

Proceedings

Caribbean Disaster Risk Management & Climate Change Adaptation: Spatial Data to Inform Decision-Making Workshop



RDVRP
Regional Disaster Vulnerability Reduction Project



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Part of the:

Regional Disaster Vulnerability Reduction Program (RDVRP)

Pilot Program for Climate Resilience (PPCR)

Kingstown, Saint Vincent & the Grenadines
National Insurance Scheme Building
November 12-14, 2013

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A. Introduction

The [Caribbean Disaster Risk Management and Climate Change Adaptation: Data to Decision-Making Workshop](#) builds upon ongoing activities through the [Regional Disaster Vulnerability Reduction Program \(RDVRP\)](#) and the [Pilot Program for Climate Resilience \(PPCR\)](#). Held in Saint Vincent and the Grenadines from November 12 – 14, 2013, the two-day workshop was hosted by Saint Vincent’s Ministry of Housing Physical Planning Unit, in partnership with The Nature Conservancy (TNC), the Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Bank. This workshop and activities related to the Dominica Case Study have benefitted greatly from funding received from the [Africa, Caribbean and Pacific – European Union \(ACP-EU\) National Disaster Risk Reduction Program](#) managed by [GFDRR](#).

The workshop aimed to accomplish the following:

1. Objectives

- Understand applications of spatial data in DRM/CCA decision-making
- Build capacity for tools that support spatial data collection, processing, visualization and analysis
- Demonstrate the current use of ecosystem-based adaptation (EBA) and applications in the Caribbean
- Increase coordination between agencies and countries, developing a support network
- Share national and regional experiences of informed decision-making for climate resilience

2. Key Takeaways & Highlights

Overall, the *Caribbean Disaster Risk Management and Climate Change Adaptation: Data to Decision-Making Workshop* was perceived as beneficial for introducing participants to the open-source software available for data management purposes and for sharing the ways in which countries in the region were utilizing these resources in their decision-making processes. Following the workshop, participants noted that key takeaways and highlights included:

Key Takeaways:

- Learning how to mitigate risk by incorporating disaster risk vulnerability into the planning and development process.
- Using visual aids to develop the data collected in order to further analyze and interpret risk.
- Utilizing various forms of technology to collect a wide range of data to better inform decision-making.

Key highlights:

- Increased awareness of open-source software that provides opportunities for feasible, economic geospatial data management.
- Training on how to use tools such as ODK and QGIS and further, how to utilize and implement the data collected through these tools within government and Ministries.
- Training on the application and use of Smartphone technologies in data gathering and management.

3. Participant Profiles

This was the first time in the Caribbean that the community of practice brought together disaster management agencies and the Red Cross. Participant groups included individuals from Ministries of Physical Planning and Works and Ministries of Transport; National Emergency Management Organizations and the Red Cross.

A total of 42 participants attended the workshop. These included representatives from nine Caribbean countries including Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines. Participants came from several national ministries and agencies, namely Ministries of Physical Planning, Transport and Works, Agriculture, Health, along with regional development agencies and institutions such as Red Cross, The Nature Conservancy (TNC), Caribbean Development Bank (CDB), The University of West Indies (UWI) and the United Nations Development Program (UNDP). A complete participant list is included in the Annex.

4. Background

In October 2011, a Caribbean community of data and risk management practitioners was established at the *Eastern Caribbean Open-Source Geospatial Data Sharing and Management Workshop* in Grenada to discuss challenges and propose solutions to harmonize data sharing and management across ministries, countries and regional agencies. This initial workshop served as a forum for GeoNode users and geospatial practitioners to address the technical challenges of both national and regional geospatial data management. This workshop also fostered an online Community of Practice – Caribbean Open Data Management Community (CODMC) to facilitate discussion on issues raised, proposed solutions and steps to address broader policy requirements. Since this workshop, the broader Caribbean region collectively has been working to exchange knowledge, share lessons, discuss tools and support spatial data integration into decision-making processes through workshops and interaction on the aforementioned CODMC. Additional information on the CODMC and previous workshops/training is included in **Annex 1**.

