего указа.
(2) Лица, которые посещали учебные курсы для аудиторов по безопасности дорожного движения продолжительностью, определенной в Руководстве по АБДД, в пределах страны или за границей, до момента вступления в силу данного документа, и которые соответствуют условиям, указанным в ст. 10, могут потребовать сертификации своей возможности проведения аудиторской деятельности, а также регистрации в списке аудиторов безопасности дорожного движения.
(2) Заявка должна быть предоставлена в письменной форме в ОАБДД в течение 60 дней с начальной даты Министерского приказа, вместе с документами, подтверждающими соответствие условиям.
(3) ОАБДД должен проверить соответствие условиям и принять решение о сертификации возможности проведения аудиторской деятельности по безопасности дорожного движения в течение 15 рабочих дней с даты регистрации заявления.

Статья 27
Подтверждение

Выданное подтверждение, предоставляемое в соответствии со ст. ___ Министерством транспорта (или другой соответствующей организации), вступает в силу с начальной даты Министерского приказа, в соответствии со ст. 5 пар. (5).

Статья 28
Вступление в силу

Настоящий закон вступает в силу в течении 90 дней с даты его опубликования в Официальном Журнале _____ дата _____.

ПРИЛОЖЕНИЕ 2

ПРОЕКТ СИСТЕМЫ АККРЕДИТАЦИИ АБДД И УЧЕБНЫЙ ПЛАН

A. Проект системы аккредитации АБДД

Самый распространенный способ установления системы аккредитации АБДД - использование уже существующих учреждений, институтов в стране, таких как: университет, Союз инженеров, Министерство транспорта (Минтранс) или равносильных, а также Национальный Совет безопасности, если таковой существует, институты и т.д.

Министерству транспорта (Минтранс) следует принять Политику аудита безопасности дорожного движения (документ, разработанный проектом ТРАСЕКА Безопасность Дорожного движения II и стать единственной заинтересованной стороной в области АБДД. После этого Минтранс (или аналог) может использовать или создать все необходимые институты по АБДД.

- Обучение аудиторов безопасности дорожного движения

Обучение аудиторов в начале внедрения АБДД может быть выполнено с помощью внешних ресурсов (иностранные инструкторы). Профессора из соответствующих университетов, институтов (или подобных организаций) - первые кандидаты для прохождения этих курсов. После этого, университеты и институты, сами или вместе с другими международными экспертами АБДД должны представить свою собственную программу учебных курсов по АБДД. Учитывая последнее, необходимо установить систему обучения аудиторов в стране.

- Сертификация аудиторов безопасности дорожного движения

Аккредитацию (сертификацию) следует проводить различными способами, учитывая возможности страны и существующую практику подобной сертификации (например, если существуют аналогичные сертификаты для дорожных проектировщиков и контролеров, и т.д.).

Аттестацию аудиторов могут проводить те же учреждения, которые предоставляют обучение, или другое учреждение, которое имеет право на предоставление лицензии и определяет перечень необходимых документов для получения лицензии АБДД (подтверждение сдачи экзамена по курсу АБДД и другие определенные документы).

Сертифицированные аудиторы должны быть приняты и признаны Министерством транспорта (или его аналогом) и дорожной администрацией, которые пользуются услугами АБДД в большей мере.

- База данных аудиторов.

Вполне логично, что базу данных аудиторов должна развивать дорожная администрация, более известная как МОТ (или ее аналог), которая является основным пользователем услуг аудиторов.

B. ПРЕДЛАГАЕМАЯ УЧЕБНАЯ ПРОГРАММА ОБУЧЕНИЯ АУДИТОРОВ БЕЗОПАСНОСТИ ДОРОЖНОГО ДВИЖЕНИЯ

Для того, чтобы достичь наилучших результатов обучения аудиторов, предлагается учебная программа. Она базируется на различных учебных модулях, которые направлены на обеспечение соответствующих знаний в области безопасности дорожного движения, которые будут необходимы при проведении АБДД.

На следующем рисунке представлена схема обучения.

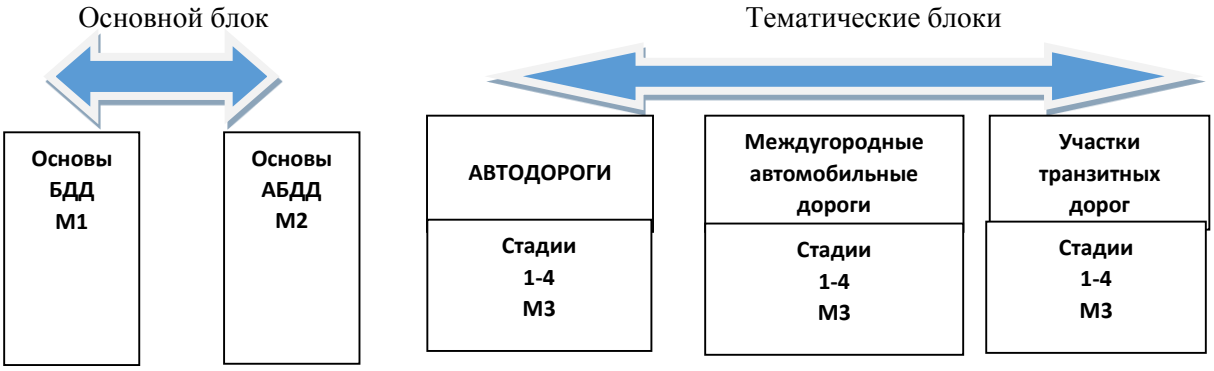


Рисунок А2-В1. Модульная процедура подготовки АБДД

В данном случае, обучение состоит из двух тематических блоков, причем теория сочетается с практикой и выделяется дополнительное время на домашнюю работу.

Слушатели должны представить на выбор 2 собственных доклада по теме АБДД, которые являются частью домашнего задания и предварительным требованием для получения сертификата (первый - после изучения блока М1 + М2 + М3, а другой - после второго учебного блока М4 + М5).

Только слушатели, которые присутствовали на всех этапах обучения и два раза успешно выступили с докладом на тему аудита, имеют шанс сдать экзамен и получить сертификат АБДД.

Учитывая тот факт, что посетители курсов АБДД имеют предварительные знания по этой теме, но этого может быть недостаточно, существуют следующие требования, которым должны соответствовать будущие аудиторы:

- Они должны обладать базовыми знаниями в области проектирования дорог и безопасности дорожного движения (как правило, высшее образование по специальности дорожное дело или строительство) и
- Необходимо иметь опыт работы в проектировании дорог или в области анализа ДТП (например, эксперт-криминалист).

Рисунок А2-В.2. показывает порядок действий в предложенной методике обучения.

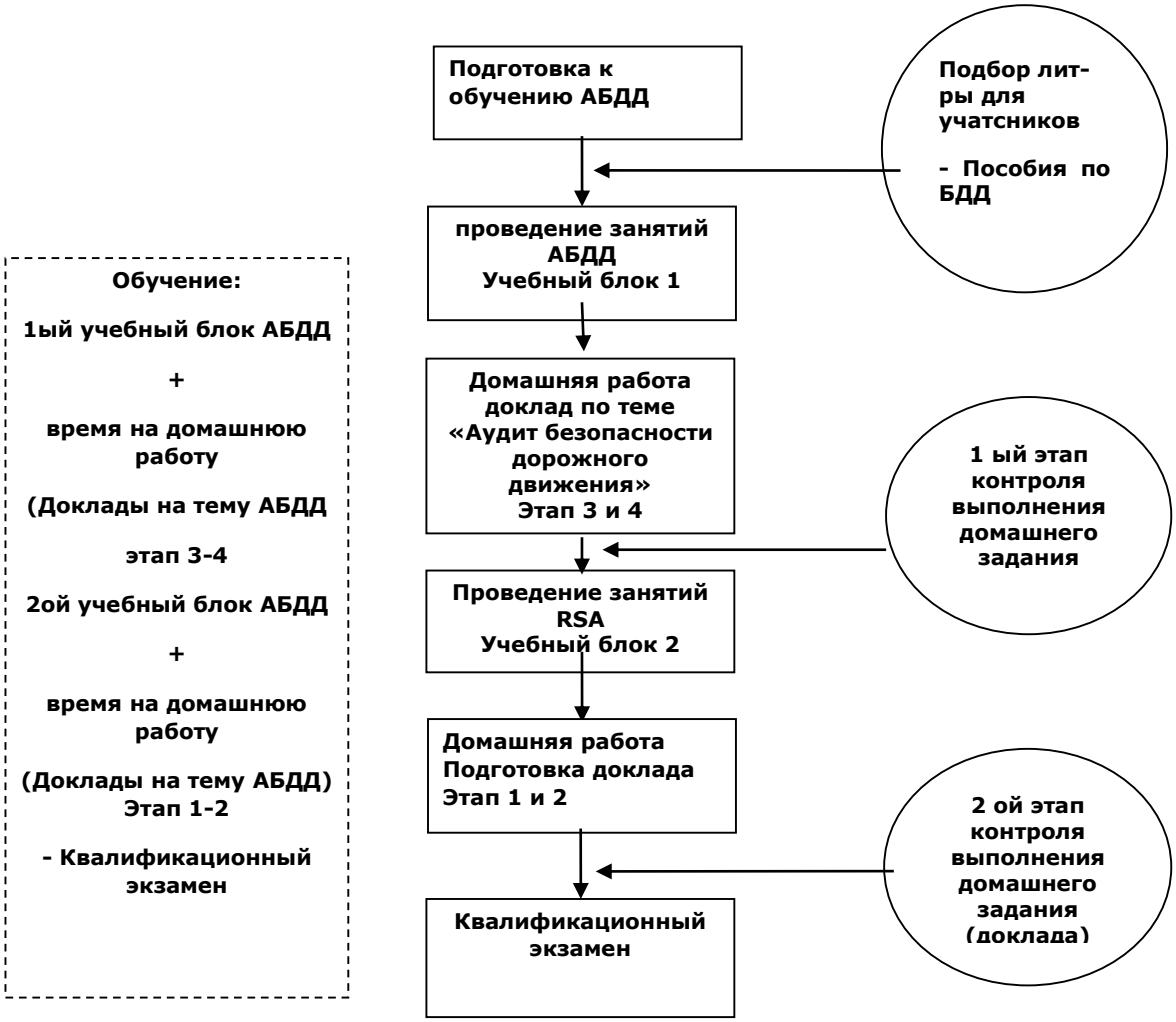


Рисунок А2-В.2. Общая последовательность предлагаемого учебного плана

ДЕТАЛИ ПРЕДЛАГАЕМОГО ОБУЧЕНИЯ

Таблица А2-В.3. Базовый курс АБДД представлен в виде двухнедельного (10 рабочих дней) интенсивного обучения и дополнительных двух недель для домашних заданий.

Таблица А2-В.3. Основные детали обучения

Модуль	Продолжительность	Основные темы
Учебный блок № 1		
М1 Основы безопасности дорожного движения	**2 дня**	- Основы о безопасности дорожного движения и безопасности дорожного движения техника, - Этапы безопасности дорожного движения, - Показатели безопасности дорожного движения - Глобальный подход к обеспечению безопасности дорожного движения (факторы безопасности дорожного движения), - Матрица Уильяма Хадона,

		- Процедуры по безопасности дорожного движения для улучшения дорог (Директива ЕС 96/2008), - Влияние скорости на ДТП - Защитные барьеры, - Записи аварий и диаграммы столкновений - Потенциальные сбережения
М2 Основы аудита безопасности дорожного движения	**1 день**	- Что такое Аудит безопасности дорожного движения? (Определение), - Почему необходимо проводить аудит безопасности дорожного движения?, - Область применения (типы проектов), - Значение и расходы на аудит безопасности дорожного движения, - Этапы АБДД, - Процесс аудита безопасности дорожного движения - Контрольные листы, - Отчетность, - Виды отчетов АБДД - Типичные недостатки БДД
М3 Автомагистрали	**2 дня** + домашнее задание: завершение 1-го АБДД	Обучение с лекцией о проблемах безопасности проектирования автомагистралей - Функция дороги (проектные и рабочие элементы), - Поперечное сечение, - Выравнивание, - Пересечения (транспортные развязки, сигналы - государственные и частные услуги (Зоны отдыха, пункты сбора платы, остановки общественного транспорта, ...), - Уязвимые участники дорожного движения, - Дорожные Знаки, маркировка, освещение, - Особенности придорожного окружения и пассивное оборудование для обеспечения безопасности. - Практическое обучение АБДД (стадия 1 или 2) в команде, - Тематическое исследование с подготовкой 1-го доклада АБДД.

Учебный блок №2		
М4 междугородные магистрали	**2 дня**	Лекция на тему «Безопасное проектирование междугородних магистралей и типичные ошибки дорожного движения»: - Функция дороги (Проектные и рабочие элементы),

		- Перекресток, - Трасса дороги, - Перекрестки (перекресток с круговым движением, светофоры, железнодорожные переезды), - Коммунальные и частные услуги, контроль доступа (Остановки городского транспорта, другие потребности пешеходов, велосипедистов, ...), - Уязвимые участники дорожного движения, - Дорожные знаки, маркировка, освещение, - Особенности придорожного окружения и пассивное оборудование для обеспечения безопасности. - - - - - Практическое обучение в команде
М5 По перекрестку междугородных магистралей	**2 дня** + домашнее задание: завершение второго доклада по АБДД	Лекция на тему безопасного проектирования перекрестков и типичные ошибки дорожного движения: - Функция дороги (Проектные и рабочие элементы), - Перекресток, - Трасса дороги, - Перекрестки (перекресток с круговым движением, светофоры, железнодорожные переезды), - Коммунальные и частные услуги, контроль доступа (Остановки городского транспорта, другие потребности пешеходов, велосипедистов...), - Уязвимые участники дорожного движения, - Дорожные знаки, маркировка, освещение, - Состояние дороги и пассивное оборудование для обеспечения безопасности - - - - - - Обучение в реальных условиях, - - - - - - Практическое обучение в команде (этап 3 и 4), - Тематическое исследование с подготовкой 2-го доклада АБДД.
1 день		**Квалификационный экзамен**

Этот вид обучения меняется для введения в университете (или в учреждении аналогичного уровня), и это означает, что его можно легко адаптировать для введения в программу последипломного обучения или специализированных курсов.

Примечание. Презентации Power Point, которые используются во время обучения АБДД, находятся на диске и читаются с любого электронного носителя.

4.4.3

REGIONAL BLACK SPOT MANAGEMENT GUIDELINES

TRACECA Regional Road Safety Project

Safety Engineering Team

March 2015

EU funded road safety project

For

Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

PREFACE
TO THE DRAFT REGIONAL BLACK SPOT MANAGEMENT GUIDELINES FOR TRACECA COUNTRIES

Black Spot Management (BSM) is one of the first road safety tools used for improving the dangerous locations and sections on roads. Despite many years of black spot improvement work, experience from developed and developing countries shows that BSM is still a highly effective and cost effective engineering tool in order to improve the safety of roads.

The identification, analysis and treatment of Black Spots is a well proven method for reducing the number and severity of crashes on the road network. Low cost remedial treatments can offer first year rates of return of several hundred percent and black spot treatments are amongst the most cost-beneficial investments a Road Authority can undertake.

Since there is no universally applicable definition of what should be regarded as a black spot, Project team jointly with concerned stakeholders have proposed a suitable unique definition of Black Spot for use in TRACECA Countries. The proposed definition of a Black Spot for the purposes of this manual is defined as “Any location on a road with a maximum length of 300 meters, at which at least four fatal* crashes have been recorded during the last three years”.

Special attention has been given to making the Guidelines user friendly and the Project Team are building on existing good practice and examples from the Region. Throughout these guidelines, the word “crash” is used instead of “accident” to emphasize that these events are preventable and avoidable and not some inevitable event outside of human control.

These Black Spot Identification and Treatment Guidelines have six chapters followed by an Appendix. They draw, as necessary, upon best international practices and manuals available in use around the world. The authors of these guidelines would like to acknowledge their indebtedness to such manuals and their authors – the key ones of which have been listed in the references.

These guidelines have been developed to provide a recommended methodology for Black Spot management to the TRACECA region countries. The main purpose of these guidelines is to provide the reader with a clear overview of the necessary steps for Black Spot elimination.

** A fatal crash is where at least one person has been killed*

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4. TYPICAL BLACK SPOTS

5. POTENTIAL CRASH SAVINGS

6. REFERENCES AND FURTHER READING

Abbreviations and acronyms

ADB	Asian Development Bank
BSM	Black Spot Management
EC	European Commission
EIB	European Investment Bank
ETSC	European Transport Safety Council
EU	European Union
GLONASS	Global Navigation Satellite System
IBRD	International Bank for Reconstruction and Development
IDS	In-depth Studies
IFI	International Financing Institutions
MoIA	Ministry of Internal Affairs
MoI	Ministry of Interior
MoTC	Ministry of Transport and Communications
NGO	Non-governmental organization
NP	National (Country) Program
PIARC	World Road Association (PIARC actually means Permanent International Association of Road Congresses but this name is rarely used)
PRI	La Prévention Routière Internationale a.s.b.l.
RIA	Road Impact Assessment
RSA	Road Safety Audit
RSI	Road Safety Inspection
SEETO	South-East Europe Transport Observatory
TL	Team Leader
ToR	Terms of Reference
TP	Traffic (Road) Police
TRACECA	Transport Corridor Europe-Caucasus-Asia
WE-WC	Western Europe – Western China International Transit Corridor
WHO	World Health Organization

1. INTRODUCTION

Road crashes are now widely recognized as a serious social and economical problem. And different measures and programs were devised to reduce the blood toll on roads. On the international level, United Nations, World Health Organization, European Commission, International financing organization (especially World Bank, ADB, EIB, IBRD, Islamic Bank,...) and some specialized NGO (PIARC, ETSC, PRI, SEETO, ...), are now working to improve global road safety. In autumn 2009, ministers and stakeholders from all over the world met in Moscow (First Global ministerial conference on Road Safety) and called upon the United Nations to take leadership of this global problem affecting all nations. This issue was discussed at United Nations and a worldwide decade for road safety was announced in 2011. The international community of United Nations Regional Economic Commission, WHO, development banks, major road safety research institutes; Global companies and NGOs are now cooperating to address this global problem.

One of the popular misconceptions is that the faults or bad behaviour of a driver are alone in almost all cases, the cause of road traffic crashes[22]. As result of a basic research project, it is evident (Figure 1.1.), that in every third crash the road environment has at least some influence (road environment factors 34 %) on the occurrence of a crash.

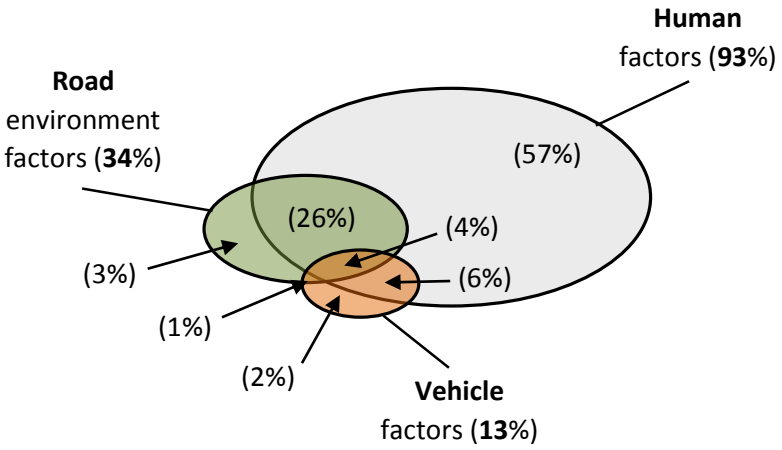


Figure 1.1. The contribution of crash factors
(Source: Road Safety Manual, PIARC, 2003)

As a consequence of recognition that most crashes have multiple contributory factors, Road Safety Management was developed as the best way to decrease the total number of crashes in a country.

The identification, analysis and treatment of Black Spots is a well proven method for reducing

[22] This is partly because police reporting of crashes tend to focus on blaming and as a consequence the vast number of crashes appear to involve human factor / driver error. However, what is often not explored by police or recorded in statistics is why the driver made that error (e.g. was it because of misleading information, missing signs or even unsafe elements of road design or the vehicle.)

the number and severity of crashes on the road network. High effective and low cost remedial treatments can offer first year rates of return of several hundred percent. Black Spot treatments are amongst the most cost-effective investments a Road Authority can undertake.

With its Directive of the European Parliament and of the Council no. 2008/96 on road infrastructure safety management, published in October 2008, the European Union made a clear decision that the BSM should be mandatory for the trans-European Road Network in the following years.

In the mentioned EU directive, the BSM is part of a package road safety measures as follows:

- Road safety impact assessment (RIA),
- Road safety audit for the design stages of roads (RSA),
- **Safety ranking and management of the road network in operation, including management of high risks road sections (BSM),**
- Road safety inspections for existing roads (RSI) and
- In-depth crash analysis (IDS).

The introduced measures are an integral part of the wider road safety management system, and they are shown at Figure 1.2.

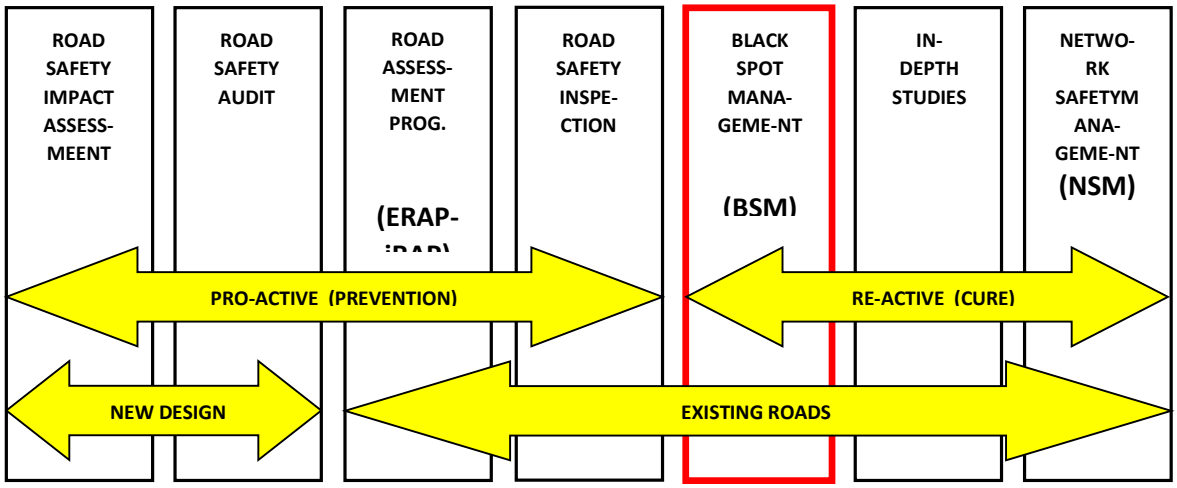


Figure 1.2. The BSM as part of the Road Safety Management (Source: Road Safety Audit Manual, SEETO, 2009)

It can be easily seen from Figure 1.2. that BSM represents re-active procedure that should be undertaken on existing roads.

The output of BSM is normally a proposal of countermeasures which will decrease the risk of crashes at the treated locations.

The Black Spot identification and treatment Guidelines are based on best international practice and special attention is given to the harmonization of black spot management approaches in TRACECA Countries.

2. INTRODUCTION TO BLACK SPOT MANAGEMENT

2.1. What is Black Spot Management? (Definition)

Black Spot management presents a systematic approach for identification, analysis, treatment and evaluation of countermeasures used at hazardous locations on the road network. The basis for Black Spot identification is statistical data analysis of road crash record and mapping of crash locations. Therefore, an adequate crash database is an essential and necessary tool for effective Black Spot work.

Output of BSM is improvement dangerous road locations, with usage of optimal measures which will prevent occurrence of future crashes and increase the total level of road safety of network.

The database should include most precise information about crash site location (preferably done by GPS/GLONASS coordinates), details about the type of crash, collision diagram, details of drivers and if it is a fatal or a crash with injuries, information about the casualties. Information about vehicles and roads involved, as well as weather conditions, when the crash occurred are other important facts useful for crash analysis.

There is no unique definition of what should be regarded as a Black Spot. Researchers generally agree that Black Spot could be defined as a **location which has a higher expected number of crashes than similar locations, as a result of local risk factors**. However, this is not an easy definition for practical work.

Jointly with concerned stakeholders in different TRACECA Countries, the project team proposes a suitable and common definition for Regional usage. The proposed definition of Black Spot is defined as **"Any location on a road with a maximum length of 300 meters, at which at least four fatal crashes have been recorded during the last three years".**

Furthermore, a Black Road Section is defined as **"any road section with a maximum length of 1000 meters, at which at least six fatal crashes have been recorded during the last three years".**

The above proposed definitions belong to the class of Numerical definitions, and they are suggested for use during the initial period of Black Spot Management. Main reasons why Project proposed unified definition is to have a single common depiction instead of having 10 different local definitions. This will help to harmonize Black Spot Management in the Region as well as fast level up of black spots all over the important transport corridors which are crossing the Region. Proposed approach will also help IFI in their transport and road safety projects and most important will help drivers in region to easily recognize the black spots on the road due to harmonized signalization and possible web based database of black spots (initiative of some NGO for such a project already exists).

All suggested variables in black spot definitions should be tested and if they provide useable and logical output (*for exampl*e: ***total number of identified black spots in country are between 50-150***), they should be applied. It should be noticed that definition could be corrected in future, when most (at least 2/3) of identified dangerous locations are treated (improved).

In future, some of more complex models could be used. For example, analysis of the spatial distribution of road crashes (which relies on modern GIS tools) allows more accurate identification of crash location with accumulation of crashes. Alternatively given that the observed road crashes have different casualties, each crash could be assigned with a weight index based on the degree of severity. Weight indices are based on the costs of crashes suggested by World Road Association (PIARC) and as follows:

- crash with minor (slight) physical injuries should be multiplied by the weight index of 1,
- crash with serious physical injuries should be multiplied by the weight index of 10 and
- crash with fatalities should be multiplied by weight index 85.

In this way, for each of the Black Spots, could be provided so-called "crash weight index" which represents every Black Spot with one unique number. Upon this number, ranking of Black Spots could be developed and a number of dangerous locations selected for improvement, in accordance with the budget available.

2.2. Methodology used for Black Spot Management

Guidelines have been developed based on EU financed research work (RIPCORD - ISEREST), project team experiences and in close cooperation with concerned counterparties, this.

The flowchart for the Black Spot process is made having in mind international best practice as well as specific needs of TRACECA Countries. It is recognized that huge changes in organization of involved institutions, as well as highly complex models, will not be possible to implement, so proposed Black Spot management methodology is a combination of minimal functional requirements for modern black spot management in Region.

Proposed flowchart for the Black Spot process is given in Figure 2.2.1.

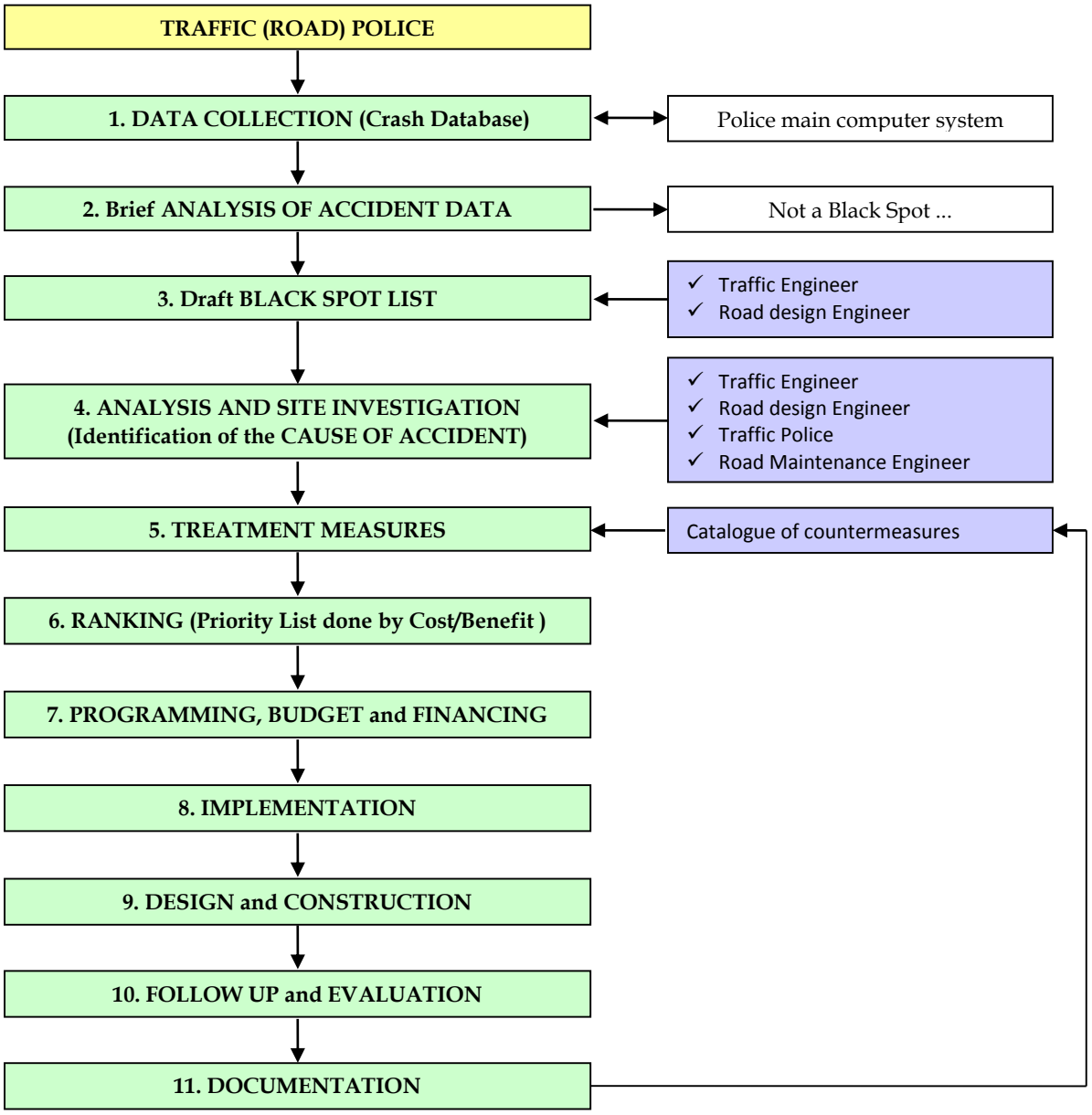


Figure 2.1.1. Flowchart for the proposed Black Spot process (Source: EU funded Project RIPCORD-ISEREST, 2007)

2.3. Structure of the Guideline

This manual is divided into six chapters as follows:

The first Chapter introduces BSM concepts and explains the need for the BSM procedures to be applied.

Chapter 2 presents basics about BSM. This Chapter contains answers to the following questions: What is BSM?, What is its Definition? and Methodology used for Black Spot Management.

Chapter 3 discusses the BSM process. Detailed explanations are provided for all steps: Data Collection (Reporting and Database), Analysis of Crash Data, Identification (Preparation of Black Spot Lists), Analysis of the Causes of Crashes (in office and on site), Determination of Black Spot Treatment, Ranking (Priority Listing upon cost/benefit analysis), Programming, Budget and Financing, Implementation of Treatment measures, Follow up and Evaluation and Documentation. The chapter also discusses a detailed methodology used for conducting BSM.

Chapter 4 presents a typical Black Spot with most frequently observed road safety deficiencies. All examples used in Guidelines are collected in TRACECA Countries.

Chapter 5 contains the most commonly used countermeasures with specified crash savings.

Chapter 6 presents the literature used.

3. BLACK SPOT MANAGEMENT PROCESS

3.1. Data Collection (Reporting and Database)

Existence of quality and available road crashes database is the most important prerequisite for managing the Black Spots. Without adequate road crash database, it is not possible to identify and monitor Black Spots on a road network. Even, if there is an existing crash database, but it is not made easily available (for further analyses by specific organizations, police), the process of establishing a system of BSM will not be successful. Crash data does not belong to the police but in a resource that has to be made available (once confidential information of driver an vehicle details is removed) to all key stakeholders, such as road engineers, so that further more detailed analyses can be undertaken of the most hazardous locations.

Usually Ministry of Internal Affairs (or Interior) through Traffic Police possesses the crash database that can be used as a basis for BSM. From the Project Inception period visits the Project Team is aware that crash databases exist in each TRACECA Country but in some of them important improvements need to be undertaken, and in some cases, the data needs to be made available for successful BSM usage. The following data could improve the quality of police crash data systems:

- adding of **collision diagram**,
- introducing of **GPS/GLONASS coordinates**,
- adding location whether inside or outside of settlements
- adding information about nearby schools or other public and private services
- surrounding characteristics of interurban roads (desert, agriculture, forests,

mountains)
- adding of **weather information,**
- introducing the **posted speed limit, etc.**

Specially designed integrated databases with data about roads, traffic counting and traffic crashes enable high-quality inputs for BSM. This kind of database output would provide adequate spatial and time analysis of crash and enabled increased reliability the understanding of basic causes and circumstances of traffic crashes. There are also other sources, which can be used for improving the quality of the integrated database, such as reports of injuries from hospitals, court records, records from insurance companies, etc. However, data from these sources are often hard to provide and to integrate.

Until now, there seems to be only minimal systematic analysis of crash data with BSM procedures. One of the reasons has been the fast development of road networks with no inclusion of road safety topics. Other, more technical reasons could be that there is no use of Geographic information systems (GIS) and GPS/GLONASS data about crash locations which makes BSM more complex (it is not easy to identify and analyse Black Spots just by looking at long tables without the possibility to see them on the map). The result of that situation is that very little effective BSM analyses have been carried out in the past.

However, by using available information from the Police, Road Authority can improve some of the identified road locations. Without clear definition of Black Spot and of outdated crash database continue to be used, this work is rather time consuming. As a consequence, identification, analysis and treatment of black spots has up to now, not been done systematically and has not been managed in a modern way in TRACECA Region.

Based on BSM international best practice there are two mostly methods used for collecting and preparing the data:

- First method is based on the analytical procedure to enable the list of crashes on different roads. Usually, output is spreadsheet with sorted crash data. In this way, the most dangerous locations can be identified.
- Second one is based on more sophisticated procedure and relies on GIS. This means that all crashes are presented on geo-coded maps. Using GIS, it is easy to identify Black Spots visually from the displayed data.

For both methods, one of most important prerequisite is knowing the exact location of the road crash. For this purpose, road km poles are often used to identify the location. This is good way, but it has few disadvantage:

- Sometimes km poles are missing which complicates the work of the police,
- If road length was change (changing of road alignment, creating the by-pass) there is a problem with km signs and
- All crash data (the part about location) should be transformed into X, Y (or North/South) coordinates, so that they can be used in a GIS road database (which is in the phase of preparation).

Therefore, the usage of “Global Positioning System” (GPS) or “Global Navigation Satellite System” (GLONASS) instruments is strongly recommended for the location of crashes from the beginning. The Traffic Police should enter the GPS/ GLONASS location in the “Road Crash Form” under “Location of the traffic crash”.

Beside data about GPS Location, it is important that crash data includes information on the events and manoeuvres that led to the crash (collision diagram). This information can be also added by the police officers, if it is known.

In this way more quality data will be collected for future BSM work.

According existing data collection in all TRACECA Countries, the Traffic (road) Police is responsible for filling the crash form and import in it into the centralized computer system. In most countries, from time to time, police have meetings with Road Authority (if Road Safety Unit exists) and exchange data about dangerous places. In some of countries, specific Institutes exist and they also receive crash data from the police. These Institutes can be used as a first step in processing the data for BSM.

Traffic (Road) Police preferably or in some cases specialized road safety research Institutes, can perform brief analysis of crash data and prepare draft Black Spot lists.

3.2. Analysis of Crash Data

The black spot can be either an intersection or a section of a road. Generally there are two methods in most common use:

Method based on crash statistics

Based on crash statistics (from police database) in early development of BSM activities, Traffic (Road) Police or specific Institute should make brief analysis of crash data and prepare a draft list of Black Spots in accordance with the adopted definition. The list could include both intersections and road sections and constitute the basis for further Black Spot investigation and processing which will be done inside Road Authority (Road Safety Unit if such exists). Later on, as methods are improved, Traffic (Road) Police or a specific Institute can use a weighted index based on the type of consequence as follows:

- crash with minor (slight) physical injuries should be multiplied by the weight index of 1,
- crash with serious physical injuries by the weight index of 10 and
- crash with the fatalities by weight index 85.

This gives ratio 1:10:85 and is broadly based on the principle that the more serious crashes result in more serious casualties and higher costs to society. Hence, fatal crashes should be given much more priority and importance than light injury crashes. [Note this particular one does not put any weight on damage only crashes but some other systems also include weighting for damage only crashes].

All black spots can be ranked based upon crash weight index. This list should then be sent to Road Authorities (at state and community level) for further analysis of potential improvements at those locations.

Method based on “Pin map”

Another possibility of crash data analysis could be the usage of a “Black Spot Pin Map” (Figure 3.2.1.) as a tool for Black Spot identification. Geo coded road maps can be produced and used for adding the road crashes on it. Each road crash should be marked on the map by a pin. The pins should have different colours to indicate different types or severities of crashes (e.g. crashes with fatal – black colour, crashes with severe injuries – read colour and crashes with slight injuries – blue). The map should be continuously updated with all new crashes as the

data becomes available.

Crashes from previous years should be also marked on the map, so that annual trends of number of crashes could be easily visible. In that case, the map would show the number and type of crashes over a period of several years. The situation at year end can be photographed as a record of the data for the year and plotting of locations can continue.

A visual interpretation of the Black Spot pin map provides a good presentation of potential Black Spot locations. If GIS are used, more sophisticated analysis could be provided. Based on the pin map and adopted definition, a preliminary Black Spot list could be drafted easily upon different criteria. The list could include both intersections and road sections and serve as a basis for further Black Spot investigation and processing inside the Road Authority.

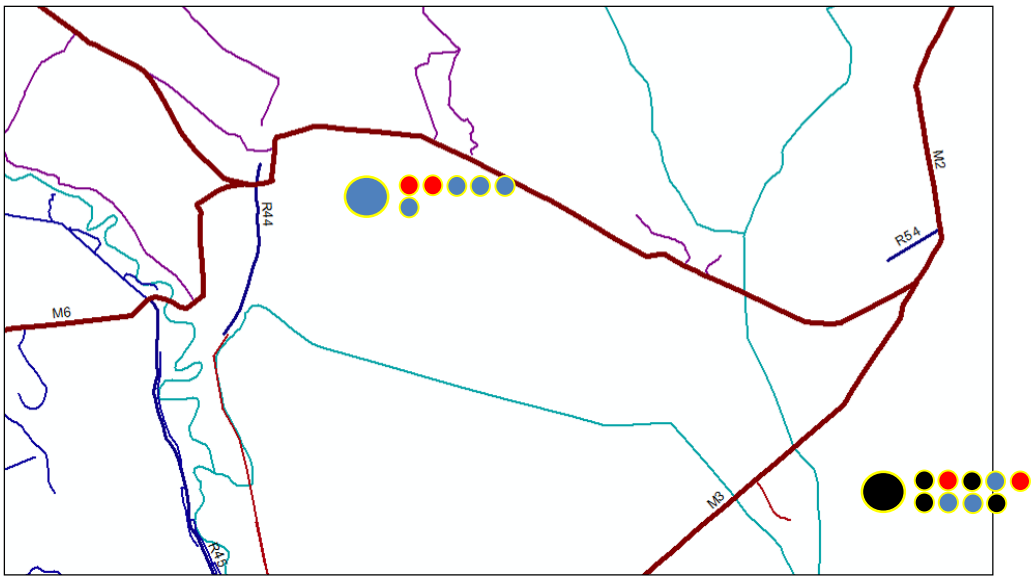


Figure 3.2.1. Example of typical Black Spot Pin Map

3.3. Identification (Preparation of Black Spot Lists)

The draft Black Spot list is prepared in accordance to the adopted definition. Later on, when the system starts to work, the list could be improved by use of a weighted index. The draft list serves as a basis for further investigation and analysis.

The preparation of initial Black Spot list could be carried out by Traffic (Road) Police (or specific Institute if such exists). Data about all single vehicle crashes in defined Black Spots should be double checked and reviewed. There should not be mistakes in crash data forms data which can influence the total statistics and conclusions. If it is necessary, more data about specific crash should be requested from police. In this way, quality of collected data will be improved.

Special attention should be given to the preparation of the collision diagram (if it does not exist inside police crash report), because it presents the easiest way to understand why and how the crash happened.

The final Black Spot list should consist of newly identified Black Spots and Black Spots which have already been analysed, but not yet treated in the past. Black Spots with the highest

number of fatal crashes (or with highest weight index) should be given the highest priority to be analysed in-depth.

3.4. Analysis of the Cause of Crash (in office and on site)

The aim of the analysis of the cause of crash is to understand the chain of events which directly lead to the crash. Many factors contribute to an crash, which means that it is not easy to get a full understanding. Therefore, it is important to carry out the analysis systematically using all known facts. Proposed analysis could be done inside Road Authority (and Road Safety Unit if such exists). Usually there are two types of analysis: in office and on site.

3.4.1. In office analysis - Collecting and processing of crash data

In order to carry out a proper analysis, at least the following data are required for in office analysis:

- Crash data,
- Traffic data,
- Road data and
- Supplementary data.

Crash data

Basic data on the crash scene is recorded by the traffic (road) police. Their report and follow up file includes all important data for crash analysis including statements of witnesses and those directly involved in the crash.

Traffic data

In order to choose an optimal countermeasure, additional data would be needed, such as:

- the traffic volume, by vehicle type, direction and time,
- average speeds at that location, if it is available from automatic traffic counters,
- the volume of specific groups of road users or modes of transport normally passing through that location,
- any changes in the traffic structure during the study period, including volume and vehicle type, etc.

Often this information can be collected from different Institutions like Road Authority, local communities and people who are living nearby.

Road Data

Apart from photos a sketch of the crash site is very useful. The sketch should show the final location of vehicles involved, all traffic facilities and obstacles contributing to the crash. The sketch should, if possible, to scale and as detailed as possible and should contain information about the location and road such as:

- Dimensions and layout of the carriageway, lanes, shoulders, medians, curve radius, super elevation and skid resistance,
- Structures and fixed hazards,
- Contours of surrounding terrain,
- Cyclist or pedestrian lanes,
- Existing guardrails and or barriers,
- Delineator posts, signs and lighting (including poles),
- Road markings and pavement markers (including pedestrian crossing),
- Road signs,
- Connecting roads with dimensions and surface type,
- Type of surface layer (carriage way/shoulder),
- Estimated traffic flow/type of traffic/traffic speed,
- Traffic Islands and dimensions,
- Trees, houses and private roads/entries, etc

Supplementary data and information

Sometime it will be useful to collect additional information about the road crash and location, such as dominant vehicle types using the road, signed speed as well as average speed, specific road conditions, obstacles on or nearby the road, etc. This information could be obtained from the local Road Agency, the local Police, from people living near the crash site location and from other sources.

Collected data could be used to draw the Collision diagram (Figure 3.4.1.1). and a Crash summary table (Figure 3.4.1.2.).

Collision diagram

The collision diagram is a schematic representation of all crashes that have occurred at the hazardous location. The characteristics of the crash are shown using the manoeuvre illustration. The movements involved in the crash are graphically explained using arrows, which represent the preliminary collisions parties. The following data are also shown in the collision diagram:

- the exact location of each crash within the junction or section of road.
- the travel direction of each vehicle
- the manoeuvres of each vehicle (straight ahead, turning, loss of control);
- the type of collision (right angle, rear-end, etc.).

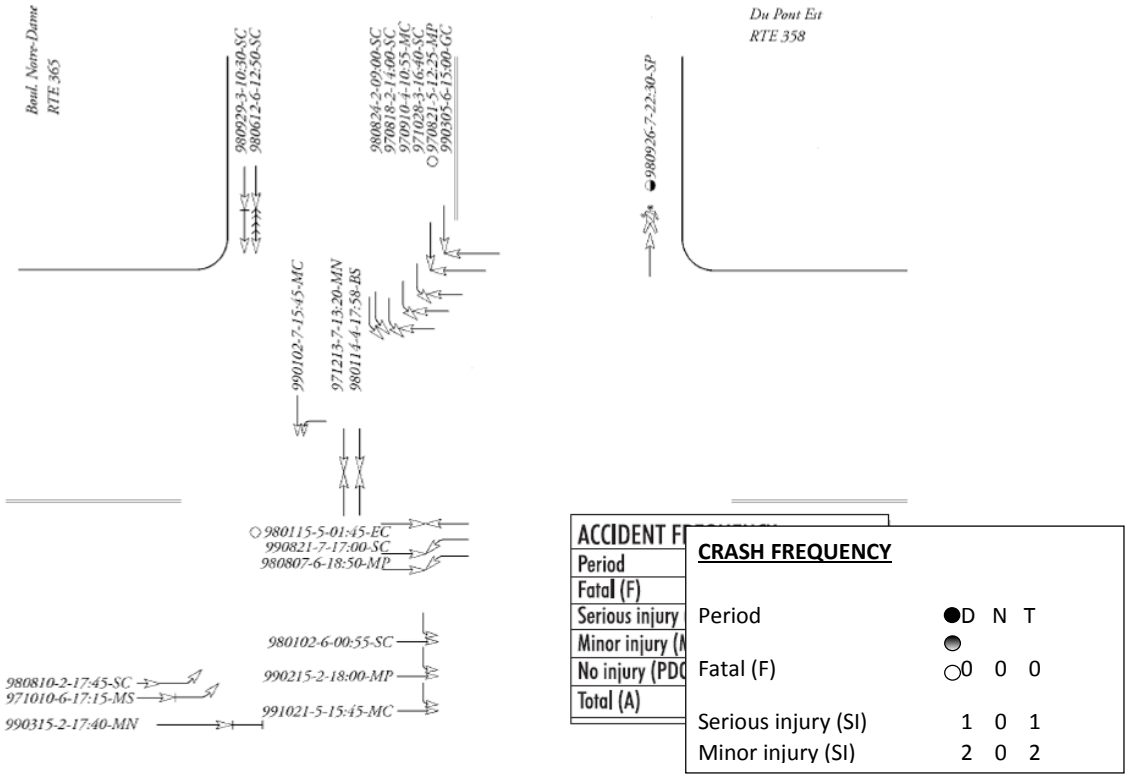


Figure 3.4.1.1. Example of a typical collision diagram

The collision diagram makes it easier to recognize the most frequent crash types and their concentration and given insights into the potential problems and manoeuvres at that location.

Summary tables of crashes

The crash summary tables contains the most important data available for the several crashes that have happened at a single location. From this table it is easy to understand the most common factors and circumstances for all crashes occurring at that location.

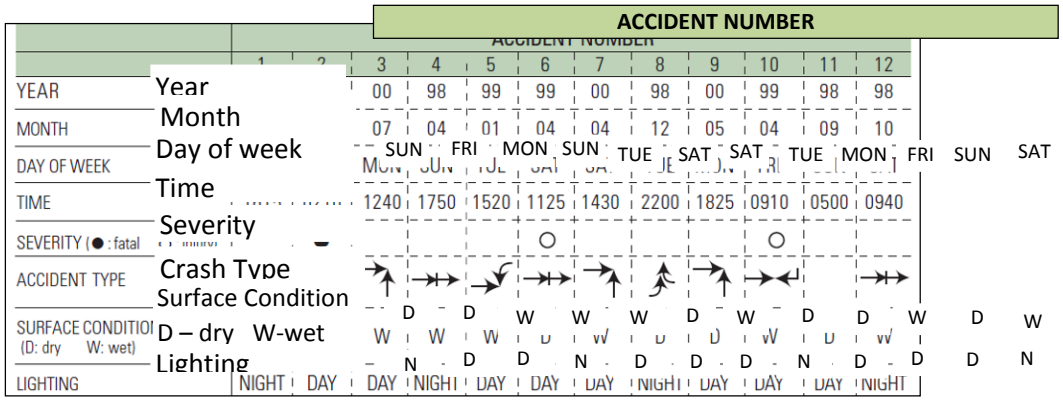


Figure 3.4.1.2. Example of a typical crash summary table

3.4.2. Crash analysis

Dominant crash types

If a collision diagram is available, it should be used at the beginning of the analysis process. Through this diagram an initial grouping of crashes will already have already been carried out showing exact location of each crash, travel direction of each vehicle and manoeuvres of each vehicle (type of crash).

The type and location of the crash generally provide the most important information for crash analysis. From the collision diagram, the dominant crash types can be deduced. A crash type is considered dominant when occurring in a cluster of 4 crashes or more. Other types of crashes, not belonging to a dominant group, are not significant enough for crash analysis and cannot lead to conclusions based on common characteristics.

It must be noted that crashes of different characteristics may have the same cause. If an intersection is not easy noticeable, this can lead to both give-way crashes (reacting too late to traffic with priority crossing) and rear-end crashes (reacting too late to the car in front slowing/stopping, standing still and waiting to give way). This means that all crashes should be thoroughly considered.

At a location with relatively few crashes, for example 3 crashes in 3 years, a dominant crash type could be hard to identify. At such locations, dominant crash characteristics (direction of approach, time, light and so forth) will facilitate the analysis better than the crash type.

