



Eastern Partnership

Road Safety Cooperation Framework



EaP | Eastern Partnership



THE WORLD BANK

IBRD • IDA | WORLD BANK GROUP



Minsk, October 19, 2018

**Terms of Reference (ToR)
for**

**IDENTIFICATION OF AT LEAST TOP TEN BLACKSPOT LOCATIONS
AND
INITIATION OF BLACK SPOT IMPROVEMENT PROGRAMS**

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ToR content:

1. BACKGROUND

2. OBJECTIVES

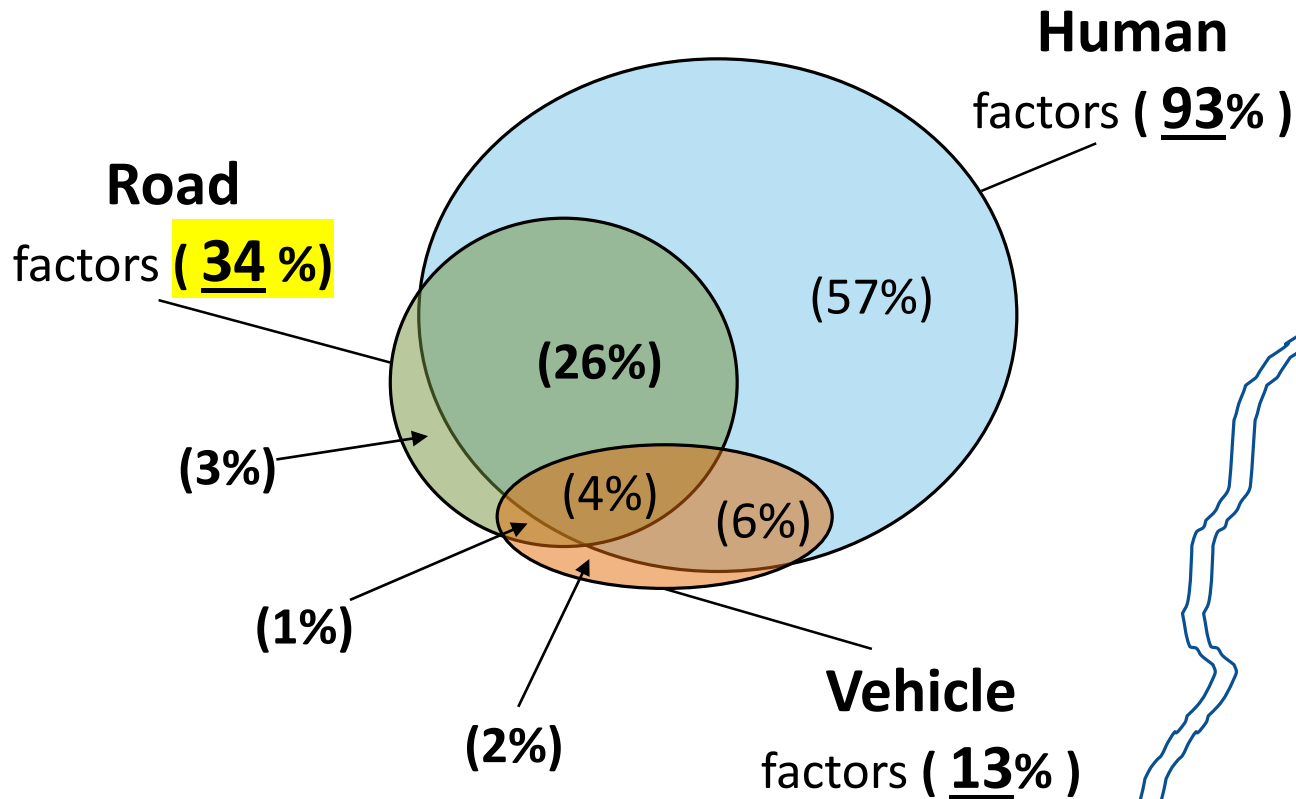
3. TASKS AND SCOPE OF WORKS

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6. GENERAL REQUIREMENTS AND QUALIFICATION

1. BACKGROUND (1/2)



Source: PIARC RSM 2003

Directive 2008/96/EC

Article 1

... Establishment and implementation of procedures such as ... the management of road network safety ...