B. Workshop Sessions

1. Overview of DRM/CCA Decision-Making & Role of Spatial Data

Justin Locke, Disaster Management Specialist, World Bank

John Knowles, Conservation Information Manager, The Nature Conservancy

The *Overview of DRM/CCA Decision-Making & Role of Spatial Data* session established the context for decision-making considerations including climate change, disaster risk, preparedness and the applications of spatial data and ecosystem-based adaptation to inform decisions. World Bank presenter and DRM Specialist, Justin Locke, discussed the disaster risks facing the region and reviewed the challenges inherent in addressing these risks due to lack of data, questionable data quality, lack of data sharing mechanisms and lack of capacity to generate or interpret risk analysis. Co-presenter and

Conservation Information Manager with The Nature Conservancy, John Knowles, focused on the use of data management tools to inform decisions regarding climate change adaptation.

2. National and Regional Presentations

During this segment, national and regional participants provided an overview of their country's current situation regarding spatial data management, including challenges, lessons learned and applications in relevant decision-making processes. The selected presentations include:

- a) Saint Lucia - Ministry of Infrastructure, Ports, Transport
Lance Octave, GIS Data Coordinator
- b) Saint Vincent and the Grenadines (SVG) – Ministry of Physical Planning
Dornet Hull, GIS Officer
- c) SVG – National Disaster Management Agency (NADMA)
Howard Prince, Director

Key Takeaways

Participants cited these presentations as being especially beneficial because the challenges and proposed solutions discussed by presenters were easily identifiable and transferrable. Key takeaways mentioned involved learning how to use free open-source software tools to collect and create maps to visually represent spatial and non-spatial data, as well as hearing how other countries had used these tools in situations to make informed decisions.

3. Data for Disaster Risk Management

Melanie Kappes, Risk Assessment Specialist, World Bank

In the *Data for Disaster Risk Management* session, World Bank presenter, Melanie Kappes, explored the various components of Disaster Risk Management such as understanding risk, risk reduction, incorporating financial protection, preparedness, and resilient reconstruction. Kappes also focused on the importance of the understanding risk component in order to inform all other components. The key message of the presentation was that there is no “one size fits all” assessment approach but that DRM consists of different complementary activities and applications, and the method, scale and quality of the analysis, etc. have to be adjusted to the objective, also considering the aspect of input data availability.

4. Working Session: How to Prioritize in Order to Strategically Reduce Risk

Melanie Kappes, Risk Assessment Specialist, World Bank

During this session, World Bank presenter, Melanie Kappes, lead the groups in working on a conceptual framework for the prioritization of emergency shelters for vulnerability reduction. Two components were considered for the prioritization process: (1) the physical vulnerability of the shelters and (2) the criticality of the shelters to keep the population safe. Guided by several questions, interdisciplinary

teams of participants identified criteria for each of the two components that would enable them to distribute funds for vulnerability reduction in the shelter portfolio.

5. Case Study Dominica: Emergency Shelter Vulnerability Reduction

Lynn Baron, GIS Technician, Ministry of Physical Planning, Dominica

Melanie Kappes, Risk Assessment Specialist, World Bank

The Case Study session focused on the details of Dominica’s national emergency shelter assessment, which seeks to identify and prioritize interventions for retrofitting the most vulnerable shelters. This assessment is conducted by using a multi-criteria evaluation (MCE) technique and the Dominode, Dominica’s Open Data Portal. The training activity that started with the working session: “How to prioritize in order to strategically reduce risk” and continued during the next day with discussion rounds and data collection exercises, involved conducting a “mini-MCE” process in which participants deliberated and found consensus on physical building criteria and the attribute data they felt should be collected to prioritize emergency shelters.

6. Overview: Caribbean GIS Data Management & Analytical Tools

Bishwa Pandey, Sr. Data Management Specialist, World Bank

The *Caribbean GIS Data Management & Analytical Tools* session provided an overview of regional and national spatial data infrastructure and data management tools to support data analysis and decision-making processes. During this session, World Bank presenter, Bishwa Pandey, touched on the Open Data for Resilience Initiative (OpenDRI) and the institutional and behavioral changes needed to facilitate similar data sharing and knowledge building throughout the region. The session then highlighted a few OpenDRI tools, in particular, Quantum GIS (QGIS) – an open source desktop GIS, Open Data ToolKit – and explored scenarios and applications for this tool.