With low numbers of crashes percentages should not be used when formulating conclusions, because this could provide inappropriate and misleading interpretation. For example: "3 out of 4 crashes occur in the dark" illustrates the actual situation better than "75% occur in the dark" and gives information on the small sample size.

Dominant characteristics

The analysis is initially carried out per dominant crash type. Within this group of crash similarities with other characteristics are required.

With a dominant crash type and a large number of crashes further analyses could be done. For example, if 12 of a cluster out of 20 single crashes turn out to have occurred in the dark, a separate further analysis of these 12 crashes is needed to disclose other similarities (e.g. driver's age, alcohol, etc.).

In addition to determination of dominant crash types and/or characteristics, the remaining part of the analysis can best be carried out using a "question and answer" technique. Two main questions should be asked:

- Does the similarity have any significance?
- What conclusion can be drawn from this?

If, for example, it turns out that 70% of the crashes occurred on wet road surface, specific questions are:

- Is that number larger than can be expected, based on the dry-wet road surface-time

relation?

- Does this serve as a basis for formulating a hypotheses regarding possible crash cause?

3.4.3. Formulating hypotheses

Based on the “in office” analysis, hypotheses regarding the possible crash causes should be formulated. This should be done for each dominant crash type or characteristic separately.

It is important for various conclusions from the crash analysis to be compared and put together as a puzzle. They can be either contradictory or even complementary to each other.

Additionally various types of crashes sometimes have same cause.

The hypotheses regarding possible crash cause should be formulated for each individual dominant type of characteristic, based on the total picture of the crash analysis.

3.4.4. On site investigation - Collecting and processing of crash data

When the “in office” crash analysis has been carried out, each of the sites will require a site investigation. A site survey should be carried out in order to add more details and to "test" the hypotheses. The assumptions as regards the possible causes should be examined as careful as possible to determine the accuracy.

The road and traffic situation at the location should be examined using the results of the crash analysis as the starting point. The investigation has to take into consideration the **triggers** of the driver's reactions and patterns of behaviour, which may result in an crash.

In the application of the Human Factors concept to traffic accidents, the road safety expert asks for the reasons that led to a driver’s **operational error**, which finally resulted in an crash. This approach is not very new in road construction. In the 1930s, basic ideas from the Human Factors concept were taken into account in planning major roads and highways.

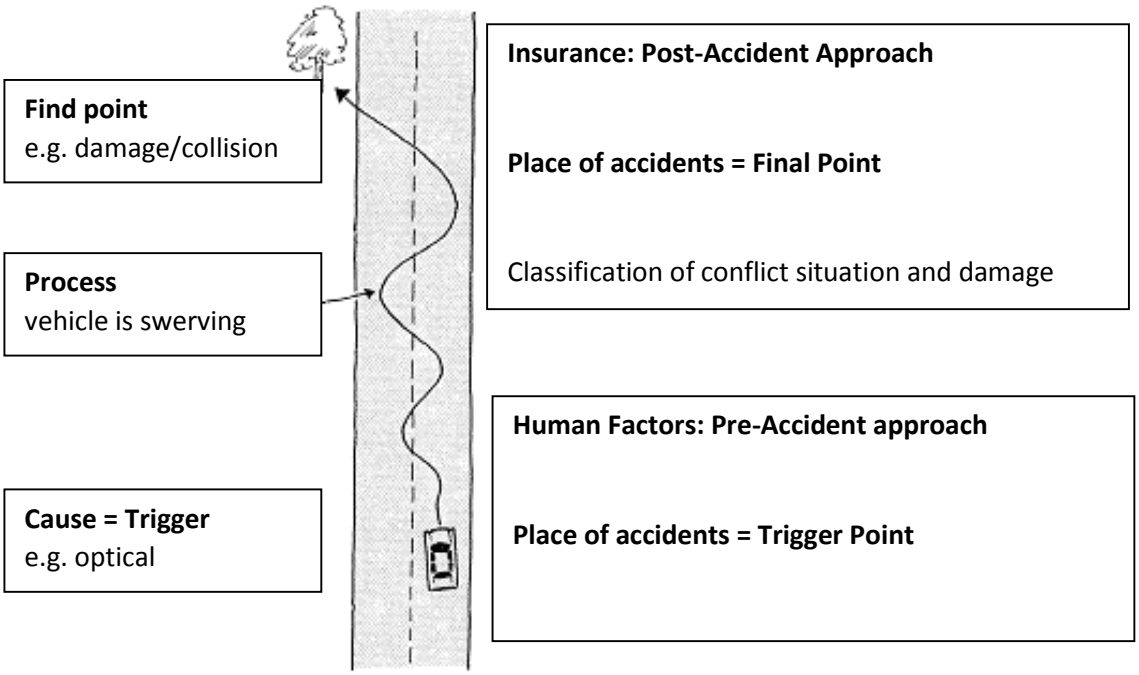


Fig. 1: Post-Crash and Pre-Crash approach [15]

The Human Factors concept considers the driver's operational error as the first step in a chain of events that may lead eventually to a crash. Many of the often-observed operational errors result from the direct interaction between the road and the driver's reaction characteristics. Road features determine driver behaviour. Since the driver's reaction characteristics cannot be changed, attention should be focused on the road characteristics. This deduction makes it possible and obligatory to take into consideration the human limitations of drivers' perception, information processing and action and must be taken into account when roads are planned and constructed.

It is the aim of the Human Factors concept to reduce the probability of operational errors and ultimately to reduce the probability of driving errors by a user-friendly and self-explanatory road design. This means that the road has to be constructed clearly, so the driver has clear information to enable safe driving. This required that dangerous points have to be designed so as to be easily understood, perceptible and recognisable. The road user should be neither confused nor invited to take risks. The goal of the notion of "self- explanatory road design" is to increase the unmistakable interpretation of road features. Such a user-friendly, self-explanatory road design should directly result in a decrease in the frequency of crashes. (see more in PIARC Human Factors Guideline).

There are a number of parameters which can be collected on site and which can substantially improve the understanding of the cause of crashes. The most important ones are: number of vehicles and average speed in at the location being analysed and the road situation as well as information regarding cross fall, skid resistance etc.

Traffic counting

Traffic counting is a procedure which enable crashes counting of road users (vehicles,

pedestrians, ...) which are passing through a certain point in the road network (a section, intersection, etc.). In traffic counting road users can be sorted by category (e.g. motorized traffic, non-motorized traffic, pedestrian traffic, etc.), and by time of day. The results of traffic counts are entered in pre-prepared forms, so that those counting should only count vehicles that are passed through their location.

The methodology of traffic counting is well developed and widely accepted and already used in all TRACECA Countries, so the procedure and methods of traffic counting will not be explained any more.

An output of traffic counting should be diagram, which shows traffic load of road, intersection legs, some location, etc. Counting could also provide information on traffic composition (percentage of different types of vehicles in traffic flow). These outputs can contribute for the better understanding of the existing road situation and improve the hypotheses and decision-making about which counter measures should be taken at Black Spots.

Vehicle speed measurement

Vehicles speed is usually one of the main factors which increases the risk of road crashes. Often, speed is a direct cause of a traffic crash, and more often it has a direct contribution to the severity of consequences. According to available information, speed measurement of vehicles on the road network and statistical analysis of speed has not so far been carried out in systematically way in TRACECA Countries. Therefore, method of speed recording will be more explained.

Exceeding the maximum permitted speed limit on the roads is one of the most important risk factors and acute problem of traffic safety in each country. Modest experience, collected inside field trips and researches of Black Spots in different TRACECA Countries, shows that speeds at the observed locations were often above the permitted speed limits. This clearly indicates the need of speed analysis at each Black Spot location.

Speed measurement should be done at the same period of day as when the biggest number of crashes happen.

Speed measurement of the vehicle can be implemented manually or with automated devices. In the case of usage of automatic devices for speed recording (inductive loops or modern laser devices / video / ultra-red / microwave detectors) the speed of vehicles can be recorded over longer periods of time.

Speed measurement results should be used for getting data about average speed of vehicles, standard deviation, the percentage of drivers which exceed the maximum allowable speed, speed of 85% of the vehicles in flow, the percentage of slow vehicles, etc.

Previous analysis will enable good understanding of driver behaviour and speed influence on Black Spot location.

Traffic conflict techniques

For crash analysis researchers usually use the information contained on crash reports to identify and understand failures of the road system and then to propose appropriate

treatments. Sometimes, data from crash reports are not enough and need to be complemented by field observations in order to improve the accuracy of safety diagnoses.

Over the years, different tools have been proposed to assist safety analysts in making field observations. One of most useful formalized techniques for recognizing the risks at analysed location is traffic conflict techniques.

In a traffic conflict technique, trained observers watch the traffic and note the frequency and types of conflicts that occur at a specific location. Since conflict studies imply direct observations of road users' behaviour, they help in identifying manoeuvres that are particularly hazardous, and that can easily became the real crashes if someone did not react quickly enough.

A well-accepted definition of traffic conflict is: “An observable situation in which two or more road users approach each other in space and time to such an extent that there is a risk of collision if their movements remain unchanged”.

For successfully implementation of traffic conflict techniques the following conditions are needed:

- Recorders must be trained to recognize and capture the conflicts,
- If more than one recorder is using, they all should apply the same criteria for identifying the conflicts, as well as severity of conflicts and
- Conflict recording period should correspond to the time when most of crashes have happened.

One of most used models for traffic conflict technique is the so called “Swedish model” or “Swedish conflict technique”. According to this model, a dangerous place is the place where are three conflicts recorded in the period of 60 min.

As a help, recorders could use predefined form. An example of a typical form is shown at Figure 3.4.4.1.

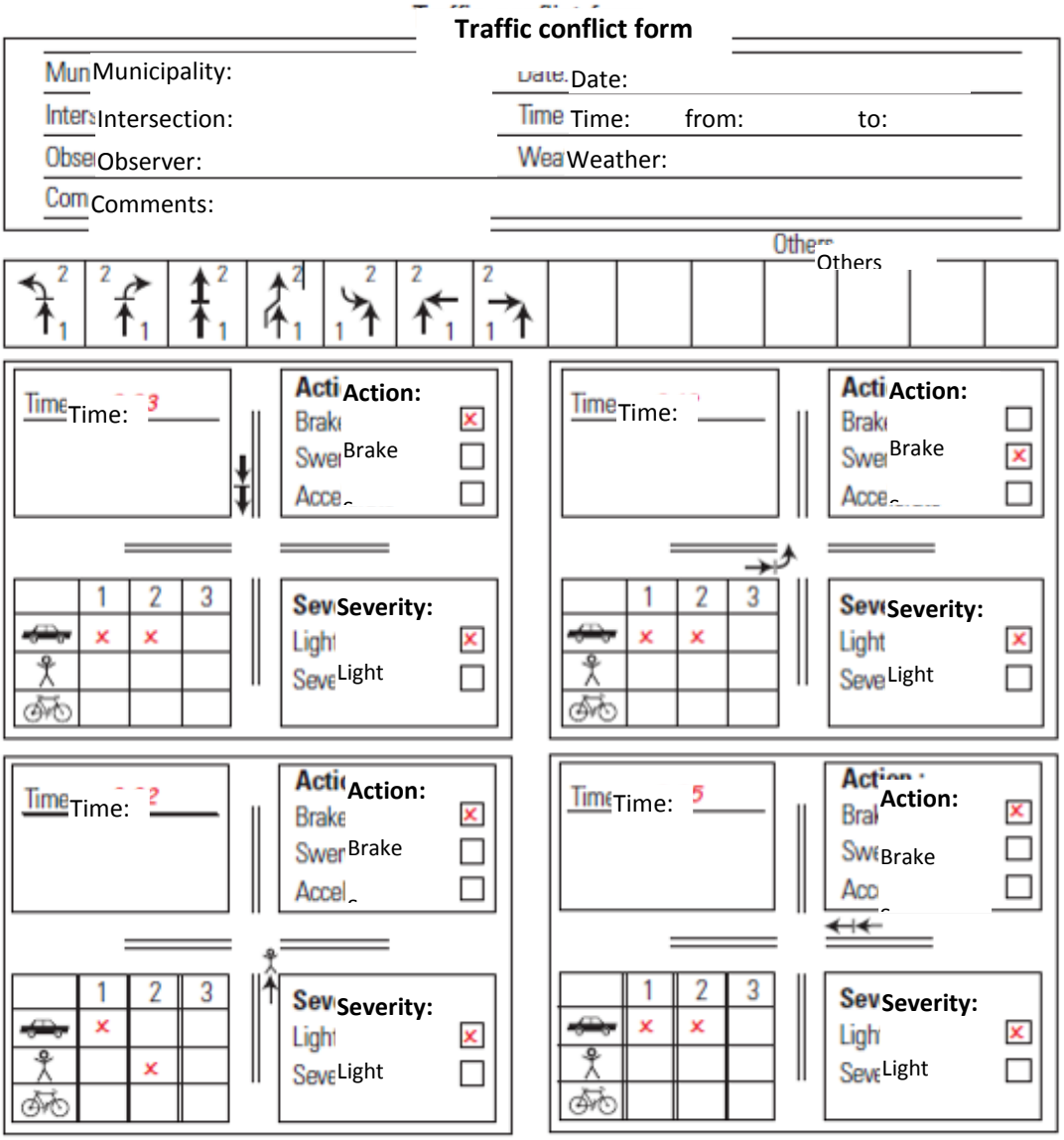


Figure 3.4.4.1. Possible look of Traffic conflict form

Beside, previously mentioned methods and techniques for field analysis, the following recommendations should be followed:

- The investigator should put himself, as best as possible, in the crash situation. The location should be approached a number of times with the "dominant" mode of vehicle from the relevant direction. Attention should also be given the route leading to the location.
- The field analysis should be carried out, as much as possible, under the circumstances similar to those prevailing at the time of the crash (time, light, weather conditions, etc.).
- It is sensible to make a list of points of attention per hypothesis for the site investigation beforehand, based on the crash analysis.
- The traffic behaviour at the intersection or road section should be observed. Entrance behaviour, observation situation, functioning of priority regulation, crossing behaviour and complexity of the manoeuvre should be studied carefully.

- Possible causes, not found during the crash analysis, may be found during the site investigation. It could be useful to take photos or video in order to enable assessment of the situation afterwards. The recording should preferably be made from position of the parties involved (location and eye level).
- Always take good time for the site investigation. Talking to people living nearby could generate useful supplementary information.
- Try to find the relation between the crash pattern and the road/road environment.

3.4.5. Determine the cause of crash

If the site investigation provides sufficient evidence for the hypotheses, then the probable crash causes can be determined for each dominant crash type.

It is important to compare the various findings from the site investigation. They can be complementary but can also sometimes be contradictory. Different types of crashes can sometime have the same cause.

Based on the findings, the hypotheses could be confirmed or rejected for each dominant type of crash characteristic. The dominant cause of crash should be determined in order to guide the decision about countermeasures proposed.

3.5. Determination of Black Spot Treatment

When the causes of each dominant crash type have been established, the results should be discussed among concerned stakeholders. Next, the objectives and solutions have to be defined and decided on.

The countermeasures

The countermeasures should eliminate the main causes of crashes. The various counter measures for preventing the various dominant types of crashes should form a unified whole solution. If the research brings deficiencies in the existing design to light, the design has to be adjusted. Some of typical black Spots and preventive countermeasures and potential crash savings are presented in Chapter 4 and 5.

If the cause of crashes lies in the use of infrastructure and little can be done through infrastructural measures, or only at extraordinarily high cost, then activities such as traffic safety education, media campaign and strong law enforcement are more suitable. However, much can also be done to improve road user behaviour through improved traffic signing, speed limits and warnings.

All proposed measures should be oriented towards problem solving. It should be noted that combating against one kind of crash might, after all, lead to generation of another crash type or transference of the crashes to another place. For example, a speed limiting measure such as a speed hump in an intersection can have a beneficial effect on the number of give-way crashes. When the same measure is applied to a main road, with high traffic volumes and speed over 50 km/h (where such measure not expected by drivers), this measure can lead to a worse situation than the original problem.

When countermeasures proposal consists of structural measures special attention should be given to potential side effects, and especially to the measures which may influencing traffic

circulation.

In the process of determination of the Black Spot treatments priority should be given to the, so called, "low cost" solutions. Low cost does not mean low quality. This means low capital cost and therefore rapid implementation by upgrading road infrastructure in as many as possible Black Spots which will lead to the decreasing the number of crashes. Better delineation, installation of guardrails, use of "speed bumps", improving of lighting, use of traffic signs with high retro reflection and high quality line markings and reflective signing are typical low cost measure which are often all that is needed at many rural Black Spots in TRACECA Countries to improve their level of safety.

When proposing measures, several alternatives or a combination of measures may be suggested. The output from this step is expected to be the proposal of Black Spot treatment with preferably application of high effective and low cost measures. The final choice of measure will be made upon cost/benefit analysis.

Until TRACECA Countries develop their own experiences in countermeasure effectiveness, World Road Association - PIARC Catalogue of design safety problems and potential countermeasures (2009) can be used. This catalogue was prepared by a team of experts drawn from the roads authorities around the world.

Estimation of crash reduction

Until now in TRACECA Region there are not too many documented experiences about the effects of implemented road safety countermeasures.

Chapter 5 contained a list of evaluated countermeasures from different courtiers, which can be used until the regions own experiences is collected. A set of expected reduction factors is given in the list where all measures are accompanied with the expected percentage of crash reduction. This list is made as a result on different case studies and research work. Usually, the analysis of road crashes is done before and after the implementation of the particular countermeasures and effects were recorded.

The expected road crash reduction factors can be used to estimate the potential crash reductions for selected countermeasures. Crash reduction factors can be also used for estimating the economic worth of projects and prioritization.

In time, crash reduction factors for each TRACECA Country will be developed, and these will allow more accurate estimates of benefits to be made.

3.6. Ranking (Priority listing upon cost/benefit analysis)

In the early years of BSM usage, ranking was pretty simple and based on number of crashes (primarily on crashes with fatality). In this way, a ranking list of Black Spots was prepared focusing only on total number of fatal crashes. Even with usage of a weighted index proposed model is pretty simple for usage.

Soon, in the process of BSM (especially in the part of determining treatment measures for improving the road safety), the following question arises: “What profits the investment into various measures (solutions) will bring in return?” To answer this question, the effect of the treatment must be related to their costs. Methods being used for this purpose are generally known as cost/benefit analysis.

The characteristics of cost/benefit analysis are that it relates the effects and cost of implemented measures.

The purpose of cost/benefit analysis is to determine priorities of measures (ranking). The determination of priorities can be used in two ways:

1. To identify the most effective measures within a determined budget.
2. To calculate the budget required for the best effect.

In most cases the first aim prevails, as the budgets are always limited.

The required information or input to carry out the cost benefit is:

1. A working list of Black Spots locations.
2. Design and cost estimates of proposed measures.

Procedure of cost benefit analysis is:

1. Calculate the annual cost per measure,
2. Estimate the number of prevented crashes,
3. Calculate the cost-benefit ratio of measures and
4. Determine priorities of measures.

Simplified method of calculating Fatality Cost Ratio (FCR):

In order to accurately determine the benefits which society will have after treatment of Black Spot, it is necessary to know the value of human life. It is normal to calculate the economic value of human life a value and calculate the amount of money that society will save by preventing fatalities by implementing proposed measures.

A detailed calculation model for "cost/benefit calculations" can be used in future, but simplified calculation model has been accepted and used for some years.

Even that value of human life has not yet been officially established in most of TRACECA Countries, for the purpose of presentation of the proposed model, crash costs from a previous Study undertaken in one of TRACECA Countries was used. So, for the purpose of testing the model, human life value will be set to **290 652** Euro.

FCR - Fatality Cost Ratio = (fatalities per year * 290 652) / cost of countermeasures

The above formula, presents a simplified calculation model where the number of fatalities at a Black Spot per year is taken from historical records, multiplied by adopted value of fatal crashes and divided by the cost of relevant countermeasures. This formula can be also be used where fatalities are substituted by casualties. Casualties in this case mean the total of any fatal crashes and any injury crashes.

For example, let us assume that a particular Black Spot has 4 recorded fatalities over a three year period (an average of 1.33 fatalities per year). After a site investigation and assessment of crash report data, it is calculated that the cost of countermeasures are about 30000 Euro.

The Fatality Cost Ratio then becomes:

FCR 1 = (1,33 * 290652)/ 30000
FCR 1 = 386567.16/ 30000

FCR 1 = 12,88:1

Now let's say, that another Black Spot site has the average of 3 fatalities per year, and after the site investigation it is shown that the cost of countermeasures comes to 20000 Euro.

The Fatality Cost Ratio then becomes:

FCR 2 = (3 * 290652)/ 20000
FCR 2 = 871956/ 20000
FCR 2 = 43,59:1

This shows that the second site, with a FCR 2 of 43,59:1, gives almost four time more benefit than the first site which only gave an FCR of 12:88:1 so site 2 should be given more propriety for implementation. This systematic, scientific approach enables more rational decision-making and more effective use of the limited funds available for road safety.

This is a very simple technique for prioritising which shows which Black Spot treatments give society the best return on investment.

Priority list based on Fatality Cost Ratio:

The ranking list of remedial measures should be made on the basis of the FCR. From this list measures may be ranked in order of priority for implementation.

Some other factors should be also considered before the final priority list is created. These factors could be implementation problems (physical, legal, ecological, etc.), limited funds available for investment, other consequences for the transport system (such as costs of congestion, etc.) and others. Experience shows, that plans based only on effective but unpopular counter measures may end up not being implemented. However, if the final decision differs from the ranking order, such deviation from procedure should be clearly pointed out in order to present leading and justification to that decision.

Prioritized treatment measures should be put into the annual Business or Action program (plan) of the Road Authority as a separate and transparent parts of the plans. If there are not enough funds in the eventual annual budget, some of proposed Black Spots could be rescheduled for the following year.

3.7. Programming, Budget and Financing

After the Black Spots are prioritized the next step is making a National (Country) Program (NP) for their treatment (implementation of measures). A national medium or long term road safety Program is a prerequisite for achieving sustainable improvements in road safety and improvement of Black Spots. The NP should set measurable mid/long term road safety targets.

The most urgent remedial measures, ranked according priority, have to be put into the priority Business/Action Plan and a basic system or standard institutional implementation procedure for effective Black Spot treatment should be established.

The main objective of the NP should be to reduce the social and economic costs of road crashes and trauma by:

- cost effective treatment of locations with a history of fatality crashes,
- placing significant focus on the need to reduce road trauma,

- coordinating and strengthening the activities of all the key road safety stakeholders who can influence on road safety and
- allocate adequate funds to treat selected locations.

Under the NP, implementation of the priority Action Plan should be undertaken for the implementation of program. In most cases, the Action Plan for Black Spot treatment incorporated into Road Authority activities and take a transparent place in their annual business and budgeting plans. The number of annually treated locations should be in accordance with available budget of Road Authority for BSM. It is likely that the number of Black Spot will be bigger than the available annual budget; NP should be made for three years.

A time scale of three year is suggested, because it allows implementation of measures for a reasonable number of Black Spots. External specialist road safety advisory input might be required for this purpose.

As the Black Spot treatment NP usually will cover a period of 3-5 years (with annul revisions), a long term sustainable funding (financing) is required to cover the implementation.

In order to achieve the benefits of a Black Spot program, it has to be systematically implemented over a period of time. Equally important is the evaluation of effects from the program implemented.

3.8. Implementation of Treatment measures

The Road Authority is responsible for initiating, coordinating and overseeing project implementation, including procurement, financial management, project monitoring and reporting, and the day-to-day supervision of project activities.

The main objectives of Road Authority are:

- To provide leadership and framework for effective implementation of road safety measures and
- High standard of road safety during implementation.

3.9. Design and Construction

Depending on to the character and the size of the construction work on Black Spot locations the Road Authority could either use the internal or external design capacity and maintenance department or external contractor for the design or work implementation.

It is the responsibility of the Road Authority (or delegated organization) to ensure safety at road works. The work site should be properly signed with temporary signalization during road works period. Risks for the road workers as well as for the road users must be avoided.

In addition any delays of construction work which can cause discomfort for the road users or neighbourhoods and should be minimized.

3.10. Follow up and Evaluation

When a period of time (1-2 years) has elapsed and the road users are familiar with the new traffic situation some after-research should be carried out in order to evaluate the effects of

the implemented counter measures. This could be done by Road Authority (Road Safety Unit if such exists).

Evaluation is the permanent monitoring of the effects of measures implemented, followed by the comparison with the goals set. Monitoring means collection of traffic data and crash data, complaints and general views on the situation. Experience shows that implemented measures sometime do not immediately lead to an improvement of the situation.

Comparison with the goals set. This means: an answer to the question whether results are as expected (do the results comply with the goals) or not.

An evaluation period of 1-2 years (sometimes even 3 years) is generally used in many countries before any definite conclusions can be made. If the effects are not satisfactory, then analysis should be repeated and corrected or new measure should be introduced.

The “after-data” should be documented together with “before-data” and used as an experience bank (Catalogue of road safety countermeasures) for the future.

For example, "before and after" crash levels at the Black Spot site should be monitored. Part of this analysis includes using the database to make sure that there has been a significant reduction in the number of crashes at a Black Spot site. The results are used to create a new entries to the list with data about reduction of crashes (Chapter 5).

The crash analysis experts should analyse the “after studies”, because it is important to fully understand the effect of the Black Spot measures and Program and eventually if necessary make adjustments.

3.11. Documentation

It is important that all technical and financial documentation of Black Spot Management is saved and available for future users. To determine the actual effect of countermeasures actual effect on fatal crashes, independent evaluation of the project may be conducted from time to time. Road Authority should maintain all the adequate documents and records for the whole process so that appropriate data will be available for this purpose.

Documentation is also a valuable tool for education and training of people involved in the Black Spot remedial process. To learn from successful and less successful countermeasures is essential. Also, data from documentation could be used for adding the information in Catalogue of countermeasures.

4. TYPICAL BLACK SPOTS

According to international best practice, there are some types of typical dangerous places on roads in TRACECA region.

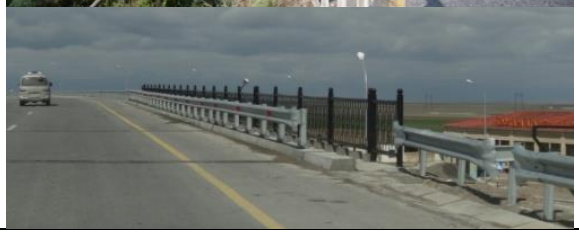
Surveys of Black Spots in some of TRACECA Countries and examination of the road networks, were used for preparation of this chapter of Guidelines. BSM surveys were done in combination of office and field work.

After detailed analysis of investigated locations (Black Spots or Black Sections), as well as survey of other parts of the road network (Project team have had an opportunity to examine more than 5000 km of major roads in different TRACECA Countries), the following typical locations/problems can be pointed out, as more dangerous than others:

Figure 4.1. Typical black spots and countermeasures

Black spot description / Typical countermeasures	**Illustrations**
- Roads passing through towns (too many access roads, mixed traffic, high speeds, illegal parking of vehicles, pedestrians, insufficient visibility, street markets, ...). - access control (closing of illegal access roads) - separation of shoulders by barriers - traffic calming (signs, physical obstruction, road surface and larger schemes) - construction of foot pass - construction of pedestrian crossing help - new signing and marking - installation of artificial lighting - add specific (UN-standard) signs - ...	
- Intersections **Problems** (dangerous types such as "Y" intersections, dangerous roundabouts with inadequate deflection, bad design or intersections without enough visibility, with inadequate signing and marking, problems with pedestrians, ...). **Possible solutions** - reconstruction of intersection (adding of channelization islands, improving of visibility, ...) - improving of signings and markings (clear wait and right of way) - installation of artificial lighting - add specific (UN-standard) signs - ...	
- Dangerous curves **Problems** (curve with the lack of visibility, too small radius for the road range, inadequate cross-slope, without the necessary signing and marking, ...). **Possible solutions** - improving of geometry (increase the curve radius if necessary) - improving of visibility (signings and markings, adding of rumble strips, etc.) - additional vertical signalization (warning signs, chevron signs) - add built-in asphalt markers - add guardrails	

- add specific (UN-standard) signs - ...	

- Road narrowing **Problems** (at bridges and culverts, with the traffic conditions that compromise road safety, with inadequate signs and markings, ...). **Possible solutions** - widening of the narrow section - improving of signings and markings - additional vertical signalization - add built-in asphalt markers - add guardrails - add specific (UN-standard) signs - ...	
- Bridges *(Tunnels)* **Problems** (objects on the road usually between two curves, lack of visibility, without adequate traffic signing and marking, mostly without vehicle guardrails, ...). **Possible solutions** - improving of signings and markings - additional vertical signalization - add built in asphalt markers - add guardrails against EN 1317 - usage of tunnel safety standards and norms - adding of artificial lightening - add specific (UN-standard) signs - ...	 

- Pedestrian crossing **Problems** (Inadequately designed, signed and marked, poorly visible, without the necessary traffic equipment in areas of intense movement of children, with no lighting).	

Possible solutions - improving of design and signings and markings - traffic calming (signs, physical obstruction, road surface and larger schemes, especially usage of humps and rumble strips - construction of pedestrian crossing help (refugee islands, pedestrian guard rails,) - adding of pedestrian fences - installation of artificial lighting - add specific (UN-standard) signs - ...	
- Railway crossings **Problems** (Crossing of road and rail at small angle, lack of transparency and visibility, inadequately secured and marked places, ...). **Possible solutions** - improving of signings and markings - additional vertical signalization - add built-in asphalt markers - add specific (UN -standard) signs - ...	

Apart from typical dangerous places (Black Spots), there are usually a few systemic deficiencies of active and passive road safety, such as:

- absence of UN compliant road signings and markings,
- low quality of passive road elements (guardrails are not in accordance with road range or not made upon adequate specification),
- a large number of commercial activities and stalls are too close to the state roads, especially on the sections of roads where they pass through populated places (cities),
- a large number of unregulated (illegal) access roads, etc.

Understanding the most typical occasion, which produces the Black Spots, is as important as desire to be active and to prevent them. The causes of Black Spots could be removed in the design phase, construction works and road maintenance.

It can be concluded that in almost all locations, there is a lack of signings and markings, to provide adequate guidance and information to its driver, as well as missing guardrails to protect them even if they make a mistake.

One suggestion could be, that all identified Black Spots should be marked with non-standard traffic signs. With this, the dangerous locations will be easily recognized by road users (mostly drivers), and they will adjust their behaviour (speed) to local road conditions. These signs will be removed after improvement (reconstruction, rehabilitation or else) at that location.

Proposed countermeasures and ways of signing the Black Spots are based on the experiences of developed countries and international associations (IRF, ERF, PIARC, PRI, WB, OECD, ECMT, etc.) Thus, provide an effective and uniform management system of Black Spots on the entire

network of State roads.

5. POTENTIAL CRASH SAVINGS

For any kind of countermeasure proposal it is necessary to know crash reduction potential. Therefore a list is proposed of the most usual low cost countermeasures with their expected effects.

The following table is collated from results of different international research projects and case studies and can be use for understanding the potential crash savings of different countermeasures. Table 5.1. presents each different proposed countermeasure (treatment) and its potential crash reduction as a percentage. Usually, minimum and maximum effects are presented.

Table 5.1. Efficiency (crash reduction) of different countermeasures

Treatment	Potential crash reduction [%]
Road Standard	
Improve to higher standard	19-33
Increase number of lanes	22-32
Lane widening 0,3 – 0,6 m	5-12
Paved shoulder widening 0,3 - 1 m	4-12
Add median strip	40
Bridge widened or modified	25
Widen shoulder	10
Overtaking lane	20
Right turn lane	40
Left turn lane	15
Pedestrian overpass	10
Side slope flattening from: 2:1	
to 4:1 ... 7:1 or flatter	6 ... 15
Side slope flattening from: 4:1	
to 5:1 ... 7:1 or flatter	3 ... 11
Service roads	20-40
Traffic calming	12-60
Speed reduction from 70 km/h to 50 km/h	10-30
Speed reduction from 90 km/h to 60 km/h	17-40
Horizontal Alignment	
Improve geometry	20-80
Curvature: improving radius	33-50
Vertical Alignment	
Gradient / removing crest	12-56
Super elevation improvement/introduction	50
Passing lane	11-43
Climbing lane	10-40
Road Structure	
Lane widening	12-47
Skid resistance improvement	18-74

Shoulder widening	10-40
Shoulder sealed	22-50
Road verge widening	13-44
Junction Design	
Staggered (from straight) crossroads	40-95
T-junctions (from Y-junctions)	15-50
Fully controlled right turn phase	45
Roundabouts (from uncontrolled)	25-81
Roundabouts (from traffic signals)	25-50
Mini roundabouts (from uncontrolled)	40-47
Turning lanes	10-60
Traffic islands	39
Sheltered turn lanes (urban)	30
Sheltered turn lanes (rural)	45
Additional lane at intersection	20
Skid resistant overlay	20
Red light camera	10
Law enforcement by the Police	7-25
Traffic Control	
Regulatory signs at junctions	22-48
Guidance/directional signs at junction	14-58
Overhead lane signs	15
Side road signs	19-24
Brighter signs and markings	24-92
Signs and delineation	29-37
Bend warning signs	20-57
Stop ahead sign	47
Speed advisory sign	23-36
Warning/advisory signs	20
Speed limit lowering - & sign	16-19
Yield/Give Way	59-80
Stop sign	33-90
Signals from uncontrolled	15-32
Signals - modified	13-85
Junction channelization	10-51
Remove parking from road side	10-25
Visibility	
Lane markings	14-19
Edge markings	8-35
Yellow bar markings	24-52
Raised reflective pavement marking	6-18
Delineator posts	2-47
Flashing beacons	5-75
Lighting installations	6-75
Sightline distance improvement	28
Channelization medians	22-50
Crash Amelioration	
Median barrier	14-27
Side barriers	15-60
Frangible signs	30
Tree removal (rural)	10

Pole removal (lighting poles, urban)	20
Embankment treatment	40
Guardrail for bridge end post	20
Impact absorber	20
Pedestrian Facilities	
Pedestrian walkways	33-44
Pedestrian zebra crossings	13-34
Raised zebra crossings	5-50
Pelican crossings	21-83
Marking at zebra crossing	-5-14
Pedestrian refuges	56-87
Footbridges	39-90
Pedestrian fencing	10-35
Cycling Facilities	
Cycle schemes	33-56
Marked cycle crossing at signals	10-15
Cyclist advanced stop line at junctions	35
Rail Crossings	
Flashing signals	73-91
Automatic gates	81-93
Traffic Calming	
30 km/h zones (inc. humps, chicanes etc.)	10-80
Rumble Strips	27-50
Rumble Strips and Bumps	20-80

NOTES:

1. Crash Reductions are NOT ADDITIVE, use highest value if multiple treatments are proposed for a particular location.
2. Reductions apply to all crashes within single intersections or single midblock that contain the treatment.

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ПРОЕКТ

Техническое примечание 3

РЕГИОНАЛЬНЫХ РЕКОМЕНДАЦИЙ ПО УПРАВЛЕНИЮ МЕСТАМИ КОНЦЕНТРАЦИИ ДТП

Региональный план действий по безопасности дорожного движения ТРАСЕКА

Команда по технике безопасности

Март 2015

Финансируемый ЕС проект по безопасности дорожного движения ТРАСЕКА для
Армении, Азербайджана, Грузии, Казахстана, Киргизстана, Молдовы, Таджикистана, Туркменистана, Украины, Узбекистана

ПРЕДИСЛОВИЕ К ПРОЕКТУ РЕГИОНАЛЬНЫХ РЕКОМЕНДАЦИЙ ПО УПРАВЛЕНИЮ МЕСТАМИ КОНЦЕНТРАЦИИ ДТП ДЛЯ СТРАН TRACECA

Управление местами концентрации ДТП (УМК) является одним из первых инструментов безопасности дорожного движения, применяемых для улучшения аварийно-опасных мест и участков дорог. Даже сегодня опыт развивающихся стран демонстрирует высокую эффективность и экономичность УМК как инструмента для повышения безопасности автодорог.

Выявление и анализ мест концентрации ДТП, проведение мероприятий в них является зарекомендовавшим себя способом снижения количества и тяжести ДТП на дорожной сети. Эффективные и экономичные мероприятия по их ликвидации могут дать в первый год рентабельность в несколько сот процентов. Мероприятия по ликвидации мест концентраций ДТП входят в число наиболее экономически выгодных инвестиций, которые может предпринять орган управления автодорогами.

В связи с тем, что не существует единого понятия «черная точка», команда настоящего проекта совместно с заинтересованными сторонами предложила соответствующее и унифицированное определение места концентрации ДТП для использования в странах TRACECA. Предложенное определение места концентрации ДТП звучит так: «Какой-либо участок автодороги максимальной протяжённостью 300 м, на котором за последние три года зафиксировано не менее четырёх ДТП со смертельным исходом»[23].

Отдельное внимание уделено удобству рекомендаций для применения и команда проекта строит их на существующем позитивном опыте и примерах в регионе. В настоящих рекомендациях вместо слова «авария» применяется словосочетание «дорожно-транспортное происшествие» с целью сделать акцент на том, что это событие можно упредить и избежать, и оно не является чем-то неизбежным, что находится вне зоны контроля человека.

Настоящие рекомендации по выявлению и ликвидации мест концентрации ДТП состоят из шести разделов и приложения. При необходимости, они опираются на передовой мировой опыт и руководства, существующие по всему миру. Авторы настоящих рекомендаций хотели бы выразить свою признательность перед подобными руководствами и их авторами, а ключевые из них указаны в списке источников.

Данные рекомендации были разработаны для обеспечения использования рекомендуемой методики управления местами концентрации ДТП в странах ТРАСЕКА. Основной целью данных рекомендаций является предоставление читателю четкого представления о необходимых шагах для ликвидации мест концентрации ДТП.

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[23] ***Примечание:***

** ДТП со смертельным исходом – при котором погиб как минимум один человек.*

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Аббревиатуры и сокращения

АБР	Азиатский банк развития
УМК	Управление местами концентрации ДТП
ЕК	Европейская Комиссия
ЕИБ	Европейский инвестиционный банк
ЕСБТ	Европейский Совет по безопасности на транспорте
ЕС	Европейский Союз
GLONASS	Глобальная навигационная спутниковая система
МБРР	Международный банк реконструкции и развития
МФУ	Международные финансовые учреждения
МВД	Министерство внутренних дел
МТС	Министерство транспорта и связи
PIARC	Всемирная дорожная ассоциация (PIARC фактически означает Постоянно действующую международную ассоциацию дорожных конгрессов, но такое название употребляется редко)
АБДД	Аудит безопасности дорожного движения
ИБДД	Инспекция безопасности дорожного движения
SEETO	Юго-восточная европейская транспортная обсерватория
РГ	Руководитель группы
ТЗ	Техническое задание
ДП	Дорожная полиция
TRACECA	Транспортный коридор Европа – Кавказ - Азия
ЗЕ-ЗК	Международный Транзитный Коридор «Западная Европа – Западный Китай»
ВОЗ	Всемирная организация здравоохранения

1. ВВЕДЕНИЕ

В настоящее время ДТП общепризнаны серьёзной социальной и экономической проблемой и разработаны различные мероприятия и программы для уменьшения кровавой дани на дорогах. На международном уровне Организация объединённых наций, Всемирная организация здравоохранения, Европейская комиссия, международные финансовые учреждения (особенно Мировой банк, АБР, ЕИБ, МБРР, Исламский банк и др.) и ряд специализированных неправительственных организаций (PIARC, ETSC, PRI, SEETO и др.) сегодня работают над повышением БДД в глобальном масштабе. Осенью 2009 года министры и заинтересованные лица со всего мира встретились в Москве на Первой глобальной министерской конференции по безопасности дорожного движения и призвали ООН взять на себя руководство данной глобальной проблемой, влияющей на все нации. Вопрос был обсуждён в ООН и в 2011 году было объявлено десятилетие безопасности дорожного движения. В настоящее время международное сообщество в лице РЭК ООН, ВОЗ, инвестиционных банков, крупных исследовательских институтов в сфере БДД, глобальных компаний и НПО сотрудничают для решения этой глобальной проблемы.

Одним из популярных заблуждений является то, что почти во всех случаях единственной причиной ДТП являются ошибки или некорректные действия водителя.[24] Из результатов основополагающего исследовательского проекта очевидно (рисунок 1.1), что в каждом третьем ДТП дорожные условия имели как минимум такое же влияние на совершение ДТП (факторы дорожных условий составили 34 %).

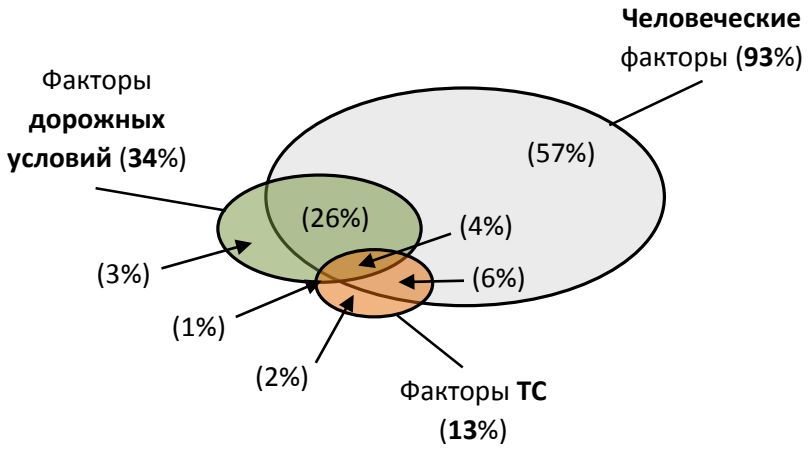

Рисунок 1.1. Влияние факторов ДТП
(Источник: Руководство по безопасности дорожного движения, PIARC, 2003)

Вследствие признания того факта, что большинство ДТП возникли под влиянием нескольких факторов, был создан менеджмент безопасности дорожного движения как наилучший путь снижения общего количества ДТП в стране.

[24]Частично причиной этого является тенденция полиции фокусироваться в отчётности на наказании и кажущееся наличие в подавляющем большинстве ДТП человеческого фактора / ошибки водителя. Однако, полицией часто не выясняется и в статистике не фиксируется ответ на вопрос «Почему водитель совершил данную ошибку?» (например, из-за вводящей в заблуждение информации, отсутствия дорожных знаков или даже небезопасных элементов дороги или транспортного средства).

Выявление, анализ и мероприятия по ликвидации мест концентрации ДТП являются зарекомендовавшим себя способом снижения количества и тяжести ДТП на дорожной сети. Эффективные и экономичные мероприятия по их ликвидации могут дать в первый год рентабельность в несколько сот процентов. Мероприятия по ликвидации мест концентраций ДТП входят в число наиболее экономически выгодных инвестиций, которые может предпринять орган управления автодорогами.

Путём принятия Европейским Парламентом и его Советом опубликованной в октябре 2008 года Директивы № 2008/96 по управлению безопасностью дорожной инфраструктуры Европейский Союз принял чёткое решение о том, что УМК в ближайшие годы станет обязательным на трансъевропейской сети автомагистралей.

В указанной директиве УМК является частью комплекса мер по БДД, включающего:

- Оценку воздействия на безопасность дорожного движения (ОВБДД),
- Аудит безопасности дорожного движения на разных стадиях проектирования автодорог (АБДД),
- **Оценку безопасности и управление дорожной сетью на стадии эксплуатации, включая управление аварийно-опасными участками (УМК),**
- Инспекцию безопасности дорожного движения на существующих автодорогах (ИБДД), а также
- Детальный анализ дорожно-транспортного происшествия (ДАДТП).

Данные меры являются неотъемлемой частью обширной системы управления безопасностью дорожного движения, как показано на Рисунке 1.2.

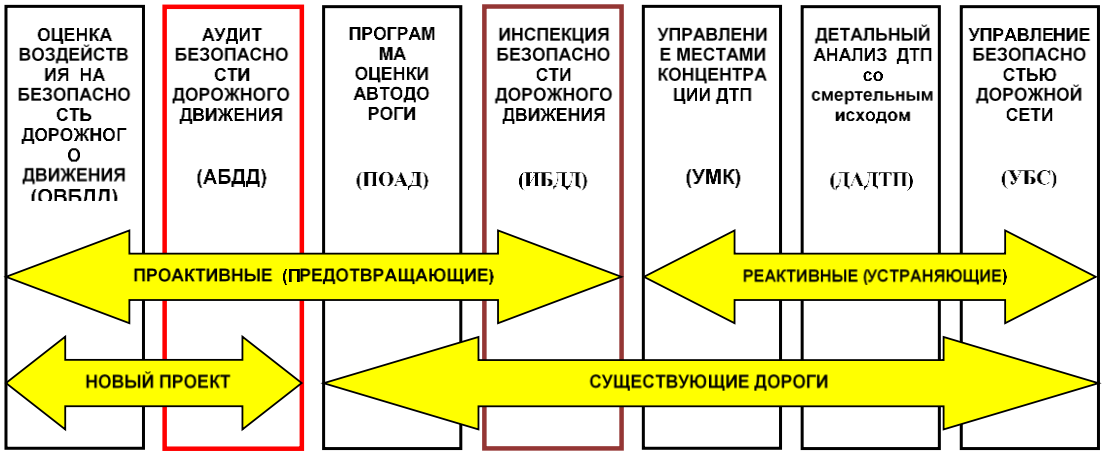

Рисунок 1.2. УМК как часть управления безопасностью дорожного движения (Источник: Руководство по аудиту БДД, SEETO, 2009 год)

Из рисунка 1.2 понятно, что УСМ является реактивной процедурой, которая выполняется на существующих автодорогах.

Результатом УМК обычно является предложение мероприятий, которые снизят риск ДТП на рассматриваемом участке.

Рекомендации по выявлению и ликвидации мест концентраций ДТП основываются на мировом передовом опыте, особое внимание уделено гармонизации подходов к управлению местами концентрации ДТП в странах TRACECA.

2. ВВЕДЕНИЕ В УПРАВЛЕНИЕ МЕСТАМИ КОНЦЕНТРАЦИИ ДТП

2.1. Что такое управление местами концентрации ДТП? (Определение)

Управление местами концентрации ДТП представляет собой системный подход к выявлению, анализу, проведению мероприятий по ликвидации и оценке мероприятий относительно опасных участков на дорожной сети. Основой выявления мест концентрации ДТП является анализ статистических данных карточек ДТП и нанесения мест ДТП на карту. Поэтому важным и необходимым инструментом для эффективной работы с местами концентрации ДТП является соответствующая база данных ДТП.

Результатом УМК является улучшение условий на опасных участках автодороги после применения оптимальных мер, которые предупреждают возникновение ДТП в будущем и увеличивают общий уровень безопасности дорожного движения на сети.

В базе данных должна содержаться как можно более точная информация о месте ДТП (желательно с GPS-координатами), информация о виде ДТП, схема столкновения, данные о водителях, и, если были смертельные случаи или травмы, информация о жертвах. Информация о участвующих в ДТП ТС и состоянии дороги, а также погодных условиях во время ДТП, также является важными фактами для анализа ДТП.

Нет единого определения того, что должно относится к местам концентрации ДТП. Исследователи в целом соглашаются, что место концентрации ДТП можно описать как **место, в котором происходит большее количество ДТП по сравнению с аналогичными местами в результате местных факторов риска**. Однако, на практике это определение оказывается не таким простым.

Команда настоящего проекта совместно с заинтересованными сторонами в разных странах TRACECA предложила соответствующее и общее определение для регионального применения. Предложенное определение места концентрации ДТП звучит так: **«Какой-либо участок автодороги максимальной протяжённостью 300 м, на котором за последние три года зафиксировано не менее четырёх ДТП со смертельным исходом».**

Более того, определён участок концентрации ДТП на дороге как **какой-либо участок автодороги максимальной протяжённостью 1000 м, на котором за последние три года зафиксировано не менее шести ДТП со смертельным исходом.**

Предложенные выше определения относятся к классу числовых и предлагаются для применения в ходе начального периода управления местами концентрации ДТП. Главная причина, по которой команда проекта предлагает унифицированное определение, состоит в необходимости иметь одну общую картинку вместо 10 различающихся местных определений. Данный подход поможет гармонизировать управление местами концентрации ДТП в регионе, а также быстро установить количество мест концентраций ДТП на всех важных транспортных коридорах, пересекающим регион. Также предложенный подход поможет МФУ в реализации проектов в транспортной сфере и сфере БДД, а, главное, - поможет водителям региона легко определять место концентрации ДТП на дороге благодаря согласованным знакам и, возможно, доступной через интернет базе данных мест концентрации ДТП (уже есть инициативы некоторых НПО на выполнение подобного проекта).

Все предложенные числовые значения в определении места концентрации ДТП должны быть протестированы и применяться в дальнейшем только, если они обеспечат

применимый и логичный результат (*например, **общее количество выявленных мест концентрации ДТП в стране – от 50 до 150***). Необходимо отметить, что определение может быть скорректировано в будущем, когда большинство (не менее 2/3) выявленных опасных мест будут ликвидированы (улучшены).