Article 5

... ranking of high accident concentration sections on the basis of at least every three years

... sections showing higher priority are evaluated by expert teams by means of site visits

... remedial treatment – measures with the highest benefit-cost ratio

1. BACKGROUND (2/2)

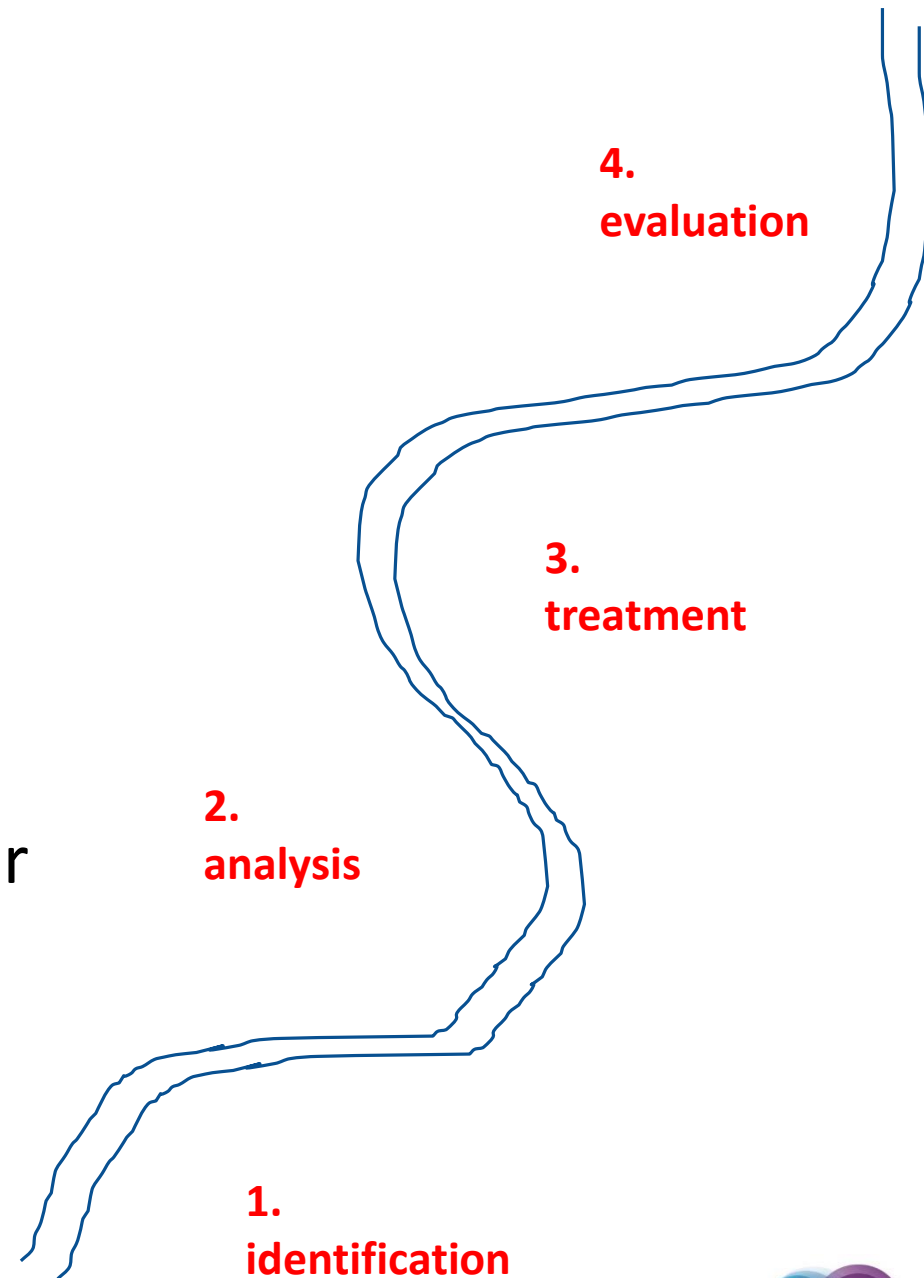
Because you
should
prevent this
on your roads!