7. Training & Fieldwork: Emergency Shelter Data - Selection, Collection, Analysis and Visualization

Interdisciplinary teams looked at investment strategies to assess how to prioritize emergency shelters. Building upon Day 1 and the specific sessions related to the MCE process, the four groups worked together throughout the day to conduct a sample exercise representing each part of the workflow process:

a) Selection of Attribute Data:

Melanie Kappes, Risk Assessment Specialist, World Bank

Vivien Deparday, GIS Specialist, GFDRR

In a plenary discussion on the most important building characteristics to be analyzed for evaluating the physical vulnerability of emergency shelters, participants chose and agreed on five criteria. Subsequently, they developed an assessment form for the selected criteria deciding upon the format of each criterion and the selection options provided to the surveyors.

b) Collection of Data:

Bishwa Pandey, Sr. Data Management Specialist, World Bank

John Knowles, Conservation Information Manager, The Nature Conservancy

During a theoretical session, presenters described the Open Data Toolkit and the process of creating a custom electronic form using ODK Build. Participants created an ODK compatible form based on their earlier work on attribute data selection. They went to the field to collect the data on select buildings using smart phone, tablets and GPS devices. Data collected via smart phone/tablet was saved in the device whereas a paper form was used to collect attribute data using GPS devices.

c) Data Import and Analysis:

Vivien Deparday, GIS Specialist, GFDRR

Bishwa Pandey, Sr. Data Management Specialist, World Bank

Presenters described the process of uploading data collected on the field. They used the ODK App to upload data previously saved on device to the server. The uploaded data was then reviewed in the server.

d) Data Visualization:

Bishwa Pandey, Sr. Data Management Specialist, World Bank

Vivien Deparday, GIS Specialist, GFDRR

The data uploaded into the server can be interactively visualized on the server itself. Participants viewed a few basic data analysis methods, however, they required a desktop GIS software to do an immersive GIS visualization. For this purpose, presenters showcased methods for downloading data into desktop GIS. Data hosted at the server can be downloaded basically into three formats – JSON, CSV and KML. Presenters demonstrated data downloaded using CSV and KML formats and showed advance GIS visualization of downloaded data into QGIS.

8. Eco-System Based Applications

John Knowles, Conservation Information Manager, The Nature Conservancy

This session, delivered by John Knowles, The Nature Conservancy, discussed eco-system based factors and considerations to bring into the decision-making process. During this session, John Knowles highlighted the *At the Water's Edge (AWE) project* – a project focused on understanding and visualizing ecological and socioeconomic vulnerability - and discussed its application in two local sites – Greenville Bay in Grenada and Union Island in St. Vincent and the Grenadines.

C. Work Plans & Training Needs – National and Regional

During this session, Dornet Hull, GIS Officer with Saint Vincent and the Grenadines' Physical Planning Unit, lead participants in utilizing the data collected and the data tools presented to inform their decision-making processes. To facilitate this, national and regional partners were requested to:

- i. Highlight key takeaways from the workshop
- ii. Propose ways to integrate this information into workflow and decision-making processes
- iii. Identify the roles of regional development agencies
- iv. Articulate resources and training needs
- v. Produce a timeline with suggested activities for implementation.

Group Presentations:

Participants were organized by countries and/or organizations, as noted below:

1. Antigua & Barbuda and Saint Kitts & Nevis
2. Belize
3. Dominica
4. Grenada including Red Cross Society and NADMA
5. Guyana and Belize
6. SVG – NEMO
7. St. Lucia
8. Dominica
9. SVG- Ministries
10. OECS, TNC, World Bank, UWI, UNDP

Below is a list of the National and Regional Work Plans presented as well as access to each presentation:

1. Antigua and Barbuda & Saint Kitts and Nevis

These countries were represented by:

- Mr. Julius Ross – Antigua & Barbuda – Technical Consultant, Ministry of Agriculture
- Mr. Meshach Alford – St. Kitts and Nevis – Senior Physical Planning Officer, Ministry of Sustainable Development

Next Steps & Training Needs:

- Focus on training opportunities to build capacity
- Incorporate into national and departmental budgets
- Establish a common data management platform, such as GeoNode, to be used across ministries and organizations

Presentation:

To access the presentation for Saint Kitts and Nevis, please click [here](#).