В будущем могут применяться некоторые из более сложных моделей. Например, анализ пространственного распределения ДТП (опирающийся на современные ГИС-инструменты), позволяющий более точное выявление мест ДТП с накоплением информации о ДТП. С другой стороны, учитывая различие типов жертв в наблюдаемых ДТП, каждому из них может быть присвоен весовой коэффициент, основанный на степени тяжести. Весовые коэффициенты исходя из затрат на последствия ДТП, предложенные Всемирной дорожной ассоциацией (PIARC), следующие:

- ДТП с лёгкими телесными повреждениями умножается на весовой коэффициент 1,
- ДТП с серьёзными телесными повреждениями умножается на весовой коэффициент 10 и
- ДТП со смертельным исходом умножается на весовой коэффициент 85.

Таким образом, каждому из мест концентраций ДТП может быть присвоен так называемый «весовой индекс ДТП», который характеризует это место концентрации ДТП одним уникальным значением. На основании этого значения может быть проведено ранжирование мест концентрации ДТП и выбрано к ликвидации определённое количество опасных участков согласно имеющемуся бюджету.

2.2. Методология управления местами концентрации ДТП

Рекомендации разработаны на основании исследовательского проекта за средства ЕС RIPCORD – ISEREST, опыта команды настоящего проекта и в тесном сотрудничестве с заинтересованными сторонами.

Схема процесса управления местами концентрации ДТП составлено с учётом мирового передового опыта, а также специфических потребностей стран TRACECA. Выяснено, что существенное изменение структуры вовлечённых организаций, а также использование сложных комплексных моделей не представляются возможными для реализации, поэтому предложенная методология управления местами концентрации ДТП является сочетанием минимальных функциональных требований к существующему управлению местами концентрации ДТП в регионе.

Предлагаемая схема процесса управления местами концентрации ДТП приведена на рисунке 2.2.1.

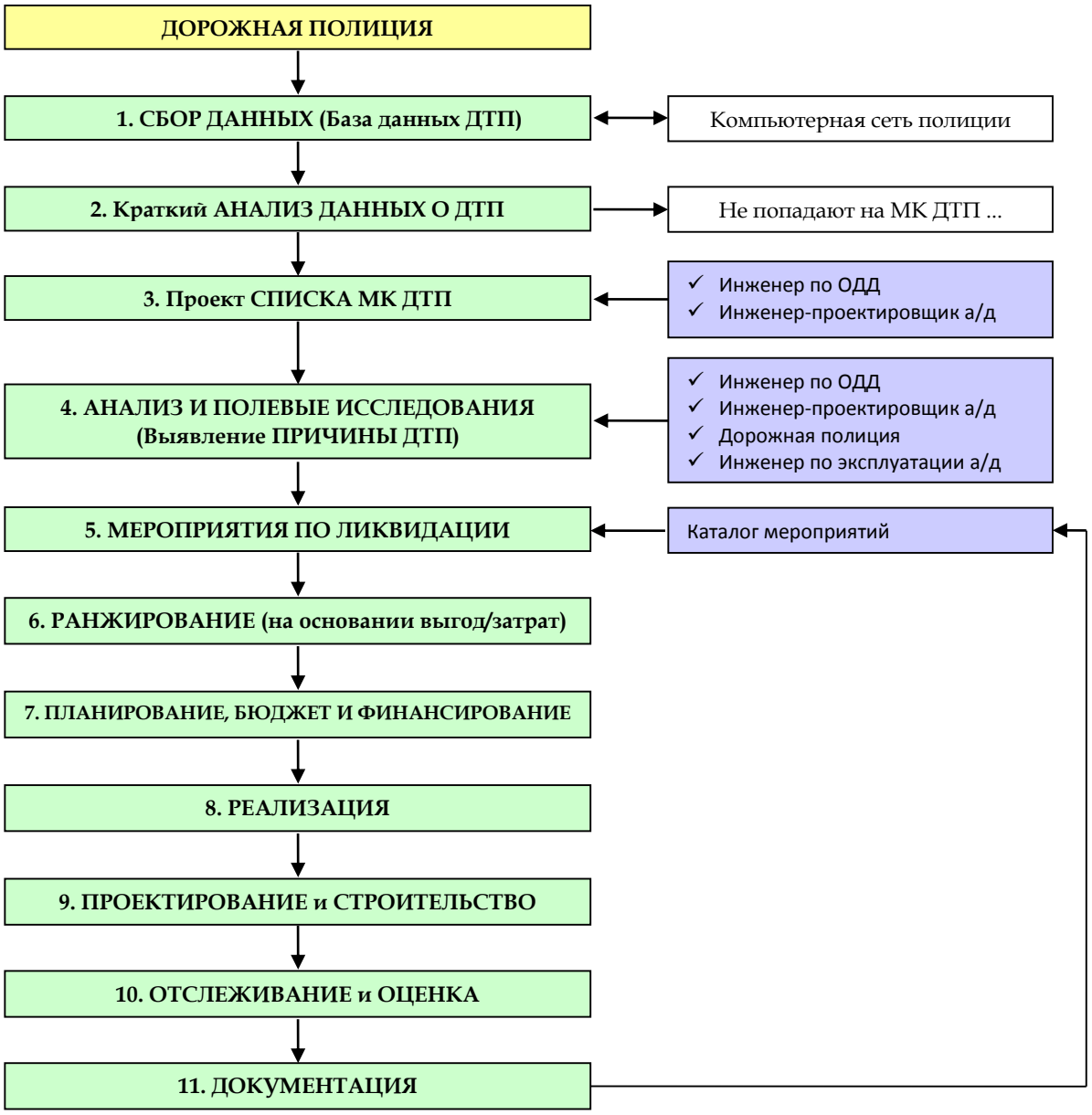

Рисунок 2.1.1. Схема предлагаемого процесса УМК
(Источник: проект за средства ЕС RIPCORD-ISEREST, 2007)

2.3. Структура рекомендаций

Настоящее руководство состоит из шести разделов:

В разделе 1 излагается концепция УМК и поясняется необходимость применения процедур УМК.

В разделе 2 представлены основы УМК. В данном разделе содержатся ответы на вопросы «Что такое УМК?», «Каково определение УМК?», а также методология управления местами концентрации ДТП.

В разделе 3 обсуждается процесс УМК. Предоставлены детальные пояснения всех шагов: Сбор данных (отчётность и база данных), Анализ данных ДТП, Выявление (подготовка списков мест концентрации ДТП), Анализ причин ДТП (камеральный и полевой), Определение мероприятий по ликвидации ДТП, Ранжирование (сортировка на основе анализа затрат/выгод), Планирование, бюджет и финансирование, Реализация мероприятий по ликвидации, Отслеживание и оценка и Документация. В разделе также подробно обсуждается методология, используемая для проведения УМК.

В разделе 4 представлены типичные места концентрации ДТП с наиболее часто встречающимися недостатками БДД. Все приведённые примеры взяты в странах TRACECA.

В разделе 5 содержатся наиболее часто применяемые мероприятия по ликвидации мест концентрации с указанием выгод от предотвращения ДТП.

В разделе 6 представлена использованная литература.

3. ПРОЦЕСС УПРАВЛЕНИЯ МЕСТАМИ КОНЦЕНТАРЦИИ ДТП

3.1. Сбор данных (отчётность и база данных)

Существование качественной и доступной базы данных ДТП является наиболее важной предпосылкой для управления местами концентрации ДТП. Без наличия адекватной базы данных ДТП выявить и отслеживать места концентрации ДТП на дорожной сети невозможно. И даже если база данных ДТП существует, но с трудом доступна для проведения дальнейших исследований специализированными организациями, полицией, то процесс организации системного УМК не будет успешен. Данные о ДТП не являются собственностью полиции, а являются ресурсом, который должен быть доступен (после удаления конфиденциальной информации о водителях и ТС) для всех ключевых заинтересованных сторон, таких как инженеры-дорожники, с тем, чтобы можно было провести дальнейшее детальное исследование наиболее опасных участков.

Как правило, базой данных ДТП, которая может быть использована как основа УМК, обладает Министерство внутренних дел в лице дорожной полиции. В ходе рабочих поездок команды проекта во время начального периода проекта стало ясно, что базы данных ДТП существуют во всех странах TRACECA, но в некоторых из них должны быть проведены важные усовершенствования, а в некоторых случаях – данные должны стать доступными для успешного применения в УМК. Следующие мероприятия могут повысить качество систем данных о ДТП, имеющихся в полиции:

- добавление **схемы столкновения,**
- предоставление **GPS/GLONASS-координат**,
- указание о нахождении места ДТП в пределах или вне населённого пункта,

- добавление информации о находящихся неподалёку школах или других общественных или частных службах,
- характеристика окружения междугородных дорог (пустыня, с/х территория, лес, горы),
- добавления информации о **погодных условиях,**
- предоставление **установленного ограничения скорости и т.п.**

Специально разработанные интегрированные базы данных, содержащие данные о дорогах, интенсивности движения и ДТП, позволяют получить высококачественные исходные данные для УМК. Результаты подобных баз данных могут обеспечить адекватный пространственный и временной анализ ДТП и дают возможность повысить точность определения базовых причин ДТП и его обстоятельств. Также существуют и другие источники, которые можно использовать для повышения качества интегрированной базы данных, такие как отчёты о травмах из больниц, судебные материалы, материалы страховых компаний и т.д. Однако данные из указанных источников часто тяжело получить и интегрировать.

До сих пор, похоже, выполняется только минимальный системный анализ данных ДТП по процедурам УМК. Одной из причин этого был быстрый рост дорожной сети без должного учёта вопросов БДД. Возможны также и скорее технические причины того, что отсутствует использование геоинформационных систем (ГИС) и GPS/GLONASS-данных о местах ДТП, а это усложняет проведение УМК (непросто выявить и проанализировать места концентрации ДТП, просто читая длинные таблицы и не имея возможности видеть данные на карте). Результатом подобной ситуации стала очень низкая эффективность анализа в рамках УМК, проводимого в прошлом.

Используя существующую информацию от полиции, органы управления дорогами всё же могут ликвидировать некоторые из выявленных мест на дорогах. Но без чёткого определения понятия «место концентрации ДТП» и с применением устаревшей базы данных ДТП эта работа требует довольно много времени. Как следствие, выявление, анализ и выполнение мероприятий по ликвидации мест концентрации ДТП в регионе TRACECA до сих пор не выполнялись систематически и не управлялись на современном уровне.

Исходя из мирового передового опыта УМК, существует два наиболее распространённых метода сбора и подготовки данных:

- Первый метод основан на аналитической процедуре составления списка ДТП по разным дорогам. Как правило, результатом является таблица, содержащая отсортированные данные о ДТП. Таким образом могут быть выявлены наиболее опасные участки.
- Второй метод основан на более сложной процедуре с применением ГИС. Согласно ему все ДТП представляются на карте с геопривязкой. С применением ГИС места концентрации ДТП можно легко выявить визуально по отображённым данным.

Какой бы метод ни использовался, одной из наиболее важных предпосылок является информация о точном месте ДТП. Для этой цели часто используются дорожные километровые знаки при определении места, что является хорошим способом, но имеет некоторые недостатки:

- В некоторых случаях километровые знаки отсутствуют, что затрудняет работу полиции,
- Если изменяется протяжённость дороги (изменение трассы, строительство

обхода), то появляется проблема с километровыми знаками, и

- Все данные ДТП (в т.ч. и место) должны быть переведены в координаты X и Y (или север/юг), чтобы их можно было использовать в геоинформационной базе данных автодорог (которая находится на стадии подготовки).

Поэтому с самого начала настоятельно рекомендуется использовать «Глобальную систему позиционирования» (GPS) или «Глобальную навигационную спутниковую систему» (GLONASS) для определения места ДТП. Дорожной полицией в карточку ДТП должны вносится GPS/GLONASS-координаты в поле «Место ДТП».

Кроме GPS/GLONASS-данных местоположения, важно включение в данные ДТП информации о событиях и манёврах, которые привели к ДТП (схема столкновения). Подобная информация, если она известна, может также быть приложена работниками полиции.

Таким образом будут собираться качественные данные для дальнейшей работы по УМК.

Согласно существующим процедурам сбора данных во всех странах TRACECA, дорожная полиция ответственна за заполнение карточек ДТП и внесению их данных в централизованную компьютерную систему. В большинстве стран время от времени полиция проводит совещания с органами управления дорогами (если в них существует отдел БДД) и проходит обмен данными об опасных местах. В некоторых странах существуют специальные институты, и они тоже получают данные о ДТП от полиции. Указанные институты могут использоваться в качестве первого этапа обработки данных для УМК.

Дорожная полиция (предпочтительно) или, в некоторых случаях, специализированные исследовательские институты по вопросам БДД могут выполнять короткий анализ данных о ДТП и составлять проект списков мест концентрации ДТП.

3.2. Анализ данных о ДТП

Место концентрации ДТП может быть как пересечением, так и участком дороги. В целом существует два наиболее распространённых метода:

Метод, основанный на статистике ДТП

Основываясь на статистике ДТП (из базы данных полиции) на начальной стадии действий по УМК дорожная полиция или специальный институт могут провести короткий анализ данных о ДТП и подготовить проект списка мест концентрации ДТП в соответствии с принятым определением. Список может содержать как пересечения, так и участки дорог, и стать основой для дальнейшего исследования и работы с местами концентраций ДТП, выполняемой в органе управления дорогами (отделе БДД, если таковой существует). Позднее, при совершенствовании метода, дорожная полиция или специализированный институт могут применять весовой коэффициент исходя из следующей последовательности видов ДТП:

- ДТП с лёгкими телесными повреждениями умножается весовой коэффициент 1,
- ДТП с серьёзными телесными повреждениями умножается на весовой коэффициент 10, и
- ДТП со смертельным исходом умножается на весовой коэффициент 85.

Указанная схема даёт соотношение 1:10:85 и в целом базируется на принципе, согласно которому более серьёзные ДТП приводят к более серьёзным жертвам и более высоким затратам для общества. Следовательно ДТП со смертельным исходом должны иметь значительно более высокий приоритет и важность, чем ДТП с лёгкими повреждениями.

[Примечание: в данном конкретном случае не выполняется взвешивание ДТП, нанёсшим только материальный ущерб, но существуют системы, в которых выполняется взвешивание и таких ДТП тоже].

Все места концентрации ДТП могут быть отсортированы на основании весового индекса ДТП. Данный список затем должен быть передан органу управления дорогами (на государственном и местном уровне) для дальнейшего анализа потенциальных мероприятий на указанных участках.

Метод, основанный на «карте с флажками»

Другой возможностью анализа данных о ДТП может быть применение «карты мест ДТП с флажками» (рисунок 3.2.1) в качестве инструмента для выявления мест концентрации ДТП. Могут быть созданы карты автодорог с геопривязкой, а потом на них нанесена информация о ДТП. Каждое ДТП помечается на карте флажком. Флажки должны иметь разные цвета для отображения разных видов ДТП или их тяжести (например, ДТП со смертельным исходом – чёрный цвет, с тяжёлыми повреждениями – красный, с лёгкими – синий). Карта должна беспрерывно обновляться по мере поступления данных о каждом из новых ДТП.

На карте также должны быть нанесены ДТП за предыдущие года, чтобы можно было легко увидеть тенденцию изменения количества ДТП. В этом случае карта может отражать количество и типы ДТП за несколько лет. Ситуация на конец года может фиксироваться как результат за год, после чего нанесение мест ДТП продолжается.

Визуальное представление «карты мест ДТП с флажками» даёт хорошее отображение потенциальных мест концентрации ДТП. При использовании ГИС может быть проведён более сложный анализ. На основании карты с флажками и принятого определения можно легко составить предварительный список мест концентрации ДТП по разным критериям. Список будет включать как пересечения, так и участки дороги, и служить основой для дальнейшего исследования и работы с местами концентрации ДТП в органе управления автодорогами.

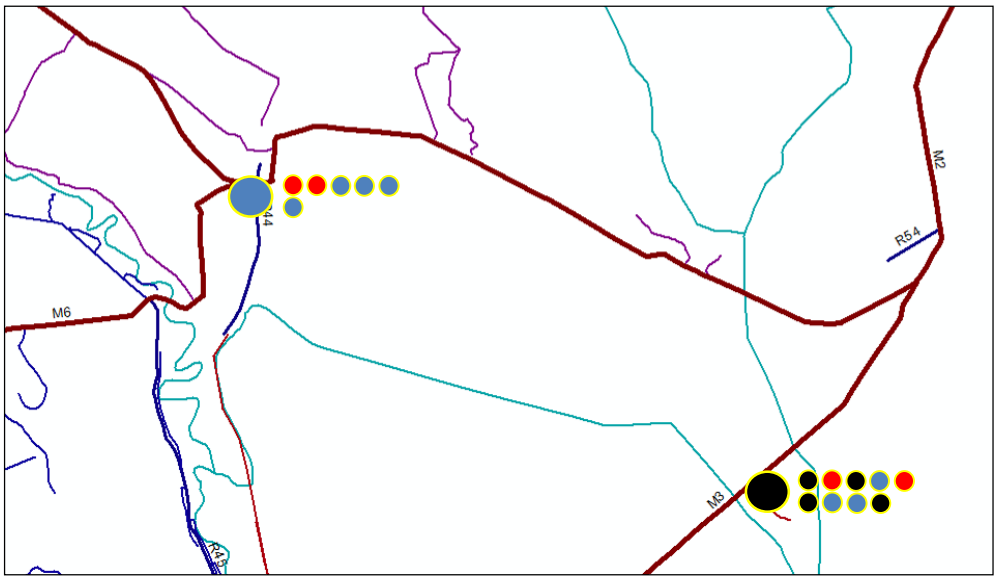

Рисунок 3.2.1. Пример типичной карты мест ДТП с флажками

3.3. Выявление (Подготовка списка мест концентрации ДТП)

Проект списка мест концентрации ДТП составляется в соответствии с принятым определением. Позднее, когда система начнёт работать, список будет усовершенствован применением весового индекса. Проект списка служит основой для дальнейшего исследования и анализа.

Подготовка первичного списка мест концентрации ДТП может выполняться дорожной полицией (или специализированным институтом, если таковой имеется). Данные о каждом ДТП с участием ТС в установленных местах концентрации ДТП должны быть дважды проверены и пересмотрены. В данных карточек ДТП не должно быть ошибок, которые могут повлиять на общую статистику и выводы. При необходимости от полиции могут быть запрошены дополнительные данные о конкретном ДТП. Таким образом будет улучшено качество данных.

Отдельное внимание должно быть уделено составлению схем столкновения (если они ещё не предусмотрены в акте полиции о ДТП), поскольку они представляют собой кратчайший путь к пониманию того, почему и как произошло ДТП.

Окончательный список мест концентрации ДТП должен состоять из выявленных мест концентрации и тех, которые в прошлом уже были изучены, но мероприятия на которых ещё не проведены. Местам концентрации ДТП, имеющим наибольшее количество ДТП со смертельным исходом (или самый высокий весовой индекс), должен быть предоставлен наивысший приоритет при проведении глубинного анализа.

3.4. Анализ причин ДТП (камеральный и полевой)

Целью анализа причин ДТП является понимание цепочки событий, которые непосредственно привели к ДТП. ДТП способствуют многие факторы, а значит получить полное представление не так просто. Поэтому важным является системное проведение анализа с применением хорошо известных фактов. Предлагаемый анализ может выполняться в органе управления дорогами (и отделе БДД, если таковой существует). Анализ бывает двух видов: камеральный (в офисе) и полевой (на месте).

3.4.1.Камеральный анализ – Сбор и обработка данных о ДТП

Для проведения надлежащего анализа в камеральных условиях требуются как минимум следующие данные:

- данные о ДТП,
- данные об условиях движения,
- данные о дороге, и
- дополнительные данные.

Данные о ДТП

Базовая информация фиксируется дорожной полицией на месте ДТП. Соответствующий акт и последующие документы содержат все важные данные для анализа ДТП, включая показания свидетелей и участников ДТП.

Данные об условиях движения

Для выбора оптимального мероприятия могут потребоваться дополнительные данные,

такие как:

- интенсивность движения по типам ТС, направлению и времени,
- средняя скорость движения в данном месте, если она предоставлена автоматическими счётчиками движения,
- количество участников движения или видов транспорта, относящихся к специфическим группам, обычно движущихся на данном участке,
- какие-либо изменения в структуре движения за период изучения, включая интенсивность, типы ТС и т.п.

Нередко указанная информация собирается из разных источников, таких как орган управления дорогами, местные власти и живущие вокруг люди.

Данные о дороге

Наряду с фотографиями места ДТП очень полезен и его эскиз. На эскизе должны быть отображены окончательная позиция участвующих ТС, все средства организации дорожного движения и препятствия, касающиеся ДТП. По возможности эскиз должен быть выполнен в масштабе, быть максимально подробным и содержать следующую информацию о месте ДТП и дороге:

- Габариты и расположение проезжей части, полос, обочин, оси, радиус кривой, подъём виража и коэффициент сцепления,
- Строения и стационарные препятствия,
- Контуры окружающей местности,
- Велосипедные и пешеходные дорожки,
- Существующие барьерные или транспортные ограждения,
- Сигнальные столбики, знаки и освещение (включая опоры),
- Дорожная разметка и маркеры на покрытии (включая пешеходные переходы),
- Дорожные знаки,
- Примыкающие дороги с габаритами и типом покрытия,
- Тип верхнего слоя покрытия (проезжей части/обочины),
- Приблизительная интенсивность движения/тип движения/скорость потока,
- Островки безопасности и их размеры,
- Деревья, дома, подъездные дорожки и т.п.

Дополнительные данные и информация

В некоторых случаях целесообразно собрать дополнительную информацию о ДТП и его месте, такую как преобладающие типы ТС на участке дороги, скорость, установленная дорожными знаками, а также средняя фактическая, отдельные параметры дороги, препятствия на или около дороги и т.п.. Указанная информация может быть получена от местного органа управления дорогами, местной полиции, живущих неподалёку от места ДТП людей и других источников.

Собранные данные используются для создания Схемы столкновений (рисунок 3.4.1.1) и сводной таблицы ДТП (рисунок 3.4.1.2).

Схема столкновений

Схема столкновений является схематическим представлением всех ДТП, произошедших на опасном участке. Характеристики ДТП показаны с помощью изображения манёвра.

Перемещения участников ДТП поясняются графически с помощью стрелок, которые отображают предшествующие столкновению действия. На схеме столкновений также показывается следующая информация:

- точное место каждого ДТП в пределах развязки или участка дороги,
- направление движения каждого ТС,
- манёвры каждого ТС (движение прямо, поворот, потеря управления),
- тип столкновения (под прямым углом, наезд и т.п.).

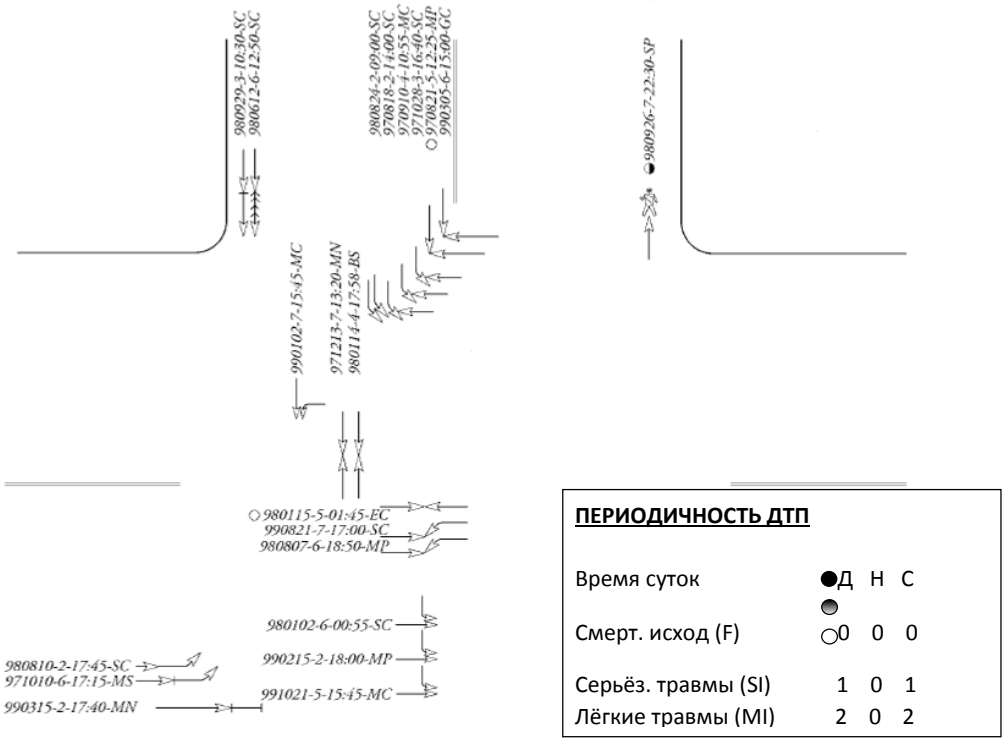

Рисунок 3.4.1.1. Пример типичной схемы столкновений

Схема столкновений облегчает определение наиболее частых типов ДТП и их доли, а также даёт идеи относительно потенциальных проблем и манёвров в данном месте.

Сводная таблица ДТП

В сводной таблице ДТП содержатся наиболее важные данные о нескольких ДТП, произошедших в одном и том же месте. С помощью подобной таблицы легко выяснить общие факторы и обстоятельства для всех ДТП, произошедших на данном месте.

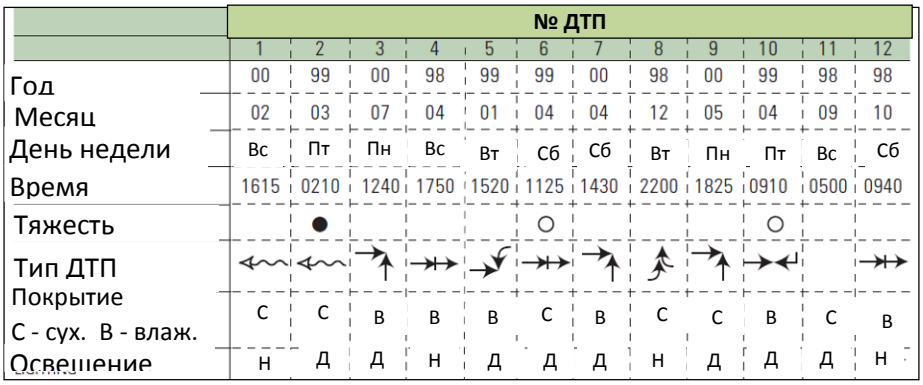

Рисунок 3.4.1.2. Пример типичной сводной таблицы ДТП

3.4.2. Анализ ДТП

Преобладающие типы ДТП

При наличии схемы столкновений она должна использоваться в начале процесса анализа. С помощью данной схемы уже проведена первичная группировка ДТП, показывающая точное место каждого события, направление движения и манёвры каждого ТС (тип ДТП).

Тип и место ДТП обычно дают самую важную информацию для анализа ДТП. Из схемы столкновений могут стать понятны преобладающие типы ДТП. Тип ДТП считается преобладающим, если подобные ДТП произошли группой из 4 событий и более. ДТП других типов, не принадлежащие к преобладающему типу, не настолько важны для анализа ДТП и могут не учитываться в общих выводах.

Необходимо отметить, что ДТП с разными характеристиками могут иметь одну и ту же причину. Если на пересечении недостаточная видимость, то это может приводить как к ДТП из-за нарушения преимущества в движении (запоздалая реакция на наличие движения по главной дороге), так и к наездам (запоздалая реакция на торможение/остановку автомобиля впереди или на стоящий и уступающий движение). По этой причине каждое ДТП должно быть тщательно рассмотрено.

В местах с относительно низким количеством ДТП, например 3 события за 3 года, может быть непросто выявить преобладающий тип. В таких случаях преобладающие характеристики ДТП (направление движения, время, уровень освещения и т.п.) могут способствовать анализу лучше, чем тип ДТП.

При малом количестве ДТП не должны применяться процентные доли при формировании выводов, поскольку их использование ведёт к неправильным и вводящим в заблуждение представлениям. Например, вывод «3 из 4 ДТП произошли в темноте» лучше иллюстрирует реальную ситуацию, чем фраза «75 % ДТП произошло в темноте», поскольку даёт информацию о малом объёме выборки.

Преобладающие характеристики

Сначала анализ проводится для преобладающего типа ДТП. В пределах данной группы требуются другие критерии сходства ДТП.

При наличии преобладающего типа ДТП и большом их количестве проводится дальнейший анализ. К примеру, если оказывается, что группа в 12 ДТП из 20 событий произошла в темноте, то требуется отдельный анализ указанных 12 ДТП для выявления

их сходства (например, возраст водителя, наличие алкоголя и т.п.).

После определения преобладающего типа и характеристик ДТП лучшим способом проведения остальной части анализа будет техника «вопросов и ответов». Должно быть поставлено два главных вопроса:

- Имеет ли сходство ДТП какое-либо важное значение?
- Какой вывод может быть сделан из данного факта?

Если, к примеру, выясняется, что 70 % ДТП произошли при влажном покрытии дороги, то конкретные вопросы следующие:

- Превышает ли это количество то, которое можно ожидать исходя из взаимосвязи состояния покрытия и времени суток?
- Может ли данный факт служить основой для формулировки предположения о возможной причине ДТП?

3.4.3. Формулирование предположения

На основе камерального анализа должно быть сформулировано предположение о возможных причинах ДТП. Данное действие должно быть сделано отдельно для каждого преобладающего типа или характеристики ДТП.

Важно сравнить и собрать как элементы головоломки различные выводы из анализа ДТП. Они могут как противоречить, так и дополнять друг друга.

Кроме того, разные типы ДТП в ряде случаев имеют одну и ту же причину.

Предположения о возможной причине ДТП должны быть сформулированы для каждого отдельного преобладающего типа или характеристики исходя из общей картины, полученной в результате анализа ДТП.

3.4.4. Полевые исследования – Сбор и обработка данных о ДТП

После проведения камерального анализа ДТП для каждого из мест требуется проведение полевого исследования. Полевые изыскания должны быть проведены для получения дополнительных деталей и «тестирования» предположений. Предположения о возможных причинах должны как можно тщательно проверяться для обеспечения их точности.

Состояние дороги и характеристики движения в месте ДТП должны быть проверены с использованием результатов анализа ДТП в качестве отправной точки. В исследовании должны быть приняты во внимание **триггеры** внимания водителя и модели поведения, которые могли привести к ДТП.

При применении к ДТП концепции человеческих факторов специалист по БДД ставит вопросы о причинах, приведших к **ошибке в действиях** водителя, которая в результате привела к ДТП. Указанный подход не так уж и нов для дорожного строительства. В 1930-е гг. базовые идеи концепции человеческих факторов учитывались при планировании основных автодорог и автомагистралей.

Рис. 1: Пост- и предаварийный подход [15]

Согласно концепции человеческих факторов ошибка в действиях водителя является первым звеном в цепи событий, которые в конце концов могут привести к ДТП. Многие из распространённых ошибок в действиях происходят из непосредственного взаимодействия дороги и реакции водителя. Особенности дороги определяют поведение водителя. А поскольку реакции водителя мы не можем изменить, то внимание должно быть сфокусировано на характеристиках дороги. Согласно данному выводу возможно и необходимо учитывать природные ограничения восприятия водителя, обработку им информации и действия, и весь этот комплекс должен быть учтён при проектировании и строительстве автодороги.

Цель концепции человеческих факторов состоит в снижении вероятности ошибок в действиях и, в конечном итоге, снижении вероятности ошибок вождения с помощью удобной для использования и интуитивно понятной конструкции дороги. Т.е. дорога должна быть понятной настолько, чтобы водитель получал чёткую информацию, позволяющую безопасное вождение. Отсюда требуется выполнять проектирование опасных мест таким образом, чтобы они были понятны, ощутимы и узнаваемы. Участник движения не должен вводиться в заблуждение и побуждаться к рискованным действиям. Целью понятия «интуитивно понятная конструкция дороги» является увеличение количества безошибочных интерпретаций особенностей дороги. Подобная удобная для использования, интуитивно понятная конструкция дороги непосредственно ведёт к снижению частоты ДТП (дополнительную информацию см. в Рекомендациях PIARC по человеческим факторам).

Существуют определённые параметры, которые могут быть определены на месте и могут существенно облегчить понимание причины ДТП. Наиболее важные из них: интенсивность движения и средняя скорость ТС на анализируемом участке, дорожной ситуации, а также информация относительно поперечного уклона, коэффициента сцепления и т.д.

Подсчёт интенсивности движения

Подсчёт интенсивности движения – это процедура, дающая возможность определения количества участников движения (ТС, пешеходов и т.п.), перемещающихся через определённую точку дорожной сети (участок, пересечение и т.п.). При подсчёте интенсивности участники движения сортируются по категориям (например, моторные ТС, безмоторные ТС, пешеходы и т.п.), а также времени суток. Результаты подсчёта вносятся в заранее приготовленные формы, так что проводящему подсчёт необходимо только фиксировать ТС, перемещающиеся через определённое место.

Методология подсчёта интенсивности движения детально разработана, хорошо известна и уже применяется во всех странах TRACECA, так что процедура и методы подсчёта здесь детальнее поясняться не будут.

Результатом подсчёта интенсивности движения должна быть схема, на которой показана загруженность дороги, съездов пересечений, определённых мест и т.д. Подсчёт может также дать информацию о составе движения (процент разных типов ТС в потоке). Данные результаты могут способствовать лучшему пониманию дорожной ситуации и уточнению предположений и принятых решений относительно мероприятий, которые необходимо выполнить в месте концентрации ДТП.

Измерение скорости ТС

Скорость ТС обычно является одним из главных факторов, увеличивающих риск ДТП. Нередко скорость является непосредственной причиной ДТП, а ещё чаще – напрямую способствует тяжести последствий. Согласно имеющейся информации измерение скорости ТС на дорожной сети и статистический анализ скоростей до сих пор системно не проводится в странах TRACECA. Поэтому способ фиксации скоростей будет пояснён более детально.

Превышение максимально допустимой скорости на дорогах является одним из наиболее важных факторов риска и острой проблемой БДД во всех странах. По последним данным, собранным во время рабочих поездок и изучения мест концентрации ДТП в разных странах TRACECA, скорости в наблюдаемых местах часто превышают установленные пределы. Это ясно указывает на необходимость анализа скоростей в каждом из мест концентрации ДТП.

Измерение скоростей должно выполняться в то же самое время дня, когда происходит наибольшее количество ДТП.

Измерение скоростей ТС может выполняться вручную или с помощью автоматических устройств. В случае применения автоматических устройств фиксации скорости (индуктивных петель, современных лазерных устройств, видео-, инфракрасных и микроволновых датчиков) скорость ТС может фиксироваться на протяжении длительного периода.

Результаты измерения скорости нужны для получения данных о средней скорости ТС, стандартном отклонении, проценте водителей, превышающих допустимую скорость, скорости 85 % ТС в потоке, проценте медленно движущихся ТС и т.п..

Подобный анализ позволит получить ясное понимание поведения водителей и влияния скоростного режима на месте концентрации ДТП.

Метод дорожных конфликтов

При проведении анализа ДТП исследователи часто используют информацию, содержащуюся в актах ДТП, для выявления и понимания сбоев в работе дороги и последующего составления необходимых мероприятий. В некоторых случаях информации из актов ДТП недостаточно и для повышения точности решения требуется её дополнение в ходе полевых изысканий.

На протяжении многих лет в помощь экспертам по БДД предлагались многочисленные инструменты для проведения полевых изысканий. Одним из наиболее полезных структурированных методов выявления источников риска в анализируемом месте является метод дорожных конфликтов.

Согласно указанному методу обученные изыскатели наблюдают за движением и фиксируют частоту и типы возникновения конфликтов, происходящих в определённом месте. Поскольку изучение конфликтов подразумевает непосредственное наблюдение за поведением участников движения, то в ходе него выявляются особенно опасные манёвры, которые легко могли превратиться в ДТП при недостаточно быстрой реакции участников ситуации.

Общепринятое определение дорожного конфликта таково: «Наблюдаемая ситуация, когда два или более участника движения настолько близко приближаются друг другу по расстоянию и по времени, что появляется риск столкновения, если характеристики их движения не изменятся».

Для успешной реализации метода дорожных конфликтов требуются следующие условия:

- Наблюдатели должны быть обучены выявлению и фиксации конфликтов,
- Если работает более одного наблюдателя, то они должны применять одинаковые критерии при выявлении конфликтов, а также при определении их тяжести, и
- Период фиксации конфликтов должен соответствовать времени, в которое произошло большинство ДТП.

Одной из наиболее популярных моделей метода дорожных конфликтов является «шведская модель» или «шведский метод конфликтов». Согласно данной модели опасным местом является участок, на котором зафиксировано три конфликта за 60 мин.

Для упрощения работы наблюдатели могут использовать подготовленную карточку. Пример типовой карточки приведён на рисунке 3.4.4.1.

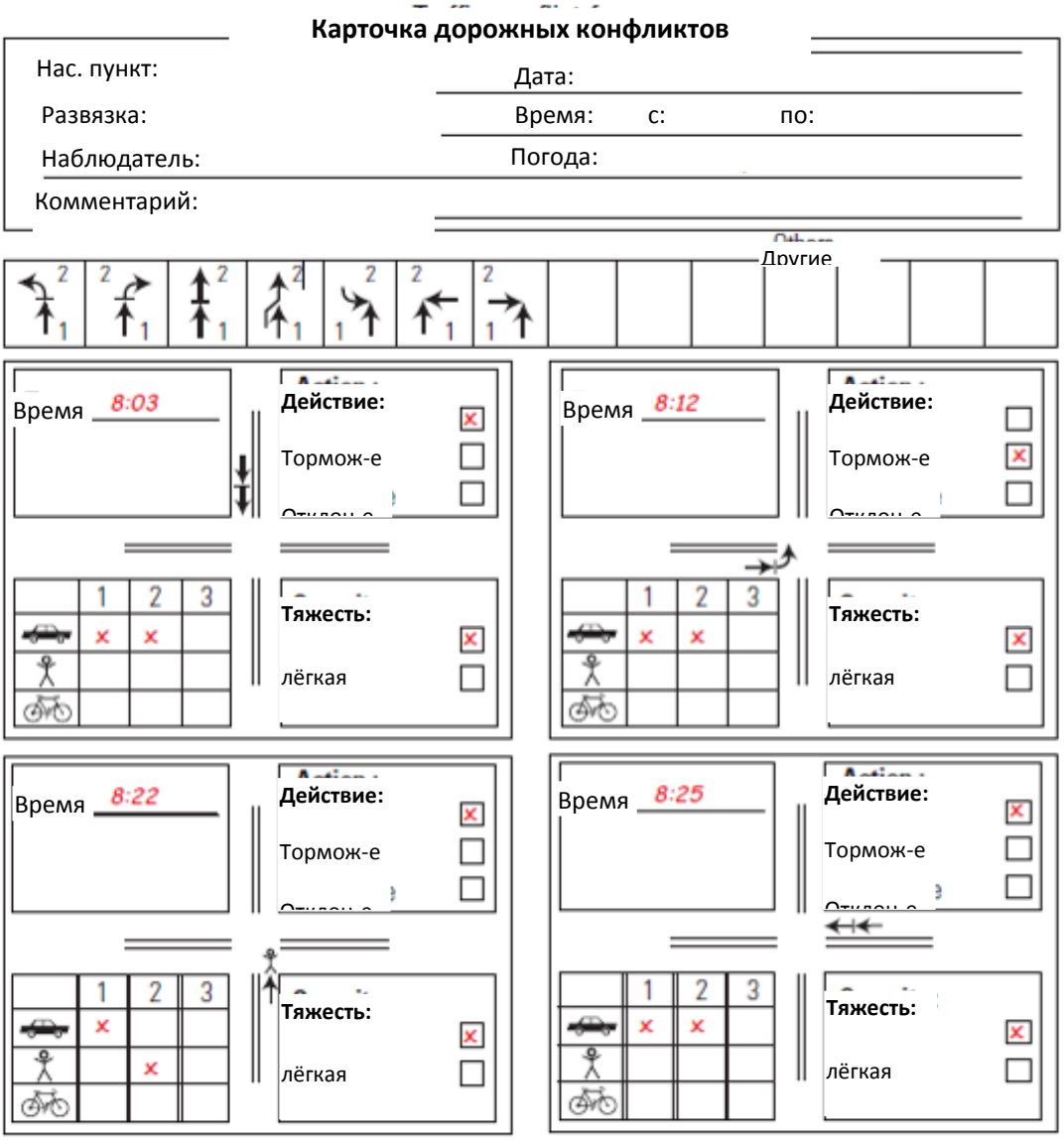

Рисунок 3.4.4.1. Возможная форма карточки дорожных конфликтов

Кроме того, при всех упомянутых методах полевых исследований необходимо следовать таким рекомендациям:

- Исследователь должен поставить себя, насколько это возможно, на место участников ДТП. Необходимо подъехать несколько раз к месту события в качестве «преобладающего» ТС с соответствующего направления. Также необходимо уделить внимание пути, ведущему к месту события.
- Полевое исследование должно проводиться, насколько это возможно, при обстоятельствах, аналогичных преобладающему времени ДТП (время суток, освещение, погодные условия и т.п.).
- Целесообразно заранее составить список точек внимания относительно предположения, основанного на анализе ДТП.
- Необходимо понаблюдать за режимом движения на развязке или участке дороги. Должны быть тщательно изучены режимы приближения к месту, ситуация с видимостью, соблюдение приоритета движения, режимы пересечения и сложность манёвров.

- В ходе полевых изысканий могут быть выявлены возможные причины, не выявленные в ходе анализа ДТП. Могут оказаться полезными фотографии или видеозапись для оценки ситуации впоследствии. Фиксацию предпочтительно сделать с позиции участников ДТП (с их места и на уровне глаз).
- Всегда выделяйте достаточно времени для полевых изысканий. Разговор с живущими рядом людьми может дать полезную дополнительную информацию.
- Попытайтесь найти взаимосвязь между процессом ДТП и дорогой.

3.4.5. Определение причины ДТП

Если в ходе полевых изысканий получены достаточные доказательства в поддержку предположений, то можно установить вероятные причины ДТП для каждого преобладающего типа ДТП.

Важно сравнить различные выводы полевых изысканий. Они могут дополнять друг друга, но в некоторых случаях и противоречить. Различные типы ДТП в некоторых случаях могут иметь одну причину.

Исходя из выводов подтверждаются или отклоняются предположения для каждого преобладающего типа характеристик ДТП. Преобладающая причина ДТП должна быть установлена для разработки решения относительно предлагаемых мероприятий.

3.5. Определение мероприятий относительно мест концентрации ДТП

После установления причин каждого преобладающего типа ДТП результаты должны быть обсуждены заинтересованными сторонами. На следующем этапе должны быть определены и зафиксированы цели и решения.

Мероприятия по ликвидации

Мероприятия по ликвидации должны устранить главные причины ДТП. Несколько мероприятий, предотвращающих разные преобладающие типы ДТП, составляют единое решение. Если исследованием выявлены недостатки в существующей конструкции освещения, то его конструкция должна быть скорректирована. Некоторые типичные места концентрации ДТП, профилактические мероприятия и потенциальные выгоды от их реализации представлены в разделах 4 и 5.

Если причина ДТП состоит в использовании инфраструктуры и технические мероприятия приведут к слабому результату или требуют чрезвычайно больших затрат, то больше подходят такие действия, как образование по вопросам БДД, кампания в СМИ и плотный правоохранительный контроль. Однако, путём усовершенствования расстановки дорожных знаков, ограничения скорости и предупреждений также может быть сделано многое для улучшения поведения участников движения.

Все предлагаемые мероприятия должны быть направлены на решение проблемы. Следует отметить, что борьба с одним видом ДТП может в результате привести к появлению другого типа ДТП или переносу ДТП в другое место. К примеру, такое средство ограничения скорости как «лежачий полицейский» перед перекрёстком может позитивно повлиять на количество ДТП из-за несоблюдения приоритета. Если такое же средство применено на главной дороге с большой интенсивностью движения и скоростями более 50 км/ч (т.е. там, где указанное средство не ожидается водителями), то оно может только ухудшить ситуацию по сравнению с исходной проблемой.

Если предлагаемые мероприятия состоят из структурных мероприятий, то отдельное внимание должно быть уделено потенциальным побочным эффектам, особенно в случае мероприятий, которые могут повлиять на движение по кругу.

В процессе определения мероприятий по ликвидации мест концентрации ДТП предпочтение должно отдаваться так называемым «экономным решениям». Низкая стоимость не означает низкого качества. Она означает низкие капитальные затраты и, следовательно, быстрое внедрение путём улучшения дорожной инфраструктуры в как можно большем количестве мест концентрации ДТП, что приведёт к снижению количества ДТП. Улучшение разграничения потоков, установка барьерного ограждения, использование «лежачих полицейских», улучшение освещения, использование дорожных знаков с высокой степенью отражения, высококачественной горизонтальной разметки является типичными экономными мероприятиями, и нередко это всё, что необходимо в странах TRACECA для повышения уровня БДД на многих местах концентрации ДТП, находящихся в сельской местности.

В процессе предложения мероприятий может быть вынесено несколько альтернатив или сочетание средств. Результатом этого этапа должно стать предложение мероприятий по ликвидации места концентрации ДТП, желательно с применением высокоэффективных и экономных средств. Окончательный выбор средств выполняется исходя из анализа затрат/выгод.

До наработки странами TRACECA собственного опыта в оценке эффективности мероприятий может применяться Каталог Всемирной дорожной ассоциации – PIARC по проблемам проектирования БДД и потенциальным мероприятиям (2009 год)[25]. Указанный каталог составлен группой экспертов, представляющих органы управления дорогами со всего мира.

Оценка снижения количества ДТП

На данный момент в регионе TRACECA нет достаточного опыта документирования эффекта от реализованных мероприятий по БДД.

В разделе 5 содержится список мероприятий, получивших оценку в разных странах, который может применяться до наработки собственного опыта в регионе. Набор коэффициентов ожидаемого снижения количества приведён в списке, в котором каждое мероприятие сопровождается ожидаемым процентом снижения количества ДТП. Данный список составлен на основе различных практических примеров и исследовательских работ. Как правило, анализ ДТП проводится до и после реализации конкретных мероприятий, а полученный эффект фиксируется.

Коэффициенты ожидаемого снижения количества ДТП могут применяться для оценки потенциального уменьшения количества ДТП при выбранных мероприятиях. Указанные коэффициенты также могут применяться для оценки экономического эффекта проектов и расстановки приоритетов.

Со временем будут разработаны коэффициенты снижения количества ДТП для каждой страны TRACECA, что позволит проводить более точную оценку получаемых выгод.

3.6. Расстановка приоритетов (на основе анализа затрат/выгод)

В первые годы применения УМК сортировка по приоритетам была довольно простой и

основывалась на количестве ДТП (в первую очередь со смертельным исходом). По данному способу отсортированный список мест концентрации ДТП составлялся с фокусом только на общем количестве ДТП со смертельным исходом. Даже при использовании весового индекса указанная модель весьма проста для применения.

Вскоре в процессе применения УМК, особенно в части определения мероприятий по ликвидации для повышения БДД, возник следующий вопрос: «Какую прибыль принесёт инвестирование в различные средства (решения)?» Для получения ответа на данный вопрос эффект от мероприятий должен быть отнесён к затратам на них. Методы, применяемые для этой задачи, в целом известны как анализ затрат/выгод.

Отличительной чертой анализа затрат/выгод является то, что он увязывает эффект и затраты на реализуемые мероприятия.

Целью анализа затрат/выгод является определение приоритетов среди мероприятий (сортировка). Расстановка приоритетов может быть использована двумя путями:

3. Выявить наиболее экономически выгодные мероприятия в пределах определённого бюджета.
4. Рассчитать бюджет, требуемый для максимального эффекта.

В большинстве случаев преобладает первая задача, поскольку бюджеты всегда ограничены.

Необходимой информацией (входными данными) для проведения анализа затрат/выгод является:

3. Рабочий список мест концентраций ДТП.
4. Проект и смета предлагаемых мероприятий.

Этапы процедуры анализа затрат/выгод:

5. Расчёт годовых затрат на мероприятие,
6. Оценка количества предотвращённых ДТП,
7. Расчёт показателя рентабельности для мероприятий, и
8. Определение приоритетных мероприятий.

Упрощённый способ расчёта коэффициента затрат на смертельные случаи (FCR):

Для точного определения выгод, которые получит общество от ликвидации места концентрации ДТП, необходимо знать стоимость человеческой жизни. Рассчитать экономическую стоимость человеческой жизни и объём финансов, которые сэкономит общество путём предотвращения смертельных случаев благодаря реализации предлагаемых мероприятий, – абсолютно нормально.

Подробная модель расчёта затрат/выгод может быть использована в будущем, а в ближайшие годы должна быть принята и применяться упрощённая модель расчёта.

Хотя стоимость человеческой жизни ещё официально в большинстве стран TRACECA не установлена, в целях презентации предлагаемой модели использованы затраты на ДТП, установленные в проведённом исследовании в одной из стран TRACECA.[26] Таким образом, для целей тестирования модели стоимость человеческой жизни будет установлена в **290 652** Евро.