Source: Serbia 09.10.2018. 7 fatalities, 35 injuries

2. OBJECTIVES (1/2)

The main purposes of this ToR is implementation of Projects which will establish **BSM as regular procedure** and **identify 10 Black Spots** in your countries including of preparation of national program for improvements (remedy measures with action plan for implementation).



2. OBJECTIVES (2/2)

The necessary steps to achieve objectives:

- Adoption of **definitions of black spots** (BS) at national level, harmonized if possible;
- Identification of **initial broader set of potential BS list** (pre-identified locations), based primarily on crash data, regardless of the causes of accidents;
- Second level analysis of pre-identified location where locations **with local road conditions as contributing factor to crashes** are selected;
- Preparation of **final list of BS** (selection of at least 10 locations for improvement);
- **Proposed treatments of BS** (with preferably low-cost and high-effectiveness measures);
- Preparation of **draft bidding documents for detailed design** and improvement works on BS;
- Preparation of costed and timed **national program (action plan) for BS improvement**;
- Proposal of **evaluation of implemented measures** on locations and national programs.

3. TASKS AND SCOPE OF WORKS (1/4)

The Consultant should implement following **4 tasks**:

Task 1: Establishment of Methodological approach within BSM (including definition of BS)

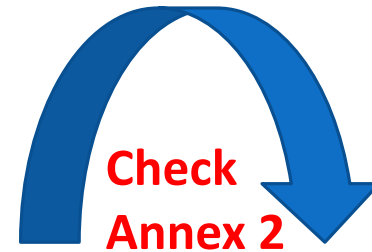
- Analysis of current state of BSM in the country
- Proposal for improvements of BSM process
- Agreed definition of Black Spot including criteria and methodology



3. TASKS AND SCOPE OF WORKS (2/4)

Task 2: Identification of black spots on national network

- Compilation of available data and review of their completeness, quality and relevance (with **gap analysis and proposed improvements**);
- Analysis of available **crash data** including proxies as necessary (i.e. alternative methods, if crash data base does not lead itself to useful analysis);
- Preparation of **initial broader set of potential Black Spot list**;
- Second level **analysis of pre-identified location where locations with local road conditions as contributing factor to accidents** are selected;
- Preparation of **final list of black spots** (selection of at least 10 locations where local road factors contribute to crashes)



3. TASKS AND SCOPE OF WORKS (3/4)

Task 3: Analysis and proposals for treatment of pre-selected black spots

- Field surveys regarding crash contributing factors on finally selected locations (final list of BS);
- Proposal of preferably low-cost and high-effective measures that will prevent similar accidents at analyzed locations in future;
- Preparation of draft bidding documents for detailed design and improvement works

May include:

- ❑ In office analysis
- ❑ On site investigation (field investigation)

In office analysis

- Collecting and processing of:
 - Crash data
 - Traffic data
 - Road data
 - Supplementary data

On site investigation

- Collecting and processing of:
 - Traffic counting
 - Speed measurement
 - Traffic conflict techniques

3. TASKS AND SCOPE OF WORKS (4/4)

Task 4: Preparation of national action plan for BS improvements with proposed evaluation

- Development of national action plan for BS improvement programs
 - Identification of legal, procedural and administrative requirements for implementation of BS programs in the country and proposal for improvements if necessary;
 - Preparation of draft costed and timed national annual and multi-year BS improvement program (including of cost-benefit analysis for locations that will be improved);
 - Preparation of the final national annual and multi-year BS program following incorporation of road managing agency comments.
- Proposal of monitoring of BS improvements and evaluation of measures and whole implementation of national BS action plan / program.