2. Belize

Belize was represented by the following:

- Ms. Carren Williams – Belize - Principal Land Information Officer, Ministry of Natural Resources and Agriculture

Next Steps & Training Needs:

- Apply QGIS and other free, open source software to overcome traditional, financial barriers
- Investigate measures to build awareness of importance of GIS training in educational curriculum
- Utilize and incorporate expertise and best practices from regional counterparts

Presentation:

To access the presentation for Belize, please click [here](#).

3. Dominica

Dominica was represented by the following:

- Ms. Lyn Baron, GIS Technician, Ministry of Environment, Natural Resources, Physical Planning and Fisheries
- Mrs. Nicole Seaman-Tyson, Engineer, Ministry of Public Works, Energy and Ports

Next Steps & Training Needs:

- Utilize Smartphone GPS capabilities to collect data on culverts, buildings etc.
- Conduct National consultations with decision-makers and increase capacity within ministries and organizations
- Whilst some departments within the relevant Government Ministries are already advanced in terms of technology and the use of various data application tools, some are not.
- Highlighted the existence of new field techniques
- Assist in training co-workers to utilize smartphones for/during data analysis. They might be more receptive to learning.
- Training materials, these can be sourced from consultants. Software, specifically open source and hardware such as GPS units.
- Technical assistance is also needed to afford the creation of GIS Units and others.
- Capacity building needs – “training of trainers”

Presentation:

Please click on [Dominica](#), to access the presentation.

4. Grenada Ministries, Red Cross, NDMA & TNC

Grenada was represented by the following:

- Mr. Fabien Purcell, Senior Planning Officer, Ministry of Works, Physical Development
- Mr. Simeon Granger, Community Program Officer, National Disaster Management Agency
- Ms. Kathy Ann Morain, Community Program Officer, National Disaster Management Agency
- Mr. Terry Charles, Director General, Grenada Red Cross Society
- Ms. Avion Baptiste, Disaster Facilitator, Grenada Red Cross Society
- Ms. Nealla Frederick, Conservation Planner, The Nature Conservancy

Next Steps & Training Needs:

- Create a central data management platform that can be utilized by practitioners across ministries and organizations
- Explore training manual for the use of open-software tools
- Utilize consultative process in creating a development plan
- Further development of in-shelter reports and the utilization of free applications such as google earth
- By supporting/providing regular training

Presentation:

For more information on Grenada's presentation, please click [here](#).

5. Guyana & Belize

Guyana was represented by the following:

- Ms. Seeram Darshini – Guyana – GIS Technical Officer, Ministry of Natural Resources and the Environment
- Mr. Agard Gavin – Guyana – GIS Technical Officer, Ministry of Natural Resources and the Environment

The contents of the workshop were analyzed within the context of the existing climate change and disaster frameworks existing in both countries, with Belize presenting a more developed framework.

Highlights:

- The workshop provided an increased awareness of the need for data sharing, whilst highlighting the availability of open-source software. It also served as a learning opportunity, as it relates to best practices within the region.
- The utilization of QGIS and other open source applications are major benefits in terms of decision-making, since the use of others are hindered by financial constraints. The workshop also provided a platform to establish contacts and share information whilst underscoring the importance of GIS education at all levels.

- International development organizations serve to mainstream GIS data through development projects within countries. They also serve as a source of funding, assistance with assessments, streamlining of funding to meet specific needs and provision of technical training, particularly in open source applications.
- Resources or tools needed included cheaper, improved internet connectivity and capacity building in terms of hardware GPS devices and others to ensure data sharing.
- Policies should be developed to facilitate cheaper connectivity via needs assessment and cabinet strategy paper. Pilot site agencies should also be identified for capacity building to include training of at least 30 persons manipulating data sets.

Next Steps & Training Needs:

- Apply QGIS and other free, open source software to overcome traditional financial barriers
- Investigate measures to build awareness of importance of GIS training in educational curriculum
- Utilize and incorporate expertise and best practices from regional counterparts

Presentation:

To access the presentation for Guyana, please click [here](#).

6. Saint Lucia

Saint Lucia was represented by:

- Mr. David Desir, Deputy Chief Physical Planning Officer, Ministry of Physical Development, Housing and Urban Renewal
- Ms. Renata McKie, Civil Engineer, Ministry of Infrastructure, Port Services and Transport
- Mr. Lance Octave, GIS Data Coordinator, Ministry of Infrastructure, Port Services and Transport

Next Steps & Training Needs:

- Utilize ODK to standardize data collection and reduce costs
- Use QGIS to assist in data analysis and map creation and to combine spatial and non-spatial data
- Utilize Google Earth to provide policy makers with a simple, interactive report

Presentation:

Please click [here](#) to access Saint Lucia's presentation.