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FCR (коэффициент затрат на смертельные случаи) = (количество ДТП со смертельным исходом в год * 290 652) / стоимость мероприятий

Приведённая формула представляет упрощённую модель расчёта, в которой количество смертельных случаев в месте концентрации ДТП за год берётся из статистики, умножается на принятые затраты на ДТП со смертельным исходом и делится на стоимость соответствующих мероприятий. Данная формула может также применяться при использовании термина «жертвы». Под ними в данном случае подразумеваются общее количество ДТП, как со смертельных исходом, так и с травмами.

Например, давайте допустим, что в конкретном месте концентрации ДТП зафиксировано 4 смертельных случая за три года (в среднем 1,33 смертельных случая за год). В результате полевых изысканий и оценки данных актов ДТП рассчитано, что стоимость мероприятий по ликвидации составляет около 30000 Евро.

Коэффициент затрат на смертельные случаи составит:

FCR 1= (1,33 * 290652)/ 30000
FCR 1 = 386567.16/ 30000
FCR 1 =12,88:1

Теперь допустим, что в другом месте концентрации ДТП наблюдается в среднем 3 смертельных случая в год и после полевых изысканий выяснилось, что затраты на мероприятия по ликвидации приближаются к 20000 Евро.

Коэффициент затрат на смертельные случаи составит:

FCR 2 = (3 * 290652)/ 20000
FCR 2 = 871956/ 20000
FCR 2 = 43,59:1

Таким образом мы видим, что второе место, имея значение FCR2 43,59:1, имеет рентабельность в четыре раза большую, чем первое со значением FCR всего 12:88:1, т.е. место 2 должно получить более высокий приоритет при реализации. Подобный системный и научный подход позволяет принимать более рациональные решения и более эффективно использовать ограниченные средства, выделяемые на БДД.

Указанный метод расстановки приоритетов очень прост и он показывает, какие из мероприятий по ликвидации мест концентрации ДТП обеспечат обществу наилучший эффект от инвестиций.

Список приоритетов по коэффициенту затрат на смертельные случаи:

Окончательный список мероприятий по ликвидации должен составляться на основании значений FCR. В этом списке мероприятия можно отсортировать в порядке приоритетов для реализации.

Перед составлением окончательного списка с приоритетами должны быть учтены также некоторые другие факторы. Такими факторами могут стать проблемы реализации (физические, законодательные, экологические и т.д.), ограничение средств к инвестированию, возможные последствия для дорожной сети (такие как затраты на заторы и т.п.) и другие. Опыт показывает, что планы, основанные только на эффективных, но непопулярных мерах, могут в конце концов не реализоваться вообще. Однако в случае, если окончательное решение отличается от порядка приоритетов, такое отклонение от процедуры должно быть чётко указано с предпосылками и обоснованием подобного решения.

Приоритетные мероприятия по ликвидации должны быть включены в годовой план или программу действий органа управления автодорогами в виде отдельного и чётко указанного раздела плана. В случае отсутствия достаточного количества средств в годовом бюджете, некоторые из предложенных мест концентрации ДТП могут быть перенесены на следующий год.

3.7. Планирование, бюджет и финансирование

После сортировки мест концентрации ДТП по приоритетам следующим шагом является создание Национальной (государственной) программы (НП) по их ликвидации (реализации мероприятий). Средне- или долгосрочная национальная программа по безопасности дорожного движения служит необходимым условием для достижения стабильного повышения уровня БДД и ликвидации мест концентрации ДТП. В национальной программе должны быть установлены измеримые средне- и долгосрочные цели в сфере безопасности дорожного движения.

Наиболее неотложные мероприятия по ликвидации, выявленные при расстановке приоритетов, должны быть внесены в приоритетный План действий, при этом должна быть создана стандартизированная институциональная процедура реализации для эффективной ликвидации мест концентрации ДТП.

Главной целью НП должно быть снижение социальных и экономических потерь от ДТП и травматизма путём:

- экономически выгодного проведения мероприятий в местах, где были зафиксированы ДТП со смертельным исходом,
- концентрирования внимания на необходимости снижения травматизма на автодорогах,
- координации и активизации деятельности всех ключевых заинтересованных сторон в сфере БДД, которые могут повлиять на БДД, и
- выделения достаточных средств на мероприятия в выбранных местах.

Согласно НП для её реализации должен быть выполнен приоритетный План действий. В большинстве случаев План действий по выполнению мероприятий по ликвидации мест концентрации ДТП включается в деятельность органа управления автодорогами и занимает чёткое место в его годовых планах работ и финансирования. Количество мест концентраций ДТП, на которых за год выполняются мероприятия, должно соответствовать имеющемуся бюджету органа управления автодорогами на УМК. Вполне вероятно, что количество мест концентрации ДТП окажется больше, чем можно ликвидировать в рамках имеющегося годового бюджета, поэтому НП должна быть рассчитана на три года.

Период в три года предлагается, поскольку позволяет реализовать мероприятия на существенном количестве мест концентрации ДТП. Для данной цели могут потребоваться консультативные услуги привлечённого эксперта по БДД.

Поскольку НП по ликвидации мест концентрации ДТП обычно простирается на 3-5 лет (с ежегодной корректировкой), то для обеспечения её реализации требуется стабильное долгосрочное финансирование.

Для достижения выгод от программы по местам концентрации ДТП она должна системно реализовываться на протяжении определённого времени. Также важно проведение оценки эффекта от программы.

3.8. Реализация мероприятий по местам концентрации ДТП

Орган управления автодорогами отвечает за запуск, координирование и контроль проекта, включая закупку работ, финансовый менеджмент, мониторинг и отчётность проекта, а также ежедневный надзор за действиями по проекту.

Главные цели органа управления автодорогами:

- Обеспечивать руководство и платформу для эффективной реализации мероприятий по БДД, и
- Высокий уровень подхода к работам по БДД при реализации.

3.9. Проектирование и строительство

В зависимости от характера и объёмов строительных работ на местах концентрации ДТП орган управления автодорогами может использовать как привлечённые, так и собственные проектные группы, а также как эксплуатационное подразделение, так и внешнего подрядчика для выполнения проектных и строительных работ.

Обязанностью органа управления автодорогами (или уполномоченной организации) является обеспечение безопасности в ходе дорожных работ. Место проведения работ должно быть соответствующим образом огорожено временными дорожными знаками на время выполнения работ. Следует избегать дополнительных рисков как для дорожников, так и для участников движения.

Кроме того, должны быть минимизированы любые задержки строительных работ, которые могут привести к неудобствам для участников движения или окружающих.

3.10. Отслеживание и оценка

По прошествии времени (1-2 лет), когда участники движения уже привыкли к новой дорожной ситуации, должны быть проведены некоторые пост-исследования для оценки действия реализованных мероприятий. Данный процесс может быть выполнен органом управления автодорог (отделом БДД, если таковой существует).

Оценка представляет собой постоянный мониторинг результатов реализованных мероприятий в сравнении с поставленными целями. Мониторинг состоит в сборе данных о движении и ДТП, жалоб и общих отзывов. Опыт показывает, что реализованные мероприятия иногда не ведут немедленно к улучшению ситуации.

Сравнение с поставленными целями. Включает получение ответа на вопрос, соответствуют ли результаты ожидаемым или нет.

Как правило, в большинстве стран используется **период оценки в 1-2 (иногда и 3) года** перед тем, как делаются определённые выводы. Если результаты неудовлетворительны, то должна быть повторно выполнена процедура анализа и реализованы скорректированные или новые мероприятия.

Данные после мероприятий должны быть задокументированы вместе с исходными данными и использоваться в будущем как банк опыта (каталог мероприятий по БДД).

К примеру, необходимо отслеживать количество ДТП в месте концентрации ДТП до и после мероприятий. Частично данный анализ включает использование базы данных для проверки существенного снижения количества ДТП в месте концентрации. Результаты используются при получении исходных данных для нового списка с учётом данных о сокращении количества ДТП (раздел 5).

Специалисты по анализу ДТП должны изучить данные пост-исследований, поскольку полное понимание действия мероприятий на местах концентрации ДТП и Программы является важным, особенно если её необходимо скорректировать.

3.11. Документация

Важным моментом является сохранение и доступность в будущем всей технической и финансовой документации по управлению местами концентрации ДТП. Для определения реального влияния мероприятий на количество ДТП со смертельным исходом время от времени может проводиться независимая оценка проекта. Орган управления дорогами должен хранить все соответствующие документы и записи относительно процесса с тем, чтобы для подобной оценки были необходимые данные.

Документация также является ценным инструментом для обучения специалистов, участвующих в процессе ликвидации мест концентрации ДТП. Важно учиться на успешных и не очень мероприятиях. Также, данные из документации могут использоваться для дополнения каталога мероприятий.

4. ТИПИЧНЫЕ МЕСТА КОНЦЕНТРАЦИИ ДТП

Согласно передовой международной практике, существует несколько видов типичных опасных участков концентрации ДТП на дорогах в регионе TRACECA (**Тра**нспортный **К**оридор **Е**вропа-**К**авказ-**А**зия).

Для подготовки данной главы Руководства были использованы результаты исследований мест концентрации ДТП и проверки сетей дорожного движения в некоторых странах TRACECA. Исследования участков концентрации ДТП осуществлялись комбинацией удаленной (офисной) и практической (полевой) работы.

После детального анализа исследованных участков (также известных, как Чёрные Участки или Чёрные Секции), и обследования других частей сети дорожного движения (команда проекта имела возможность изучить более 5000 км основных дорог в разных странах TRACECA), можно выделить следующее типичные проблемные участки дороги:

Рисунок 4.1. Типичные места концентрации ДТП и меры противодействия

Описание места концентрации ДТП / Типичные меры противодействия	**Изображения**
<u>- Дороги, проходящие через города</u> (слишком много подъездных путей, разнородный трафик, высокие скорости, незаконные стоянки транспортных средств, пешеходы, недостаточная видимость, уличные рынки...).	
- контроль доступа (закрытие	

нелегальных подъездных дорог) - разделение ответвлений барьерами - замедление трафика (знаки, физическое препятствие, дорожное покрытие и крупные схемы) - строительство пешеходного прохода - строительство вспомогательных средств для пешеходных переходов - новая дорожная разметка и маркировка - установка искусственного освещения - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы перекрёстков (опасные типы, такие как "Y"-перекрёстки, опасные круговые развязки с недостаточным прогибом, неправильно спроектированные перекрёстки без достаточной видимости, с плохой разметкой и маркировкой, проблемы с пешеходами…). **Возможные решения** - перестройка перекрёстков (добавление островков безопасности, улучшение видимости...) - улучшение разметки и маркировки (чёткая маркировка ожидания и права проезда) - установка искусственного освещения - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы опасных поворотов (повороты с ограниченной видимостью, слишком малым радиусом для данной дороги, несоответствующий поперечный наклон, отсутствие необходимой разметки и маркировки...).	

Возможные решения

- улучшение геометрии (увеличение радиуса кривой при необходимости)
- улучшение видимости (разметка и маркировка, добавление отбойников и т.д.)
- дополнительная вертикальная сигнализация (предупреждающие знаки, шевроны)
- добавление встроенных асфальтных маркеров
- добавление ограждений
- добавление точных (по стандартам ООН) знаков
- ...

- Проблемы сужения дорог

(на мостах и водопропускных сооружениях; в условиях движения, угрожающего безопасности его участников; при несоответствующей разметке и маркировке...).

Возможные решения

- расширение узких участков
- улучшение разметки и маркировки
- дополнительная вертикальная сигнализация
- добавление встроенных асфальтных маркеров
- добавление ограждений
- добавление точных (по стандартам ООН) знаков
- ...

- Проблемы мостов (туннелей)

(объекты на дорогах, обычно между двух поворотов; отсутствие видимости; несоответствующая разметка и маркировка; обычно без ограждений…).

Возможные решения

- улучшение разметки и маркировки
- дополнительная вертикальная

сигнализация - добавление встроенных асфальтных маркеров - добавление ограждений по EN 1317 - использование стандартов и норм туннельной безопасности - усиление искусственного освещения - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы пешеходных переходов (неверно спроектированные, размеченные и маркированные; плохо видимые; недостаточно оборудованные в участках интенсивного движения детей; без освещения).	
Возможные решения - улучшение планировки, разметки и маркировки - замедление трафика (знаки, физическое препятствие, дорожное покрытие и крупные схемы, особенно использование искусственных неровностей и предохранительных полос) - строительство вспомогательных средств для пешеходных переходов (островки безопасности, перила и ограждения) - добавление заборов, ограждающих пешеходов от дороги - установка искусственного освещения - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы железнодорожных переездов (пересечение дороги и ж/д полотна под острым углом; недостаточность видимости и обзора; неадекватная разметка и неправильное ограждение участков…).	

Возможные решения - улучшение разметки и маркировки - дополнительная вертикальная сигнализация - добавление встроенных асфальтных маркеров - добавление точных (по стандартам ООН) знаков - ...	

Описание места концентрации ДТП / Типичные меры противодействия	Изображения
- Дороги, проходящие через города (слишком много подъездных путей, разнородный трафик, высокие скорости, незаконные стоянки транспортных средств, пешеходы, недостаточная видимость, уличные рынки...). - контроль доступа (закрытие нелегальных подъездных дорог) - разделение ответвлений барьерами - замедление трафика (знаки, физическое препятствие, дорожное покрытие и крупные схемы) - строительство пешеходного прохода - строительство вспомогательных средств для пешеходных переходов - новая дорожная разметка и маркировка - установка искусственного освещения - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы перекрёстков (опасные типы, такие как "Y"-перекрёстки, опасные круговые развязки с недостаточным прогибом, неправильно спроектированные перекрёстки без достаточной видимости, с плохой разметкой и маркировкой, проблемы с пешеходами…). **Возможные решения** - перестройка перекрёстков (добавление островков безопасности, улучшение видимости...) - улучшение разметки и маркировки (чёткая маркировка ожидания и права проезда) - установка искусственного освещения - добавление точных (по стандартам	

ООН) знаков - ...	
- Проблемы опасных поворотов (повороты с ограниченной видимостью, слишком малым радиусом для данной дороги, несоответствующий поперечный наклон, отсутствие необходимой разметки и маркировки...). **Возможные решения** - улучшение геометрии (увеличение радиуса кривой при необходимости) - улучшение видимости (разметка и маркировка, добавление отбойников и т.д.) - дополнительная вертикальная сигнализация (предупреждающие знаки, шевроны) - добавление встроенных асфальтных маркеров - добавление ограждений - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы сужения дорог (на мостах и водопропускных сооружениях; в условиях движения, угрожающего безопасности его участников; при несоответствующей разметке и маркировке...). **Возможные решения** - расширение узких участков - улучшение разметки и маркировки - дополнительная вертикальная сигнализация - добавление встроенных асфальтных	

маркеров - добавление ограждений - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы мостов (туннелей) (объекты на дорогах, обычно между двух поворотов; отсутствие видимости; несоответствующая разметка и маркировка; обычно без ограждений…).	
Возможные решения - улучшение разметки и маркировки - дополнительная вертикальная сигнализация - добавление встроенных асфальтных маркеров - добавление ограждений по EN 1317 - использование стандартов и норм туннельной безопасности - усиление искусственного освещения - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы пешеходных переходов (неверно спроектированные, размеченные и маркированные; плохо видимые; недостаточно оборудованные в участках интенсивного движения детей; без освещения).	
Возможные решения - улучшение планировки, разметки и маркировки - замедление трафика (знаки, физическое препятствие, дорожное покрытие и крупные схемы, особенно использование искусственных неровностей и предохранительных полос) - строительство вспомогательных средств для пешеходных переходов (островки	

безопасности, перила и ограждения) - добавление заборов, ограждающих пешеходов от дороги - установка искусственного освещения - добавление точных (по стандартам ООН) знаков - ...	
- Проблемы железнодорожных переездов (пересечение дороги и ж/д полотна под острым углом; недостаточность видимости и обзора; неадекватная разметка и неправильное ограждение участков…).	
Возможные решения - улучшение разметки и маркировки - дополнительная вертикальная сигнализация - добавление встроенных асфальтных маркеров - добавление точных (по стандартам ООН) знаков - ...	

Наряду с типичными местами концентрации ДТП (чёрными участками), обычно присутствуют систематические недостатки активной и пассивной безопасности дорожного движения, такие как:

- отсутствие соответствующей стандартам ООН дорожной разметки и маркировки,
- низкое качество пассивных дорожных элементов (ограждения, которые не соответствуют типу дороги, или разработаны с нарушением спецификаций),
- высокая торговая активность и большое число торговых палаток в излишней близости к государственным дорогам, особенно на участках, где дороги проходят через населённые пункты (города),
- большое число нерегулируемых (незаконных) подъездных дорог, и т.д.

Понимание наиболее распространенных причин, из-за которых возникают места концентрации ДТП, является столь же важным, сколь и желание их предотвратить. Причины возникновения мест концентрации ДТП могут быть устранены на этапе проектирования, строительных работ и технического обслуживания дорог.

Можно сделать вывод, что почти на всех подобных участках недостаточно качественная дорожная разметка и маркировка, призванная обеспечить указания и информацию для водителя, а также отсутствуют ограждения, которые могли бы защитить его в случае

ошибки.

Одно из предположений – маркировать все выявленные места концентрации ДТП дорожными знаками по стандартам ООН. При этом опасные участки будут легко узнаваемы участниками дорожного движения (в основном водителями), и последние будут корректировать своё поведение (скорость) в соответствии с локальными дорожными условиям. Эти знаки будут удалены после усовершенствования (перепланировки, реконструкции и др.) данного участка.

Предложенные меры противодействия и способы маркировки мест концентрации ДТП основаны на опыте развитых стран и международных ассоциаций (IRF, ERF, PIARC, PRI, WB, OECD, ECMT, и др.), следовательно, являются эффективной и единой системой управления местами концентрации ДТП на всей сети государственных дорог.

5. ПОТЕНЦИАЛЬНАЯ ЭКОНОМИЯ ПРИ СНИЖЕНИИ АВАРИЙНОСТИ

Для предложенных мер противодействия любого типа необходимо знать потенциал снижения аварийности. Поэтому предлагаем список наиболее распространённых бюджетных мер противодействия с ожидаемыми от них эффектами.

Следующая таблица составлена по результатам различных международных исследовательских проектов и тематических исследований, и может быть использована для понимания потенциальной экономии при снижении аварийности с учётом различных мер противодействия. Таблица 5.1. содержит перечень способов и мер противодействия и их потенциал снижения аварийности. Чаще всего, представлены минимальный и максимальный эффекты.

Таблица 5.1. Эффективность (снижение аварийности) различных мер противодействия

Решение	Потенциал снижения аварийности [%]
Дорожный стандарт	
Улучшение до высокого стандарта	19-33
Уменьшение числа полос движения	22-32
Расширение полосы на 0,3-0,6 м	5-12
Расширение асфальтированной обочины на 0,3 - 1 м	4-12
Добавление разделительной полосы	40
Расширение и модификация моста	25
Расширение обочины	10
Полоса для обгона	20
Полоса для правого поворота	40
Полоса для левого поворота	15
Наземный пешеходный переход	10
Уплощение бокового склона с 2:1 до 4:1 ... 7:1 или более	6 ... 15
Уплощение бокового склона с 4:1 до 5:1 ... 7:1 или более	3 ... 11

Сервисные дороги	20-40
Снижение трафика	12-60
Снижение скорости с 70 км/ч до 50 км/ч	10-30
Снижение скорости с 90 км/ч до 60 км/ч	17-40
Горизонтальное выравнивание	
Улучшение геометрии	20-80
Кривизна поворота: улучшение радиуса	33-50
Вертикальное выравнивание	
Плавность подъёма/удаление холмистости	12-56
Улучшение/введение возвышения	50
Проходная полоса	11-43
Восходящая полоса	10-40
Структура дороги	
Расширение полосы	12-47
Улучшение сопротивления заносу	18-74
Расширение обочины	10-40
Ограждение обочины	22-50
Расширение зоны мульчера для обочин	13-44
Проектирование развязок	
Смещённые перекрёстки (вместо прямых)	40-95
Т-развязки (вместо Y-развязок)	15-50
Полностью контролируемый правый поворот	45
Круговые развязки (вместо неконтролируемых)	25-81
Круговые развязки (вместо светофорных)	25-50
Небольшие круговые развязки (вместо неконтролируемых)	40-47
Полосы для поворота	10-60
Островки безопасности	39
Защищённые полосы для поворотов (городские)	30
Защищённые полосы для поворотов (сельские)	45
Дополнительная полоса на перекрёстке	20
Слой против скольжения	20
Камера красного света	10
Присутствие полиции	7-25
Контроль движения	
Регулирующие знаки на перекрестках	22-48
Информационно-указательные знаки на	14-58

развязках	
Знаки над дорогой	15
Знаки на обочине	19-24
Более яркие знаки и маркировка	24-92
Знаки и разграничение	29-37
Знаки, предупреждающие об изгибе	20-57
Знак «впереди стоп»	47
Знаки, регулирующие скорость	23-36
Предупреждающие знаки	20
Знаки снижения скорости движения	16-19
Выезд/Уступи дорогу	59-80
Знак «Стоп»	33-90
Сигналы – вместо неконтролируемой дороги	15-32
Изменение сигналов	13-85
«Канализация» развязок	10-51
Запрет парковки на обочине	10-25
Видимость	
Маркировка полос	14-19
Маркировка края дороги	8-35
Жёлтая поперечная разметка	24-52
Светоотражательная асфальтная разметка	6-18
Указательные столбы	2-47
Проблесковые маяки	5-75
Установка освещения	6-75
Улучшение расстояния видимости	28
Каналообразующие медианы	22-50
Смягчение последствий аварий	
Медианные барьеры	14-27
Боковые барьеры	15-60
Ломкие знаки, не вредящие автомобилю в случае столкновения	30
Удаление деревьев (сельские дороги)	10
Удаление опор освещения (городские дороги)	20
Обработка насыпей	40
Ограждение для концевых мостовых опор	20
Смягчители удара	20
Оборудование для пешеходов	
Пешеходные дорожки	33-44
Пешеходные переходы «зебра»	13-34
Поднятые пешеходные переходы «зебра»	5-50
Переходы «пеликан»	21-83

Разметка на переходах «зебра»	-5-14
Островки безопасности для пешеходов	56-87
Пешеходные мосты	39-90
Заборы, ограждающие пешеходов	10-35
Оборудование для велосипедистов	
Велосипедные дорожки	33-56
Маркированные велосипедные переходы по сигналам	10-15
Выдвинутые вперёд линии остановки велосипедистов на развязках	35
Железнодорожные переезды	
Световые сигналы	73-91
Автоматические ворота	81-93
Замедление трафика	
Зоны 30 км/ч (включающие искусственные возвышенности и шиканы, и т.д.)	10-80
Предохранительные полосы (грохота)	27-50
Предохранительные полосы (грохота и возвышения)	20-80

ПРИМЕЧАНИЯ:

1. Значения потенциалов снижения аварийности НЕ СУММИРУЮТСЯ, следует использовать то решение, которому соответствует наибольший показатель из списка возможных для данного участка.
2. Потенциал снижения аварийности применяется ко всем дорожным происшествиям на одном перекрёстке или отрезке дороги, где реализовано соответствующее решение.

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4.4.4

REGIONAL GUIDELINES

FREIGHT THROUGH TRAFFIC ROUTING

TO AVOID RESIDENTIAL AREAS

TRACECA II Regional Road Safety Project

Freight / Road Safety Engineering Team

December 2015

EU funded road safety project
for
Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

PREFACE

The movement of road freight has generally doubled globally in the last twenty years and is forecast to double again in the next twenty years. The distribution of goods and services relies heavily on the freight industry, and does the global postal system.

Roads that are important for major freight movements have a different role and function to most other roads. They require specific treatment and management. Increasingly, road agencies are realising that there are significant benefits in publicly identifying freight route networks, and investing in their maintenance or improvement. Countries recognising the opportunities including the European Community, have commenced publicly identifying freight route networks of different types, mainly through statutory planning processes.

The Austroads Freight Program has lead this recognition, and their approach to thoroughly research and provide planning guidance on how to facilitate increasing demand for freight, while addressing community issues and their concerns.

As part of the TRACECA project and document package, this report outlines a guideline for such objectives. It offers processes for identifying and planning rural and urban freight routes of importance. Focusing more towards the urban situation where freight transport movement is concentrated and the community is potentially negatively impacted by the road freight.

This guideline outlines why and how to identify road freight routes that are of economic importance for the growing freight chain and offering the industry suitable options for distribution and transit travel. It explains why road freight networks need to be identified and the benefits. It provides processes through various approaches to planning for each issue, including protecting community interested as well as road freight economic importance through statutory planning mechanisms.

Road authorities should be encouraged and apply a number of innovative approaches to identify and support freight routes for specific purposes. The successful approaches that may be used at national, regional, metropolitan and provincial city level should ensure route networks are studied, and improvement prioritised.

Route access for specific truck types or truck loads and cargo type is slightly outside the scope but it is highlighted in this report. Road design and performance investment, road use and operation, or road safety impacts of road freight vehicles are likewise discussed. These issues must be strongly address by TRACECA road and traffic regulatory publications.

This guideline has been drafted to list the issues and necessary effort needed to address the complexity and importance of the route network and community safety and ambience. It challenges any existing objectives and freight route network design standards and policy and includes suggests on how to manage it, and the processes that are practical for freight route identification and route planning, for avoiding residential areas or reducing the impact on communities.

This guideline attempts to provide a framework to assist all levels of government and the private sector to understand the importance of better managing different types of freight movement to grow our economy and minimise negative community impacts.

Readers are presented with a collection of successful approaches for road freight networks that reflect the diversity of needs across the nation, as well as processes for planning, identifying and protecting them. The Project team in cooperation and consultation with

TRACECA Country representatives has discussed the local issues and best international theory and practice. They offer unified approach for across the Region.

As TRACECA Region contains important transport corridors between the production national and consuming nations, China and Europe, harmonization of standards and road performance and elimination of potential traffic risks to all road users is importance.

This information should be used to build upon existing State manuals. This will ensure similar approaches are applied for related improvement of road infrastructure in all TRACECA Countries.

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Abbreviations and acronyms

BSM	Black Spot Management
EC	European Commission
EU	European Union
IBRD	International Bank for Reconstruction and Development (World Bank)
IFI	International Financing Institutions
ITS	Intelligent Transport Systems
MoIA	Ministry of Internal Affairs
MoI	Ministry of Interior
MoTC	Ministry of Transport and Communications
PIARC	World Road Association (PIARC actually means Permanent International Association of Road Congresses but this name is rarely used)
RSA	Road Safety Audit
RSI	Road Safety Inspection
SEETO	South-East Europe Transport Observatory
State	Statutory boundary and independent responsible jurisdiction (States of Australia or USA)
TL	Team Leader
ToR	Terms of Reference
TP	Traffic (Road) Police
TRACECA	Transport Corridor Europe-Caucasus-Asia
WE-WC	Western Europe – Western China International Transit Corridor
WHO	World Health Organization

1. INTRODUCTION

In accordance with the TRACECA II project's terms of reference, Component 3: "Freight Routes and Parking", this document has been drafted as a result of workshops and consultation meetings on local situations and international best practices regarding freight route management and design, and community safety.

The additional aim was to encourage pilot studies and schemes focused on freight route and facilities and safety.

The freight specialist team mobilised to the TRACECA countries in June 2015, until July 2015. The mission met with various freight stakeholders including transport ministries, traffic and road safety agencies, Traffic Police, and freight associations, as well as local representative for TRACECA. The aim was so to identify and discuss issues experienced locally with freight routes, traffic safety, and needed facilities such as parking, and solutions to avoiding freight route through communities.

This guideline highlights key freight route design considerations so to maximise safety and avoid residential areas, as well as suggestions for a way forward for achieving current international best practices and possibly meeting EU standards.

The details provide a breakdown of common issues and key factors for freight movement management and safety, for consideration by national road, transport, road safety and enforcement agencies for technical and institutional framework improvement.

1.1 Scope

This component activity consists of a study, in close cooperation with the beneficiary countries, to identify typical problems and situations that occur in their respective countries for road safety.

The guidelines will outline typical problems and possible solutions that could be applied and would provide a core body of information and guidance that could be incorporated into local guidelines developed in each country.

Prepare guidance on freight through traffic routing to avoid residential areas.

Terms of Reference;

"…*Simple Guidelines will be prepared on how to prevent such through traffic in residential areas. The guidelines will outline typical problems and possible solutions that could be applied and would provide a core body of information/guidance that could be incorporated into local guidelines developed in each country.*

This would provide a common and consistent approach across the region while allowing each country to localise their country specific guidelines to meet their particular needs. It would lead into the definition and design of a network of major freight routes (for transit traffic) avoiding residential areas.

In conjunction with the above objective, the countries will be encouraged, via a regional road safety coordination group, to cooperate in establishing a network of safe and secure parking areas along the major regional routes. International experience will be shared to ensure that the locations and facilities made available are such that they encourage truck drivers to use

them, instead of parking at potentially more dangerous parking areas and places not designed for that purpose."

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International experience will be shared to ensure that the locations and facilities made available are such that they encourage truck drivers to use them, instead of parking at potentially more dangerous parking areas and places not designed for that purpose.

The Project team will introduce best practice in traffic routing through the production of a guideline document that outlines basic principles that all countries should abide by to avoid commercial traffic passing through residential areas. Alternative strategies and options will be discussed at a joint workshop, following which suitable schemes will be pilot tested in selected countries.

This core activity will consist of the identification and promotion of best practice, of successful cases developed in TRACECA region, either in the course of the implementation of the present project or other similar projects and initiatives. Experience shows that solutions from other countries within a region are often effective in inspiring neighbouring countries to do the same. This activity is very important and great care will be taken in selecting case studies and examples.

1.2 Background

Successes and effective policy framework from other countries will also be referred to as guidance for freight management and enforcement administrators within each TRACECA country.

Guidelines form a comprehensive approach to assist governance in road freight management also for international reference, such as TRACECA.

An initiative to apply these approaches by TRACECA countries has significant potential to learn lessons of best practice, by providing improvements to the transport industry, economic benefits to states and regions and high potential for lifestyle and social benefits for those living or working near major freight roads, especially in urban areas.

Purpose of guidelines

The guideline encourages development and pilot schemes, and to provide to State road agencies and transport industry:

- Benefits of identifying, approving and managing urban and rural freight route networks for state road agencies, the transport industry and nearby communities
- Describing the types of freight routes that state road agencies should consider progressing as a freight route network
- Outlining criteria (and rules of thumb), a process and jurisdictional success stories in determining freight route networks

- Provide detailed planning guidance for nominating particular links – which may be sensitive or where there are competing choices – as components of a freight route network.

In essence this guideline outlines how best to identify and protect road routes that are of high importance to road freight, and what to provide as facilities or how to solve potential conflict between freight movers and vulnerable road.

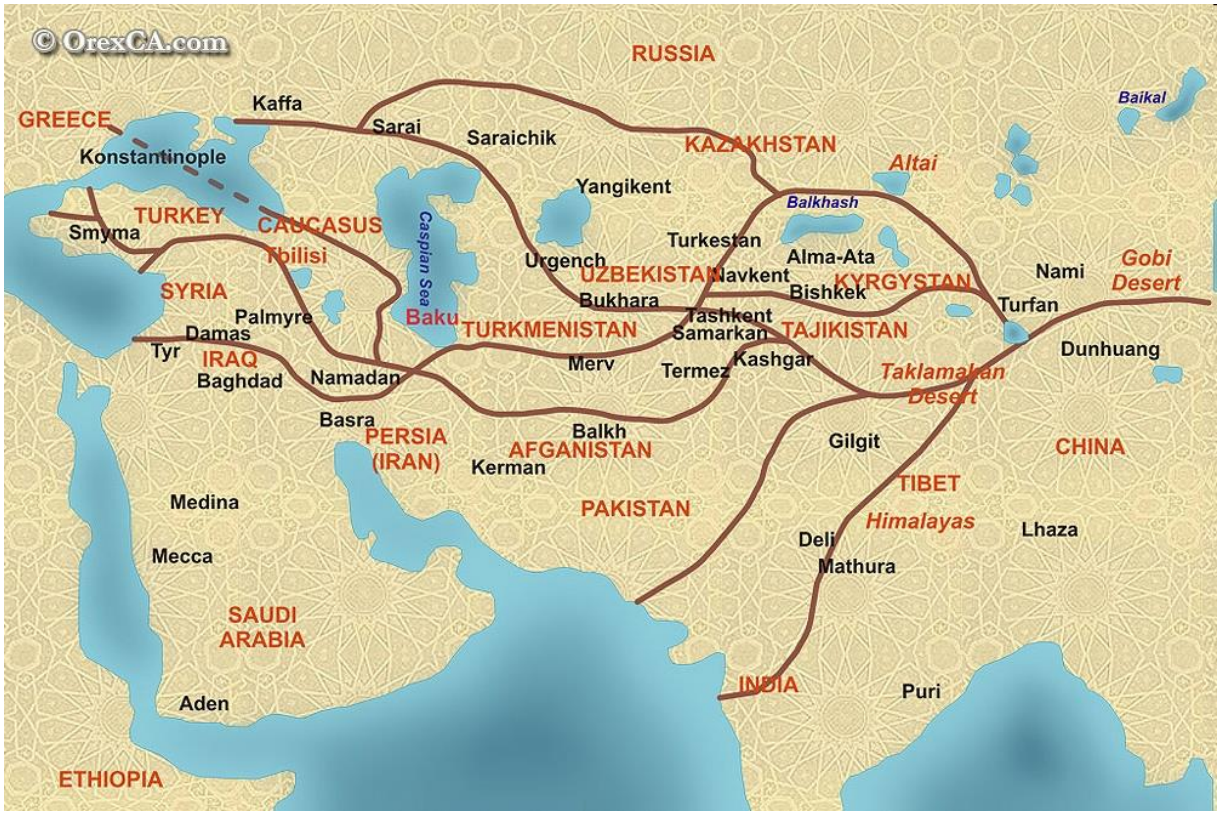
While this guideline provides special guidance about freight routes in urban and rural areas, it should be part of a comprehensive national package of guidelines and standards as well as policies. It must work together with other ministries to assist the State road stakeholders to grow regional economies through facilitating the movement of freight by the transport industry, while reducing the impacts of road freight movement on nearby communities and their safety.

The guideline has been designed to outline the issues for identifying in statutory planning documents on different types of freight networks. It is designed to assist State road agencies to make an effort to address the complexity and importance of the freight activity and route network.

It is necessary to undertake studies to confirm the degree of the issues in your country. In most instance, a more comprehensive planning approach will be needed, especially if coordination is required with neighbouring countries with related freight routes and shared customs borders.

The planning and study reports should involve other stakeholder ministries in which can learn from them and potentially adapt their policy approach and application of resources to their local situation.

Key freight routes through TRACECA;

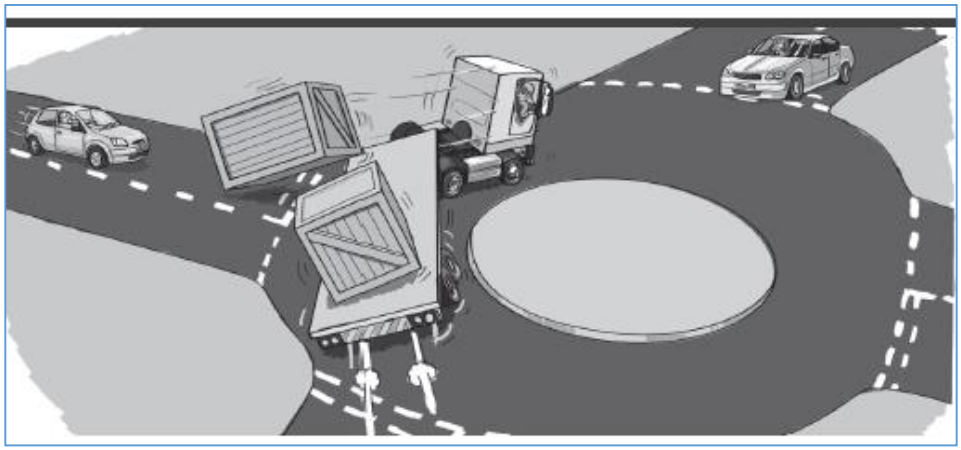


2. UNDERSTANDING THE TASK

2.1 Freight through traffic routing avoiding residential areas

Avoiding residential areas could only be achieved by specific road planning and construction of infrastructure, and administrative framework from legislation and policy adhered by the freight industry and supported by the preparedness of their drivers, vehicles and cargo.

Cargo safety;



Planning and improvement programmes where the conflicts are reduced or completely eliminated. Areas in which have existing freight routes passing through with the community strongly and justifiably objecting will require increased priority for investment and redevelopment.

A technical approach by improving physical aspects of the road and traffic access network reducing the negative impacts for freight and negotiating progressive change of the road and resolution or separation between the source of conflict and specific community members.

Major investment options include:

- Bypasses
- Over passes or under passes including tunnels
- Road division or segmentation between freight and vulnerable road users and community

Minor investment option:

- Service roads, with central traffic island or median
- Overtaking lanes for hill areas, or double lanes for separating slow traffic and freight traffic
- Traffic calming treatment for through freight traffic
- Restriction of access roads or times (within residential areas)
- Restricted vehicle types or weights, or cargo types
- Avoiding air-brakes usage (noise reduction)
- Maintaining road surfaces that are not smooth (reducing vibration and noise)

Industry investment:

- Strict freight policy in line with regional and national ambience and safety objectives

- Higher level driver training and disciplinary performance benchmark for promoting safe driver behaviour, and preparedness when travelling long haul distance with route choice, and with specific types of cargo, including full understanding of traffic regulations and vehicle maintenance

Community:

- Committee establishment providing feedback and consultation of local issues
- Minor tolerance
- Negotiation with the freight industry for sharing benefits of freight activity and route usage

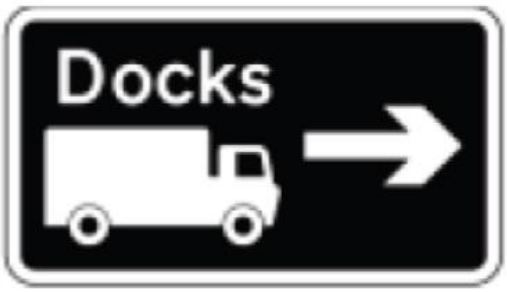
Framework

State ministries responsible for road infrastructure and traffic management are obliged to have identified the roads and route corridors and facilities necessary to facilitate freight movement for domestic and international cargo transit distribution.

This can only be successful if communities accept this progression, and safety concerns are appropriately addressed, along with sharing benefits of the improvement for road access and usage.

Each TRACECA country should have, at its disposal at intra-ministry level, a plan and map of the nation's entire road network in which includes suitable roads specifically used by freight vehicles, of specific sizes and weights, including frequency of cargo type, and daily traffic flow volume (at peaks).

Freight directions;



Scoping and profiling your road network will assist with prioritisation and funding distribution for future development, maintenance and enforcement for freight, as well as identify and verifying community concerns regarding safety and access. Associated with this road network plan, should be linked to a list of road maintenance expenditure each year since keeping the record.

Scoping profiles the investment of each road and of the financial commitment needed for up-keeping the performance of the corridors for community and freight industry support. A focus on road safety performance should link the road incidents and crash records so to highlight areas of concern such as Blackspots, and the freight routes. This information will identify necessary treatments, or establish where freight routes are to be discouraged and roads demoted.

Connecting freight generators and road distribution while avoiding residential areas;

Freight planning

Transport infrastructure

- *condition: e.g. maintenance and improvement of main freight routes*
- *congestion: increases or decreases*
- *expansion or contraction: e.g. altering major freight movement corridors (freeways & primary arterial roads), construction of intermodal facilities*
- *heavy vehicle access to intermodal and other facilities: e.g. queuing, loading/transfers*
- *location of intermodal facilities and their connection with principle arterials and national highway network*

Freight generation

- *industry developments: e.g. e-commerce, logistics operation (JIT) manufacturing/warehousing systems, changes in competition between operators and modes, technology adoption*
- *changes in product supply or demand, input costs and market prices*

Transport policy

- *taxes/fees: e.g. registration, road tolls, fuel excise*
- *regulation: e.g. safety, entry/exit barriers, load specifications*
- *subsidies: e.g. infrastructure, fuel*

Land use zoning

- *changes in location of product suppliers, large multi-purpose retail outlets, warehousing distribution centres*

Local area traffic management

- *local access: e.g. parking, local street access, designated routes for 'over-dimension' vehicles*
- *environmental and safety concerns: e.g. noise*

Commodities moved

- *identification of key economic sectors that generate the most important freight traffic within a given geographic region e.g. packaging, disposable foodstuffs,*

- *distinguish specific layers of commodities e.g. refrigerated food products, building materials*
- *allows for a simplified separation of freight into groupings with similar transportation requirements*

(Source: Austroads, Planning for Freight in Urban Areas AP-R228, 2003, p24)

2.2 Road and traffic consideration

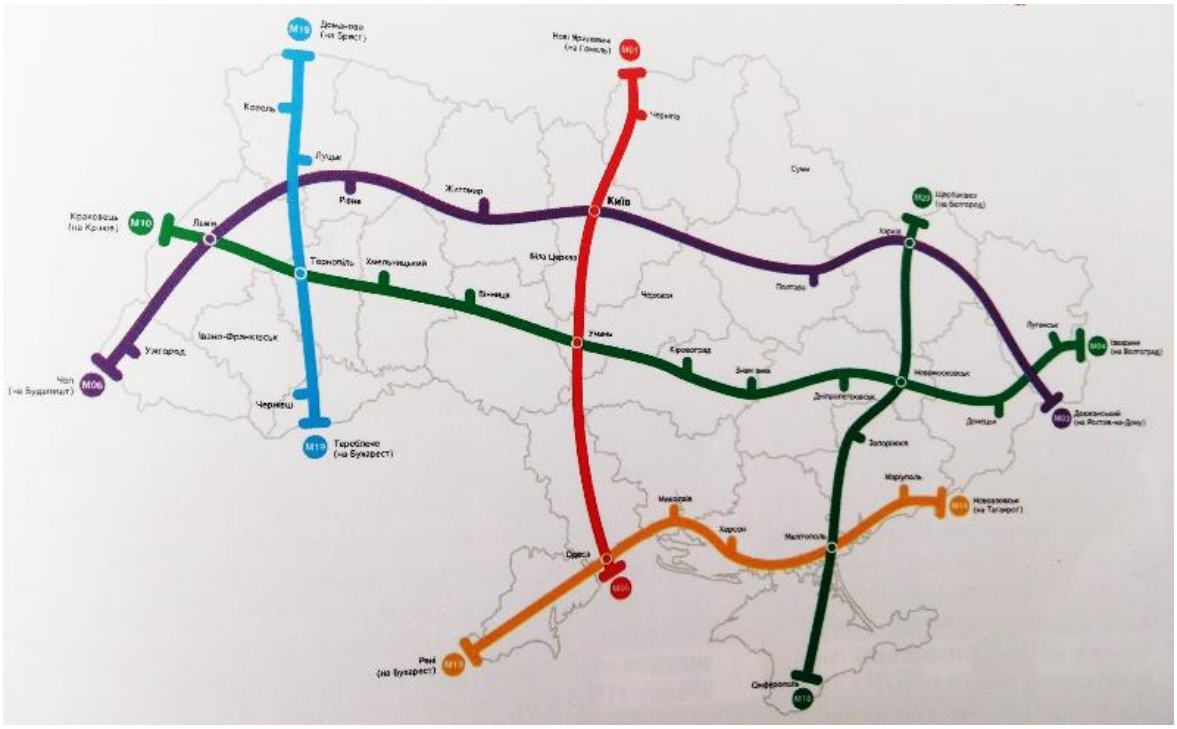
I. Routes;

The origin and destination of freight traffic must be defined. These are often linked to transport hubs such as sea and air ports, rail yards, industrial districts and national borders and river and mountain crossings. Authorities must also management and control these roads so to ensure traffic flow and safety as well as condition.

Selection and maintenance of the freight corridors should provide uninhibited traffic flow for large heavy vehicles, but also offer opportunities and facility for driver rest, vehicle repair and law enforcement.

In addition, control the movement any conflict between slow and fast moving traffic and if necessary separation between freight vehicles and road users and also reducing any disturbance to residential communities and ambience.

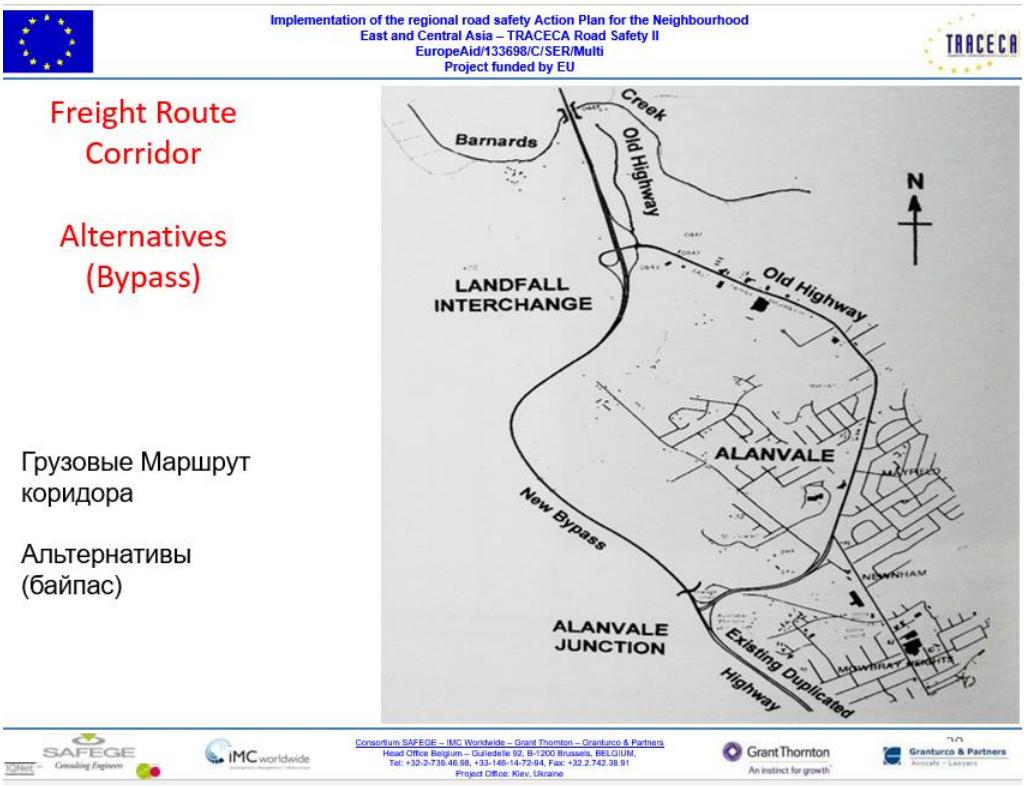
Route planning at the macro level;



Freight routes must also provide for specific traffic and vehicles, as well as provide access during all weather conditions.

If large or heavy vehicles cannot ensure safety by use of specific routes or sections of roads, an alternative must be provided, with advance warning especially during adverse weather conditions or between summer and winter seasons.

Determine the key routes, and potential conflict residential areas;



II. Road infrastructure;

Pavements must be designed for the average weight of the freight as well as provide clearance for height and widths considerations of cargo sizes. New pavements often suffer early repair or maintenance as the road design guidelines being used are not up to date with modern freight weight. Old standards allowed for 12 tonnes but modern freight is carrying 20-40 tonnes, especially if there are quarries and metal yards along the corridor.

Road surfacing is also a significant factor in location where water and ice formation could impact on safety. Open graded surfaces have been used to assist with better traction during heavy rain, or where there is incidental frost or ice formation.

Other climate factors to consider for road surfacing and infrastructure design is where there is dust and wind, as well as mountainous road section. Wide or sheltered carriageways could offer protection for tall vehicles against wind and dust, and escape roads or lanes could ensure trucks with over used brakes can leave the traffic lanes safely when brakes may fail.

This consideration must also include all structures along the corridor.

III. Structures;

With the consideration of the issues mentioned above, the structures in which must be suited when designed and constructed or upgraded and maintained must address axle loads, vehicle size and turning arc, cargo height and width and driver requirements.

Structure should include culverts, bridges, sign board and gantries, embankments, safety fencing and crash barriers, as well as pavement types and depths. Design for these must take into consideration traffic speeds, weight of vehicles in addition to dimensions of vehicle and cargo.

In ensuring freight routes are suitable these structures require assessment and vetting to confirm tolerances for freight dimensions and vehicle movement (turning arcs) and weights so to provide sufficient pavement flexibility and avoid rutting and prevent cracking (particularly for shoulders and stopping areas).

