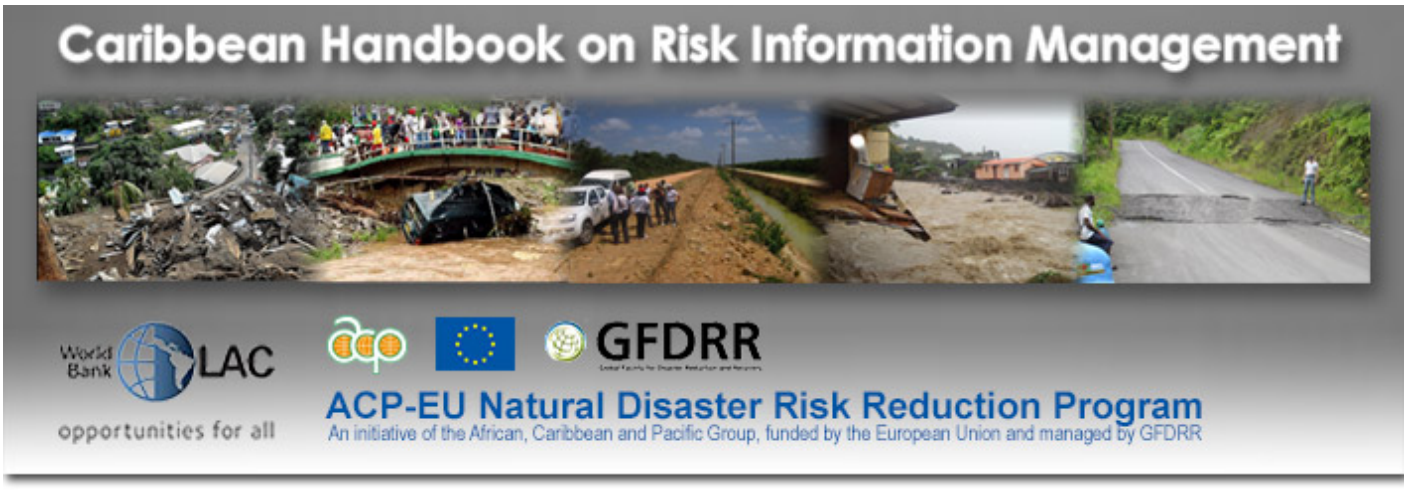

10.3 Hazard and risk information requirements

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Objectives

How to formulate the hazard and risk information requirements for a TOR, and how this comes back in the use cases. What (geospatial) products should be delivered, and in which form. Who is responsible?

Introduction

The target countries should now require that projects for the design of structures or preparation of development plans have Terms of Reference (TOR) that specifically state that data on landslide and flood risks must be taken into consideration. These TOR and the projects they support will then serve to minimize the risk of hazard impact on future infrastructure and building development.

Before writing the TOR for physical development planning projects or infrastructure projects, the responsible entities should discuss and agree on a clearly defined aim and objectives for the TOR. This must take into consideration the existing data on hazard and risk, its accuracy, currency, completeness and comprehensiveness or spatial coverage, as well as the spatial and temporal resolution of capture. Decisions should be made on whether the consultant or group will be restricted to existing data or will they be allowed or required to acquire more current, accurate or complete data. This decision has implications for cost and time on the project so it should not be quickly arrived at. It should be made clear in the TOR that all hazard and risk information available, particularly that pertaining to flooding and landslides, should inform the outcomes of the project. In preparing the TORs for the target countries, the minimum effort, time and cost that will arrive at an optimal outcome should be aimed for. For example, this methodology book gives specifications for data required for achieving outcomes of reasonable risk. All risk cannot be eliminated. The use cases give practical examples of outcomes actually achieved using specific and existing data types, precision and currency. These can be used as guidelines for determining what can be achieved at lowest cost and effort and should therefore impact on what is put into the TOR.