7. Saint Vincent & the Grenadines

Governments and other agencies are often times not very proactive, and availability of funds can be used to prevent potential impacts in vulnerable areas. Potentially funds can also be utilized for the procurement of equipment, both software and hardware, which will facilitate data sharing amongst

personnel and other organizations. Trained personnel and training of personnel from various agencies to utilize software, would assist in mitigating hazards. Personnel should include geologists and others all working together to reduce the effects of seismic and climatic hazards.

Saint Vincent & the Grenadines was represented by:

- Mr. Reschevski Jack, Fisheries Officer, Ministry of Agriculture
- Mr. Cornelius Lyttle, Forestry Officer, Ministry of Agriculture
- Mr. Dougal Allen, Administrative Cadet, Ministry of Agriculture
- Mr. Colin Francis, Engineer, Roads Building & General Services
- Mr. Earlan Myers, Engineer, Saint Vincent Electricity Services
- Ms. Tashana Providence, GIS Technician 1, Ministry of Finance and Planning
- Mr. Duane Bailey, Technical Officer, Inland Revenue Department
- Mr. Adrian Bailey, Forest Officer III, Ministry of Agriculture
- Ms. Juliana Francis, Senior Engineering Assistant, Ministry of Transport and Works
- Mr. Neri James, Senior Environmental Health Officer, Ministry of Health
- Mr. Jonathan Francis, Engineer, Central Water & Sewerage Authority
- Mr. Dwane Allen, GIS Technician 1, Ministry of Housing
- Ms. Dornet Hull, GIS Officer, Ministry of Housing
- Mr. Carl Phillips, National Emergency Management Office
- Mr. Andrew Bramble, National Emergency Management Office

Next Steps & Training Needs:

- Cultivate awareness of Ecosystem-Based Adaptation
- Utilize Smartphone GPS technology to assist in data collection and implement GIS to facilitate data retrieval
- Foster an environment of data and knowledge sharing by circulating information among colleagues and superiors

Presentation:

Please click [here](#) to access the presentation for Saint Vincent and the Grenadines.

8. SVG : National Emergency Management Organization (NEMO) & the Red Cross

These organizations were represented by the following:

- NEMO, Saint Vincent and the Grenadines – Mr. Carl Phillips
- NEMO, Saint Vincent and the Grenadines – Mr. Andrew Bramble
- Red Cross, Grenada – Mr. Terry Charles, Director General
- Red Cross, Grenada – Ms. Avion Baptiste, Disaster Facilitator
- Red Cross, Saint Vincent and the Grenadines – Ms. Shenny Meyers

Key Takeaways:

Need to create data bank for sharing with stakeholder agencies

- Data can be integrated into work and decision-making processes by mapping vulnerable and high-risk areas
- Increased need for networking amongst agencies

Presentation:

Please click [here](#) to access the presentation from NEMO and the Red Cross.

9. Regional Development Agencies

These agencies were represented by the following people:

- Caribbean Development Bank (CDB) – Mr. Leslie Walling, Project Manager, Caribbean Disaster Risk Reduction Fund (CDRRF)
- Organization of Eastern Caribbean States (OECS) – Mr. Simon Alexander, Head of Information Technology
- United Nations Development Program (UNDP) – Mr. Ian King, Program Manager, Disaster and Climate Risk Management
- University of the West Indies - St. Augustine – Ms. Allissa Williams
- World Bank – Ms. Melanie Kappes, Disaster Risk Assessment Specialist, LCSDU

Key Takeaways:

- Need to incorporate further organizations and countries from the wider Caribbean
- Need to develop inter-governmental collaboration and sustained support
- Seek commitment and buy-in from governments
- Prioritize which regions require more assistance. Strengthen further partnerships amongst partners; solicit CDEMA participation in workshops.
- Language spoken by decision-maker should be understood by agencies and vice versa
- Views from other presentations/participants to be considered
- Technical assistance; a give and take relationship
- Building Climate Resilience – a case for Caribbean collaboration

Presentation:

Please click [here](#) to access the presentation from Regional Partners.