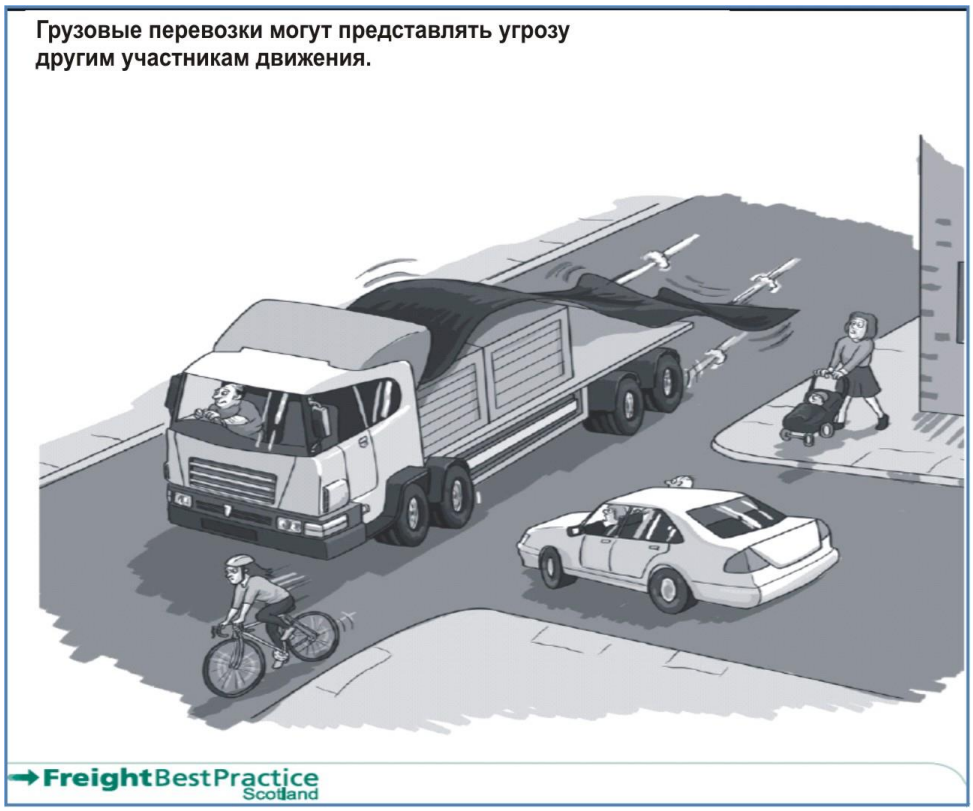
IV. Traffic control devices;

Devices should include; signs (traffic control, advisory and information), variable message signs boards; alarms (flashing lights for weather condition warning; wind, road hazard, traffic incident); traffic signals specifically for controlling freight vehicles particularly when there is potential conflict with other traffic, and the expected delineation devices including road markings, marker studs or rumple strips, reflectors and posts.

Controlling freight transport (weight);

It is important to state that some countries may consider using speed humps for traffic or speed calming but this is to be discouraged. The alternative is to use a series of traffic islands supported by road markings, marker studs and signs, along with Traffic Police enforcement. Modern enforcement now involves high technological systems such as radar and CCTV.

Managing the existing road users;



V. Enforcement;

Traffic Police and Customs must be provide for so to enforce national laws or policies for freight vehicle (and drivers) and cargo control. This includes vehicle speeds, dimensions, access and stopping (parking) restriction, cargo size as well as dangerous or hazardous good (restricted goods control including human trafficking), and emissions such as CO2, carbon and noise and vibration.

Authorities must define strategic locations and facilities along freight corridors in which are suitable for sufficient control of each of these factors, and ensure the safety of the enforcement officers as well as the drivers and their assets.

VI. Customs;

The operation of customs is critical for a nation's incoming and outgoing freight control. Specific facilities must be provided, along with appropriate protocol for processing drivers, vehicles and cargo.

This issue complicated with differences with driver origin where language could be a barrier for understanding cargo, weight or dimension restrictions, in advance. Facilities should aim to have appropriate staff who are suitably trained and supported by control devices and facilities for checking and withholding goods, drivers and vehicles in a safe and secure area.

VII. International transit;

International agreements and collaboration assist with monitoring and control of international transit of freight, drivers and vehicles. The suitability and success of a freight corridor depends upon its position as well as attraction for freight movers. If agreements to share information and customs control data could ensure better security of State interests, and provide a more efficient movement of a freight route and its cargo processing and road performance.

VIII. Policy and Law;

TRACECA countries have the opportunity to learn the lessons from other countries who have developed freight movement as a main industry. This includes Europe and other countries such as Australia.

The policies and laws from these places could be used to draw upon the current best practices. Most of the issues have already been discussed here but primarily cover cargo control and movement efficiency, safety and security, as well as crime prevention and law enforcement.

IX. Emissions;

Traffic Police and Customs must be provide enforcement of national laws or policies for vehicle control. This includes specification of restriction and prohibition of dangerous or hazardous goods (including seepage, or securing loads in instance of collisions and lost loads), and emissions of the vehicle such as CO2, CO, and noise and vibration.

These factors must be covered by policy and law, and enforcement agencies should be supported with appropriate equipment, resources and budgets so to control these factors. Villages and townships are often at risk, and consultation often exposes their vulnerability to such potential hazardous events. It also places importance on monitoring emissions and measuring in accordance to targets or limits.

2.3 Community road users

The relationship between community road users and freight transport is often in conflict. The challenge is to manage slow moving short journey local travellers (pedestrians, bicyclists, motorcyclists, tri-wheelers or agricultural vehicles) mixing with long haul faster bigger moving trucks travelling between ports and towns or inter-city. The alternative is to provide separation and this may impart significant infrastructure costs, and so may not be the first suitable option.

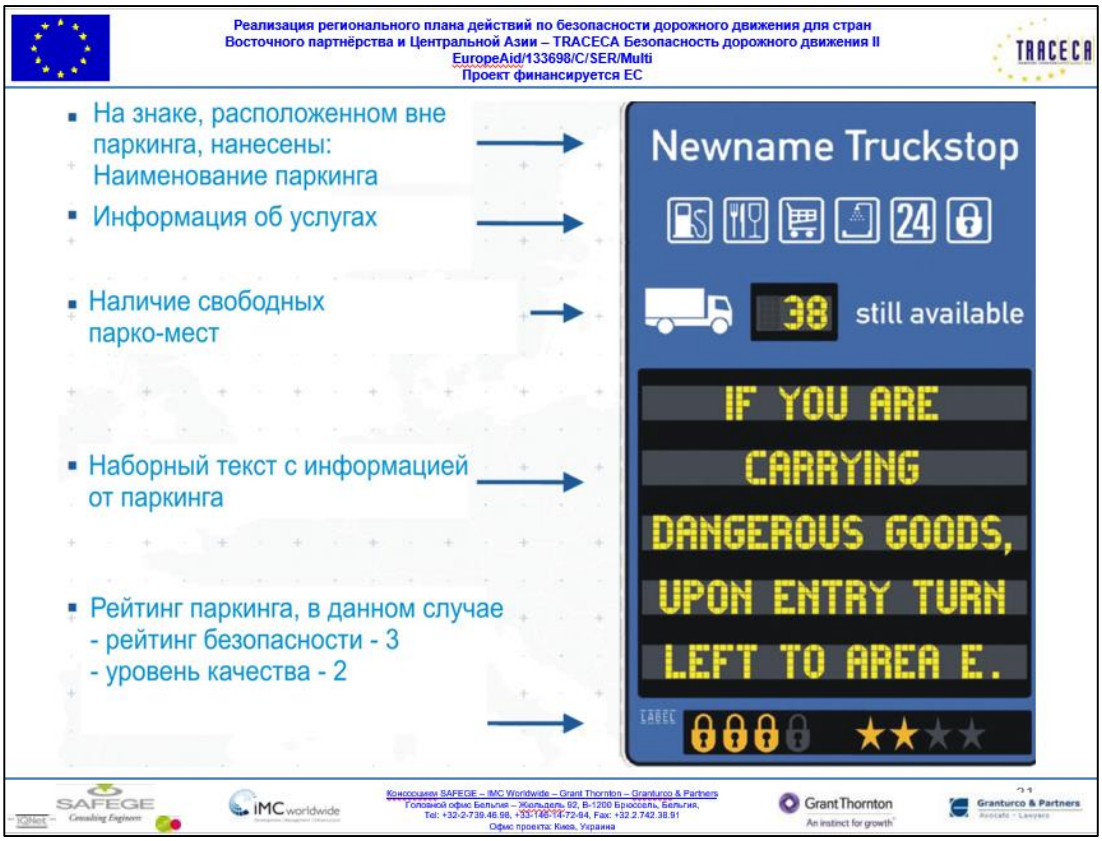
The potential conflicts between freight and other road users is always present, especially in rural areas. Slow moving short journey traffic is in conflict with long haul faster traffic, and most countermeasures involve either separation or traffic calming, or both. Examples of slow movers are agricultural vehicles, animals, market areas where vehicles are constantly moving slowly or stopping.

The ideal situation is to have freight traffic separated by design, and this would mean via service roads, bypasses or overpasses. With every new road project, current best practice requires a committee to be developed that involves the local village or township representative to consult to the project planners and implementers so that road safety issues can be capture early, or, as they develop before escalation. Other options for freight involves restricted access in some areas, such as during specific times or roads, and avoiding direct conflict with vulnerable road users such as schools students and commuters during peak hours.

2.4 Freight travel road safety

Road safety for freight movers means driver safety. Drivers are travelling for long distances over various terrains and weather conditions. There are many hazards and risks in which present themselves in this situation.

Freight transport planning involve preparation and avoiding hazards;



Countries who are investing in freight transport and infrastructure realise the difficulty of freight transport. They must also realise government regulation and employment policy must focus on driver fatigue, training and vehicle maintenance as key factors for securing road safety for the drivers, and other road users who are in contact.

Part of this is supporting the freight industry with workable policies and regulations for improved freight movement. This includes domestic transport as well as international freight movers.

Drivers must be employed with an existing level of capability, then obtain training for specific freight driver skills. Training should involve reducing risks while driving and carrying heavy or large loads, and how best to secure them on the vehicle. In addition, regular rest must be obligatory and drivers should plan their route, on known roads capable for tolerating heavy or wide loads, while also providing fuelling, repair and rest and refreshment areas.

These selected roads should avoid ambient areas such villages where possible, and avoid conflicts with vulnerable road users. Vehicle speed and control is imperative for freight road safety. They are many reports from truck drivers that there are inconsiderate private vehicle drivers in which involve freight vehicles in high risk manoeuvres such as cutting in front and creating shorter stopping distances. Drivers must be trained to be vigilant for speed control and also proper use and maintenance of brakes.

In addition, discipline needs to be installed for awareness affects and consumption of alcohol and drug influence on driving behaviour.

2.5 Enforcement; driver, vehicle, and cargo

Traffic control authorities and Traffic Police must be in position to carry out enforcement of traffic regulations and laws. These must specifically focus for monitoring driver, vehicle

and cargo condition and performances.

It has already been mention above that driver fatigue, drink or drug consumption and speed management must be priority for enforcers and for securing and maintaining community safety. Vehicle and cargo controls should ensure the truck is fit for road use and for carrying specific cargo without damaging road infrastructure or risking hazard to other road users, such as wide loads or loose cargo or heavy loads (requiring weigh stations; fix or mobile). Cargo type has also been discussed earlier and this subject relates to hazardous or perishable goods, or restricted goods such as dangerous or toxic.

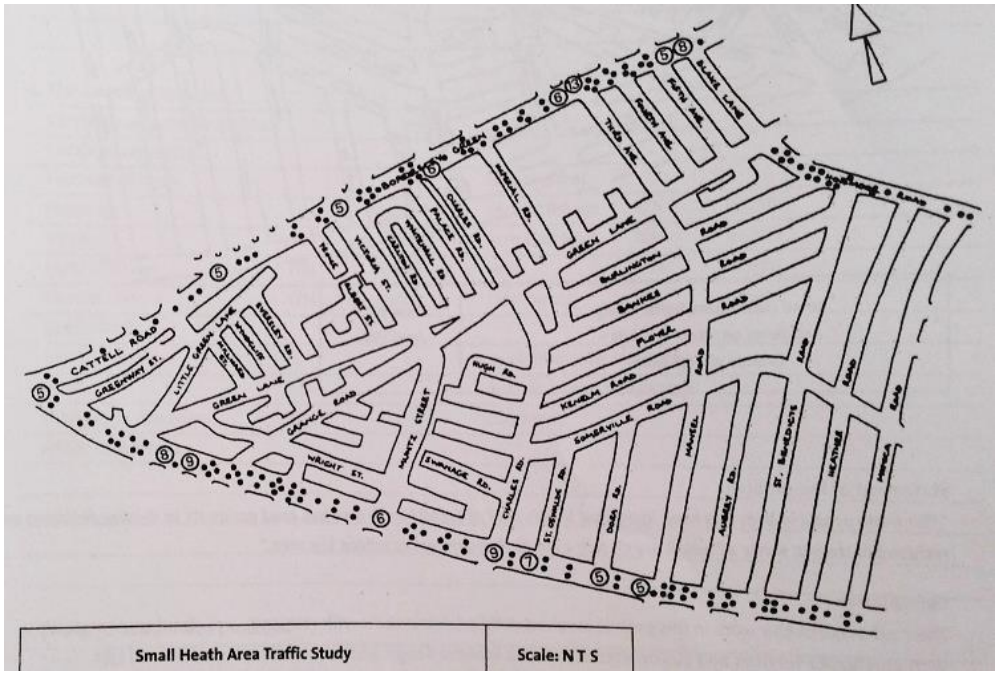
These issues require specific regulations and monitoring facilities for enforcers to proactivity control potential problems, at locations best suited for capturing law offenders and impound, if needed.

Many modern freight parking facilities provide information and registration centres for drivers to register cargo or vehicles or conduct necessary research of local laws or preferred route corridors for safe travel. Providing access to information for domestic and international drivers provides the best option for preventing breaches of law and regulation.

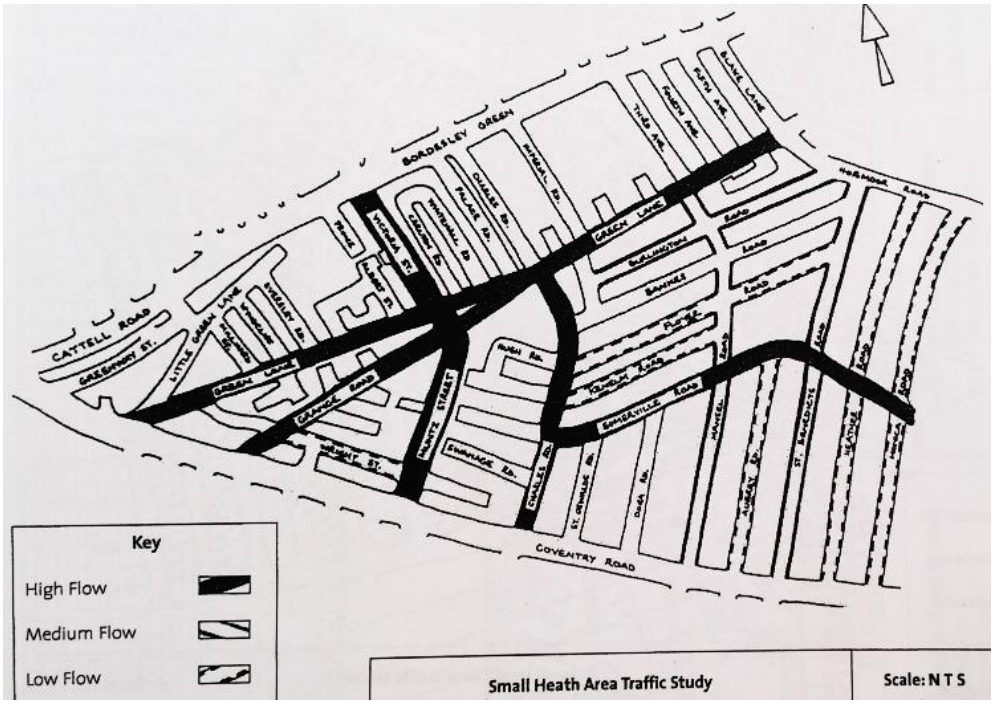
3. FREIGHT ROUTE NETWORK

It should be a primary concern of road authorities to have freight routes identified as existing and proposed, but also have identified all locations and potential issues associated with villages, townships, industries along these routes, as well as any key factors and impact on nearby areas such as environment and touristic features and climatic influences.

Authorities must review the residential road network, and distinguish freight routes from other areas.



Traffic studies and consultation with community groups and local freight industry for route identification



3.1. Transport road network identification

Freight routes different from other roads

Not all roads are designed and maintained for modern freight transport. Larger heavier transport has been growing and some roads and land uses cannot cope with this growth regarding road maintenance costs and road safety. Freight transport has been identified for supporting and enhancing global economy, including at the local level. Countries have realised the value of investing in road transport for the efficient distribution of good s and services for keep costs lower.

The movement of road freight has generally been increasing (doubled in some countries) in the last twenty years. It is forecast to double again in the following twenty years. Specific road design and facility considerations are required so to ensure the industry has provided the best road network that can cater for this demand, and prevent conflicts which are associated with other road users in areas often being residential or townships.

This situation impacts on State road agency management and the major road network. Maintenance and expenditure comes critical and a long term commitment. In addition, new road design policy and standards requires constant review and updating in order to address changing transport conditions and demands. State road agencies adjust maintenance processes such as to night hours when traffic is less severe and congestion and interruption is minimised.

Increasing ‘off-peak’ freight traffic flow and addressing community concerns such as safety, emissions, vibration and noise has been the modern challenge with freight growth.

Freight route monitoring is essential for identifying any changes;

Road agencies are designing and constructing major roads carrying freight so major maintenance is prolonged. Road use and operational management practices must be

significantly upgraded for key routes. It is becoming increasingly evident that the volume and size of trucks on key roads require new heavy duty pavements and taller, stronger bridges and culverts. Community concerns focus on roads with major freight movements.

These aspects led to a growing realisation that roads carrying major freight movements are different. They perform a different role and function that requires tailored treatment and management, and in some instances exclusive access and usage. (It is important to note that current thinking is to provide freight transit lanes on existing carriageways on corridors in which has no other opportunity to widen. One traffic lane is dedicated only to freight, coaches or similar vehicles). It is understood that major freight roads form a strategic network in which industry can grow, often at the price of local communities.

These networks of major freight roads are crucial to economic development, while the road freight impacts on nearby communities. The road must interact with adjacent land use and requires special consideration and investment in its planning, design, development, maintenance and operation to ensure travel performance and road safety for all that use the road.

This guideline refers to a package that Austroads has developed to assist State road agencies to understand the role and function of freight route networks. To identify and dedicate these networks to specific usage (or shared usage, as necessary), and upgrade their overall management to address industry demand as well as community safety and access requirements.

Urban and rural areas

Identifying roads as a component of a freight distribution route network has not been a common focus for many road authorities. Exclusive truck access would not be well accepted by the community, and shared roads is equally disputed by residents and those concerned about safety. These announcements have been well accepted by industry but objected by the community.

The key for modern design is to designate freight routes, within urban and rural areas. The objective is to provide freight movers with transit options for avoiding traffic congestion, and for avoiding hazards and risks of conflicts with vulnerable road users, such as schools and the elderly as well as bicyclists and pedestrians.

The key factors in selecting, design, or constructing freight routes are; appropriate speed; manoeuvrability; weight, height and width dimension tolerance of the road carriageway; conflict movements, vulnerable road users; traffic congestion and land usage; and, traffic control and information for origin and destination advice for unfamiliar drivers.

Identifying freight routes should provide varying levels of access and safety to specific road user type, role and function of travel, and should offer best performance during specific timing either during peak or off-peak periods. Both urban and rural roads present different road environments and each must be addressed individually so to resolve specific issues to ensure access and safety efficiency for all.

Freight networks are different from other road sets. These freight routes have specific requirements that need to be incorporated into road agency processes. Unless freight route networks are identified, road agency processes cannot address the needs. If a road agency does not identify a freight route network as a special category for investment, its investment allocation processes for a class of roads are likely to be inconsistent and sub-standard, leading to inefficient economic and outcomes.

Benefits in identifying freight route networks:

1. Provides industry with a level of freight movement guarantee so they can reduce costs and develop their businesses in locations for growth prospects

2. Road agencies can improve processes for road asset management and reduce long term costs during the planning, design, construction, maintenance and operation of roads

3. Road agencies can improve investment allocation for better travel performance outcomes and driving public benefits through better address of freight route networks in urban and rural areas. Local commerce often improves with freight route development

4. Better managed freight roads impacts positively on local communities. This relates to better land use design. Land use planning and development is primarily managed by local governments but can negatively impact on freight routes. National governments can influence this with planning legislation but this requires lengthy consultation. If a shared benefit is established, road agencies can collaborate better for identifying freight routes in statutory planning, with support from local governments, immediately addressing local conditions and avoiding objections and costs

5. Increasing public consultation requiring a greater openness from government assists with better planning and improved road design and road location choice. The community responds very negatively when state road agencies dictate their planning

Governments' policy for freight route network identification must adapt to changing goals for economic growth and social development and amenity in urban and rural areas. Public consultation for identification of important issues, such as road safety and freight access control, plays a strategic benefit for negotiation and benefit delivered over time, securing important freight routes and facilities.

It must be acknowledged that some existing road links must be commandeered for heavily vehicle use as new or as an alternative route on the freight route network. These roads may need improved design or maintenance for their adjusted role and function. National and regional government must development suitable access in situation of road incidents or climate change and congested land use when road access is blocked. This is more extensive covered by proper planning and consultation, and is required before a freight network can be identified.

Route types

Freight is diverse in its characteristics and needs road diversity fit for purpose. This is so to minimise the impact on the needs of other vehicles and community needs, while also offering access and safety to freight movers.

These are to be considered in the route planning processes, and can be considered in terms of;

- 'Primary Networks,' serving inter regional and strategic industrial areas, including freight terminals and transport hubs to end-users or further processing,

- 'Distribution Networks,' serving numerous longer distanced origins and destinations in a regional or local area, and

- ‘International Networks,’ servicing the transitory flow across borders, for north-south and east-west global corridors, where vehicles are not stopping and distributing cargo.

Route approaches

Decision-making, investment allocation and management of freight route networks should follow a coordinated process irrespective of where their routes or location. However differences between urban and rural areas in the operational and safety issues faced, requires interactions and decisions for a range of actions.

The overall approach is to plan, consult and design, with an urban or rural community focus.

A. Urban freight route network drivers and issues

Route consideration includes high volume and concentration of road freight:

- Freight route continuity across cities
- Location of inter-modal and freight generating activities adjacent to the route
- Sensitive land uses and activities; noise and vibration impacts in residential areas
- Volume and type of other road traffic; high levels of congestion are typical and the allocation of road space between freight, public transport and private vehicles is an issue in route selection and management. Freight may be restricted between specific times as a solution
- Acceptance; a link may not be ideally developed, but if it is already performing as a freight route due to historical usage, objections cannot be considered completely
- Physical constraints may limit the ability to provide new infrastructure in dense urban areas

B. Rural freight route network drivers and issues

Route network includes:

- Heavier loads, larger vehicles, may be lower volumes but higher speeds
- Route continuity across regions and interstate, supported by planned and purposeful signs for origin and destination, traffic regulation, road safety awareness and alerts and warnings
- Volume (or tonnage) of road freight is difficult to control because of remote areas and expanse of road network
- Pavements and bridge infrastructure condition and physical constraints must be noted for certain vehicle types and cargo being carried. Enforcement is essential for addressing this
- Freight generating locations and seasonal demands may differ and impact on movements and suitability of some roads for safe operation and community acceptance
- International traffic may require specific monitoring and control
- Trucks that are slower such as in hill terrain mixing with faster moving traffic may require short overtaking lanes on some roads
- Mix of freight and tourism traffic, particularly at weekends and holiday periods may require action and awareness for both road users
- Research must show how rural communities can accommodate trucks as with urban communities. Consideration needs to be given to noise, vibration, speeds, access

impacts on adjacent communities, particularly at night

- Enforcement and control

Major routes

Major Freight Routes are roads that carry very large volumes or constant traffic particularly of heavy freight vehicles on a daily basis. These routes are easily identifiable and must have importance placed on them for performance assurance.

Conduct traffic studies and data collection for analysis;

They consist of inter-city motorways, inter-regional highways, and the linking network of major roads that provide connections between routes and freight storage, generating transit stations and terminals, sea ports and major industrial areas.

In many cases these roads have developed in some way to accommodate freight over time. Often they need to be further developed to minimise impact to the community in which often had existed while the freight developed.

Purposely design major routes often bypass townships I some way and avoid freight traversing through sensitive or vulnerable areas. Purpose built and developed roads must have a minimum level of investment to ensure benefit to all road users and local areas avoiding any negative impacts (including environmental, economical, transport and social).

In rural areas the major freight network is almost similar. They are often determined through historic usage but should be on a national basis by government for strategic network

planning and maintenance. The Transport authority should have specific requirements to achieve for the road for meeting industry performance and enforcement objectives. These should be incorporated into a corridor strategic profile and network for freight road programme.

The national network should be supplemented with major freight routes identified by State and local governments, compared with other freight routes as a hierarchy, with specific guidelines for development and maintenance intended to assist and clarify for better driver decision and behaviour.

Route network and links

Many of the roads that become part of a freight route already carried freight traffic and their usage is unlikely to be contentious with local objectors, or have rejection to significantly change to the amount of traffic carried.

Much will be gained by undertaking a comprehensive route planning process to confirm the role of each road, identifying their hazard and risk areas, and the selection of the best route for defined origin-destination definition.

The focus for managers is primarily on how best to identify, protect and manage the route so that its freight function is enhanced and secured. However, it is recommended that freight route planning guidelines are reviewed to ensure that no factors could impact on effectiveness and acceptability of the decision-making regarding the network.

Questions to be considered before declaring a freight network or link roads include:

- What roads are freight vehicles using?
- Does the road meet freight travel and connection objectives?
- What road users are currently using the road, and how many and when?
- What are the hazards, behaviour risks, and crash history?
- Why is the entire corridor route declared?

  Network declaration should lead to specific management or funding. A priority is likely to be managed differently to other road of the network due to industry expectations, characteristics of vehicles, wear and tear, and impact of these on other road users and surrounding areas.

- What are the current land users?

  Land use shaped by freight activity adjacent to the road
  What are the conflicts, and infrastructure and management required?

- Is freight demand expected to continue to operate into the future?

  Freight demands can change, and a high level of confidence is necessary if significant freight specific investments are to be made on a route.

- Do the freight routes need specific improvement for special vehicles, such as high wide or heavy loads?

- What are the impacts of freight vehicles on vertical and horizontal clearances to structures, such as for articulated vehicles?
- What is required to maintain road capacity and to ensure compatible vehicle operations?
- What are the road safety records on the network and link roads, such as Blackspot areas?
- What investment is required by the freight industry?

3.2. Freight routes and safe and secure parking

Safe and secure parking facilities have been traditionally provided for specific functions, such as; emergency stopping (rest and repair); rest and refreshment (possible overnight stays); parking stations for longer term stays, refuelling and refreshment.

This is in addition to statutory parking for Customs and Police enforcement campaigns where drivers and cargo may be detained for some time, and safety and security needs to be provided and assured.

The placement of such facilities have commonly been associated with travel distances, cross border locations, proximity to remote areas or townships where communities have restricted freight vehicle access through the town, but drivers are still near to amenities, and also where Customs and Police authorities require control of drivers, vehicles, and cargo type and weights.

These locations vary for motorways, highways, arterials roads and townships. Distances for long haul routes are commonly spaced evenly for extraordinary road lengths, such as 20-30 kilometres spacing, in addition to placement of fuelling and convenience stations.

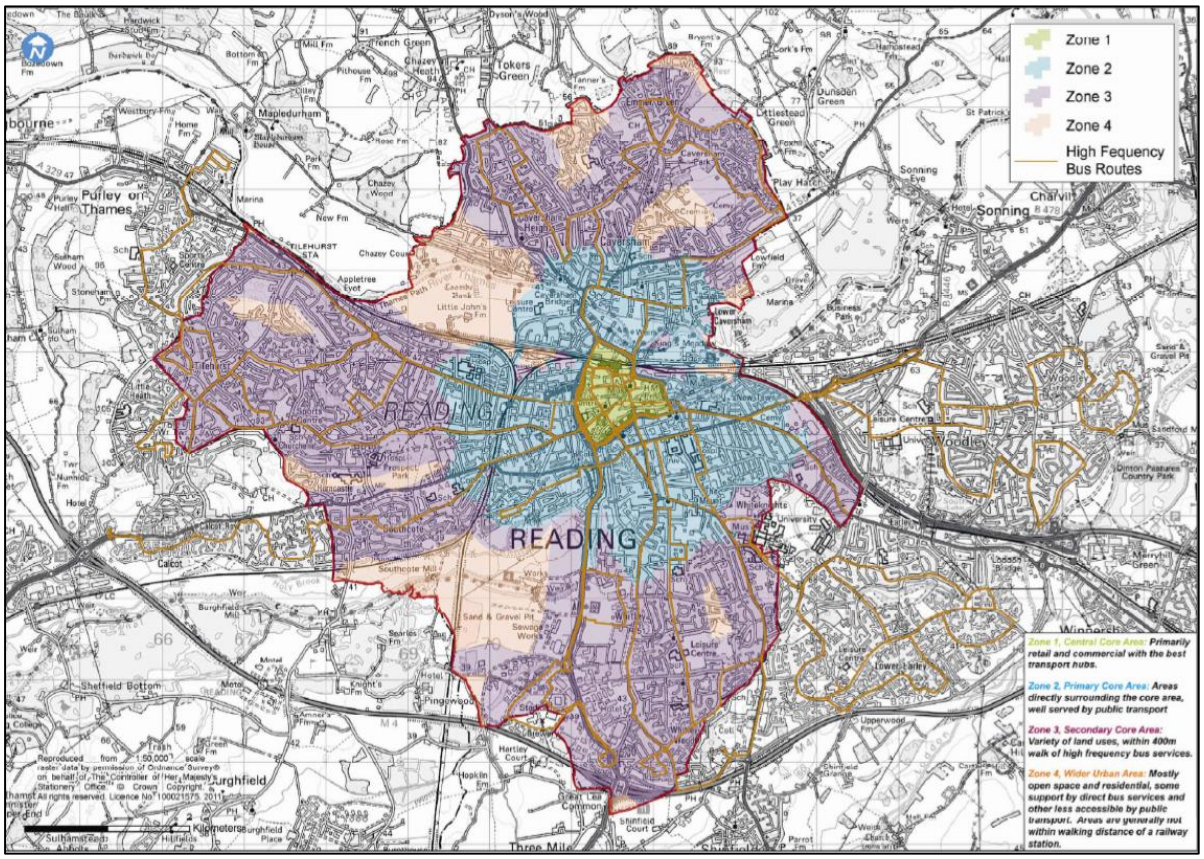
Small parking area example;

Some parking facilities may only accommodate drivers with an unsurfaced road side bay, with

no street lighting, minor toilet convenience or for refuse disposal. These facilities are generally low cost and may only require the expense of minor clearing land and construction and crushed rock surfacing, with some short lengths of crash barriers or bollards, markers, and advanced signs.

The objective is to provide long haul drivers with options to load/deliver goods where practical, and rest and avoid fatigue driving which is a causal factor for single vehicle collisions.

Townships should zone the areas according to access and tolerance (Reading, UK);



All facilities must provide appropriate parking space (secured and specifically serviced), and others should offer suitable deceleration and acceleration lanes so that fast moving freight traffic can safely exit and enter high speed road ways.

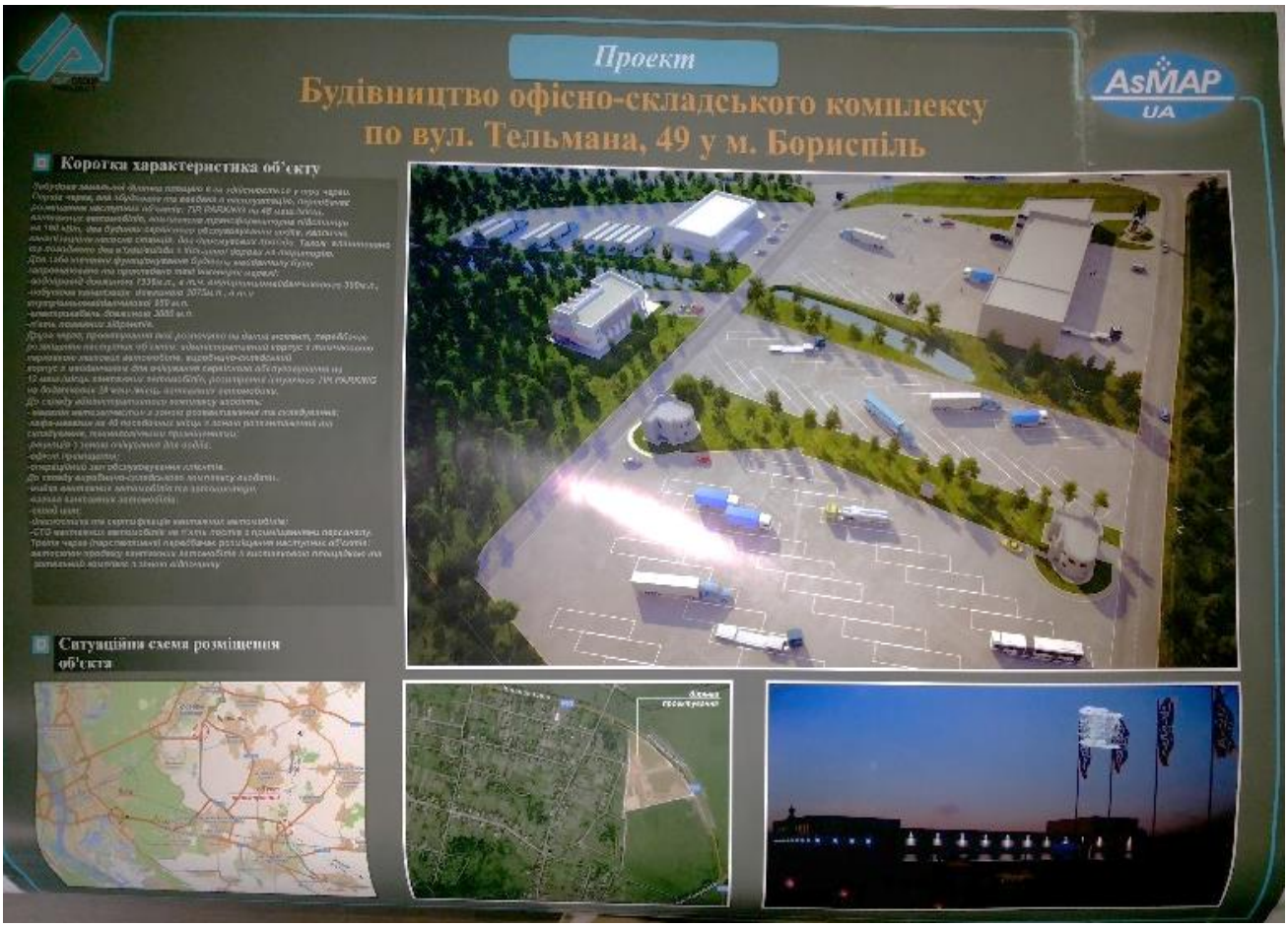
Large parking area example;

Other more complex facilities usually funded by the freight industry, or local commercial investors, are placed strategically for maximum use and provision of high level conveniences and multiple parking including for sanitary (washing and cleaning), food (restaurant and shopping), modern communication services (internet, office equipment and freight regulatory information and registration), as well as accommodating religious needs (churches and shrines).

These facilities are commonly located outside of townships and near to transport hubs where long waiting periods or rest is required.

These facilities may cover significant land footprints (50-200 bays), and require investment from $1,000,000 USD upwards, depending on construction costs, facilities and progress staging. The outright benefits of these complex facilities is that it encourages and attracts driver usage and further local investment of support services and staff resources.

Planning specific freight parking facilities;



Security for either of these facilities has become an issue in recent years. There has been issues with criminal activity such as taking diesel fuel from the vehicle, forcing opening cargo packaging and containers and taking contents, as well as robbery of the driver's valuables.

Fencing and clearing of nearby land provides sight visibility, including provision of street lighting can also assist with this factor. Drivers can take better precautions, and Police can carry out better monitoring of the parking facilities and surrounding area.

Urban or rural parking area provision is typically determined by vehicle type, function, and demand and usage.

Zoning area system example in UK;

	Maximum Parking Standards			
	Zone 1	Zone 2	Zone 3	Zone 4
Commercial 1 space per m^2				
B1(a) Office	250m^2	100m^2	50m^2	*
B1(b) Research & High Tech	250m^2	100m^2	50m^2	*
B1(c) Light Industrial	250m^2	125m^2	100m^2	*
B2 – B7 General & Specific Industrial	250m^2	125m^2	100m^2	*
B8 Storage & Distribution	250m^2	200m^2	150m^2	*

3.3. Freight movement control

The principle factors of freight traffic is, as with any other road motor transport, to define the influences to usage and management such as cost, performance as well as duration.

This information must be collected and assessed so as to avoid obvious conflicts with the community or to identify causal factors to residential community conflicts.

(Austroads)

Control of freight traffic and facilities is essential to achieve a balance, to ensure efficient access and accepted level of safety. These would involve:

- Vehicle type, dimension, axle number, and weight, and performance
- Cargo dimension; weight, height; and cargo width, and cargo type (fragile, perishable, refrigerated, hazardous, dangerous, restricted or prohibited)
- Emissions
- Driver training and skill

- Enforcement and control (customs)

Once these key factors are identified and their planning, implementation, operation and control are being coordinated by stakeholders, the process for movement control becomes more obvious pending available funding and resources as well as the level of political support.

The objectives must always be agreed for movement control, being:

- Provision of suitable and efficient traffic flow and journey time
- Road performance and comfort as well as safety
- Access assurance, and useful information and advice
- Suitable sites for monitoring and control, as well as refuelling and rest

High wide load routes

Drivers must be informed in advance and prepared for what routes are suitable for high wide roads, and avoid potential risks to community safety, or damage to road infrastructure causing significant repair or traffic journey delay.

These road and travel situations require application for permits to be issued and approved before usage. Any contravention to using unapproved access especially on unsuitable roads must be treated strictly with high penalties for the driver, vehicle and cargo owners. There must be suitable and advanced warning so to discourage such behaviour as the damage to road infrastructure can be extensive, and experienced some time later after the offensive action. Prevention is best!

Oversized cargo control;

(Austroads)

High wide load (HWL) routes have a number of names including OSOM (over size over mass), ODOM (over dimension over mass). They are serviced by Restricted Access Vehicles which require a permit from the jurisdiction to access that set of roads. High wide loads are typically associated with agriculture, mining, or large engineering projects such as

power stations or manufacturing.

There is a growing trend in heavy fabrication with agriculture and mining industries, so to reduce the level of on-site fabrication by building large modules in factories and workshops, and then transporting these prefabricated modules to the project site for further assembly. This method of construction has several advantages in terms of time, cost savings and improved quality, particularly when skilled personnel are in short supply in regional areas.

Industry places significant expectation on the roadway. Governments need to be well informed by industry if this demand is expected from the network so to ensure proper movement of freight.

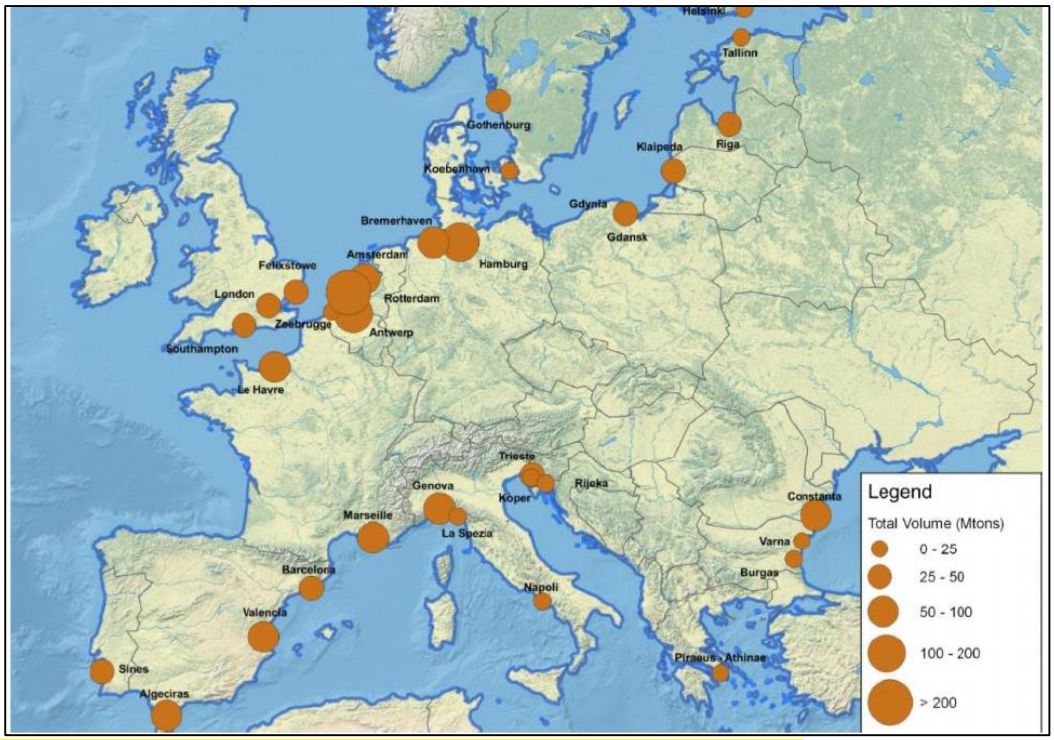
Long freight;

(Austroads)

Freight generating areas

These areas are generally warehouse, container, or port storage or assembly yards where goods are produced or brought into the country from other transport modes.

Distribution begins from these locations outwards to other national regions or across borders to other production houses or end-user places. There should be planned locations, with road characteristics to accommodate likely freight movement and activity generation (such as sea ports).



(Source: EC, Modal Share of Freight Transport to and From EU Ports, Study, 2015)

This requires stronger land development policy, and road and land development linking so one is developed in conjunction with future or developing commercial objectives and defined freight route network investment:

- National Land Transport Network
- Roads and highways, which connect areas of strategic freight and economic importance (ports, industrial centres, freight hubs, distribution centres, regional centres, resource provinces)
- Local government roads provide network connectivity to serve areas of strategic freight importance
- Roads with a high tonnage of freight currently carried requires investment in maintenance
- Roads in urban areas must have a minimum investment for community safety, and preventing or treating Blackspots
- Alternative routes (other than for freight) may be essential but impact on a sensitive areas

Hierarchy

Not all freight routes are equally important. This is typically determined by presence of industry and their demands, and traffic volume totals and peaks, and road connection to manufacturing, storage and shipping terminals, and end users and also borders.

Different ways are used to differentiate important routes that warrant particular supportive management and investment treatments.

Primary freight routes are arterial roads that typically are:

- Strategically important economic regions (key freight centres, industrial, agricultural and manufacturing areas, intermodals, sea and airports), within and external to a state
- High volume for heavy freight vehicles through the majority of the day

- Provide access for long distance freight vehicle movements.

Secondary freight route can be defined as:

- Supplements primary freight routes
- Provides sub-regional (urban and rural) access and linking to primary freight routes
- Lower proportion of heavy freight vehicles than primary routes, but performs are branched distributary function, rather than long hauling from point to point

Freight Facilities must be located and suited in the best area;

4. FREIGHT ROUTE PLANNING

4.1 Principles

Irrespective of the type of freight route that is being planned there are principles that should be considered when identifying and deciding on how it should be managed. Designs and policy should cover key community and national issues, and set appropriate and agree able performance standards and targets.

There must be a clear understanding of roles, objectives and function within the industry chin between freight companies and associations, road infrastructure and traffic management authorities, and traffic and customs Police. Each of these would benefit from collaboration, sharing information and objectives, and being properly resourced with continual development planning.

While in operation, all drivers must be kept informed, alerted and guided while making decisions on and off the road, the community should be assured the freight industry uses trained and disciplined drivers, vehicles must be properly maintained and suited to carry the loads, loads must be legitimate and properly secured to trucks, and freight routes used must be planned and appropriate for the vehicle and cargo being carried while ensuring safety for other road users.

Route and link planning should be specifically addressed in guidelines:

- Route and link planning for national corridor dedication, and local area benefit strategy
- Routes to be fully signed with traffic control devices and information (origin-destination, kilometre markers, rest and fuel areas, warnings, land marks), alignment options, and weight, height and width restrictions of the road and structures, as well as speed limits and advice
- Plans should typically cover a 15 to 20 year period, with commitment from stakeholder chains and planned reviews for improvement. Plans should contain a mission statement of intent, and broadly indicating expectations about future function and likely initiatives so that future governments and authorities share a long term vision
- Priority placed on specific routes for initial attention and funding consideration (improvement, upgrade or maintenance), and limitations in funding must be planned for supplementary revenue options, such as from traffic offences or breaches with cargo with customs
- Set up of national and regional committees for freight issues, incorporating safety and traffic access, enforcement, emissions, and local ambience

Freight routes should be designed to achieve community relevant economic, social and environmental objectives, and operational objectives. These should be responsive to government priorities and policies, as well as regulations and design standards.

Freight routes are part of interactive transport and land use systems. These routes should be specifically planned and managed as an integral part of the road system and economic development.

4.2 Data sources

Information collection, statistics, and feedback from interest groups and community surveys are the modern tools for capturing priorities and concerns with respect to traffic, safety

and freight.

Some obvious examples of key sources are:

a) Traffic volumes (origin and destination)
b) Crash statistics and Traffic Police reports
c) Road maintenance expenditure
d) Climate forecasts and weather reports

Other sources in which should be considered are:

e) Customs processing data; cargo (permitted and restricted or prohibited); vehicle; and driver
f) Enforcement statistics regarding law offences; speed; driver behaviour; restricted cargo breaches; emissions (CO2, CO, noise and vibration)
g) Public surveys and focus groups
h) Local committee feedback and community road safety committees
i) Road design standards and guideline reviews
j) Land development planning, including tourism and industry development
k) Freight Association feedback
l) Main industry feedback (Mining or quarry, fossil fuel, chemical or steel)
m) CCTV records

It has been discussed earlier, road authorities must have the best understanding of the route network profile and characteristics. There should be identified what issues are priority, their locations and analysis must identify what is needed to counter any problems or deficiencies. The data collected must be purposeful so to achieve this objective.

4.3 Routes and Corridors

Freight vehicle drivers may have several alternative routes to a major destination. Decisions on routes may be made several hundred kilometres before, and road authorities must play a role in determining the preference. This may include route segments leading up to the route corridors.

Alternative route options to preferred corridors should be by design such as weather affected roads (winter and summer roads) or where heights or widths are larger for bigger vehicles and their cargo, or load weights are more tolerable on purpose built roads were less damage is made on unsuitable roads.

This focus on how vehicles use the network and not on the administrative classification of road links. Administrative classifications must be relevant for the management of the roads. Driver decisions may be influenced on what information is provided on the road or to the freight industry for the most appropriate route. This should occur as an intended plan for network operation for freight vehicles.

In freight corridor planning, logistics efficiency must be priority along with safety. Management of the total logistics chain is necessary and could assist with route selection, improvement and maintenance. Each vehicle mode and cargo type has a potential role to play in this chain. This is how statistics can contribute to a better understanding of freight movement.

Road freight route planning should include analysis of cost effectiveness so to carry freight amongst other road users. Effective multi-use of roads requires the provision of

appropriately located facilities, traffic controls such as separation between fast and slow traffic or vulnerable road users, and designing of the road asset. A multi-modal network planning approach focuses on serving on specific areas where freight and other users are address equally and with benefit for each, or rather, address any disadvantages in which may have developed over time.

Route Continuity

Freight route planning requires location to location planning with specific assessment for each village and township and necessary road facility, from freight origins to destinations so targeted vehicles are able to use the total route.

Alternative routes should not be the first consideration for drivers. Road authorities are then in better position to monitor and control traffic flow and safety. This could include purpose designed and signed arterial roads and local road catchments that link freight generating centres to the corridor network.

On some routes, it may not be feasible to achieve physical design standards, such as traffic lane and shoulder widths along the full route. The maximums and minimums that are appropriate for freight vehicles can be expected to be used on specific route sections. This approach can save design and implementation costs as well as future maintenance expenditure, and must be a consideration for route planners and road operation and maintenance managers.

In most freight roads and routes, including their collector roads, it may be appropriate to accept different design standards in order to achieve route continuity. If a variation of the standards are accepted then constraints may be required on the operation of freight vehicles, such as restricted vehicle speeds, loads, time of access. In these instances, an assessment of the existing situation and needed road design and facility capability requires professional advice for authority decision-making. The objective must be to ensure traffic access, efficient flow and safety for all road users involved.

4.4 Safe and secure parking

In urban areas road space is often restrictive and the feasibility of freight sharing may influence the choice of a preferred route. Decisions may be necessary on whether road space should be allocated to priority vehicles, where it is typically public transport or freight. Public transport priority is more likely to be supported by most communities. This will help to reduce the demand for private car travel within the corridors, and shift the opportunities for improving freight movement.

For rural areas, freight facilities such as parking are usually kept outside the township precinct, unless there are specific parking and resting areas for long haul drivers. Not many rural communities would readily accept freight traffic passing through their area without some restriction or separation from their vulnerable road users. Routes must be capable to accommodate the vehicles that will be using them, while also providing for local traffic demands and needs.

In some cases there may be a desire to allow vehicles to use the freight route only during certain times. In other situations the route will need to be tested for its ability to physically accommodate these vehicles, in consultation with the local community.