At the end of the process of implementation of the project, evaluations of the products as well as evaluation of the process should be undertaken. An evaluation of the products, whether it be a prepared physical development plan or the construction of an infrastructure component, should be conducted. The evaluation can be done in-house by the ministry or department responsible or another project or consultant individual or team can be used to monitor and evaluate the project. If the ministry or department does not have the capacity or personnel to perform the evaluation and monitoring, then external evaluation of the process can allow changes to the procedure to be made. The experience developed through implementing a TOR can be on a feedback loop that further refines and improves the TOR template to be used on similar projects in the future.

Hazard and Risk Requirements for the TOR

The client institution in the countries may have a need for a project or the mandate to develop the project but may not have the expertise required to determine the hazard and risk requirements for the TOR. It is therefore recommended that a multi-disciplinary team, comprising planners, emergency management personnel, and engineers develop the TORs in concert. The procedure for developing the project itself includes (Mahony and Dearden. 2012; Roberts, Khattri, and Wessal 2011):

1. Establish the need for the project
2. Identify and engage stakeholders
3. Estimate resources needed
4. Determine whether a team or individual consultant or contractor is needed
5. Develop the TOR

The procedure for developing the TOR includes (Mahony and Dearden. 2012; Roberts, Khattri, and Wessal 2011):

1. Draft the TOR
2. Consult with stakeholders
3. Include all relevant regulations
4. Discuss and clarify the specifications in the TOR

Step 1. Draft the TOR

The responsible agency or institution should draft the TOR based on the previous discussions with the multi-disciplinary stakeholder team. The agency will be dependent on the type of project. For projects to develop physical plans the Planning department will be the agency charged to develop the draft. In this draft they can specify what they would like to achieve at the end of the project, which may be a revised national plan or a local area plan or it may end at a risk map for floods or landslides. For projects to develop infrastructure, the works department can draft the TOR specifying what they wish to achieve. This may be the multi-criteria analysis for the location for siting or resiting a school, or the building of a bridge or road. The Use Case book can be referred to for examples of projects. The draft TOR should list:

1. Objective of project
2. Recipient of project, stakeholder, beneficiary
3. Deliverables
4. Methodology
5. Reporting
6. Timeframe
7. Coordination
8. Background

Step 2. Consult with stakeholders

The draft TOR goes back to the multi-disciplinary team for input on the specifications and by a process of discussions the draft TOR is developed.

Step 3. Include all relevant regulations

At this point all the existing building and engineering guidelines and regulations can be conformed to.

Step 4. Discuss and clarify the specifications in the TOR

In some instances a consultancy to develop the specifications can be the first contracted and the output can feed into the implementation of the infrastructure.

Step 5. Geospatial products required

The geospatial products required depend on the particular project being performed. Therefore the specifications to be put into the TOR will also depend on the project and the method of data acquisition specified. For example, see the Use Case chapter on creating DEMs which outlines the precision obtainable from different methods such as ground surveying, scanning, and digitizing and the relative costs of each method.

Step 6. TOR writing issues to avoid

Mahoney and Dearden (2012) highlight typical errors made in the preparation of TOR, some of which are applicable to the development of TOR that relate to precision of geospatial data. These errors may be:

- Recreating TOR from unrelated projects – specifications for precision should relate to the particular requirements of the current project and not an unrelated previous project
- No cohesive discussion and conclusion involving all stakeholders on each aspect – All stakeholders' inputs should be heard and form part of the discussions and decisions
- Not focusing on the aim of the project – The specifications for precision should be only as rigid as necessary for the project at hand. All of the TOR should be focused on achieving the aim
- Over-specification or under-specification of requirements – It is equally detrimental to state too rigid specifications as to state specifications that are not rigid enough and upon which little confidence can be placed.
- Undefined outputs – Clear determination of outputs such as, for example, digital data sets in formats that can be integrated into the spatial data infrastructure for the country
- No innovation possible – Where capacities are not advanced in the institutions, stakeholders should be open to suggestions for experienced and professional judgment on methodologies such as proposals for structural and non-structural mitigation measures

Keywords

Terms of Reference, TOR,

List of References

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