D. Conclusion & Next Steps

Ongoing efforts such as training and regional workshops such as this one, provide a unique opportunity for similar trades and professionals to exchange ideas, share knowledge and further collaborate to improve access to data and information to support DRM and CCA decision-making. The workshop included a multi-sectoral audience, which gave development actors a new perspective on land-use planning, risk assessment, data collection, disaster response, and public infrastructure design. In the short-run, these new relationships and ideas will spur further integration and data-sharing practices for decision-making processes. In the medium to long-run, the Caribbean community of practitioners will continue to engage through online communities, webinars, conducted national training activities and collaboration with regional partners that are also working towards this same vision.

Next Steps & Key Takeaways:

- Work and communicate directly with decision makers and policy makers, including those from Ministries of Finance
- Desire to focus on application and access to spatial data with ministries of works
- Foster national training on spatial data management, collection, analysis, and visualization
- Build relationships between national and regional agencies to strengthen cooperation and data sharing and management standards and protocols.
- The ministries, GIS practitioners and regional partners represented at the workshop are committed to building upon the training, knowledge sharing and networking conducted at the workshop.
- All parties acknowledge the need to work with decision-makers and policy-makers and communicate to them the importance of using data to inform decision-making.
- Representatives from each country are also determined to connect with Ministries of Works and collaborate with regional agencies to strengthen regional cooperation and standards.

Annex

Annex 1: Community of Practice, Workshops and Training

The *Caribbean Open Data Management Community* (CODMC) was conceived at the [Eastern Caribbean Open-Source GeoSpatial Data Sharing and Management Workshop](#) in Grenada (October 2011) as part of the PPCR/RDVRP. An online forum was initially created using eScoop. During this workshop, there was wide acknowledgement and agreement for the principles of open data and open-source technologies as a foundation to address common challenges and goals to improve the use of spatial data management for decision making. Among the 40 participants, there was consensus on the need to create an online community in which members across the region can share resources and discuss ongoing challenges and solutions to spatial data management in the Eastern Caribbean. The [GeoNode](#) platform was presented for the first time, on a large, regional scale, including a training that was also conducted and well received by participants as needed solution to manage, access and share.

During the [Caribbean Risk Assessment and Open Geospatial Data Management Workshop](#) at the University of the West Indies, St. Augustine in Trinidad and Tobago held in February 2012, a larger audience was integrated into the data management community, including those responsible to manage and disseminate Caribbean Risk Atlas results, specifically seismic and flood hazard assessments. This also established a formal link between the spatial data managers and Caribbean risk assessment specialists that attended. The data management community again received additional GeoNode training to layer data, create maps and share and manage national data sets.

During 2012, operational activities of the Latin American and Caribbean Disaster Risk Management and Urban Development Unit (LCSDU) surfaced similar needs related to spatial data management in the Caribbean; this is mainly due to common institutional arrangements in client countries and development challenges across the Caribbean. Thus, LCSDU data and knowledge management activities naturally expanded to include all English-speaking countries, adding Belize and Guyana, in addition Haiti.

In February 2013, the CODMC was formally expanded to the entire English-speaking Caribbean (and Haiti) during the Bank-financed Caribbean-Region [Advanced Training for Spatial Data Management](#) supported by the University of the West Indies, St. Augustine in Trinidad and Tobago. Over 50 participants joined the new World Bank secured community platform called *Collaboration for Development*. All training materials and resources are now currently housed on this Community site.

Annex 2: Workshop Agenda

Annex 3: Participant List

Annex 4: Multi-Criteria Evaluation (MCE) - Day 2 – Working Sessions

Annex 5: ODK Tool Kit

Annex 2: Participant List

Annex 2: Agenda

Annex 4: MCE Activity Day 2 – Workshop Sessions



SVG Workshop Data Collection Form

Building Number (from GPS or paper map):

1. Roof shape

Flat Shed Gabled Hip Other _____

2. Roof material

Concrete slab Metal Sheet Clay tiles Other_____

3. Openings

- Shutters: yes no

- Percentage of openings:

0 to 5% %5 to %10 %10 and above

4. Wall material

Timber Stone Concrete Other _____

5. Number of stories: ____

Annex 4: ODK Toolkit