Safety and parking must be design along with selection of freight routes. Administrators and planners must expect large and heavy vehicles need to access conveniences in townships, as well as access any purpose built parking or rest and fuelling areas. This

must also be at the benefit of the local community and commercial establishment otherwise negotiation becomes more difficult. This therefore places importance on understanding what freight drivers' needs, what the local community can provide, and how best Traffic Police and Customs carry out monitoring can and control practices.

Triggers for route safety and parking planning

There is no simple answer when should a particular section of road be identified as a freight route and what facilities are best suited.

Most roads should be able to accommodate the majority of freight vehicles that operate on the road network. As previously discussed, there are benefits in identifying as early as possible common freight traffic, their routes and where freight traffic are coming from and to so they can be managed appropriately. This clarity provides understanding what facilities are needed, and where the areas of safety concerns are concentrated.

Safety and security obviously must act against risks to vulnerable road users such as pedestrians and bicyclists, and other slow moving vehicles, and offer a level of security for the driver and freight vehicle and cargo owner.

The safety and security facilities that should be considered are:

a) Parking bays (overnight or for repair)
b) Fuelling and rest stations specifically for freight drivers (with security fencing and food and sanitary conveniences including travel advice and legislation information)
c) Town service roads for traffic separation
d) Traffic islands (central medians, turning separators, and pedestrians refuges)
e) Traffic calming treatments and crash barriers for township approaches
f) Information signs; origin-destination routes, town and landmarks and kilometre markers
g) Emergency stopping bays, and emergency escape lanes (at hill terrain)
h) Reinforced shoulders (for tolerating heavy loaded vehicles)
i) Pedestrian over passes and under passes, or pedestrian crossing traffic signals
j) Access restriction signs through townships, and supported by recommended stopping areas or advice for through traffic

Factors that determine a route facilities include:

- Manage freight performance to achieve economic, social and environmental objectives identified for the nation and its region
- Meeting changing traffic conditions and freight needs; traffic demand, route continuity, safety and crash records
- Origin and destination routes meeting best freight travel times
- Encouraged use of one route reduces negative impacts on other routes
- Historic usage

Cross region and international considerations

International freight opportunities are recognised as an important aspect for developing economies.

This is not just for cross border transitory freight but also for integrated freight. The industry plays a critical role for part production and assembly chains across many industries. In recent history parcel and product delivery from internet purchasing means that manufacturing and packaging occurs where ever economies of scale dictate. Countries should plan and attract this as part of State or national transport plans and commercial

development planning.

The difficulty with cross border freight and international supply chains is the dependency upon adequate enforcement controls versus processing times (Customs and Traffic Police). Foreign languages and varying legislation and unfamiliarity with the route network or traffic restrictions contribute to the difficulty for enforcing and processing time. This also impacts on the type of facilities needed especially if drivers, cargo or vehicles need impounding and detention.

A recent phenomenon of modern criminal activity is the issue of trafficking including contraband products as well as humans. This place pressure on authorities to invest in high-technology devices such as sensors, radars, detection devices, and weigh machines (both fixed and mobile stations) for identification of illegal activity and law interventions.

Intelligent transport systems are adding to the facilities of freight route networks and management and control methods. This is a significant investment requirement in addition to the road infrastructure and furniture for simple freight movement.

A comprehensive planning process can resource locations where priorities are evident or demanded. Panning and consultation will provide a sound and defensible basis for decision making. If a rigorous discussion is not followed with action then there is a risk the desired outcomes will not be achieved, and costs for solution may escalate as a result of no-action with needed facilities.

Physical characteristics and challenges

As discussed earlier there is a need to understand the full logistics chain and identify where constraints occur. The facilities for safety and parking should include current conditions and an estimate of future challenges.

Analysis of the route(s) in sectors or sub-regions that have common characteristics such as road condition, demand, abutting land use can identify common potential weakness. The lessons learnt can be applied across other areas and road links for programming works on flood prone sections, strategic bridges, wind affected roads and selecting alternative routes so to maintain continuity.

Land use along freight routes can impact adversely on the safety and security viability. In particular, facilities for safety and security must take into account the ‘last kilometre’ of the freight journey. These facilities may be compromised if incompatible with freight sensitive land uses or communities. These locations will require consideration of bypasses or facilities distanced from the restriction.

Other constraints to consider will take the form of topography and terrain and weather conditions in which determine what safety devices are required.

Impediments to planning for facilities can include:

- Geometric impediments; bridge clearances, railway crossings,
- Infrastructure condition and repair; weight restrictions, pavement and structure strength
- Operational impediments; routes cannot achieve optimum truck speeds and are below speed performance targets set for the importance of the route
- Connectivity impediments; gaps in the network of freight roads, or lack of facilities, or routes are not well known
- Community objection; benefits of freight traffic is not supported

- History; road crash record of traffic incidents or tragic collisions
- Structural limitation or restriction, such as bridges, over passes, underpasses and tunnels
- Heritage landmarks and archaeological features

In rural areas physical road conditions may present the most significant blocking point that potentially delays the movement of goods, and may pressure freight into considering alternative roads that are unsuitable and longer through restricted areas.

4.5 Driver behaviour

Freight drivers cover those that are properly trained and licensed to control and mange a large heavy vehicle and loads, and those that have been recruited to the role without much guidance and initiation. Whichever driver is placed in a vehicle and is control of a heavy vehicle and its cargo must abide by the principles of safe driving, and be prepared and informed of preferred routes and restricted areas.

It is now international practice that freight drivers familiarise themselves with the planned route and traffic control and cargo regulations including those across borders. This best practice extends to abiding to local traffic speed restrictions and traffic lane use discipline.

It is evident where freight drivers are breaching their driving performance and obedience especially where there are wheel marks on traffic islands, damaged road furniture and road side shoulders, or where inappropriate roads are being used and surfaces and pavements are being damaged. In addition, regular complaints from residents of truck activity during restricted or ambient hours of the day, or where there are potential of actual conflicts with vulnerable road users. Traffic Police could also be able to identify hazardous locations on freight routes or where freight drivers are abusing traffic regulations such as speed limits.

Best driver behaviour is created and reinforced by government and industry regulation and monitoring and enforcement. If government agencies are making investments on the roads and facilities, freight industry at all levels must abide by best practices and regulations so that the benefits of freight traffic is shared and any negative effects are identified and appropriately treated or prevented.

4.6 Stakeholders

The core stakeholders for freight traffic and transport are:

- Road and traffic authority (planners, designers, implementers and policy makers)
- Freight logistics companies and associations
- Traffic Police (regulation makers and enforcers)
- Customs officers (cargo controllers)
- Drivers, and owners of vehicles and cargo
- Maintenance Contractors (road and vehicle)
- Local communities and townships (residents and planners)
- Other road users

Each of these stakeholders may influence their needs on freight route planning, facility selection and design, and level of government investment and maintenance commitment.

In order for freight planners to best achieve long term objectives it may be suggested to establish local and regional committees for an integrated approach, and avoid rejections

in future plans. The ultimate objective is to provide a platform for sharing the benefit of freight route traffic, especially to those that either contribute most, stand to benefit or stand to be adversely affected such as with safety and security.

Social and political pressure

Even if routes meet technical and cost criteria, the social and political concerns can significantly influence the feasibility of freight route and facilities. This can result in the imposition of constraints on the operation of the route. Town centre leaders or sensitive land uses including influential local industry may place political pressure. This situation will warrant investigation and may require significant design consideration such as bypasses, alternate routes or special treatments.

Land use decision-making is usually locally focussed and is subject to many more influences than freight route planning. Local government decision-making will be a major determinant along freight routes and so the plans of local government should be understood and integrated into national plans and so part of the scoping stage. These influences should be identified and factored into the route planning process.

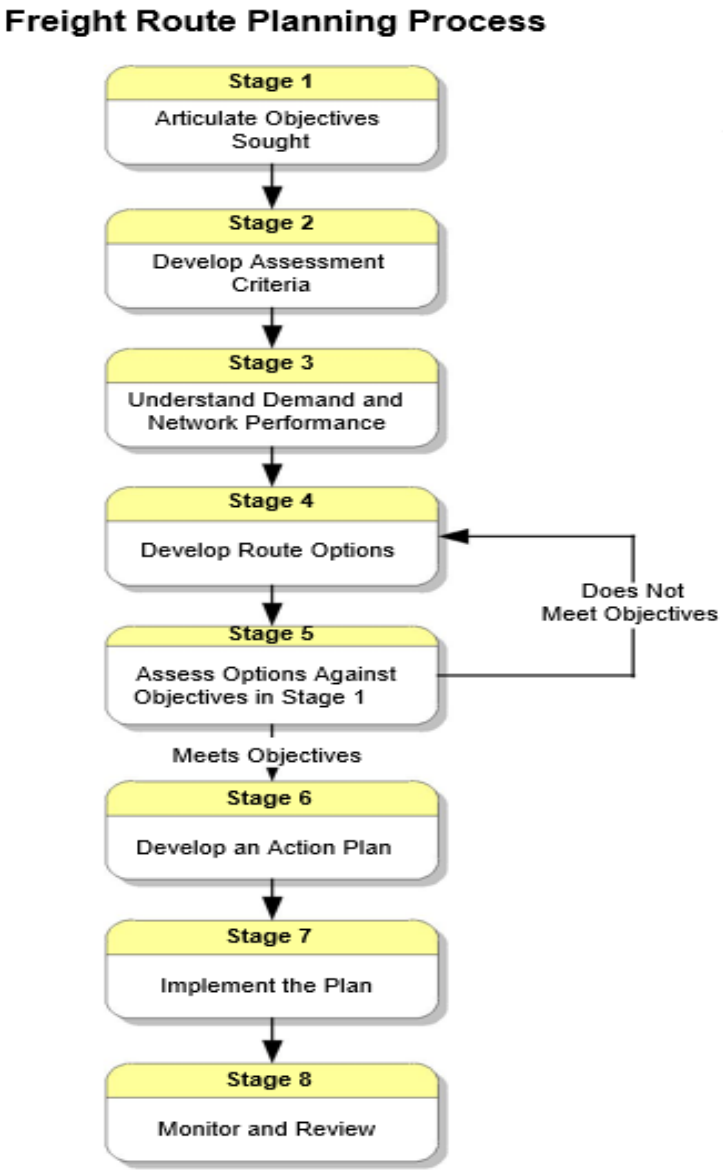
Freight facilities including safety and secure parking are often an afterthought in land use planning rather than an integral part of land use planning. Public authorities, such as Councils and planning authorities may be more focussed on regulating and restricting freight based land uses rather than understanding and planning for their needs.

Land use planners

The identification of freight routes puts transport agencies in a better position to positively influence councils in their land use decision-making so that planning facility regulations complement freight objectives, rather than responding negatively to freight impacts.

Early and ongoing discussion with these authorities is necessary to ensure freight route planning is not compromised through independent land use and development decisions.

4.7 Route Planning Process Guide



(Source: Austroads Research Report, Guideline for Freight Routes in Urban and Rural Areas, AP-R316/07, 2007)

A. Identify objectives

These have been described at length in previous sections, and priorities must be placed on each according to local preference, situation, and expectations levels.

B. Define the area

When making decisions on freight routes, the interactions between different corridors and routes within a corridor may be relevant. Although a single route will usually be selected as the designated freight route, the planning process should consider if there is a range of feasible alternative routes and areas of influence.

In some cases these alternatives may be a significant distance from a section of road that is the major focus of the study. For example, freight may be able to use alternative routes

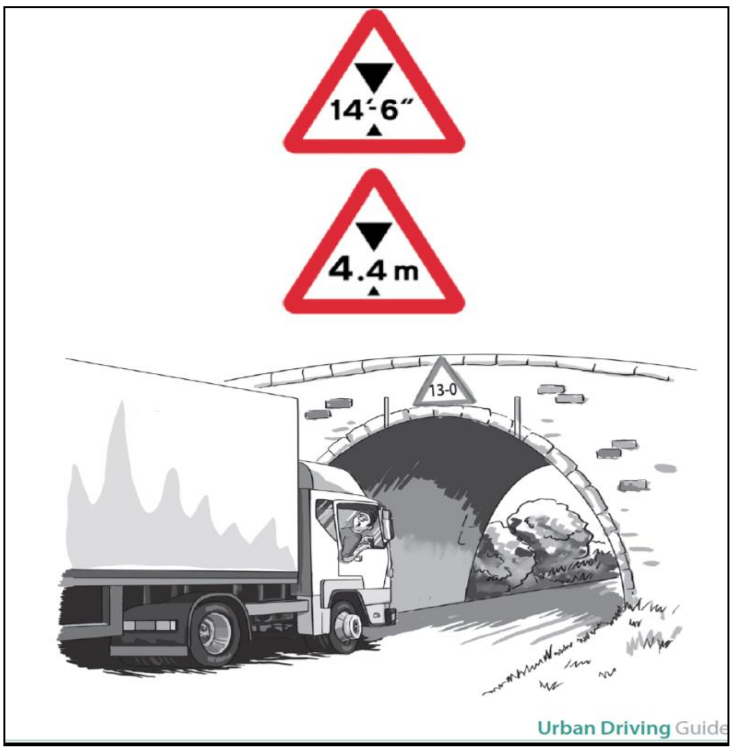
between capital cities or regions, such as a coastal and inland route, and actions in one corridor may influence freight demands in the other.

These broad network interactions require that a regional or corridor view to be taken of the geographic extent of the study. The study area may include roads coming under different political or road management responsibilities, including roads in other states. This network should include local roads that link to freight generating areas and intermodal sites.

C. Understand freight route demands and needs

Freight routes do not operate in isolation from their surrounding environment and they form one element of the total transport system. Usually freight routes serve multiple functions for freight and non-freight road users, and for non-road users on abutting land. Furthermore, there are various levels at which the freight system operates. The total system encompasses a national transport network that in turn includes regional/local transport networks, and again these networks encompass freight routes.

Clearances and warnings;



Freight route planning operates at the detailed level of particular road links but it cannot be undertaken separately from other elements of the system, or the surrounding land activities.

D. Mobility versus accessibility

As a primary objective for identifying freight routes is to improve economic efficiency and hence economic development, then the ability of freight to access key activities efficiently and to a standard that meets the needs of the products carried is more critical than the ability to move around the whole network. This puts the focus of route planning onto freight accessibility rather than vehicle mobility.

Accessibility can be determined by many more factors than mobility. An understanding of user

needs and the impacts of packages of actions on freight efficiency are necessary to understand accessibility. Accessibility determinants may vary across a network. Depending on what product is carried factors such as travel time reliability, speed, load carrying capacity or road smoothness can all be major determinants of the quality of accessibility. Similarly, if heavy vehicle priority is only required at certain times, such as during harvest time, then accessibility might be met with freight routes that operate seasonally.

E. Consultation

Public officials are more likely to have success with gaining industry support and input if they understand the freight business and the perspectives of industry. In turn consultation can lead to improved understanding within the freight sector of government processes, such as the checks and balances in the public sector that often determine planning timelines and outcomes.

Freight generators and operators understand the needs of their sector better than most public servants and industry can provide valuable input on issues and potential responses. Freight industry stakeholders can be difficult to identify and engage, particularly if there is scepticism on what will be achieved through the planning process.

There can also be a mismatch in planning horizons between professionals and industry, with the public sector taking a 15-20 year perspective, and private sector vision of 1-1.5 years. Effective consultation is likely to be enhanced by the establishment of good ongoing collaborative relationships with the industry before a specific route planning exercise is started.

Where a freight route may impact on non-industry groups, consultation with these groups will also be necessary in order to ensure that the multiple concerns and objectives of the affected groups are understood.

The views received through consultation will legitimately represent the focussed views of a particular sector and so they should be tested with sound analysis to ensure their completeness and veracity. The results of this analysis should be fed back to those who were involved in the consultation to show how they have been considered during the planning process.

F. Understanding freight demand

Freight route planning should be based on a 15-20 year planning horizon to reflect the scale of investment that is made in major freight routes and the inertia of many economic systems. In some instances it may be warranted to take a shorter-term perspective if the demand and the benefits are high; linking mining that may have a less than 20 year life to a sea-port. Freight demands are influenced by many factors and where possible forecasts of future flows should be developed from multiple sources to improve understanding of their sensitivity to major drivers.

Influences on route/network demand include:

- **Economic Activity;** Understand which industries are likely to drive the economy and the medium/long term viability of industries
- **Patterns of Activity;** Changes in the location and magnitude of freight generators and attractors; changes in national and international trade patterns
- **Pricing and Cost Structures;** Changes in infrastructure pricing policies; changes

in industry cost structures; cost differentials between modes

- **Transport Infrastructure and Management;** physical and operational performance
- **Regulations;** can facilitate the use of some routes and limit the use of others; safety regulations; vehicle regulations
- **Vehicle Characteristics;** may limit the alternatives available to large vehicles
- **Industry practices;** Just in Time, distribution practices
- **System performance;** Congestion; route continuity; ITS

G. Speed of delivery (reliability of delivery) versus quality of transportation expected

Factors such as the speed of delivery or the reliability of delivery time may be important depending on the characteristics of the commodity and the logistics chain within which it is being moved. If a commodity has to access an inter-modal site or delivery point within tightly specified time limits then the reliability of the vehicle travel time may an important factor in route selection. If the commodity carried is susceptible to deterioration e.g. fruits and vegetables, then the time taken to deliver commodities to their destination may be more critical.

H. Local, regional and national freight operating on the one route

Freight vehicles on a route can be difficult to categorise. Most freight studies are unable to differentiate between local traffic and long distance traffic on any particular section of a route. Most corridors operate as a series of pulses, with traffic using part of a route between major centres.

If the role of potential rural routes are understood within their region and possibly national context then it is possible to build an economic case for intervention. Factors such as system reliability and inefficiencies will impact on their economic impact.

Due to the problems in getting reliable data it is usually necessary to test the robustness of assumptions on demands by comparing multiple primary and secondary sources of data. A combination of bottom up and top down data can provide insights and checks that increase the user's confidence in the available data.

Freight and economic data is often incomplete and dispersed so that access may be required to multiple transport and non- transport data sets to interpret information on demands and needs. Data may be commercially sensitive and confidential. Economic indicators can be used to estimate commodity demands that in turn can be converted to vehicle demands. Changes in the location of freight generating activities can change freight travel patterns.

I. Develop route options

Identify the range of potential solutions that could achieve the transport and non-transport objectives.

If the route cannot be managed appropriately to meet both transport and other objectives then it may not be a viable long term freight route.

J. Planning scenarios

A technique that can assist in the development of robust strategies where future conditions are uncertain is scenario planning. Scenarios can help focus planning down from a large number of possibilities to a small number of feasible futures that warrant close

consideration.

They can be useful for testing the implications and sensitivity of demand assumptions and the implications of alternative actions. Scenarios can be used to test the implications of changes in freight drivers, the cost effectiveness of alternative routes, the impact of different intervention strategies and trigger points that would result in the need for intervention. In order to keep the analysis within reasonable resource commitments approximately 3-4 scenarios should be selected so that they cover a realistic but wide range of futures.

Through the process of scenario development and evaluation an appropriate course of action is likely to evolve. Sketch planning can be used to facilitate the generation of scenarios for this process. Scenarios can reflect assumptions on demand drivers, mode split, route choice and pricing.

K. Demand scenarios

Freight is generated by the level, characteristics and distribution of economic activity. Because of the number of factors that can influence these drivers' long-term trends is difficult to forecast with a high degree of certainty.

A range of demand estimates can be developed based on assumptions of future changes to drivers in the key industry groups and the way they use transport that currently or are expected to generate freight.

L. Route choice scenarios

Changing operating conditions within sections of one route may change freight patterns across a region if these changes impact on travel quality between the alternatives.

M. Determine the route hierarchy

Not all freight routes are equally important. Part of the process of route selection is to determine where in the hierarchy individual links and routes sit. This hierarchy can be used to determine how the route is to be managed, including whether or not the route is recognised explicitly in land use planning regulations, and funding priorities.

The National Highway Network agency and corridor plans identify the most important links.
Jurisdictions use different methods to define their freight hierarchy but these routes are typically determined through similar criteria:

- Importance as an interregional/interstate link
- Freight volume
- Link to major freight activity areas, such as ports and transport hubs
- Route continuity

N. Policy instruments

Although the focus of this project is on the identification of freight routes rather than their management, the policy instruments available to manage routes will impact on route planning decisions. Policy instruments can be transport and non-transport based and no single organisation is responsible for their delivery. An understanding of the potential actions and the feasibility of their use is an integral part of route planning and decision-making.

Even if there is agreement between the key stakeholders on the high level objectives there may be different interpretations of what this means in practice on the ground. If the implementation actions are left undefined then they can be interpreted differently by different organisations and an agreement that was assumed to be binding on parties may not be sustained as it is implemented.

This potential confusion over the conversion of strategies into action and the relationship between objectives and policy instruments, particularly if responsibility for implementation is spread over several organisations, reinforces the need to achieve agreement on clearly articulated objectives across organisations at the start of the planning process and agreement on implementation plans at the end.

O. Assess Options

The assessment of options occurs at various stages during the planning process. At the corridor or network planning level the assessment of options is often based on modelling considerations re: demand analysis. At the route planning level analysis is based primarily on appraisal methods when comparing options including economic analysis and road performance.

Evaluation of road freight routes comprises more than 'predict and provide'. Analysis of freight route alternatives will typically consider consistency with objectives, demand and engineering aspects of the route, and economic, environmental and social elements.

Evaluation methodologies are not value neutral and so the implications of the approaches used should be understood.

P. System performance

When planning routes level of service is usually used at a tactical level to describe a road. This usually defines parameters that are easily measured at road class and network level:

- **Condition indicators**, such as roughness, rutting, texture or bridge strength
- **Configuration parameters,** such as seal width, design speed, bridge width
- **Traffic flow indicators,** such as traffic flows, accidents and overtaking opportunities
- **Availability parameters,** such as number of days of closure due to flooding

Each of these parameters is road class specific and has predefined a maximum intervention level and maximum defective condition. Most road authorities use the conditions and configuration intervention criteria to identify 'gaps' in network performance.

Q. Route evaluation

Significant progress has been made in Australia over the past decade in the development of multi-criteria evaluation processes.

Techniques for the assessment of non-monetary impacts in the project appraisal process which are important for integrated transport and land use planning projects being developed by state and national agencies. These assess the environmental, land use and social outcomes of projects using multi-criteria assessment, which either incorporates or supports the more traditional Benefit Cost Assessment.

The level of analysis that is appropriate will vary with the stage in decision-making – more detailed analysis is required as strategies and projects are refined. Strategic and rapid

appraisal is usually necessary during route planning.

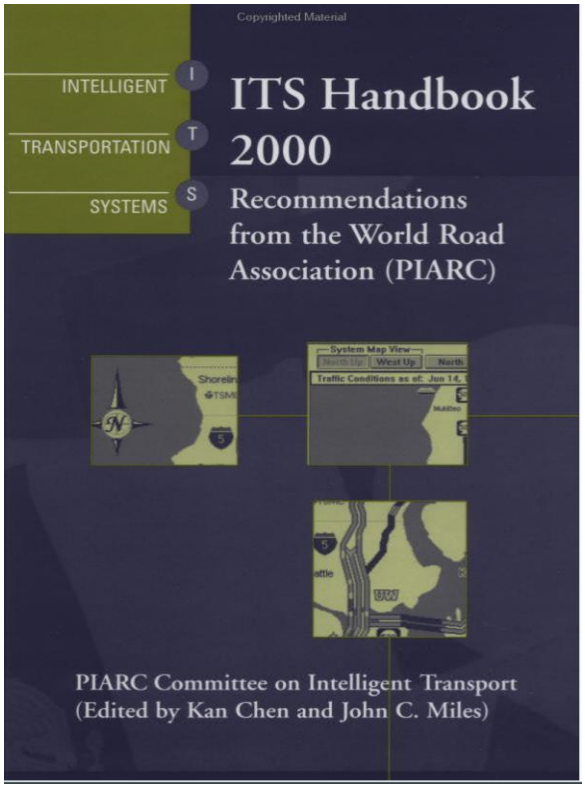
R. Monitor and Review

The primary measure of effectiveness for a route strategy can be measured in terms of its ability to achieve the objectives and outcomes set.

This can include:

- Achievement of the corridor or route objectives e.g. improving access of grain to rail silos
- Achievement of route performance targets e.g. safety, speed
- Support for high level objectives e.g. increase in the number of jobs in a region

Effectiveness of the planning processes should also be reviewed so that lessons from each route strategy can be built on for future activities. Measures could be the degree to which agencies understood and implemented the route strategy, or was on-ground implementation consistent with the adopted action plan. Whilst the monitor and review stage is an essential part of any project the level of resourcing of this phase is often low.



The key principles of a performance review of a route strategy/plan/project include:

i. Measurement of actual versus desired freight transport system outcomes – these involve the comparison of 'ex-post' versus 'ex-ante' studies and whether specific performance targets were met. Performance targets can include, but not be limited to efficiency, safety, security, the environment, social equity and economic ends.

ii. The actual effectiveness of the implemented plan (policies and projects) in supporting or undermining specific performance targets agreed to at the beginning of the process. In other words did the project over-perform or under-perform and what were the causes

iii. The effectiveness of the broader freight transport system management framework in achieving the desired outcomes/objectives. Post completion evaluation is usually bottom up beginning with how well outputs were delivered (inputs and project management processes), whether the outputs affected the performance of the system in a positive/intended way, and furthermore whether the use of the system leads to the appropriate outcomes (supports or undermines).

5. CHALLENGES

The primary objective should be to ensure road infrastructure and traffic management and control is supported by suitable policy, strategic planning, and design standards and enforcement.

GOST Road Design Standards;

УКРЛІКНЕП ПРИ УПО НКО УСРР
БІБЛІОТЕКА УКРАЇНОЗНАВСТВА

М. НАКОНЕЧНИЙ

УКРАЇНСЬКА МОВА

ПРОГРАМА-КОНСПЕКТ

ДЕРЖАВНИЙ НАУК.-МЕТОД. КОМІТЕТ НКО УСРР ПОСТАНОВОЮ ВІД. 25/VI 1927 Р. ПО СЕКЦІЇ ПРОФЕСІЙН. ОСВІТИ ТА ПОЛІТОСВІТИ ДОЗВОЛИВ ЗА ВИКОРИСТАННІ НЕЗАЛЕЖНОГО ВІД ВИЗНАЧЕНИХ ТРУДОВИХ ЦІЛЕЙ ТА ЗАВДАНЬ НА КУРСАХ РІЗНОГО ТИПУ, ЯК ПОСІБНИК У ПЕДТЕХНІКУМАХ І НА ФАКУЛЬТЕТУ ТА ЯК ДОРАДНИК УЧИТЕЛЯМ ПО ШКОЛАХ ПРОФОСВІТИ.

КООПЕРАТИВНЕ РУХ ВИДАВНИЦТВО
ХАРКІВ

Governments will need to modernise as well as learn lessons from other countries. This requires appropriate investment and funding for road planning, maintenance, and resources and their training. The following are the current issues for consideration by any country when investing in freight route development or enhancement.

5.1 Urban areas

Access;

In the discussion of freight routes and communities, the challenge must be to offer access to all road users, fast and slow, large and vulnerable, local or long haul travellers.

Urban planning and road design will be the key to achieve this, using the lessons from other projects and countries, and keeping standards and policies updated for meeting international best practices while always focusing on future developments.

Safety;

Prevention of conflicts, collisions and injuries will provide the most benefit based upon appropriate investment and skills development and programmes. Monitoring road safety issues and collecting key data will be fundamental for understanding what priorities need attention and where they occur.

Ambience;

Often freight routes through urban areas have been long established, but road authorities and

town leaders must still be obliged for improvement and ensuring an acceptable level of safety and access for local communities.

Each urban area must have produced a list of areas that restrict as well as encourage freight activity and access. These must be promoted and freight industry informed for avoid any conflicts, but ensuring a community ambience at specific times and places. It is important to link freight vehicle emission to this category, especially for meeting community expectations as well as national emission targets.

Traffic congestion;

Traffic flow and access and route linking will be a key priority for countries wanting to develop or enhance their freight industry. As with road safety, traffic congestion must be monitored and responded with appropriate action plans, resources and solution options suitable for keep priority traffic moving without an increase in risks to safety.

Traffic conflicts;

Freight route networks and road links are essential for connecting freight traffic from transport hubs and storage and cargo entry centres. Purposely planned routes that avoid congested community centres and complex cross roads and intersections must commence from initiation of freight route strategies, through to constant monitoring, improvement and maintenance of the routes so to ensure conflicts are identified and resolved.

There is a need to establish regional committees in which are linked to national bodies and road safety and traffic management agencies. The planning and road design strategies must be shared and agreed, and any future issues should be prioritised so that important conflicts are addressed and minor issues are appropriately monitored, reported for further investigation.

Facilities;

Space availability and support for new or enlarged freight facilities is restrictive. Support or endorsement is often improved by sharing the benefits achieved through improved freight facilities.

Freight vehicles are becoming larger and heavier, including their cargo. Providing for this development in future may not be possible. Identifying areas for potential land and facility development, and inviting investors for commercial planning and development may be one way for progress.

Otherwise, expansion for accommodating larger vehicles may be further restricted in urban areas. This may change the economic and social balance of an area as the activity for freight shifts or reduces. Planning authorities must be prepared for anticipation of these events, and design contingencies for adaption.

5.2 Rural areas

Safety and traffic conflicts;

Road incidents and traffic collisions injury history records must be maintain and accessible to road safety stakeholders. Assessment and analysis of conflicts can then permit prioritisation of resources and budgets for countermeasures, or further investigation. Any safety issues or development of hazards must be identified as early as possible. Solutions may take the form of simple road maintenance or road improvements of new infrastructure.

Speed control;

Traffic speed management is a particular road safety issues, not only associated with freight traffic. Long straight roads (urban or rural) encourage some drivers to exceed limits. It is essential that road safety awareness signs and traffic speed countermeasures are placed at these vulnerable locations. They should also be supported by regular Traffic Police presence and enforcement campaigns, especially on approach to villages and townships. Having said this, speed limit signing must be provided on freight specific routes, and reinforced with repeater signs and related road markings.

Ambience;

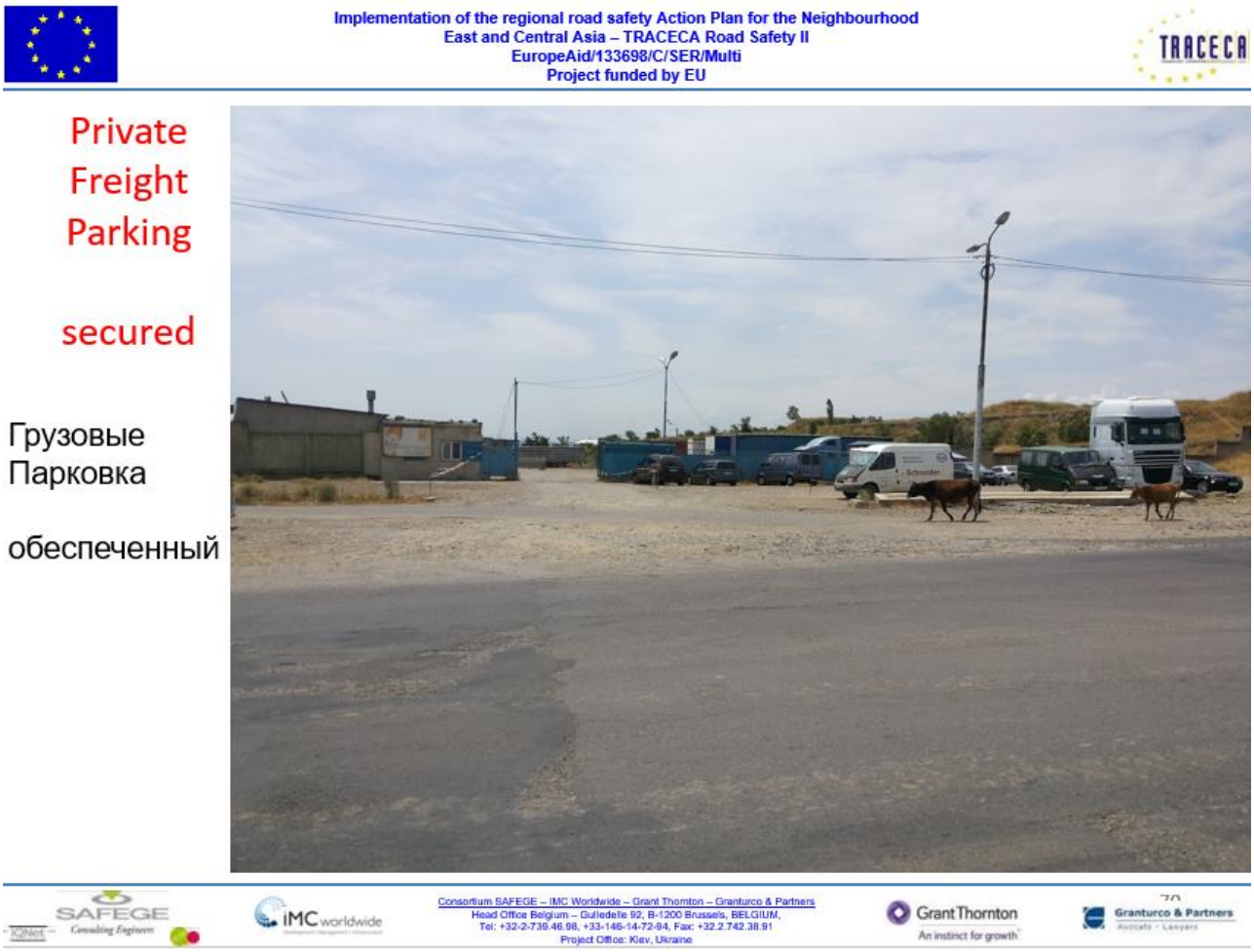
Freight vehicles that need to travel during the night or close to residential areas but best when noise and vibration is minimised. The challenges are to maintain movement of the freight traffic without slowing down or sudden stopping. This will require potential hazards to be investigated and designed out of the route. Noise is a particular issue for trucks, with empty containers, and travel on hilly roads or when surfaces are not smooth. Instances when ambience must be assured for the communities could restrict freight travel during certain hours or days, with provision of alternative routes or bypasses.

Facilities;

Specific facilities for rural areas may include parking in remote areas, as well as service roads for freight routes that pass through villages and townships. Objectives for these must be

so to provide options for safety and efficiency for freight drivers and local road users, especially the vulnerable.

Some facilities can be developed from existing infrastructure;



In addition to these options, are rest and fuelling stations in which meet freight route needs as well as provides support to local industry and employment in the rural areas.

5.3 Cross borders

Cargo processing time;

During many consultation meetings for TRACECA II project, it was commented that freight cargo processing time at borders sometimes takes multiple hours or days. During winter conditions or road with restricted road widths, traffic lanes and alternative roads can be a safety and security matter for drivers and local communities.

Current international best practices is to conduct monitoring and control in efficient time, so that freight journey times and costs are also kept to a minimum. If peak traffic volumes are congested at the borders, there may be a contingency to stage a measured quantity of vehicles for border processing at a set time. This may require advanced agreements and information to freight carriers, and provision of holding centres or freight parking bays.

Information and languages;

Countries in which experience freight drivers from many nations of varying languages may consider preparing advisory information in multi lingual options, suited to the drivers'

origins. This will also assist with dissemination of traffic and Customs' regulations and restrictions, as well as discouraging law offences or contraband. It may also assist with development improved road safety awareness and best driver behaviour when entering the country.

Collaboration between nations;

Cross border relations is essential for establishing security and Customs measures where borders share fright route corridors. It is recommended that information be shared especially for cargo and driver and vehicle monitoring and enforcement, so that congestion at the borders are effective but thorough and efficient. This can only be achieved if resources are shared and collaboration is achieved on a daily basis.

Trafficking;

A modern phenomenon has developed in recent years which is human trafficking. This is fact has particularly affected European and eastern European freight routes. There will be no limits to this geographically should the preferred option of freight transport be used for this. Government agencies and immigration offices must participate in national policies and enforcement practices involving freight transport and route network.

5.4 Route design and facility considerations

Width, height, and weight;

Network routes, roadways, traffic lanes and service roads including road structures must offer sufficient clearance and manoeuvrability as well as strength. Government policy and road authority strategies and programmes must be prepared to plan, assess and implement improvement and maintenance works so to ensure road performance to current and future freight traffic needs.

Avoiding restricted areas;

The freight industry must be given information regarding any restrictions as well as being encouraged for using special routes specific for certain freight dimensions and weights. Advanced journey preparation and information should include warnings and alerts on the road. In addition, specific freight use roads or routes should be considered for separation from village or township areas therefore avoiding any conflicts with residential communities.

Facilities; monitoring, parking and other;

Freight route facilities should include specific provisions for long haul drivers, community safety and Customs and Traffic regulation enforcement. Parking provision must reflect industry feedback as well local regional and community consultation. Parking facilities should aim to provide a mixture of simple and complex parking stations, but at regular distances, with advanced notice, for drivers during various journey times. These facilities play a significant role for road safety and driver fatigue solution.

CCTV and sensors are now actively informing road authorities of enforcement monitoring as well as statistical data collection for detail analysis including crash and injury history reporting.

Shoulders;

Decision for surfaced and unsurfaced shoulders must be made with expectation that freight vehicles occasionally will stop or travel on them. Cracking of asphalt or pavements, rutting or drainage issues commonly development as a result. Strength of pavement and edges as well as road markings must be adequate on installation or regularly maintained. Otherwise, expenditure for repair or rehabilitation of the entire carriageway may eventually be inevitable.

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3-W004
"ROAD SAFETY AUDIT AND BLACK SPOT MANAGEMENT" (two regional WS)

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1.1. Brief Introduction
(Overview of the Workshop/Training Course)

In accordance with the Project Terms of Reference and Inception Report it was agreed that the Project should implement two sub-regional Workshops/Training Courses (WS/TC) "Road Safety Audit and Black Spot Management" in Georgia and Kazakhstan.

These WS/TC content is based on a number of different publications, guidelines and International best practice manuals written to help road safty auditors in the analysis (audit) of design and existing roads.

The main WS/TC target groups for those WS/TC are representatives of MoT, Road Administrations, Road design Companies, Traffic Police representatives etc.

Duration of intensive Workshop/Training course was 5 days.

The number of participants invited was:
5 x 3 participant from Armenia, Azerbaijan, Georgia, Moldova and Ukraine (3-W004-1 WS was held in Georgia (Tbilisi) on 20-24 October 2014.)
5 x 3 participants from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan (3-W004-2 WS was held in Kazakhstan (Astana) on 24-28 November 2014.)

The safety engineering team which provided inputs to development of WS/TC training materials and presented at the actual WS/TC were KE2, **3** NKE (STE 12-1/STE 10, STE 12-2, STE 9-1).

The safety engineering team consist of experts from Germany, Australia, UK, Croatia, Bosnia and Herzegovina and Serbia so encompasses the experience from some of the most developed and safest countries at the world as well as former Soviet countries who had structures and systems similar to those still in place in TRACECA countries.

1.2. Objectives and Expected Outcomes

Agreed WS/TC objective is to implement the two sub-regional Workshops (Training Courses) to develop trainers (local instructors) in safety audit, safety inspection and black spot management programmes.

The most important outcome is implementation of two WS and key staff trained for undertakin by its own Road Safety Audits in their countries.

1.3. Program

The program of the first Workshop is presented bellow.

"ROAD SAFETY AUDIT AND BLACK SPOT MANAGEMENT

18-24th October 2014

Ministry of Infrastructure, Tbilisi, Georgia

PROGRAMME AND AGENDA

Monday, 20.10.2014.

09.00 Module M1-A: Basics of Road Safety - Background
10.20 Module M1-B: Basics of Road Safety - Risk Factors

11.30 Coffee break

11.40 Module M1-C: Basics of Road Safety - Principles of Road Safety Engineering

13.45 Lunch

15.00 Module M2-A: Basics of Road Safety Audit
16.30 Module M2-B: Road Safety Audit Policy

16.50 Coffee break

17.00 Module M2-C: Changing of Legislation to Enable Road Safety Audit as Mandatory Routine
17.30 Discussion

Tuesday, 21.10.2014.

09.00 Summary of Day 1
09.15 Module M2-D: Human Factors in Road Design and Operations
10.30 Module M2-E: Network Planning and Road Hierarchy in Road Safety Audit

11.20 Coffee break

11.30 Presentation of Road Safety Manual and Checklists

12.30 Presentation of Current Situation in TRACECA Countries about Road Safety Audit and Black Spot Management Usage

13.00 Lunch

14.15 Module M2-F: Linear Settlements along Highways
15.00 Module M2-G: Basic Road Safety Design Axioms

15.40 Coffee break

15.50 Module M3-A: Safer Designs of Interurban Roads and Motorways – Function and Cross Section
17.00 Module M3-B: Safer Designs of Interurban Roads and Motorways – Alignment
17.30 Discussion

Wednesday, 22.10.2014.

09.00 Summary of Day 2
09.15 Module M3-C: Safer Designs of Interurban Roads and Motorways – Intersections

11.00 Coffee break

11.10 Module M4: Road Safety Audit of Interurban Highways
11.30 Module M5-A: Road Safety Audit of Through Road Sections – Vulnerable Road Users (Pedestrians and Bicyclists)
12.30 Module M5-B: Road Safety Audit of Through Road Sections – Traffic Islands

13.00 Lunch

14.15 Module M6 - BLACK SPOT MANAGEMENT
17.30 Discussion

Thursday, 23.10.2014.

10.00 Field trip (survey of road nearby place of WS in two groups: RSA and BSM teams)

13.30 Lunch

15.00 Preparation of Road Safety Audit Report I (Stage 3/4 - group work)
17.00 Discussion

Friday, 24.10.2014.

Two parallel sections:

I Road Safety Audit participants

09.00 Preparation of Road Safety Audit Report I (Stage 3/4 - group work) - continuation

13.15 Lunch

14.30 Preparation of Road Safety Audit Report II (Stage 1/2 - group work)

II Black Spot Management participants

09.00 Analysis of selected Black Spots on surveyed road

13.15 Lunch

14.30 Analysis of selected Black Spots on surveyed road - continuation

17.00 Evaluation of WS and providing of participants homework's

Closing session

All participants to WS/TC got printed presentations and program with DVD rom which contains:

1. 3-W001 Workshop/Training Course Presentations
2. Important International documents regarding Workshop/Training Course
3. List of participants with contact details
4. Photographs from the WS/TC

Through all two WS/TC there was lively question and answer discussions between participants and lecturers.

1.4. Attendance

WS/TC 3-W004-1

WS/TC 3-W004-1 was attended by 9 representatives from Georgia (3), Moldova (3) and Ukraine (3).

List of participants are presented on next tables.

GEORGIA

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Mr. Mamuka Patashuri	Georgian Roads Department of the Ministry of Regional Development and Infrastructure of Georgia		
2	Mr. Besik DauTashvili	Georgian Roads Department of the Ministry of Regional Development and Infrastructure of Georgia		
3	Mr. Vazha Marsagishvili	Ministry of Internal Affairs of Georgia		

MOLDOVA

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Oleg Plinschi	FSP Universinj Ltd., Engineer of Road Department	+37322748850	universu@mtc.md
2	Petru Bologan	Head of Road Safety Service at the State Road Administration	+37369121160	bologan@asd.md
3	Ilie Bricicaru	President at “Road Safety Moldova” Association PhD student, Civil Engineering (Road safety), Technical University, "Gheorghe Asachi", Iasi, Romania,	+3737 988 11 90	ilie.bricicaru@gmail.com

UKRAINE

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Dudnik Nataiya Mykolaivna	Ukravtodor (Head specialist of Road Safety Department, Road Maintenance and Safety Administration)	044 287 72 17 067 232 25 67	bezpeka@ukravtodor.gov.ua
2	KOTUL IGOR			
3	Kryzhanivsky Alexander Yevgeniyovych	State Enterprise "Ukrainian state institute of road facilities design" SE "Ukrdiprodor", Head of Engineering Department	(044)206-64-08, M: 099-244-35-58	kaeuad@gmail.com

WS/TC 3-W001-2

WS/TC 3-W004-2 was attended by 13 representatives from: and.

List of participants are presented on next tables.

KAZAKHSTAN

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	SADVAKASOV KANAT	Head of Administration KAP MIA	87015147713; 87172715055	Sadvakasov63@mail.ru
2	MUKHAMEDYANOV RAMAYAN	MIA		

KYRGYZSTAN

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	ASKAROV AIBEK	Specialist of Department of automobile transport, Administration of automobile and railway transport	031 231 42 88	aaskarov@mtk.gov.kg aaskarov_mtk.gov.kg@mail.ru
2	SOLTOBAEV TALANTBEK	Design and survey institute "Kyrgyzdortransproject"	031 256 11 23	kyrgyzdortrans@yandex.ru
3	SUBANBEKOV NUSUP	Head of Sector of road supervision, Design and survey institute "Kyrgyzdortransproject"	055 052 60 65 031 256 69 39	kyrgyzdortrans@yandex.ru

TAJIKISTAN

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	AZIZOV FATKHIDDIN	Head of Supervision and control of road facilities department, State	+992 93 888 10 25	Azizov_1979@inbox.ru

		Service on supervision and regulation of road facilities, MoT		
2	NAZRISHOEV SOLIM	Head of Surveying and road design department, "Scientific-research and project-surveying institute" MoT	93 504 31 83	Solim_61@mail.ru
3	ZIYOEV BEGIJON	Lead specialist of road transportation and safety department, Land transport administration, MoT	+992 93 524 31 29	begijon@mail.ru

UZBEKISTAN

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	MAGAY GALINA	Head of Department of regulations development, Uzbek Automobile and River Transport Agency	+99871 241 20 54 +99890 350 88 13	g.magay@uzaart.uz
2	SHOKOSIMOV SADRIDDIN	Head of Tashkent city-territorial department, Uzbek Automobile and River Transport Agency	+99898 363 25 90	s.shoqosimov@aart.uz
3	ABIDOV BOBIR	Head specialist of automobile transport safety department, Uzbek Automobile and River Transport Agency	+99871 241 56 29; +99893 534 55 50	b.abidov@uzaart.uz
4	ZIYAYEV OYBEK	Head of road scientific-research institute, "Uzavtoyul"	+99871 255 08 31 293 49 31	ayiti@uzavtoyul.uz
5	RADJABOV FAZIL	Deputy head of Maintenance and technical analysis of highways, "Uzavtoyul"	+99871 237 01 66	Rajabov@uzavtoyul.uz

After checking of two remaining homework/projects is completed for each trainees, it will be known what kind of certificates they will get. Evaluation criteria consists of four requirements: 1. marks from three mini tests taken at key stages during the training (max 10 points), marks from final exam (max. 40 marks), and marks for two homework/projects (max 50 points, 25 each). In accordance with total number of marks achieved different types of RSA certificates will be provided to the participants as below.

1. RSA Instructors auditors: Those achieving 75% or more
2. RSA Inspectors: Those achieving 50-74%
3. Certificate of attendance: Those not achieving over 50%

1.5. Results Achieved

Results Achieved from the three WS/TC are shown in the following table.

Expected and achieved objectives and outcomes

	Expected objectives and outcomes	Objectives and outcomes Achieved	Comments
Objectives			

1	To develop trainers (local instructors) in safety audit, safety inspection and black spot management programmes.	Yes,	22 participants from 7 countries (except Armenia, Azerbaijan and Turkmenistan) were trained
Outcomes			
2	Selected staff were trained in RSA/BSM (WS held)	Yes	22 participants from 7 countries (except Armenia, Azerbaijan and Turkmenistan) were trained
3	Key staff trained for undertakin by its own Road Safety Audits in their countries	Yes	22 participants from 7 countries (except Armenia, Azerbaijan and Turkmenistan) were trained trained

1.6. Evaluation

For evaluation of WS/TC anonymous evaluation questionnaire were used. Questionnaire template is presented at figure below.

Implementation of the regional road safety Action Plan for the Neighbourhood East and Central Asia – TRACECA Road Safety II
EuropeAid/133080/C/SER/Multi
Project funded by EU

TRACECA ROAD SAFETY PROJECT

TRACECA

Anonymous Evaluation Questionnaire

Please be kind enough to evaluate the Workshop and give feedback on "Training on safety elements of road design, construction and maintenance" held in Kiev on 18-19 September 2014 as part of the European Union financed Project "TRACECA ROAD SAFETY II"

DIFFERENT ASPECTS OF WORKSHOP	VERY POOR	POOR	ADEQUATE	GOOD	EXCELLENT	YOUR COMMENT
ORGANIZATION OF WORKSHOP						
IMPORTANCE OF WORKSHOP TOPIC						
QUALITY OF PRESENTATIONS						
QUALITY/EXPERTISE OF LECTURERS						
LENGTH OF WORKSHOP						
LOCATION WHERE THE WORKSHOP WAS HELD						

- What did you like most on Workshop?

- IS Workshop useful for your work? (your suggestions for next topics):

- Suggestions to the organizers/lecturers:

THANK YOU FOR TOUR TIME!

Kiev, 19.09.2014.