4. TIME SCHEDULE AND ACTION PLAN

Expected Project duration is 12 months and timeline is:

- **Task 1:** Methodology: Consultancy start date + 2 months
- **Task 2:** Identification of blackspots: Consultancy start date + 6 months
- **Task 3:** Analysis and proposal for treatment: Consultancy start date + 9 months
- **Task 4:** Consultancy signing date + 12 months

5. DELIVERABLES

Expected deliverables by Consultant:

5.1. Technical Deliverables

- Task 1: draft: 1.5 months & final: 2 months
- Task 2: initial set: 4 months; draft final set: 5.5 months & final set: 6 months
- Task 3: draft proposal: 8 months & final proposal and bidding documents: 9 months
- Task 4: draft action plan: 10 months & - final action plan: 11 months
- Final compiled report: 12 months

5.2. Management Deliverables

- An inception report
- Monthly short E-mail based progress reports
- Quarterly progress interim reports
- A final report

6. GENERAL REQUIREMENTS AND QUALIFICATION

6.1. Qualifications of the Consultancy firm:

- **Firm's profile** (organization and capabilities)...
- **Specific experience of the firm**, relevant to the assignment or of similar nature...
- **Experience** under similar conditions...

6.2. Qualifications of the Experts team:

- **Team leader:** Road infrastructure safety specialist, minimum 10 y (5 years of international experience and work on BS improvement Projects and preparation on action plans. Preferably work experience at least in three EaP countries),
- **Team member:** Road safety policy specialist, minimum 7 y (of international experience and work on BS. Preferably work at some of EaP countries),
- **Team member:** Road accident analysis expert, minimum 7 y (of international experience including CADaS and preferably work at some of EaP countries),
- **Team member:** Civil engineer - Road Designer, minimum 5 y (of experience in Design and Construction including preparation of bidding documents. Preferably work at some of EaP countries).

SUPPORT FOR ToR (PROJECT) IMPLEMENTATION FROM CLIENT SIDE

- **ANNEX 1: Definition of black spots
(how to support and guide Consultants)**
- **ANNEX 2: Typical Black Spot Management Workflow**
- **ANNEX 3: Typical problems / risks in ToR implementation and possible mitigation measures**

ANNEX 1 (1/3)

Possible definition of black spots

From a theoretical point of view, black spots can be defined as any location that

- 1. Has a higher expected number of accidents,**
- 2. Than other similar locations,**
- 3. As a result of local risk factors.**

Source: Elvik, 1988, 2007):

PS

Sounds very good, logical, but hard to implement in reality...

ANNEX 1 (2/3)

Definition of potential black spot (candidates for BS – level I)

Potential black spots COULD BE a location on the road of maximal length of 1000 m (on interurban roads) :

- Where at least one traffic accident with fatalities occurred in last 3 years AND
- Where Weighting Coefficient (WC^*), a ponder is higher than agreed limit K^{**}

$$WC^* = No. \textit{fat.} * 99 + No. \textit{ser.} * 13 + No. \textit{sli.} * 1$$

WC – Weighting coefficient

No. fat. – Number of accidents with fatality

No. ser. – Number of accidents with seriously injured

No. sli. – Number of accidents with slightly injured

K^{**} -agreed limit of WC^*

K – Agreed limit

(value decide to have reasonable number of potential black spots).

Eg. to get 50-75 locations that will be analyzed furthermore)

ANNEX 1 (3/3)