SAFEGE Consulting Engineers · IMC worldwide · Grant Thornton An instinct for growth · IQNet

Consortium SAFEGE – IMC Worldwide – Grant Thornton – Grantorco & Partners–
Project Office: Kiev, Ukraine Head Office, Brussels, Belgium

The results of participant's evaluation of two WS/TC are shown in tables overleaf.

Evaluation results of RSA/BSM Workshop 3-W004-1

9 participants from UKR (3), Moldova (3) and Georgia (3+1 from time to time) and 9 evaluation lists received
Tbilisi, 20-24 October 2014.

		Participants answers									
		1	2	3	4	5	6	7	8	9	AVG
Main Questions	Organization of WS	5	5	5	5	5	4	5	5	3	4.67
	Importance of WS topics	5	5	4	5	4	5	5	5	4	4.67
	Quality of presentations	5	5	5	5	4	5	5	5	5	4.89
	Quality/Expertise of lecturers	5	5	5	5	4.5	5	5	5	5	4.94
	Length of WS	4	5	4	4	2	5	3	5	5	4.11
	Location of WS	5	5	5	5	5	5	4	5	4	4.78
	AVG	4.8	5	5	5	4.1	4.8	4.5	5	4.3	**4.68**

Legend:
Mark 1: Very poor, 2: Poor, 3: Acceptable, 4: Good, 5: Excellent

Main participants comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organizers/lecturers
1	Information, activeness	Best practice in installation of road barriers	Provide more qualified translation
2	Organisation of the course, learnt many new things, e.g. RSA	Yes, will use in future implementation of projects	Separate courses (and give more sessions - longer)
2	Knowledge of lecturers, methodology of education, problems and their solving	Very useful	Have a good health!
4	Volume of information and level of knowledge of lecturers	Yes; Give more attention to BSM	Translation of documents needs improvement; involve experts from TRACECA countries
5	Organisation	Yes	Not enough time; need more specific translation
6	Importance of the problems	-	
7	Very important topic, very difficult to grasp information in such a short period	Yes, very useful. Need to implement education on Road Design	
8	Everything	Yes	More time for the workshop
9	International experience	Yes	
10			More detailed information on site visit

Project response to evaluation results:

1. Next WS should be longer (more time dedicated for discussions and examples)
2. Improved translation of presentations for next WS (to be checked by one of TRACECA country representative)
3. Longer site visit and more discussions

Evaluation results of RSA/BSM Workshop 3-W004-2

13 participants from Kazakhstan (2), Uzbekistan (5), Kyrgyzstan (3) and Tajikistan (3) and 13 evaluation lists received

Astana, 24-28 November 2014.

		Participants answers													
		1	2	3	4	5	6	7	8	9	10	11	12	13	AVG
Main Questions	Organization of WS	5	5	5	5	3	5	4	4	4	5	4	5	5	4.54
	Importance of WS topics	5	5	5	5	5	5	5	5	4	4	5	5	5	4.85
	Quality of presentations	5	5	5	5	4	5	5	4	4	5	5	5	5	4.77
	Quality/Expertise of lecturers	5	5	5	5	5	5	5	5	4	5	5	5	5	4.92
	Length of WS	3	5	5	5	4	5	5	4	4	5	5	5	5	4.62
	Location of WS	5	5	5	5	5	5	4	5	4	5	5	5	5	4.85
	AVG	4.6	5	5	5	4.3	5	4.6	4.5	4	4.8	4.8	5	5	**4.76**

Legend:
Mark 1: Very poor, 2: Poor, 3: Acceptable, 4: Good, 5: Excellent

Main participants comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organizers/lecturers
1	Practical course, level of knowledge of lecturers		Too long
2	Level of knowledge, organisation (+hotel)	Yes	Need to organise trips to road sections
2	Information; translators		Simulaneous translation, not Sequential Interpretation
4	Standards, knowledge	Yes	Do in all TRACECA countries
5	Examples, RSA	Yes	Separate person should organise WS, not to disturb lecturers
6	Information		
7	Lecturers, translators	Yes	
8	RSA	Yes; will use in road maintenance	
9	Good and useful discussions, RSA, high level	Yes	Organisation needs to be improved
10	Discussion on RSA	Yes	
11	Discussion on RS on highways and RSA	Yes	
12	Topic, Organization		
13	Everything		

Project response to evaluation results:

1. Next Workshops should have more logistical support
2. More WS with similar contents in TRACECA countries

1.7. Photo documentation

WS/TC 3-W004-1

Plate 1.

Active dialogue between participants and lecturers were established during 3-W004-1 WS

Plate 2.

WS/TC participants

WS/TC 3-W004-2

Plate 1.

Finalisation of 3-W004-2 WS

3-W003
"TEMPLATE ON ROAD SAFETY AUDIT POLICY/LEGISLATION"
(two regional WS, part of 3-W004 WS)

The EU Directive 2008/96/EC on Road Infrastructure Safety Management requires EU member states to actively manage the safety of the trans-European road network (TERN). One of most important safety measures is implementation of Road Safety Audits on main road network. Although, the Directive at present only applies formally to the TERN, these safety management principles have general validity and it will benefit all TRACECA countries. It is recommend that the scope of the Directive be extended to the whole TRACECA main road network.

The Project Team developed a simple template on Road Safety Audit Policy and possible legislation changes at three levels (as amendment of Law on Road Safety or Law on Roads and a Ministerial Decree about audit).

Model of RSA Policy and possible legal changes to make a Road Safety Audit process mandatory was presented and discussed at Road Safety Audit and Black Spot Management workshop (3-W004). Therefore 3-W003 Workshop/Training Course becomes an integrated part of 3-W004, as well as a reporting about 3-W003.

After presentation, discussion and comments, template of RSA Policy and amendments to legislation to make RSA mandatory was finalized and will be distributed to the TRACECA countries.

3-W001
"TRAINING ON SAFETY ELEMENTS OF ROAD DESIGN, CONSTRUCTION AND MAINTENANCE"
(three regional WS)

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1.4. Brief Introduction
(Overview of the Workshop/Training Course)

In accordance with the Project Terms of Reference and Inception Report it was agreed that the Project should implement three sub-regional Workshops/Training Courses (WS/TC) "Training on safety elements of road design, construction and maintenance" in Ukraine, Georgia and Kazakhstan.

These WS/TC content is based on a number of different publications, guidelines and International best practice manuals written to help designers and road authorities in the design of safe roads taking into account the needs of both motorized vehicles and vulnerable road users (VRU). Participants are introduced to new approach such as the "safe system approach".

The main WS/TC target groups for those WS/TC are representatives of MoT, Road Administrations, Road design Companies, Traffic Police representatives etc.

Duration of Workshop/Training course is 2 days.

The number of participants invited was:
2 x 6 participant from Moldova and Ukraine
(3-W001-1 WS was held in Ukraine in Kiev on 18-19 September 2014.)
3 x 6 participants from Armenia, Azerbaijan and Georgia

(3-W001-2 WS was held in Georgia in Tbilisi on 16-17 October 2014.)
5 x 6 participants from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
(3-W001-3 WS was held in Kazakhstan in Astana on 20-21 November 2014.)

The safety engineering team which provided inputs to development of WS/TC training materials and presented at the actual WS/TC were KE2, **3** NKE (STE 9-1, STE 9-2 and STE 12-1).

The safety engineering team consist of experts from Germany, Australia, UK, Croatia, Bosnia and Herzegovina and Serbia so encompasses the experience from some of the most developed and safest countries at the world as well as former Soviet countries who had structures and systems similar to those still in place in TRACECA countries.

Different individuals are selected as needed and relevant for each WS/TC from the pool of experts that we have established in project safety engineering team that we can bring relevant expertise to each WS/TC.

In addition, inputs are included from experts with knowledge of the local safety engineering problems in the country where WS/TC has been held.

1.5. Objectives and Expected Outcomes

Agreed WS/TC objective is to implement the three sub-regional Workshops (Training Courses) to increasing knowledge of road designers about safety elements in design, construction and maintenance of the roads.

The most important outcome is the key staff trained will have better understanding of road safety elements in design, construction and maintenance and will use that knowledge in their future work to design and operate safer roads.

1.6. Program

Before implementation of the WS/TC visit was made to all countries within Project inception period and some road safety meetings were organized to collect relevant information. Field trips (road surveys) were organized in some countries during such visits to collect some typical road safety problems for use in WS/TC as examples of bad (or good) road safety practice.

The program of the first Workshop is presented below.

WORKSHOP/TRAINING COURSE
3-W001-1

"SAFETY ELEMENTS OF ROAD DESIGN, CONSTRUCTION AND MAINTENANCE"

18-19th September 2014

Ministry of Infrastructure, Kiev, Ukraine

PROGRAMME AND AGENDA

Thursday, 18.09.2014.

10.00 Registration
10.05 Welcome note & Introduction of Participants
10.30 Introduction to Workshop – Accident Statistics
10.45 Most important International Conventions, EU Directives and Standards in use
11.30 EU Regulation (Express Roads)

11.45 Coffee break

12.15 Current situation in TRACECA countries concerning International agreements
12.25 Best practice in Safety Elements of Road Design + Discussion
13.10 Best practice in Safety during Road Construction + Discussion

14.00 Lunch

15.15 Best practice in Safety during Road Maintenance + Discussion
16.00 SNiP solutions compared to International Practice

16.30 Coffee break

17.00 Additional recommendations for SNiP
17.30 Short country presentation on usage of standards (if any)
18.00 Questions and discussion
18.15 End of day 1

Friday, 19.09.2014.

09.00 Summary of Day 1
09.05 Major Road Safety Gaps
10.05 Case study: M-06 Road Safety Inspection (RSI) Findings

11.05 Coffee break

11.35 Technical session 1: Most important road safety deficiencies in Design

13.00 Lunch

14.30 Technical session 2: Most important road safety deficiencies in Road Construction (Including Working Zones)
15.15 Technical session 3: Most important road safety deficiencies in Road Maintenance (Including Winter Maintenance)

15.45 Coffee break

16.15 Future steps for improving Design, Road Construction and Maintenance
16.30 Evaluation of WS and Closing Session
16.45 End of day 2

All participants to WS/TC got printed presentations and program with DVD room which contains:

1. 3-W001 Workshop/Training Course Presentations
2. Important International documents regarding Workshop/Training Course
3. List of participants with contact details
4. Photographs from the WS/TC

An instantaneous translation was provided to enable effective dialogue. Through all three WS/TC there was lively question and answer discussions between participants and lecturers.

There were considerable discussions about practical issues and case studies included in WS/TC.

1.7. Attendance

WS/TC 3-W001-1

WS/TC 3-W001-1 was attended by 12 representatives from: Ukraine (6) and Moldova (6) and the Sector Manager Transport Policy of EU Delegation in Ukraine. In close consultation with EC Delegation information was provided to the EU Delegation public relation expert about the EU funded Regional road safety project and training. The Project Team Leader was interviewed by the national TV station.

List of participants are presented on next tables.

UKRAINE

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Dudnik Nataiya Mykolaivna	Ukravtodor (Head specialist of Road Safety Department, Road Maintenance and Safety Administration)	044 287 72 17 067 232 25 67	bezpeka@ukravtodor.gov.ua
2	Bondar Tetyana Vasylivna	State enterprise “State road scientific research institute named after m. P. Shulgin” (SE "DerzhdorNDI"), Head of Road Safety Department	(044)201-08-55	bdrndi@ukr.net
3	Pyna Oleksandr Grygorovych	State enterprise “State road scientific research institute named after m. P. Shulgin” (SE "DerzhdorNDI"), Junior Research Fellow Road Safety Department	(044)201-08-42	bdrndi@ukr.net

4	Kryzhanivsky Alexander Yevgeniyovych	State Enterprise “Ukrainian state institute of road facilities design" SE "Ukrdiprodor", Head of Engineering Department	(044)206-64-08, M: 099-244-35-58	kaeuad@gmail.com
5	Lysak Julia Mykhaylivna	State Enterprise “Ukrainian state institute of road facilities design" SE "Ukrdiprodor", Engineer of 3rd category Engineering Department	(044)248-33-29, M: 063-867-46-99	lusak.julia@mail.ru
6	Paratsa Andriy Volodymyrovych	State Enterprise - Ukrainian road investments SE "Ukrdorinvest", Head of Project Management Department №3	M: 066-201-10-62	paratsa@ukrdorinvest.com.ua

MOLDOVA

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Oleg Plinschi	FSP Universinj Ltd., Engineer of Road Department	+37322748850	universu@mtc.md
2	Sergiu Bejan	Engineer, Technical University of Moldova, Chair of Railways,Roads, Bridges - Head of Chair \ BCPC Ltd "ASTRAL-PROIECT" – Director	(+373) 22 76 85 87, (+373) 69611873	serbej@gmail.com
3	Oleg Bîcu	Head of the Systematization of Road Traffic at Surveillance of Transport and Road Traffic Department of National Patrolling Inspectorate, at General Police Inspectorate of Ministry of Internal Affairs	+37369161316	oleg.bicu@igp.gov.md
4	Petru Bologan	Head of Road Safety Service at the State Road Administration	+37369121160	bologan@asd.md
5	Simion Bogza	SIMBO-PROIECT LTD, Project Chief Engineer, Director	(37322) 71 61 24	bogza61@mail.ru
6	Ilie Bricicaru	President at “Road Safety Moldova” Association PhD student, Civil Engineering (Road safety), Technical University, "Gheorghe Asachi", Iasi, Romania	+3737 988 11 90	ilie.bricicaru@gmail.com

WS/TC 3-W001-2

WS/TC 3-W001-2 was attended by 18 representatives from: Armenia (6), Azerbaijan (6) and Georgia (6).

List of participants are presented on next tables.

ARMENIA

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail

1	Karen Torosyan	"Armenian roads directorate" SNCO, Ministry of Transport and Communication of Armenia, Chief Specialist, Road maintenance and exploitation monitoring department	+374 10 590033 (work) +374 94 079911 (mob.)	torosyan.1969@mail.ru
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3	Heghine Sahakyan	"Armenian roads directorate" SNCO, Ministry of Transport and Communication of Armenia, Leading specialist, Laboratory works and economic matters regulation department	+374 10 590033 (work) +374 91 381334 (mob.)	helen199004@yahoo.com
4	Andranik Movsesyan	"Armenian roads directorate" SNCO, Ministry of Transport and Communication of Armenia, Deputy Head, Purchasing and Management department	+374 60 540527 (work) +374 96 838333 (mob.)	amovsisyan@transportpiu.am
5	Robert Makaryan	"Armenian roads directorate" SNCO, Ministry of Transport and Communication of Armenia, Designer	+374 10 562501 (work) +374 93 700880 (mob.)	armshin_ltd@mail.ru
6	Konstantin Kostanyan	"Armenian roads directorate" SNCO, Ministry of Transport and Communication of Armenia, Lieutenant Colonel, Chief of Department of Traffic Management Control	+374 93 40 23 22 (mob.)	dornadzor701@mail.ru

AZERBAIJAN

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Anvar Karimov	Ministry of Infrastructure of Azerbaijan, Head of sector of road infrastructure safety	012 430 99 43 050 240 31 77	e.kerimov@mintrans.az envernn@gmail.com
2	Vagif Yusifli	AAO "AzerDorService", Head of Department of Organization and road safety	012 499 79 10 050 357 21 55	v.yusifli@mail.ru
3	Ruslan Babayev	AAO "AzerDorService", Specialist of Department of Organization and road safety	+994 12 499 79 10 +994 55 831 17 52	Ruslan_babayev27@mail.ru
4	Rauf Mustafayev	State Administration for Traffic Police MIA of Azerbaijan, Chief engineer of “Traffic Organization” department	050 210 81 01 012 590 81 40	Raufmustafayev2012@yandex.ru
5	Vakil Hajiyev	State Administration for Traffic Police MIA of Azerbaijan, Engineer of “Traffic Organization” department	050 222 28 14 070 222 00 17	-
6	Faig Ismayilov	State Road Transport Service of Azerbaijan, Head of “Road Safety” sector	050 323 07 22 055 323 07 22	Faiq1974@mail.ru

GEORGIA

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Ms. Ketevan Takaishvili	Ministry of Economy and Sustainable Development of Georgia		
2	Mr. Koba Metreveli	Ministry of Economy and Sustainable Development of Georgia		
3	Mr. Vasil Margishvili	LEPL "Land Transport Agency"		
4	Ms. Tamar Gabrichidze	LEPL "Land Transport Agency"		
5	Mr. Mamuka Patashuri	Georgian Roads Department of the Ministry of Regional Development and Infrastructure of Georgia		
6	Mr. Davit Kurdadze	Georgian Roads Department of the Ministry of Regional Development and Infrastructure of Georgia		
7	Mr. Davit Pashalishvili	Georgian Roads Department of the Ministry of Regional Development and Infrastructure of Georgia		
8	Mr. Zaza Devdariani	Ministry of Internal Affairs of Georgia		
9	Mr. Vazha Marsagishvili	Ministry of Internal Affairs of Georgia		

WS/TC 3-W001-3

WS/TC 3-W001-3 was attended by 17 representatives from: Kazakhstan (2), Kyrgyzstan (6), Tajikistan (6) and Uzbekistan (3).

List of participants are presented on next tables.

KAZAKHSTAN

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	SADVAKASOV KANAT	Head of Administration KAP MIA	87015147713; 87172715055	Sadvakasov63@mail.ru
2	Uvoev Nurlan	Deputy head of ODTI UAP OVO	87015120072; 87172532600	

KYRGYZSTAN

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Askarov Aybek	Specialist of Department of automobile transport, Administration of automobile and railway transport	031 231 42 88	aaskarov@mtk.gov.kg aaskarov_mtk.gov.kg@mail.ru
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3	Subanbekov Nusup	Head of Sector of road supervision, Design and survey institute "Kyrgyzdortransproject"	055 052 60 65 031 256 69 39	kyrgyzdortrans@yandex.ru
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5	Eraliyev Nurlan	Lead specialist, Department of production preparation and acceptance of work, Ministry of Communications, Kyrgyz Republic	031 266 18 32 055 442 75 44	Mr.nurlan.ddx@mail.ru
6	Toktomushev Bolotbek	Chief specialist, Service of organisation of traffic, State Directorate of road "Bishkek-Osh"	031 231 42 72 077 318 25 70	gdadpto@mail.ru

TAJIKISTAN

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2	Nazrishoyev S.	Head of Surveying and road design department, "Scientific-research and project-surveying institute" MoT	93 504 31 83	Solim_61@mail.ru
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5	Azizov F.	Head of Supervision and control of road facilities department, State Service on supervision and regulation of road facilities, MoT	+992 93 888 10 25	Azizov_1979@inbox.ru
6	Saydakhmadov M.I	Specialist of road transportation Administration, State Service on supervision and regulation of road facilities, MoT	+992 93 808 05 02	mukhriddin@mail.ru

UZBEKISTAN

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
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2	Shoqosimov Sadriddin	Head of Tashkent city-territorial department, Uzbek Automobile and River Transport Agency	+99898 363 25 90	s.shoqosimov@aart.uz
3	Abidov Bobir Ziyaviddinovich	Head specialist of automobile transport safety department, Uzbek Automobile and River Transport Agency	+99871 241 56 29; +99893 534 55 50	b.abidov@uzaart.uz

Certificate of attendance at two day (16 hours of lecturers) WS/TC were presented to participants at the end of the training.

1.8. Results Achieved

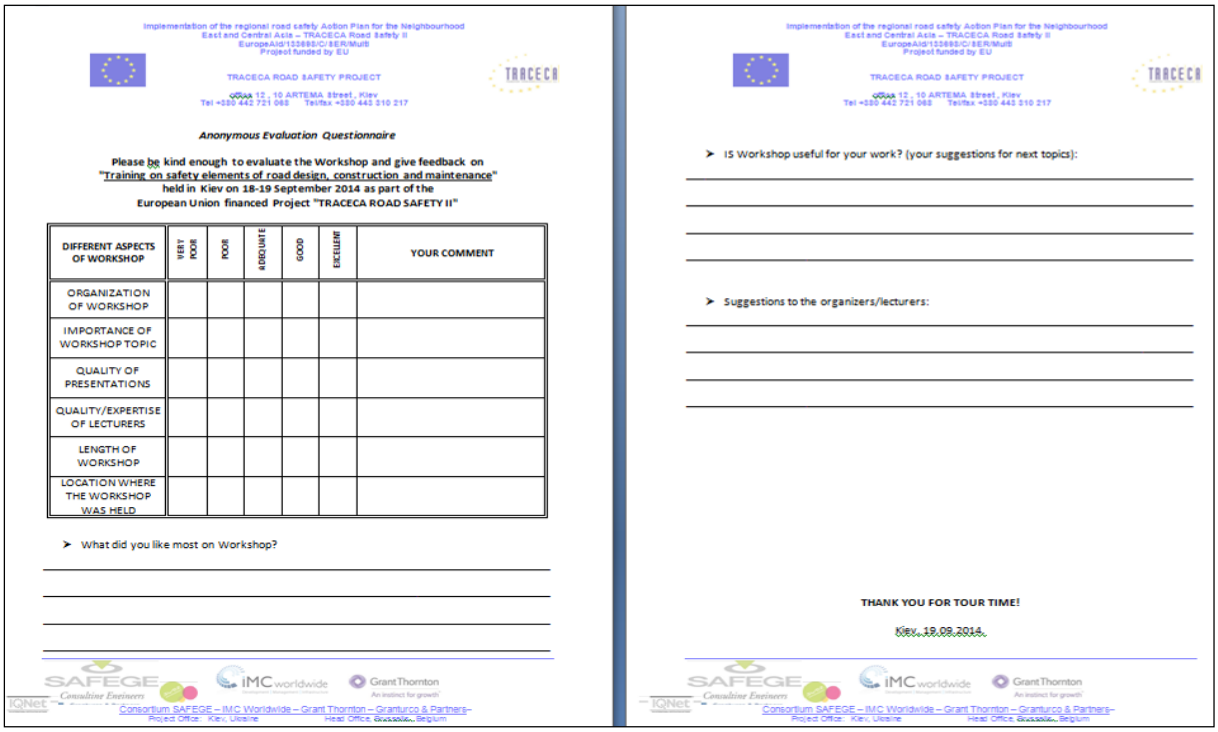
Results Achieved from the three WS/TC are shown in the following table.

Expected and achieved objectives and outcomes

	Expected objectives and outcomes	Objectives and outcomes Achieved	Comments
Objectives			
1	Introduction of the concept of safe road design, construction and maintenance to trainees	Yes,	47 participants from 9 countries (except Turkmenistan) were trained
Outcomes			
2	Selected staff were trained in safe design construction and maintenance of roads	Yes	47 participants from 9 countries (except Turkmenistan) were trained
3	Knowledge increased and awareness raised about usage of safe elements in design, construction and maintenance of the roads	Yes	47 participants from 9 countries (except Turkmenistan) were trained

1.9. Evaluation

For evaluation of WS/TC anonymous evaluation questionnaire were used. Questionnaire template is presented at figure below.



Implementation of the regional road safety Action Plan for the Neighbourhood East and Central Asia – TRACECA Road Safety II
EuropeAid/132698/C/SER/Multi
Project funded by EU

TRACECA ROAD SAFETY PROJECT

ulitsa 12 , 10 ARTEMA Street, Kiev
Tel +380 442 721 068 Telifax +380 443 310 217

Anonymous Evaluation Questionnaire

Please be kind enough to evaluate the Workshop and give feedback on "Training on safety elements of road design, construction and maintenance" held in Kiev on 18-19 September 2014 as part of the European Union financed Project "TRACECA ROAD SAFETY II"

DIFFERENT ASPECTS OF WORKSHOP	VERY POOR	POOR	ADEQUATE	GOOD	EXCELLENT	YOUR COMMENT
ORGANIZATION OF WORKSHOP						
IMPORTANCE OF WORKSHOP TOPIC						
QUALITY OF PRESENTATIONS						
QUALITY/EXPERTISE OF LECTURERS						
LENGTH OF WORKSHOP						
LOCATION WHERE THE WORKSHOP WAS HELD						

➢ What did you like most on Workshop?

Consortium SAFEGE – IMC Worldwide – Grant Thornton – Grantурco & Partners–
Project Office: Kiev, Ukraine Head Office: Brussels, Belgium

Implementation of the regional road safety Action Plan for the Neighbourhood East and Central Asia – TRACECA Road Safety II
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TRACECA ROAD SAFETY PROJECT

ulitsa 12 , 10 ARTEMA Street, Kiev
Tel +380 442 721 068 Telifax +380 443 310 217

➢ IS Workshop useful for your work? (your suggestions for next topics):

➢ Suggestions to the organizers/lecturers:

THANK YOU FOR TOUR TIME!

Kiev, 19.09.2014.

Consortium SAFEGE – IMC Worldwide – Grant Thornton – Grantурco & Partners–
Project Office: Kiev, Ukraine Head Office: Brussels, Belgium

The results of participant's evaluation of three WS/TC are shown in tables overleaf.

Evaluation of Workshop 3-W001-1

12 participants from: Ukraine (6) and Moldova (6) and 12 evaluation lists received

Kiev, 18-19 Sept 2014.

		Participants answers												
		1	2	3	4	5	6	7	8	9	10	11	12	AVG
Main Questions	Organization of WS	4	5	5	5	5	5	5	5	5	5	5	5	4.92
	Importance of WS topics	5	4	5	5	5	5	5	5	5	5	5	5	4.92
	Quality of presentations	4	4	4	5	5	5	5	5	5	5	5	5	4.75
	Quality/Expertise of lecturers	4	5	5	5	4	5	5	5	5	5	5	5	4.83
	Length of WS	5	4	5	5	4	4	5	4	4	5	4	5	4.5
	Location of WS	4	5	5	5	4	5	4	5	4	5	5	5	4.67
	AVG	4.33	4.5	5	5	5	4.80	4.83	4.83	4.67	5	4.8	5	**4.77**

Legend:

Mark 1: Very poor, 2: Poor, 3: Acceptable, 4: Good, 5: Excellent

Main participants' comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organisers/lecturers
1	Active dialogue	Yes	-
2	Importance of the problem; level of knowledge of lecturers	Yes, will use in future work	-
2	Everything	For me and for my work - very important; Waiting for RSA and BSM WS	We need to learn from them. Good job.
4	Information on EU Directives; RSA materials	-	-
5	Examples	-	Examples need to be more real (countries in which WS is organised); Everything is perfect
6	-	-	-
7	Level of experts and approach methods in RS	Yes, especially in methodological material and experience exchange	More practical examples of solving important issues
8	Excellent - everything	Yes, a lot. I learnt many new things	Need more time for WS and organise more frequently
9	Organisation; Importance of the problems and solving these issues	Yes, very interesting	Keep working on the same level
10	We save people's lives and think about safety and comfort of transport and pedestrians; openness of the lecturers	100% useful	Organise WS with more specialists, not design only
11	Very interesting, especially information on vulnerable road users	Of course, especially at this stage of the beginning of my career	
12	Have answers for many questions	Yes	Could be in Ukravtodor; use examples from countries where the WS is held

Project response to evaluation results:

5. Overall the WS/TC was obviously considered by participants to be of high quality, but WS/TC team will make further improvements to the presentations.
6. Add more local examples of good and bad practice for illustrations and discussions during the WS/TC.

Evaluation of Workshop 3-W001-2

18 participants from: Armenia (6), Azerbaijan (6) and Georgia (6+3 temporary) and 16 evaluation lists received

Tbilisi, 16-17 October 2014.

		Participants answers																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	AVG
Main Questions	Organization of WS	5	5	5	3	3	5	5	5	5	5	5	5	4	4	4	4	4.5
	Importance of WS topics	5	5	5	3	3	5	5	5	5	5	5	5	4	4	4	5	4.56
	Quality of presentations	5	5	5	4	4	5	5	5	5	5	5	5	5	4	4	5	4.75
	Quality/Expertise of lecturers	5	5	5	5	4	5	5	5	5	5	5	5	4	4	4	5	4.75
	Length of WS	5	5	5	3	3	5	5	5	5	5	5	4	3	2	2	5	4.19
	Location of WS	4	4	5	4	3	5	5	5	5	5	5	4	4	4	3	5	4.38
	AVG	4.83	4.8	5	4	3.3	5	5	5	5	5	5	4.7	4	3.7	3.5	4.8	**4.52**

Legend:
Mark 1: Very poor, 2: Poor, 3: Acceptable, 4: Good, 5: Excellent

Main participants comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organizers/lecturers
1	-	-	-
2	Quality of presentations	Yes, very useful	-
2	-	-	-
4	Very detailed which is good	Yes	The participants could live in the same hotel where we had lectures
5	Presentations	Yes	-
6	Everything	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-
11	Everything	-	-
12	-	-	-
13	Questions discussed	-	-
14	Questions discussed	Yes	Nothing
15	Questions discussed	Yes	Nothing
16	-	-	-

Project response to evaluation results:

1. Improvement of organisation (lecturers at the same hotel

Evaluation of Workshop 3-W001-3

17 participants: Kazakhstan (2), Kyrgyzstan (6), Tajikistan (6), Uzbekistan (3) and 15 evaluation lists received

Astana, 20-21 November 2014.

		Participants answers															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	AVG
Main Questions	Organization of WS	4	5	4	5	4	4	5	4	5	5	4	4	5	5	3	4.4
	Importance of WS topics	5	5	4	5	5	4	5	4	5	4	5	5	5	4	5	4.67
	Quality of presentations	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	4.93

	Quality/Expertise of lecturers	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	4.93
	Length of WS	5	5	4	3	4	4	5	5	5	3	4	5	4	4	3	4.2
	Location of WS	5	5	5	5	5	4	5	5	5	5	5	4	5	5	5	4.87
	AVG	4.8	5	5	5	4.7	4.1	5	4.5	5	4.5	4.7	4.7	4.8	4.7	4.3	**4.67**

Legend:
Mark 1: Very poor, 2: Poor, 3: Acceptable, 4: Good, 5: Excellent

Main participants comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organizers/lecturers
1	Lecturers	Yes, please do more WS like this one	
2	Topic and ways to improve	Yes, this one is related to my work (winter slipperiness)	More analysis, modern methodology, teach experts
2		Yes	More new topics
4	Topic, problem is common for all TRACECA countries; quality of lectures; wide experience of lecturers	Yes, please do more WS like this one	45 min lectures, 5 min break
5	very important topic, high interest, need to use recommendations in practice	Yes	
6		Yes	More specific examples from neighbouring countries
7		Yes	More WS like this one
8	Planning and organisation	Yes	Analyse and compare EU countries and Asian countries and choose the most effective option
9	RS, signing, barrier installation	Yes	
10	Information	Yes	Hold such a WS in all TRACECA countries
11	Topic, level of knowledge of lecturers	Yes	More WS like this one (international practice, EU)
12			
13		Yes	
14	International road parameters	Yes, regarding winter maintenance	
15	Examples of mistakes, new methods, legislation review	Yes	

Project response to evaluation results:

1. Prepare more road safety examples and measures from different cour
2. Organisation of more WS with same topics

1.10. Photo documentation

WS/TC 3-W001-1

Plate 1.

Instantaneous translations enabled very active dialogue/discussions between participants and lecturers and exchange of experience between all involved in WS/TC.

Plate 2.

Apart from design engineering/police participants from Moldova and Ukraine TL sat in at the back of the room for part of the training course to access quality and to make comments to the safety engineering team/presenters on how the presentations could be improved for the next WS/TC.

Plate 3.

WS/TC participants Transport Specialist from EU Delegation, project team lecturers and Kiev project office staff at WS/TC in Kiev, 18-19 Sept. 2014

WS/TC 3-W001-2

Plate 1.

Working section of 3-W001-2

WS/TC 3-W001-3

Plate 1.

Working section of 3-W001-3

3-W002
"INTRODUCTION TO EU DIRECTIVE ON SAFETY IN ROAD TUNNELS"

Table of contents

1.1. Brief Introduction
1.2. Objectives and Expected Outcomes
1.3. Program
1.4. Attendances
1.5 Results Achieved
1.6. Evaluation
1.7. Photo documentation

* * *

1.1. Brief Introduction

(Overview of the Workshop/Training Course)

In accordance with the Project Terms of Reference and Inception Report it was agreed that the Project should implement one regional Workshops/Training Courses (WS/TC) "Introduction to eu directive on safety in road tunnels" in Kyrgyzstan.

Tunnels are important infrastructures which facilitate communication between different areas and are therefore essential for long-distance transport and the development of regional economies. However, accidents in tunnels, and particularly fires, can have dramatic consequences and can prove extremely costly in terms of human life, increased congestion, pollution and repair costs.

These WS/TC content is based on a number of different UN and EU publications concerning Tunnel Safety and particularly on EU Directive on safety in road tunnels.

The main WS/TC target groups for those WS/TC are representatives of MoT, Road Administrations, Road design Companies, Traffic Police representatives etc.

Duration of Workshop/Training course is 2 days.
Two participants from each TRACECA countries was invited to WS/TC.

The safety engineering team which provided inputs to development of WS/TC training materials and presented at the actual WS/TC were KE2 and NKE 11.

1.2. Objectives and Expected Outcomes

Agreed WS/TC objective is to increase the knowledge among relevant stakeholders (specialists) in each of TRACECA countries about EU Directives and related Agreements concerning tunnel safety.

The most important outcome is the key staff trained will have better understanding about EU Directive/ Agreements on tunnels safety and its implementation.

1.3. Program

The program of the Workshops is presented bellow.

WORKSHOP/TRAINING COURSE
3-W001-2

"INTRODUCTION TO EU DIRECTIVE ON SAFETY IN ROAD TUNNELS"

30-31th October 2014
Kyrgyzstan, Bishkek

PROGRAMME AND AGENDA

Thursday, 30.10.2014.

10.00 Registration
10.10 Welcome note
10.15 Introduction to tunnel safety (overview of the accidents in the World's Road Tunnels, the importance of traffic safety in tunnels)
10.20 Video – Mont Blanc tunnel disaster
11.00 Most important International Documents in use
11.05 Videos - Safety Pillars 1-5
11.30 Presentation of UNECE Conventions (similarity, uniformity)

12.30 Lunch

14.00 Presentation of EU Directive on safety in road tunnels
15.00 Presentation of PIARC documents
(Tunnel Safety Manual – general information)

15.45 Coffee break

16.00 Conventions and Directives (possible steps in implementation)
16.05 RABT and RVS – guidelines general
16.15 Video - Behaviour in a road tunnel
16.30 Discussion
16.40 End of the Day I

Friday, 31.10.2014.

09.00 Summary of Day 1
09.05 Technical section I
- Most important rules (Tunnel systems - table)
- Tunnel Management Systems – general (Video TM Doha)
- Power energy supply system, lighting system, Ventilation - energy savings strategy, fire detection and alarm system, surveillance video system, emergency call stations (intercom and phone), visibility, air speed and pollution (CO, NO) monitoring, tunnel, traffic radio and loudspeakers, emergency stop stations, VMS, lights and signs, meteorology stations, water supply system, system of tunnel closure, Control Center (SCADA)
- Videos

12.30 Lunch

14.00 Technical session II:
- Show case of experience - Croatia (EU awarded tunnels)
- Serbia (details)

15.45 Coffee break

16.00 Technical session II: continuation
16.30 Future steps of improving tunnel safety + Discussion
17.00 Evaluation of WS and closing session
17.15 End of WS

All participants to WS/TC got printed presentations and program with DVD room which contains:

1. 3-W001 Workshop/Training Course Presentations
2. Important International documents regarding Workshop/Training Course
3. List of participants with contact details
4. Photographs from the WS/TC

Instantaneous translation was provided to enable effective dialogue. Throughout the WS/TC there was lively question and answer discussions between participants and lecturers.

There were considerable discussions about practical issues and case studies included in WS/TC.

1.4. Attendances

WS/TC 3-W002 was attended by 14 representatives from seven TRACECA countries (except representatives from Kazakhstan, Turkmenistan and Uzbekistan).

Armenia

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Karen Badalyan	Transport programs implementation Office, Ministry of Transport and Communications of the Republic of Armenia	37491-41-73-89 (mob) 37460-54-05-27 (work)	kbadalyan@transportpiu.am
2	Vardan Astvatsatryan	Head of Development Programs Department, "Directorate of highways of Armenia", Ministry of Transport and Communications of the Republic of Armenia	37491-40-33-88 37410-56-25-01	vardan.ast@mail.ru

Azerbaijan

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Anvar Karimov	Ministry of Infrastructure of Azerbaijan, Head of sector of road infrastructure safety	012 430 99 43 050 240 31 77	e.kerimov@mintrans.az envernn@gmail.com
2	Mammadov Safa			

Georgia

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	David Kortava	LELP "Land Transport Agency", Advisor of the Director		dkortava@lta.gov.ge
2	Zurab Lebanidze	Georgian Road Department of Ministry of regional Development and Infrastructure	+995595225886	zlebanidze@mail.ru

Kyrgyzstan

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Zamir Aydarov	Deputy Director General State "Bishkek-Osh" Road Administration	0 312 31 42 93 0 777 90 90 24	Gdadpto@mail.ru
2	Nurlan Eraliyev	Lead specialist of the Department of production and acceptance of work preparation, Department of Road	0 312 66 18 32 0 554 42 75 44	Mr.nurlan.ddx@mail.ru

		Management, Ministry of Transport and Communications, Kyrgyz Republic		

Moldova

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Sergiu Bejan	Engineer, Technical University of Moldova, Roads, Bridges - Head of Chair \ BCPC Ltd "ASTRAL-PROIECT" – Chair of Railways, Director	(+373) 22 76 85 87, (+373) 69611873	serbej@gmail.com
2	Andrei Buraga			

Tajikistan

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Azizov Fatkhiddin Fatokhovich	Head of Department of Supervision and Regulation of road facilities	992 938 881 025	azizov_1979@inbox.ru
2	Saidasanov Hurshedsho Avzalshoevich	Chief specialist of Department of Supervision and Regulation of road facilities	992 934 686 803	khursh.89@mail.ru

Ukraine

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	E-mail
1	Bondar Tetiana	SE "DerzhdorNDI", Head of Road Safety Department	+38 050 334 72 30 +38 044 201 08 55	bdrndi@ukr.net
2	Levchuk Mykola	Ukravtodor, Head of Artificial constructions Division, Road development Department	+38 044 287 33 57	Levchukn@i.ua

1.5. Results Achieved

Results Achieved from the three WS/TC are shown in the following table.

Expected and achieved objectives and outcomes

	Expected objectives and outcomes	Objectives and outcomes Achieved	Comments
Objectives			

1	Increase the knowledge among relevant stakeholders (specialists) in each of TRACECA countries about EU Directives and related Agreements concerning tunnel safety.	Yes	14 participants from 7 countries were trained
Outcomes			
2	Selected staff were trained in tunnels safety	Yes	14 participants from 7 countries were trained
3	Selected staff trained will have better understanding about EU Directive/ Agreements on tunnels safety and its implementation	Yes	14 participants from 7 countries were trained

Evaluation

For evaluation of WS/TC anonymous evaluation questionnaire were used. Questionnaire template is presented at figure below.

Implementation of the regional road safety Action Plan for the Neighbourhood East and Central Asia – TRACECA Road Safety II
EuropeAid/133898/C/SER/Multi
Project funded by EU

TRACECA ROAD SAFETY PROJECT

TRACECA

Anonymous Evaluation Questionnaire

Please be kind enough to evaluate the Workshop and give feedback on "Training on safety elements of road design, construction and maintenance" held in Kiev on 18-19 September 2014 as part of the European Union financed Project "TRACECA ROAD SAFETY II"

DIFFERENT ASPECTS OF WORKSHOP	VERY POOR	POOR	ADEQUATE	GOOD	EXCELLENT	YOUR COMMENT
ORGANIZATION OF WORKSHOP						
IMPORTANCE OF WORKSHOP TOPIC						
QUALITY OF PRESENTATIONS						
QUALITY/EXPERTISE OF LECTURERS						
LENGTH OF WORKSHOP						
LOCATION WHERE THE WORKSHOP WAS HELD						

➢ What did you like most on Workshop?

Consortium SAFEGE – IMC Worldwide – Grant Thornton – Granturco & Partners–
Project Office: Kiev, Ukraine Head Office: Brussels, Belgium

Implementation of the regional road safety Action Plan for the Neighbourhood East and Central Asia – TRACECA Road Safety II
EuropeAid/133898/C/SER/Multi
Project funded by EU

TRACECA ROAD SAFETY PROJECT

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➢ IS Workshop useful for your work? (your suggestions for next topics):

➢ Suggestions to the organizers/lecturers:

THANK YOU FOR TOUR TIME!

Kiev, 19.09.2014.

Consortium SAFEGE – IMC Worldwide – Grant Thornton – Granturco & Partners–
Project Office: Kiev, Ukraine Head Office: Brussels, Belgium

The results of participant's evaluation WS/TC are shown in table below.

Evaluation results of Tunnel Safety Workshop 3-W002

14 participants (except from Kazakhstan, Uzbekistan and Turkmenistan) and 14 evaluation lists received Bishkek, 30-31 October 2014.

		Participants answers														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	AVG
Main Questions	Organization of WS	5	5	5	5	4	5	5	5	4	5	5	5	5	5	4.86
	Importance of WS topics	5	5	5	5	4	4	5	5	5	4	5	5	5	5	4.79
	Quality of presentations	5	5	5	5	4	5	5	5	4	5	4	4	4	4	4.57
	Quality/Expertise of lecturers	5	5	4	5	3	5	5	5	4	5	5	5	5	5	4.71
	Length of WS	4	4	4	4	4	3	5	5	5	3	4	3	4	3	3.93
	Location of WS	5	5	5	4	5	4	5	5	5	5	5	4	5	5	4.79
	AVG	4.83	4.8	4.7	4.7	4	4.3	5	5	4.5	4.5	4.7	4.3	4.7	4.5	**4.61**

Legend:
Mark 1: Very poor, 2: Poor, 3: Acceptable, 4: Good, 5: Excellent

Main participants comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organizers/lecturers
1	Level of knowledge	Yes, especially construction and rehabilitation of roads	Should last 3 days; more practical examples (the hosting country, problems and methods to improve)
2	Organisation	Very useful	Need a longer WS (more days)
2	Very important topic, freight and passenger transport, especially in tunnels in countries with different levels of road safety	Yes	More lecturers from different countries
4	Detailed information with examples	Yes, will use in development of legislation	Future topic: "Methods of RS improvement on pedestrian crossings". Indicate the lecturer on the programme
5	-	Yes	Length - 4 days
6	Organisation, the speaker	Yes, especially catgorization of tunnels	Length at least 3-4 days
7	Importance of the topic	Very useful. Will use in design of new tunnels	Would like to know more about road construction technologies
8	All the topics	Will use the methods and examples which were shoewn on the WS	
9	Topic,discussion, understanding each other, skills	Very useful and important. Development of new standards	More WS on different topics in the area of transport and road construction
10	Videos	Yes	In future please invite thoe participants who have already participated in such WS
11	New topic, video materials, lecturer	Yes, related to my work, will follow the recommendations	More discussions during the lecturer's speech
12	The topic of the WS is chosen correctly, high level of lectures	Yes	More time (WS length)
13	New technologies which allow quick management and make the work of the operating personnel easier	Yes, Interested in the topic "smart roads"	More practical examples
14	Importance of the problem and how it is presented	Yes	Need a longer WS (more days)

Project response to evaluation results:

1. WS should be longer (3 days) with increased number of examples
2. To organise more WS with tunnel safety topics

1.6. Photo documentation

WS/TC 3-W002

Plate 1.

Instantaneous translations enabled very active dialogue/discussions between participants and lecturers and exchange of experience between all involved in WS/TC.

Plate 2.

WS participants

5. SAFETY ENGINEERING VEHICLES

Although vehicle related issues were included under UN Conventions (Section 6), there was considered additional need to review Vehicle Technical Inspections to ensure road worthiness. This section contains the country report on that topic.

5.1

COUNTRY: **ARMENIA**

TEAM: TIV/ TEAM

TOPIC: INSTITUTIONALIZATION OF TIV/MVSRB IN ARMENIA

DATE: JUNE 17-19; AUGUST 13-14 2015

TECHNICAL INSPECTION OF VEHICLES & MOTOR VEHICLE SAFETY REGULATIONS/STANDARDS TEAM
REPORT PREPARED BY

Team member/s:

1. Dušan Mladenović (STE 14&STE15)

June 20th, August 18th, 2015

Table of contents

1. **Introduction**
2. **Activities undertaken**
3. **Current situation (present practices)/deficiencies requiring attention and recommendations (suggested way forward)**
4. **Conclusions**

Annexes:

A: Persons met or consulted

* *

1. Introduction

In accordance with project ToR for Component 3: "Safer Infrastructure and Vehicles" and Inception Report, tasks No.: 3.2 Safer Vehicles, precisely 3.2.1 Training and International Best Practice for Technical Inspection of Vehicle as well as 3.2.2 Training on International Recognized Motor Vehicle Safety Regulations, Vehicle Technical Inspection Team (DM) made a two-day visit to Armenia on 18th and 19th June and two-day visit on 13th and 14th August 2015 .

The main task of VTI/VR (Vehicle Inspection/ Vehicle regulation) Team was to analyze the legal framework of periodic vehicle inspection system and vehicle regulations in Armenia and to help local experts o institutionalize of Periodical Vehicles inspection system as regular procedures in Armenia. Also, it was necessary to understand the level of control in real conditions (on the technical inspection stations), as well as the quality of equipment and the level of knowledge of the controllers.

The analysis of the regulation level of protection from the vehicles that do not fulfill the standards was also necessary, as well as the quality of spare parts.

2. Activities undertaken

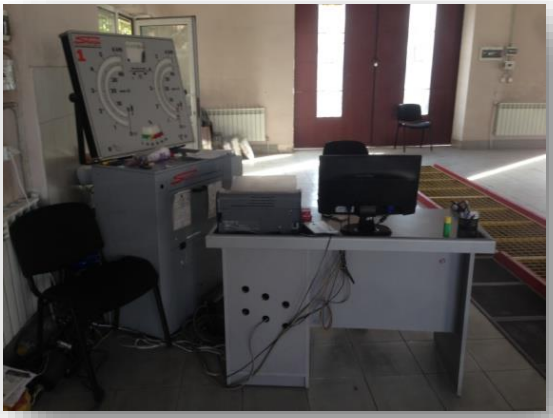
On the first day of first mission (18th June) a round table and training was organized in the Ministry of Transport where VTI/VR Team (DM) presented the institutional and legal framework of the functioning of PVTI system in certain countries of EU and UNECE. Fourteen representatives attended the meeting – representatives from government sector, representatives of the companies who are dealing with vehicle control, insurance, associations, NGO sector (Annex A).

The following presentations were shown and consider:

- Legal framework of international Periodical Technical Inspection system
- Periodical Technical Inspection system in transient countries (examples of Serbia)
- International best practices in PTI (Statistics, main goals and best practices)
- Trends of the test lines in Europe
- Regulation on Technical inspection of vehicles in Turkey

Discussion developed also in the part that relates to the minimal standards for facilities,

equipment and controllers which are necessary to fulfill in order to get a permission (authorization, license) for the carrying out of PVTI, about the responsibility of metrological laboratories for the calibration of devices and equipment, and particularly about the way of the controllers training and the minimal level of expertise of the controllers.
Test stations must contain headlight beam testing devices, brake testing devices, emission tester for diesel engines, gas analyzer for petrol engines, side sleep tester, noise level meter (see pictures)

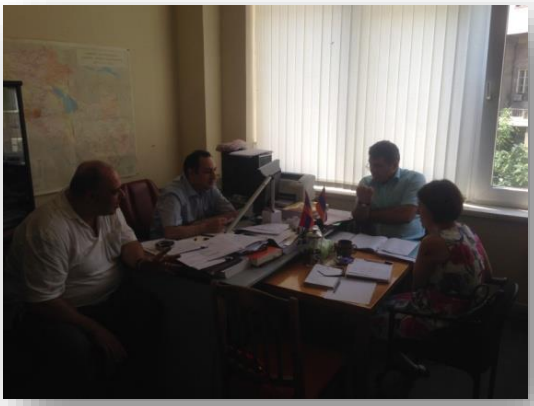


Picture ARM 1: Brake testing and light testing on VIS

Picture ARM2 Testing equipment at VIS for PVTI of vehicles under 3.500 kg curb-weight

On the second day (20.06.2015)) three separate meetings were held.
The first one was attended by representatives of NGO Drivers protection. The president of NGO gave the weaknesses identified in the way of applying the legal procedures. He highlighted the corruption issues which caused that government adopted a decree which disabled paying directly to VIS for services and abolish issuing of label (sticker) as a proof of completion of PVTI. He expressed his disagreement to implementation of real-time cameras as a tool for control of PVTI process at VIS and anti-corruption measure.
After the NGO meeting the second meeting was held at Ministry of transport with Deputyhead for Road transport Mr. David Melkoryan and his associates.

Ministry for transport is responsible for licensing, authorization, organization and coordination of PVTI, preregistration inspection of vehicles, PVTI controllers training and certification.



Picture ARM 3; Bilateral meeting in the MoT

Mr. David Melkoryan was presented measures planned by Ministry in order to protect against corruption and reactivation of PVTI aiming to real improvement of traffic safety instead of formal issuing of certificates by Bank, without effect of vehicle control.
Ministry representatives presented information system for management and control of VIS work. Also, experiences exchanged in the field of VIS authorization, which is introduced 2007 in Armenia.
After the Ministry visit, the third meeting was held with the president of NGO TIGRAN. As an important issue, the promotion of safe vehicles was highlighted and its important role in Road traffic safety. According to his opinion, Vehicle control issue and type approval process application of imported used vehicles and spare parts have only social effect, which is the base point for non-recognizing of PVTI and type approval system importance.
On the other hand, corruption and illegal activities lead to wrong decisions of government, producing the so-called mandatory PVTI system aiming to fill the budget only under the statement of anti-corruption.
Second visit to Armenia was on August 13th and 14th.
On first day, the training and workshop in Ministry of transport was held. In the morning session was realized the training program, including knowledge of norms and standards (legislations) (96/96 EC 2040/90).
Main topic was to promote type approval requirements that take account in-service enforcement:

- Issuing of type approvals
- Approval of rebuilding
- Vehicle and their component type approval
- Manages the data bases of Motor vehicle and VTI Stations.

Afternoon session was organized as discussion on topic: Road Transport in General and Vehicle Regulations (1958 Agreement on Vehicle Construction and 1997 on Periodical Technical Inspection).

On second day, two VIS visits were made. First VIS for vehicles under 3.5 t with 3 controlling

lanes visited, where the training was held on implementation of procedures given by 96/96 EU directive. The other VIS was equipped to conduct PVTI for all kind of vehicles. Employees presented how they conduct PVTI of freight commercial vehicle.
Head of VIS expressed strong attitude on topics of corruption and illegal activities stating that corruption is not the issue of control procedures or vehicle safety, but only to institutions. Also he expressed that social aspect cannot be the barrier to implementation of PVTI system.

Picture ARM4: VIS for all types of vehicles

3. Current situation (present practice), deficiencies requiring attention and recommendations (suggested way forward)

Periodical vehicles technical control (PVTI) is delegated to the private companies. In Armenia there are 33 stations for technical inspection, out of which 11 are in Yerevan. The total number of vehicles is around 600.000. Number of vehicles registered is not exceeding the 500.000 of which are half in Yerevan and other half out of Yerevan. Difference in fleet structure by age is outstanding comparing the Yerevan and the rest of the territory.
The system is largely unclear. According to the law, PVTI is obligatory, but in the real system, it is not. Reimbursements are paid in a bank, and after the payment a clipping is received for go to the VTI. Practically, the payment for VTI is obligatory, but going to the VTI Station is not. Namely, upon the payment of the taxes, a vehicle can be registered in a police station. The process of the registration and the process of the vehicle inspection do not comply.
There is a significant opposition by the Association of the drivers, which does not wish to introduce Information system with the control via web cameras.
The facility visited and the equipment inside is on a high level. The staff is on a high level, too.
The importance of the NGO sector in the area of traffic safety is significant.
The use of the capacity is around 10%. The authorization is issued by the Ministry of Transport.
According to estimation given by the Ministry, about 80% of vehicles are re-engineered and adapted to use gas instead of petrol fuel. Actually, PVTI is mandatory by law but not in the practice too.

A) Implementation (institutionalization) of different impact indicators for VTI:

	Selected Impact indicator (current situation)	Deficiencies requiring attention	Recommendations (suggested way forward)
1	Legal basis for VTI exists? - Current legal system is obligatory and under MOI. -Control procedures is at the level of Directive 96/96 EU and 2009/40 EC -Wien Agreement 1997 is not signed		- To prepare for the signing of the 1997 agreement
2	Adequate manual for VTI Methodology is in use? -They have developed a methodology to control VTI -Controllers at the VI station have engineering education	-	- The frequency of the inspection is in accordance to the Directive 2010/40, 4-2-2.
3	Equipment on PVTI available? -Most modern equipment is in use		-prepare VTIS for the control of electronic equipment for the vehicles with modern electronic devices
4	Information system? Information system exist Statistics about inspection and vehicles is available for MOI and MOT	No on-line web camera surveillance	- upgrade the information system, both in the part that concerns recognition of vehicles in real time via cameras and suitable backing software connections with other databases (police database, stolen vehicles, Insurance register)
5	Social aspect of VTI How to introduce motorized vehicles into society	How to harmonize the social aspect of the technical level of control Relation between Vehicle defects and Road traffic accident	-improve linkages between forms of roadworthiness enforcement -improve proof of compliance to demonstrate that vehicles has been checked for roadworthiness
6	Agreement 58 and EU directive Int. convention is not ratified		- To prepare for the signing of the 1958 agreement
7	Legal basis exists to prevent import of unsuitable/ unsafe vehicles Allowed to import used cars with a minimum standard of EURO IV	Adequate controls to prevent import of fake spare parts (no control)	

4. Conclusions

After the workshop and training in Ministry of Transport, several bilateral meetings, visiting, analyzing and training in the two vehicle technical stations, it can be concluded that system of periodical vehicles technical inspections must be changed and improved. Main deficiency is the way of payment of fees for technical inspections. Actual model which is including the bank services should be stopped immediately and revert the process back to Vehicle Inspection Stations (VIS) with full responsibility.
Due to the way of realization of payment and certification by the bank, we get the impression that the periodical vehicle technical inspection (PVTI) in Armenia is mandatory but not implemented fully in practice. It is necessary to change the regulations in the way to establish mandatory PVTI and clear monitoring and control of VIS operations. First step should be returning of all activities to VIS and implementation of higher level of control by using of IT solutions.
. Information system should be improved to real time surveillance level using web camera control. Existing information system managed by MoT is good basis for further improvement. The importance of the NGO sector in the area of traffic safety is significant. NGO still are not aware of importance of PVTI for Roar safety and they are still against to real time VIS control, as well as to way of struggle against corruption and bribery. NGOs could be very helpful in promotion of significance of vehicle safety as a part of Road safety. Concerning the age of fleet (more than 18 years in average) as well as fast increase of motorization level (almost 3 times in past 10 years), vehicle safety have important role in level of Road Safety in Armenia. Vehicle safety management have to be brought on higher level through:
Improvement of legal framework and harmonization with EU regulations in implementation of PVTI system
Improvement of information system (real time) for control and surveillance of work of VIS
Improvement of legal framework and implementation of road-side vehicle inspections (RSI)

Periodical vehicle safety inspections stations are private companies. The facilities of VIS that were visited and the equipment in them are on a high level. The staff is on a high level, too.
According to the information from the Ministry of Transport, the Draft on Law which will return the responsibility back to the VIS and ensure full function of PVTI system aiming to improve vehicle safety is prepared. Process of PVTI should be putted back to regulation framework with full responsibility of VIS.
A special activity, which requires a longer period to implement, is working on the introduction of Agreement 58, (Agreement concerning the adoption of uniform technical prescriptions for wheeled vehicles…), which would be a base for adopting a national normative for the permissions of type of vehicles regarding import of both, new and used vehicles. Also the UN 1997 Agreement (Agreement on periodical technical inspections) is very important for introduction. The Agreements 97 provides legal framework and procedures for the adaption of u uniform rules for carrying out technical inspection of vehicles in use and, which are very important, possibilities to delivering international certificates of inspection.

ANNEX:
A: Persons meet or consulted

Road Safety Vehicle Tehnical Inspection
Working visit to June 18 -19 2015 as part of the
European Union financed Project "TRACECA ROAD SAFETY II"

LIST OF PARTICIPANTS

No.	Name and Surname	Institution (Organization) and Position	Contact telephone E-mail
20.	Artak Asatryan	Ministry of Transport, Deputy head of Technical Control department of Vehicle Inspection	093 804030
21.	Gagik Petrosyan	Ministry of Transport, Chief Specialist of Technical Control, department of Vehicle Inspection	094591399
22.	Aram Badalyan	Ministry of Transport, Chief Specialist of Technical Control, department of Vehicle Inspection »	0937776665
23.	Varlen Mkrtchyan	Leading Specialist of Central Control and Registration division of Technical Control Department	093 022622
24.	Vardan Tadevosyian	Chief Specialist of Yerevan city department of Vehicle Inspection MoT	093 676173
25.	Artak Fidanyan	First Class Specialist of Kotayq and Gegharquniq regional department of Vehicle Inspection, Ministry of Transport	
26.	Eduazd Hovhannisyan	President of center Achil protection of drivers rights	

27.	Karen Chilingaryan	President of the Consumers consulting centre NGO	
28.	Tigran Ghazaryan	Board member of National Road Safety Council NGO	
29.	Tigran Kosharyan	Director of ''Autorem'' vehicle inspection center	
30.	Tatevik Hovhannisyan	TRACECA Road Safety Project II National Coordinator of Armenia	
31.	Samvel Parsamyan	Leading Specialist of Registration and Analysis department of Vehicle Inspection, Ministry of Transport	
32.	Margarita Martirosyan	President of Federation of Armenian women' drivers	
33.	Lilit Papikan	Translation	

Vehicle technical inspections team working visit 13-14 August 2015

Yerevan, Armenia, as part of the
European Union financed Project "TRACECA ROAD SAFETY II"

LIST OF PARTICIPANTS

No.	Name and Surname	Institution (Organization) and Position	Contact telephone E-mail
1	Tigran Kocharyan	Director of ''Autorem'' vehicle inspection center	091428 717
2	Daniel Ionnisyan	President of Union of informed citizens NGO	093 742 244
3	David Melkoryan	Deputy head of transport Department, Head of division of transportation policy, Ministry of transport and Communication	093 215 225Dave_melkonyan@yahoo.com
4	Artak Asatryan	Deputy Head of Technical Control department of Vehicle Inspection, Ministry of Transport	093 804 030 Aartak69@mail.ru
5	Ashot Iskandaryan	Director of "Format-automontogi" vehicle inspection station (trucks)	055 553 452
6	Tigran Ghazanyan	Board member of National Road Safety Council	**077 465 985**

6. UN CONVENTIONS AND EU AGREEMENTS

A regional workshop was held on the most important UN Conventions and EU Agreements related to road safety. Each country identified the aspects of greatest need in terms of technical assistance from the follow up visits to those countries to provide further support/information and training.

6.1

EU/UNECE Conventions and Agreements Workshop

Kiev, Ukraine

10-13 March 2015

1.1 Workshop

The EU/UNECE Conventions and Agreements Workshop was held in Kiev, Ukraine during the period 10-13 March 2015. It was implemented in the Ministry of Infrastructure in Kiev. Mr. Adamantiadis was unable to attendthe workshop to do his presentations due to illness so his presentations were done by other members of the project team.

Workshop attendance was 22 participants from 8 TRACECA countries, and there was a very active discussion throughout the workshop.

Information was provided to the media about the EU funded TRACECA Regional Road Safety Project and the scale and urgency of the problem in Ukraine and media coverage was organized.

1.2 Participants of workshop

The list of participants attending all or parts of the workshop is presented below.

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	**E-mail**
Armenia				
5.	Sahakyan Sargis	Lead specialist “Roads Directorate of Republic of Armenia”		
Azerbaijan				
6.	Mirzoyev Sabir Mashi oglu	Head of Sector "Transport Safety" of the Ministry of Transport of Azerbaijan		
7.	Babaev Ruslan Fizuli oglu	Expert of Department "Organization and traffic safety" of "AzerDorServis" of the Ministry of Transport of Azerbaijan		
Georgia				
8.	Mr. Koba Metreveli	Chief Specialist of Land Transport Division		kmetreveli@economy.ge

9.	Mr. Shalva Uriadmkopeli	Head of Land Transport Safety Department		shuriadmkopeli@lta.gov.ge
Kazakhstan				
10.	Aitbayev Bulatbek	Head of the Department of Science and the quality of work of the Committee of highways Ministry of Investment and Development of the Republic of Kazakhstan	8 7172 243065 8 7172 299065	aitbaev@mid.gov.kz
11.	Abdenov Moldabek	Chief Expert of the Department of Road Transport, Transport Committee, Ministry of Investment and Development of the Republic of Kazakhstan	8 7172 242413	m.abdenov@mid.gov.kz
Kyrgyzstan				
12.	Beishenova Salima	Leading specialist of road and rail transport department	0312314288 0555906200	sbeishenova@mtk.gov.kg
13.	Kasymaly uulu Arslanbek	Head of International transportations department of the State Agency for Road and Water Transport under the Ministry Transport and Communications of the Kyrgyz Republic	0312314070 0554770880	k.u.arslan@mail.ru
Moldova				
14.	Olec Bicu	Head of the Systematization of Road Traffic at Surveillance of Transport and Road Traffic Department of National Patrolling Inspectorate, at the General Police Inspectorate of Ministry of Internal Affairs		oleg.bicu@igp.gov.md
15.	Mr Radu Rogovei	Deputy Head, Road Development Department, Ministry of Transport and Roads Infrastructure		radu.rogovei@mtid.gov.md
Tajikistan				

16.	Makhmudov Firuz	Deputy Head of the International Cooperation Ministry of Transport	919 22 55 57	Mahmudov.firuz@mail.ru
17.	Quodirov Sayfullo	Chief specialist of road transport and transport security department	917 68 65 68	Sayfullo-80@mail.ru
Ukraine				
1.	Gorbakha Mykola Mykolayovych	Head of Safety Department, Ministry of infrastructure of Ukraine		
2.	Koskovetsky Volodymyr Mykolayovych	Deputy Director of Safety Department, Head of traffic safety and transport of dangerous goods Department, Ministry of infrastructure of Ukraine		
3.	Mikov Dmytro Igorovych	Chief Specialist of Road Safety and transportation of dangerous goods Division, Safety Department, Ministry of infrastructure of Ukraine		
4.	Proskura Olena Oleksandrivna	Deputy Director - Head of European Integration and International Organizations Division Department of International Cooperation and Investment of the Ministry of Infrastructure of Ukraine		
5.	Babiy Oksana Stepanivna	Head of Advanced Development of priority transport networks Division, Department of Strategic Infrastructure Development and Science and Technology Policy of the Ministry of Infrastructure of Ukraine		
6.	Deminska Katerina Gennadiivna	Chief Specialist of the prospective development of priority transport networks Division, Department of Strategic Infrastructure Development and Science and Technology Policy of the Ministry of Infrastructure of Ukraine		

7.	Gritsenko Victor Mykolayovych	Chief Specialist of Department of development strategy of road and public transport Department of Road Transport and Highways Strategic Development Ministry of Infrastructure of Ukraine		
8.	Majboroda Yuriy Mykolayovych	Head of Department of disaster and accidet prevention work, State Inspectorate of Ukraine on land transport safety		
9.	Gerega Ivan Vasilyovych	Deputy head of Department of disaster and accidet prevention work, State Inspectorate of Ukraine on land transport safety		
10.	Holotsvan Oleksandr Vasylyovych	Head of department of operational road maintenance and safety of the State Agency for Roads of Ukraine		
11.	Dudnik Natalia Mykolayivna	Chief Specialist of Department of operational safety management of road maintenance and safety Department of the State Agency for Roads of Ukraine		
12.	Horpyniuk Andriy Vasylyovych	Deputy Director of Research of the State Enterprise "State Road Transport Research and Design Institute"		
13.	Habutdinov Arseniy Romanovych	Head of Department of Transportation Safety of state enterprise "State Road Transport Research and Design Institute"		
14.	Simonenko Roman Viktorovych	Head of Sector - Certifying services secretariat, inspection and support of implementation of AETR laboratory studies of fuel consumption and ecology, state enterprise "State Road Transport Research and Design Institute"		
15.	Nazarenko Mykola Borysovych	Senior Research Fellow of sector - Certifying _ services secretariat, inspection and support of implementation of AETR laboratory studies of use of fuels and ecology, state enterprise "State Road Transport Research and Design Institute"		

16.	Kolinchenko Yuriy Petrovych	Engineer of 2 category of sector - Attestation services secretariat, inspection and support of implementation of AETR laboratory studies of use of fuels and ecology, state enterprise "State Road Transport Research and Design Institute"		
17.	Shum Inna Vitaliyivna	Head of the department of public transportation enterprise "State Road Transport Research and Design Institute"		
18.	Eremenko Mykhailo Oleksandrovych	research fellow of freight traffic department of state enterprise "State Road Transport Research and Design Institute"		
19.	Terent'ev Vitaliy Oleksandrovych	Category 2 engineer Department of engineering development and scientific and technical expertise state enterprise "State Road Transport Research and Design Institute"		
20.	Gutarevych Sergiy Yuriyovych	Deputy Director of Research state enterprise "State Road Transport Research and Design Institute"		
21.	Zharov Kostyantyn Sergiyovych	Head of the department of registration, information provision and management of the state enterprise "State Road Transport Research and Design Institute"		
22.	Matviichuk Svitlana Ruslanivna	Assistant and consultant to National Deputy of Ukraine		

1.3 Agenda

Tuesday, March 10

Time	Theme	Who delivers
09:30	Welcome and registration	
Opening session		
10:00	Welcome Opening Speech Introduction of the TRACECA Road Safety Project Phase II Introduction of the project component 2 "Regulatory and institutional reforms", the Workshop Agenda, methodology and organizational aspects Presentation of the UNECE film on UN the Decade of Action 2011-2020 (8 minutes)	***Ministry of Infrastructure of Ukraine*** **EU Delegation, Ukraine** **Mr. Alan Ross,** Road Safety Adviser and Team Leader of the TRACECA Regional road safety project **Mr. Michalis Adamantiadis**, UNECE Road Safety Agreements and EU Regulations Expert and Activity Coordinator, TRACECA Regional road safety project, former Chief of Transport Facilitation and Economics Section, UNECE Transport Division (Given by Alan Ross since Mr. Adamantiadis was ill)
11.30	Coffee Break	
Item I: The Vienna Conventions – objectives - key provisions – benefits and related EU Legislation		
12.00	**Convention on Road Traffic, 1968** **Convention on Road Signs and Signals, 1968** **Training and licensing in the EU with emphasis to these relating to professional drivers** **Questions/ Answers**	**Mr. Robert Nowak,** Head of Unit, Road Transport and Road Traffic Safety & Secretary of the Working Party on Road Transport (SC.1) and the Road Safety Forum (WP.1), Transport Facilitation and Economics Section, Transport Division, UNECE **Mr. Soren Christiansen**, Road Safety and Dangerous Goods transport Expert, TRACECA Regional road safety project All attendants
13:30	Lunch Break	
15:00	**Status of accession and implementation, strengths and weaknesses across the region, sharing best practices amongst the project beneficiary countries** **Debate**	**Experts of project beneficiary countries** (Armenia, Azerbaijan, Georgia, Moldova, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Uzbekistan) All attendants
16:30	Coffee Break	
17:00	**Discussing the needs and the follow up work**	All attendants
18.00	**End of the first day**	

Wednesday, March 11

Time	Theme	Who delivers
Session II: European-Agreement concerning the Work of Crews of Vehicles Engaged in International Road Transport (AETR), 1970		
10:00	**The AETR Agreement objectives - key provisions – benefits and related EU Legislation** **Experiences of the Eastern European countries and in particular of Ukraine in implementing the AETR and the digital tachograph** **Questions/ Answers**	**Mr. Robert Nowak**, UNECE **Mr. Roman Symonenko,** Chairman of the UNECE Working Party on Road Transport (SC.1), Ministry of Infrastructure, Ukraine (TBC) All attendants
11:30	Coffee break	
12:00	**Road Map on the accession to and implementation of the AETR Agreement** **Status of accession and implementation, strengths and weaknesses across the region, sharing best practices amongst the project beneficiary countries** **Discussing the needs and the follow up work**	**Mr. Michalis Adamantiadis,** TRACECA project (Given by Soren Christiansen) **Experts of project beneficiary countries** (Armenia, Azerbaijan, Georgia, Moldova, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Uzbekistan) **All attendants**
13:30	Lunch break	
Session III: European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), of 1957		
15:00	**The ADR Agreement objectives - key provisions – benefits** **Definitions – Roles and Responsibilities – Classes - Vehicle requirements – Packaging, Labelling and transportation documents - Training** **Questions/ Answers**	**Mr. Soren Christiansen,** TRACECA project
16:30	Coffee break	
17:00	**Status of accession and implementation, strengths and weaknesses across the region, sharing best practices amongst the project beneficiary countries** **Discussing the needs and the follow up work**	**Experts of project beneficiary countries** (Armenia, Azerbaijan, Georgia, Moldova, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Uzbekistan) **All attendants**
18:00	**End of the second day**	

Thursday, March 12

Time	Theme	Who delivers

Session IV: Vehicle Regulations – objectives - key provisions – benefits		
10:00	**Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be fitted and/or be used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of These Prescriptions, 1958** **Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles and the Reciprocal Recognition of such Inspections, 1997** **Questions/ Answers**	**Mr. Juan Ramos**, Vehicle Regulations Expert, TRACECA Regional road safety project, former Chief, Vehicle Regulations and Transport Innovations Section, Secretary World Forum Harmonization of Vehicle Regulations (WP.29), Transport Division, UNECE and former Detached Expert to the European Commission
11:30	Coffee break	
12:00	**Status of accession and implementation, strengths and weaknesses across the region, sharing best practices amongst the project beneficiary countries** **Discussing the needs and the follow up work**	**Experts of project beneficiary countries** (Armenia, Azerbaijan, Georgia, Moldova, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Uzbekistan) **All attendants**
13:30	Lunch break	
Session V: Site visit in Kiev of place(s) providing good example of the implementation of the UNECE Road Safety related Agreements		
15:00	**Transfer of participants by bus (to be confirmed)** *Visit(s) could be to the State Road Transport Research Institute (testing center for vehicles) or a vehicles' technical inspection center - ADR tank certification or tank cleaning station - Real life Road Side control of vehicles – Professional drivers training center*	
18:00	**Return of participants - End of the third day of the workshop**	

Friday, 13 March

Time	Theme	Who delivers
Session VI: The European Agreement on Main International Traffic Arteries (AGR), of 1975		
10:00	**AGR Agreements – objectives - key provisions – benefits** **Questions/ Answers** **Status of accession and implementation, strengths and weaknesses across the region, sharing best practices amongst the project beneficiary countries** **Discussing the needs and the follow up work**	**Mr. Michalis Adamantiadis,** TRACECA project (Given by Mr. Nowak) **All attendants** **Experts of project beneficiary countries** (Armenia, Azerbaijan, Georgia, Moldova, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Uzbekistan) **All attendants**

11:30	Coffee break	
Session VII: The way forward		
12:00	**Discussion on the overall situation with regard to the status of accession and implementation, strengths and weaknesses across the region, and possibilities of sharing best practices amongst the project beneficiary countries**	**Mr. Soren Christiansen** **Mr. Juan Ramos** **Mr. Michalis Adamantiadis** **All attendants**
13:30	Lunch break	
15:00	**The way forward: Identification of the follow up actions at regional and national level for implementation by the project**	**Mr. Soren Christiansen** **Mr. Juan Ramos** **Mr. Michalis Adamantiadis** **All attendants**
16:30	Coffee break	
Closing session		
17:00	**Conclusion and closure**	**Mr. Michalis Adamantiadis** **Mr. Alan Ross** ***Ministry of Infrastructure of Ukraine***
17:30	**End of the fourth day and of the workshop**	

1.4 Evaluation

An anonymous workshop evaluation form (with 1 as very poor and 5 as excellent) was completed by the 15 participants on the last day. This covered 5 aspects (see form below) and delivered an overall average score of 4.64 out of a maximum 5 indicating the very high satisfaction level of participants.

Evaluation results of EU/UNECE Conventions and Agreements workshop

Completed on last day 15 participants

Kiev, 10-13 March 2015

Questions asked	Participants answers															AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Organization of WS ?	5	4	5	4	4	4	5	5	5	5	3	4	5	4	5	4,5
Importance of WS topics ?	5	4	5	4	5	5	5	5	5	5	4	5	5	4	4	4,7
Quality of presentations ?	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4,9
Quality/Expertise of lecturers ?	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Length of Workshop ?	4	3	3	3	4	4	5	5	5	5	4	5	5	4	5	4,3
Location of Workshop ?	5	4	5	4	4	4	5	4	5	5	3	5	5	4	5	4,5
Average	4,83	4,2	5	4	5	4,5	5	4,83	5	5	4	4,8	5	4,3	4,7	**4,64**

1= very poor, 2= poor , 3 = adequate , 4 good , 5 = Excellent

Main participants comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organizers/lecturers
1	International experience	Yes	
2	Lectures, experience exchange, conventions '58	Yes	Statistics (RS, signs, reducing accidents) in country, do research
3	Knowledge of experts, humour, organisation	Yes	9am till 6pm is too long
4	Juan Ramos lecture on agreement '58	Yes	
5	Lectures	Yes	
6	All topics were important; good presentations	Yes	Didn't like the place of the event; no WiFi
7		Yes	
8	Experience exchange and example of implementation of conventions	Yes	
9	Level of knowledge; organisation	Yes	
10	High level of knowledge of lecturers and participants	Yes; experience exchange	Whole list of participants with contacts before the event or after we meet
11	Discussion; examples of country experience	Yes	Higher day allowance
12		Yes	
13	Technical inspections (field trip)		
14	Technical inspections (field trip)	Yes	
15	Experience exchange; discussion and feedback	Yes	More practical tasks; field trips to government/agencies; involve experts from TRACECA countries

Workshop organizer response to evaluation:

7. Overall the workshop was obviously considered by participants to be of high quality, but project team will make further improvements to the presentations and identify more example countries to show successes
8. Change order of presentations to have impact/ effect
9. Present more analyses of greater local problem an what can be done

1.5 Photo documentation

Plate 1. Instantaneous translations enabled very active dialogue/discussions between participants and lecturers and exchange of experience between all involved in WS/TC.

AETR Convention

No country report prepared on this topic

AETR Agreement

Guideline for the agreement of workshops

By Gilles Baranger

Road Transport Expert

AETR & Digital Tachograph

April 2015

564

Preamble

The digital tachograph is a system setting down on three pillars:

- on board measuring instrument, the tachograph with a Vehicle Unit (VU), Motion Sensor (MS) and cables
- Enforcement by technical and legal bodies
- Regulations (international as AETR and national)

Workshops play a key role in the technical enforcement: they check, install and repair digital tachograph systems on vehicles. In addition they are responsible for decommissioning invalid VU and MS.

Agreed workshops may be requested by legal enforcers checking a tachograph installation, in case of doubt at a roadside check.

Commercial vehicles shall comply with the regulation, i.e. driving with a working tachograph system. They are considered by owners as production tools. Consequence is that commercial vehicles cannot be stopped for long period , that is why it is important to have a workshop network spread out on the territory in scope of AETR Agreement of each Contracting Party, in order to give a fast access to vehicles in case of tachograph failure.

A second consequence is that national administrations do not usually have possibility of performing all tasks of a workshop within a short time (some hours). The role of an administration is usually to check, not to repair.

In order to properly achieve their task, workshops are agreed by a national competent body. Then workshops technicians receive a “workshop card” allowing them setting up digital tachographs on vehicles.

Each workshop card is personal and has a PIN code which shall be exclusively known by the owner.

All activities performed by a technician on a digital tachograph are recorded on the very tachograph, so it is possible knowing afterwards who is responsible of the installation and setting up.

Then it becomes necessary that a national competent administration empowers private companies applying for an agreement of their workshop.

Even though AETR Agreement does not explicitly require al the followings, due to the importance of the agreed workshops for digital tachograph, this guideline provides national administrations with a minimum set of requirements allowing a possible empowerment.

1. The company

The company which applies to a digital tachograph workshop agreement shall justify the followings:

- Creation date and registration number
- Shareholders (it is highly recommended that the company is fully independent of haulage companies and vehicles retailers, avoiding commercial stress on the activities of the workshop, which could weaken probity of technicians). The involvement of shareholders complying with the requirements is needed.
- Activities: the company may have several activities (e.g. breakiing specialist, tires,…) but the agreed workshop shall be clearly (physically and organization) separated from others.
- People: responsibilities shall be written down. Responsible person of the agreed workshop activity, technicians…
- Quality system: It is not mandatory having a formal and approved quality system (e.g. ISO 9000), but each workshop shall have, as a minimum, a booklet of executive procedures (technical and administrative) and the official texts (regulations, laws,..) which rule the activity:

i. Installation procedure
ii. Repair procedure (conformity of an installation)
iii. Check procedure (initial and periodical)
iv. Procedures for engaged people: initial skill, specific training, periodical trainings…
v. Procedure for equipments (tools, housing, parking places for commercial vehicles…)
vi. Regulations and follow up of the regulation (procedure)
vii. Commitment of the management complying with requirements

2. Engaged persons

- A job description for each responsibility shall be written:
  i. Responsibility of the digital tachograph activity
  ii. Responsibility of the security
  iii. Technicians
- For each person an updated file shall describe:
  i. Initial skill and training
  ii. Specific trainings (Digital Tachograph)
  iii. Experience (certificates…)

3. Building and equipments

- Building and environment
  i. Accessibility to commercial vehicles (trucks and buses)
  ii. Parking places for commercial vehicles
  iii. Space for a 20m measuring track with clearance (40m about)
  iv. Dedicated room for specific instruments
  v. Dedicated space for spare parts
  vi. Dedicated space for decommissioned items
- standard tools:
  i. mechanics for mounting dismounting tachograph components
  ii. Electrical for vehicles
  iii. Dedicated for tachograph (cables, sealing tool…)
- Measuring tools (see Appendix below)
  i. Tachograph bench,
  ii. Cells and light barrier for the 20m track,
  iii. Manometer,
  iv. Triple decameter, …

4. Workshop management

- logbook of the workshop (register where all actions on tachographs are described)
- Invoicing (invoicing shall reflect the workshop register)[1] with:
  i. manpower,
  ii. spare parts,
  iii. flat rate for use of benches
- Personal follow-up (periodical trainings)
- Building and equipment follow-up
  i. maintenance,
  ii. Periodical check of measuring tools,…
- Regulations follow-up: procedure for checking the evolution of the regulations

5. Audits

- Initial audit shall check that all requirements are fulfilled. Any lack or invalid statement shall be noted and addressed to the applicant workshop. The applicant workshop shall answer on each point with a commitment for solutions with dates. A second audit may be accordingly necessary before granting the agreement.

- Follow-up audits shall check that all initial requirements are still in use. In addition it shall check the reliability of the records (workshop register) and the quality of operations (e.g. attending to a complete periodical check of a vehicle). Such audit should be driven once a year about (validity of workshop cards is limited to one year by the AETR).

- Random audits will mainly consist in checking that the workshop makes a good job. Typically the best way is to check the last vehicle which was checked by the workshop and comparing records and results of the two consecutive checks.

Appendix: Measuring tools for Digital Tachograph

Calibration of vehicles equipped with a digital tachograph requires a dedicated set of measuring tools.

The accuracy of data measured by a digital tachograph on a vehicle depends on the measurement of vehicle parameters:

- "l" = tire circumference of the motorized axle (unit = mm)

- "w" = pulses number per kilometer measured at the output of the gearbox, allowing the measurement of the real driven distance and the speed. (unit = imp/km).

The tachograph coefficient k is then adapted to the measured w. For digital tachographs, usually the formula k = w is applied.

The following measuring tools allow the above mentioned measurements:

- 20 m track for a manual measurement of the vehicle coefficient "w"
- A rolling road system (bench) for automatic measurement of the vehicle coefficient « w » and the tires circumference « l » (option)[2]
- Pulse generator checking the counting of pulses by the digital tachograph
- triple decameter measuring and setting up the light barriers on the beginning and end of the 20 m track, and manually measuring the tires circumference “l”.
- Manometer checking the tires pressure in accordance with the specified value by the tire manufacturer.

Each measuring instrument in a tachograph workshop shall have: its own records written on a life booklet (at each maintenance or repair), an acquisition procedure (which measuring tool for which measurement, range of measurements, required accuracy…), and a working procedure.

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[1] The invoiced cost of tachograph operations (installation, checks,…) may be a good indicator for the seriousness of a workshop. Very low cost may indicate that people are working very fast and likely do not roll out the complete procedure of operations.

[2] The rolling road system is not mandatory according to AETR, but in some Contracting Parties depending on national regulation. Nevertheless it is highly recommended, because automatic measurements are much more reliable than manual. In addition, when automatic measurements are performed, one can be sure they have been properly done

UN 1958 Agreement

No country report prepared on this topic

ADR

No country report prepared on this topic

7. ROAD SAFETY IMPLEMENTATION TEACHING AND RESEARCH

Visits were made to all beneficiary countries and local academics and universities were given encouragement and guidance on how to develop and undertake road safety research project. This section indicates the experts' findings in Armenia.

No country report prepared on this topic

8. STUDY TOUR AND MOTIVATION

A study tour was arranged to Serbia for the most senior officials from Traffic Police, roads departments and the Ministry of Transport. Serbia is an ex-socialist country which had similar constraints and systems to those that still exist in the TRACECA Region. Study tour participants were introduced to international best practice in each sector o road safety and then open opportunities to have direct discussions with the individuals and organisation who delivered the reforms that led to a 40-50% reduction in road deaths in Serbia. The DVD at the rear of the report shows the Study Tour.

TRACECA Regional Road Safety Project

Study Tour to Serbia

For high level officials from TRACECA Countries

Organised by

Dr. Alan Ross
Alanross999@gmail.com

Professor Krsto Lipovac
k.lipovac@gmail.com

With support from:
Mariya Ivchenko
Anastasiia Kovalenko

Belgrade, Serbia

23-28 March 2015

1.1 Workshop

The Study Tour was held in Belgrade, Serbia during the period 23-28 March 2015. It was implemented in the Police Academy, with site visits to RE "Roads of Serbia" PERS, work zone, Traffic Police HQ, Vehicle inspection (''Dunav auto''), NAVAK drivers training center.

Workshop attendance was 22 participants from 8 TRACECA countries, and there was a very active discussion throughout the workshop. Participants were:

- Heads or Deputy heads of Traffic Police

- Heads or Deputy heads of Roads Administrations

- Heads or Deputy heads of Ministry of Transport, Safety Department.

The Study Tour was arranged to Serbia because it has implemented many successful road safety interventions and established effective road safety systems over the last 10 years. By adapting and implementing a similar "Safe systems" approach as has been applied in EU countries, Serbia has managed to reduce road deaths by 50% over the last decade.

The participants attended some lectures and visits jointly and some in their respective sector groups (police, roads, MoT) so that they could see activities and meet with counterparts from their sectors. In addition, the participants worked in break out groups by country and by section and agreed to establish regional working groups in the following sectors:

- Traffic Policing

- Road Engineering

- Ministry of Transport

The fact that Serbia, a non-European country and which had a similar ex-communistic administration structures and practices as currently exist in many TRACECA countries, has been successful in addressing road safety, demonstrates that any one of the TRACECA countries could also achieve similar improvements if they adopt such approaches to road safety.

1.2 Participants of workshop

The list of participants attending all or parts of the workshop is presented below.

No.	Name and Surname	Institution (Organization) and Position	Contact telephone	**E-mail**
		Azerbaijan		
	Gulamov Elchin	President of freight forwarding company "Eltrans", member of the National Road Safety Working Group	+994 50 214 68 56 +994 12 493 64 93	office@eltrans.net
	Karimov Anvar	Head of Sector "Transport Safety", Ministry of Transport of Azerbaijan	+99450 240 31 77	e.kerimov@mintrans.az
	Hajiyev Vagif	Deputy Chairman of JSC "AzerDorServis"	598 12 24 +99450 212 24 50	info@azeryol.az
		Georgia		
	Mr. Shalva Uriadmkopeli	Head of Land Transport Safety Department of LEPL "Land Transport Agency"	+995599396644 0322365501 (140)	shuriadmkopeli@lta.gov.ge
	Mr. Kakhaber Tchanturishvili	Head of Traffic safety and Analysis System Management Division of Patrol Police Department of Ministry of Internal Affairs	+995 32 241 88 70 +995 577 77 24 05	k.tchanturishvili@mia.gov.ge
		Moldova		
	Lelenco Neli	Secretary of the National Council for Road Safety	+37369182554	neli.lelenco@mai.gov.md
	Mindra Nicolai	Chief Consultant, Road Development Department, Ministry of Transport and Road Infrastructure	+373 69936881	nicolae.mindra@mtid.gov.md

	Drucec Ion	Deputy Director General, responsible for road maintenance and road safety, State Road Administration	+373 69233417	ion.drucec@asd.md
Kazakhstan				
	Kubeisinov Zhantore	Senior Expert of department of Department of operations, Roads Committee of the Ministry of Investment and Development of the Republic of Kazakhstan	8 (7172) 75-46-49	zhantorekub@mail.ru zh.kubeisinov@mid.gov.kz
	Sadvakassov Kanat	Head of road safety coordination department, Administrative Police Committee of the Ministry of Internal Affairs of the Republic of Kazakhstan	8 717 2 71-50-55 87015147713	Sadvakasov63@mail.ru
	Baltashev Bakhytzhan	Head of State Automobile Inspection Department, Administrative Police Committee, Ministry of Internal Affairs of the Republic of Kazakhstan	8 717 2 71-58-10 87011112260 +77771002209	Riza.2000@mail.ru
Tajikistan				
	Azizov Fatkhiddin	Head of supervision and regulation of road facilities Department, State Service for Supervision and Regulation of Transport Ministry of Transport of RT	+992938881025	azizov_1979@inbox.ru
	Ziyoev Begijon	Chief specialist of road transport and transport safety Department Ministry of Transport of RT	+992935243129	begijon@mail.ru
	Murodov Sherkhon	First Deputy Head of SAI Ministry of Interior of the Republic of Tajikistan	+992900404040	
Ukraine				
	Koskovetskyi Volodymyr	Deputy Director of Transport safety Department - Head of traffic safety and transport of dangerous goods unit Ministry of Infrastructure	+38 044 351 40 63	vkosko@mtu.gov.ua
	Fedorenko Oleg	Head of Department of Operational Maintenance of Roads And Road Safety, State Agency of Automobile Roads of Ukraine	+38 044 287 72 17	50281@ukr.net
	Briantsev Vasyl	Head of the regulatory division of the Department of SAI of MIA	067 232 25 81 044 374 10 36 272 56 77	vvb@sai.mia.gov.ua
Uzbekistan				
	Saydaliev Kholmatjon	Chief of Road Safety Department, Ministry of Internal Affairs of Uzbekistan, Colonel	+99898-3670217	
	Ulmasov Asfandiyor	Deputy Head of road transport safety, Uzbek Agency for Automobile and River Transport	+99871-2414620 +99 893 395 92 76	a.ulmasov@uzaart.uz
	Shokosimov Sadriddin	Head of Tashkent city-territorial office of the Uzbek Agency for Automobile and River Transport	+99898 363 25 90 +99894 669 88 09	s.shoqosimov@aart.uz

1.3 Agenda

PROGRAM, Monday, 23.03.2015

(Lectures/presentations at Police academy)

Monday, 23.03.2015.	09.00 – 11.00	Introduction of participants (A. Ross) 1.1 Presentation of Study Tour 5 day program (K. Lipovac) 1.2 Overview of TRACECA RS II Project (D. Jovanov) 1.3 International Overview of Road Safety + Lessons from successful countries (A. Ross) 1.4 UN Decade, WHO Plan of UN decade (K. Lipovac)
	11.00 – 11.30	COFFEE BREAK
	11.30 – 12.45	1.5 Overview of current road safety situation in TRACECA countries (Mariya Ivchenko and Alan Ross) 1.6 Overview of current road safety situation in Serbia (D. Kukić & M. Nešić)
	12.45 – 14.00	LUNCH BREAK
	14.00 – 15.00	1.7 Safe systems approach, The most important stakeholders in Road safety and the need for a multidisciplinary, Holistic approach (K. Lipovac)
	15.00 – 15.30	COFFEE BREAK
	15.00 – 16.45	1.8 Management, Coordination and funding of road safety activities and financing of national road safety programmes (A. Ross & K. Lipovac)
	19.00 – 21.00	Visit to Museum of Automobiles (Movie & Cocktail)

PROGRAM, Tuesday, 24.03.2015

Tuesday 24.03.2015. (The whole day in the company NAVAK)	07.30 – 08.30	Transfer to NAVAK (National Driving Academy)		
	08.30 – 09.00	Refreshments, Introduction		
	09.00 – 10.15	2.1 Road safety strategies and action plans (M. Vujanić, K. Lipovac & B. Antić)		
	10.15 – 10.30	COFFEE BREAK		
	10.30 – 11.45	2.2 Role and Importance of road accident database and the need to share with all stakeholders, Coordination and cooperation in Road safety (D. Kukić & D. Pešić)		
	11.45 – 12.00	COFFEE BREAK		
	12.00 – 13.15	2.3 Police role in delivering traffic road safety (M. Nešić & K. Lipovac)	2.4 Vehicle technical inspections to ensure safe vehicles (D. Mladenović & D. Pešić)	2.5 Safe road design concepts (D. Jovanov & D. Pešić)
	13.15 – 14.00	LUNCH BREAK		
	14.00 – 17.00	2.6 Presentations by groups (rotation group at 60 minutes) (NAVAK, AMSS, iRAP, Model 5, Geoput, Road Safety Equipment Claster, …)		
	17.00 – 17.15	Discussion, Closing speech		
	17.30 – 18.30	Transfer to hotel		

PROGRAM, Wednesday, 25.03.2015

Wednesday 25 .03.20,15	09.00 –10.30	3.1 Road safety legislation – International Conventions / Agreements and Domestic Legislative as a framework to improve road safety (M. Vujanić, B. Antić & D. Mladenović)	
	10.30 – 11.00	COFFEE BREAK	
	11.00 – 12.30	3.2 International Best practices in Law enforcement – Police control / management of traffic (M. Nešić & K. Lipovac)	3.3 EU Directive 2008/96 on road safety and importance of road safety audit (RSA), road safety inspection(RSI) and Blackspot management programmes (BSM) to deliver safer roads (D. Jovanov & B. Antić)
	12.30 – 13.30	LUNCH BREAK	
	13.30 – 14.45	3.4 International Best practices in Traffic law enforcement strategies (M. Nešić & K. Lipovac)	3.5 ISO 39,001 Quality Assurance in Road safety Management (B. Antić & D. Kukić)
	Site visits: 14.45 – 17.00	Each group travels to their relevant site visit location - Visit to Traffic Police HQ + discussions with senior officers - Visit to RE "Roads of Serbia" PERS + discussions with senior officials - Visit to work zone on a roads project to see work zone safety management	
	18.00 – 20.00	International Motor Show at Belgrade fair	

PROGRAM, Thursday, 26.03.2015

Thursday, 26.03.20,15.	09.00 – 10.30	4.1 Joint Road safety campaigns and roles / activities of key parties (D. Jovanov & B. Antić)	
	10.30 – 11.00	COFFEE BREAK	
	11.00 – 12.30	4.2 Road safety policy and strategy (for Road Administrations), Risk Mapping, BSM, Network Safety Management (NSM) and in Depth Studies (D. Kukić & D. Pešić)	
	12.30 – 13.30	LUNCH BREAK	
	13.30 – 15.00	4.3 Best practices and systems in driver training and testing to ensure safer drivers, CPC for professional drivers (M. Vujanić, D. Mladenović & D. Pešić)	
	Site visit	Each group travels to their relevant site visit location	
	15.00 – 17.00	Vehicle inspection (''Dunav auto'')	Visit to Geoput company, Working Zone

PROGRAM, Friday, 27.03.2015

Friday, 27.03.2015.	SECTOR SPECIFIC BREAK OUT GROUP WORK			
	09.00 – 10.30	Regional cooperation and harmonization 1 Regional working group 2 crash data + systems 3 Regional database 4 Penalties for drivers 5 legislation	Regional cooperation and Harmonization 1 Regional working group 2 driver testing systems 3 vehicle technical inspections 4 Regional database 5 Legislation	Regional cooperation and Harmonization 1 Regional working group 2 Design standards modernization 3 Recognition of certified RSA auditors 4 Regional RSA Guidelines 5 Regional BSM guidelines
	10.30 – 10.45	COFFEE BREAK		
	COUNTRY SPECIFIC BREAK OUT GROUP WORK			
	10.45 – 12.15	The 3 specialists from each country to work together so that we create 10 separate breakout groups, each group to discuss road safety in their respective country and to agree how they will cooperate to promote road safety on their return to their country. They will agree actions to be taken on their return.		
	12.15 – 12.45	Study tour and training course + Evaluation (D. Jovanov, D. Mladenović & M. Ivchenko		
	12.45 – 14.00	LUNCH BREAK		
	14.00 – 16.30	Visit to Road Traffic Safety Agency of the Republic of Serbia - Overview by Ministry of Transport - Presentation of the Road Traffic Safety Agency and its functions		
	19.00 – 21.00	STUDY TOUR / TRAINING COURSE CONFERENCE DINNER		

1.4 Evaluation

An anonymous workshop evaluation form (with 1 as very poor and 5 as excellent) was completed by the 20 participants on the last day. This covered 5 aspects (see form below) and delivered an overall average score of 4.80 (96%) out of a maximum 5 indicating the very high satisfaction level of participants.

Evaluation results of Serbia Study Tour

Completed on last day 20 participants

Belgrade, 27 March 2015

Questions asked	Participants answers																				AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Organization of WS ?	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4,95
Importance of WS topics ?	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4,95
Quality of presentations ?	4	5	5	4	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	4,85
Quality/Expertise of lecturers ?	4	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4,9
Length of Workshop ?	5	4	5	4	4	5	5	5	5	5	4	4	4	5	4	5	4	5	5	5	4,6
Location of Workshop ?	5	5	5	4	4	5	4	4	5	5	4	4	4	5	4	5	4	5	5	5	4,55
Average	4,5	4,83	5	4,2	4,67	5	4,8	4,67	5	5	4,67	4,67	4,67	5	4,7	5	4,67	5	5	5	**4,80**

Main participants comments:	What did you like most on WS?	Is WS useful for your work?	Suggestions to the organizers/lecturers
1	Organisation	Yes	
2	Organisation	Yes	
3	Interesting	Yes	
4	Crash data	Yes	
5	Importance of the problem; legislation and practical kowledge	Yes	Give more examples
6	Trip to NAVAK	Yes	Involve more experts, continue the same way
7	Organisation, friendliness, information given	Yes	
8	Everything	Yes	
9	Everything	Yes	
10	Everything	Yes	
11	Experience exchange, best practice, topics for discussion, methods of improving Road Safety	Yes	Hold such Workshops more often
12	Organisation, Strategy	Yes	Thank you
13	Organisation, getting to know other experts and colleagues	Yes	Thank you
14	Level of knowledge	Yes	More discussions
15	Lectures	Yes	
16	Thnak you very much for organisation of such useful workshops. Very good lectures, trip to NAVAK	Yes	

17	Especially liked the lecture by Prof. K. Lipovac "System approach to RS" and Dr. Jovanov's lecture at NAVAK	Yes	
18	Experience exchange	Yes	
19	Importance of the problem; lecturer's knowledge and openness	Yes	Good luck!
20	Importance of the problem	Yes	Thank you

Workshop organizer response to evaluation:

10. Overall the workshop was obviously considered by participants to be of high quality, but project team will make further improvements to the presentations and identify more example countries to show successes
11. Change order of presentations to have impact/ effect
12. Present more analyses of greater local problem an what can be done

1.5 Photo documentation

Plate 1. Lectures at NAVAK Driver Training Academy

Plate 2. Field trip to NAVAK Driving Academy

Plate 3. Vehicle Testing Station

Plate 4. Police station

Plate 5. Police Academy

Plate 6. Participants of the Study Tour

9. DVD OF ALL REPORTS

Two DvDs are included. These contain:

1. **Electronic versions of all working documents and technical notes related to Armenia.**
2. **The Study Tour of high level officials**

TRACECA Regional Road Safety Project
Project Documentation

The EU funded project produced a number of documents as shown below.

A. CONTRACTUAL REQUIREMENTS

1. Inception Report
2. Benchmarking Report
3. Interim Reports (4) (at 6 month intervals)
4. Final Report

1 2 3 4

B. ADDITIONAL DOCUMENTATION

B1

B1. Benchmarking Report (including initial position and impacts delivered)

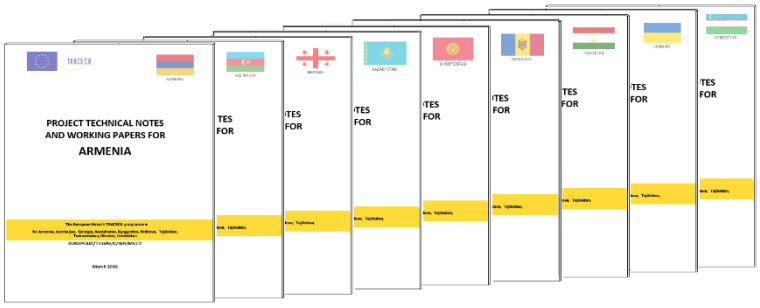
B2. Regional Guidelines

G01 G02 G03 G04 G05

G01. Road Safety Audit
G02. Blackspot Programmes
G03. Legislative Changes
G04. Safety Engineering Problems + Solutions
G05. Freight routing to avoid urban areas

B3. Country Specific Reports (9), Technical notes and working papers

CR01 Armenia
CR02 Azerbaijan
CR03 Georgia
CR04 Kazakhstan
CR05 Kyrgyzstan
CR06 Moldova
CR07 Tajikistan
CR08 Ukraine
CR09 Uzbekistan



Information about the project, project team and official documentation (apart from the Action Plans and Technical working papers, which are confidential to each country) is downloadable from:

http://www.traceca-org.org/en/technical-assistance/traceca-road-safety-ii/documents/