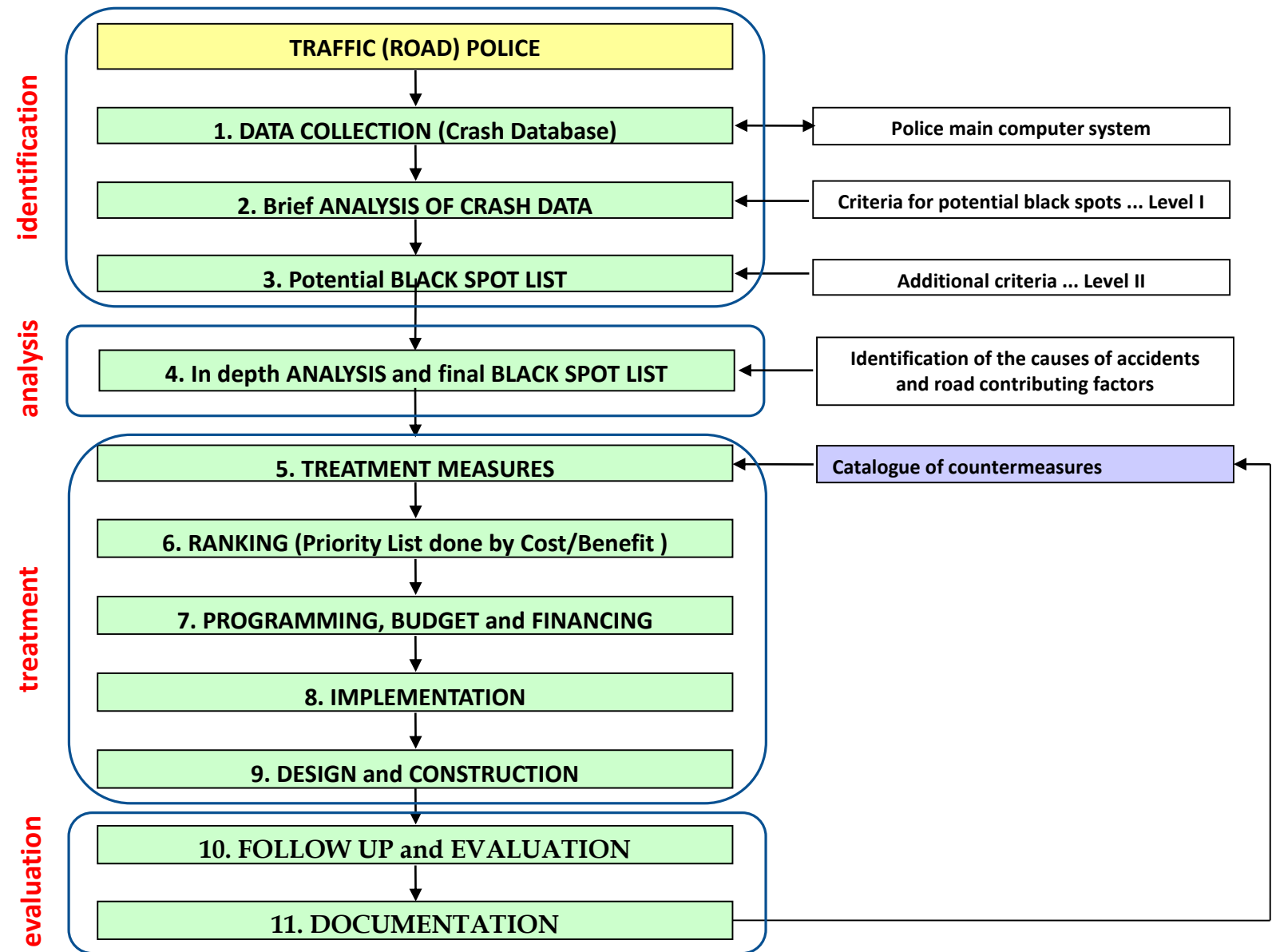
Final identification of black spots (final list of BS – level II)

Final identification of black spots.

Black spots COULD BE a location on the road with maximum length of 500 m (on interurban roads), where in last 3 years occurred at least 2 accidents with fatalities or injured persons in which road was recognized as influencing or contributing factor.

ANNEX 2

BSM Flowchart



ANNEX 3

Some of typical problems/risks in ToR implementation and possible mitigation

- Low selected or performing Consultant ...
- Lacking of crash data or low level of quality ...
- No crash locations ...
- Missing criteria/definition of BS ...
- No costs of crashes calculations needed for C/B analysis ...
- Missing data of crash reduction for different measures implemented ...
- Missing of budget for SB improvement ...
- Poos supervision of constructor ...
- No evaluation of implemented measures ...

THANK YOU FOR YOUR ATTENTION!

Any questions?