Local Data Collection Guide

ETH zürich

SPUR
Spatial Development and Urban Policy

GENEVA TECHNICAL HUB

Co-convened by

UNHCR
The UN Refugee Agency

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
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Swiss Agency for Development and Cooperation SDC

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01 | Introduction

Context

Flood risk mapping and analysis are essential to ensure sustainable and safe planning of settlements. With climate change, natural hazards such as floods occur more often, especially in regions that are unprepared to face them. Many of these regions host refugee or internally displaced people settlements. At the same time, refugee settlements tend to be less resilient to natural hazards due to their built environment and the socio-economic vulnerabilities of the refugees.

The project “Risk Mitigation Strategy” stems out of a collaboration of ETH Zurich, the Swiss Development Cooperation (SDC), and UNHCR through the Geneva Technical Hub initiative (GTH). The aim of the project is to support field staff in identifying and mapping flood risks for a given refugee settlement and provide general guidance on adapted mitigation measures. The project comprises three parts: 1) a GIS tool, 2) a catalog of risk mitigation measures for refugee settlements, and 3) supporting documents.

Other documents

As part of this project, several documents were produced and are key to implement the risk mitigation strategy tool:

1. User Manual for the Risk Mitigation Strategy Tool Add In in QGIS. This document provides guidance and a step-by-step manual for the implementation of the tool in the GIS application.

2. The Mahama Case study provides an example of the implementation of the tool in Mahama refugee settlement in Rwanda and presents examples of how to interpret the results.

02 | Local data needed

Three data inputs are needed to create this risk mitigation strategy within the provided tool:

- **Flood hazard mapping** (where and how likely and intense floods might occur)
- **Vulnerability mapping** (which elements of the built environment are valuable and exposed to flood hazard)
- **Risk mitigation measures** (which actions can be taken to mitigate the flood risk)

For these three types of inputs, we make use of globally accessible data as well as local data and manual input from field staff. Local knowledge and experience is essential for creating a valuable and usable risk mitigation strategy. This document outlines the local data needed and proposes data collection strategies. We understand that in different contexts, different kind of data is available and we suggest seeing this document as a guideline that need to be adapted to the local situation and data availability.

The document is structured around the three themes (hazards, vulnerabilities and mitigation measures) that are essential for the creation of a risk mitigation strategy. In the annex, we discuss possible data collection strategies and methods.

03 | Flood hazard mapping

In order to map the flood hazard in the settlement, we use either use globally available data on riverine and coastal flood hazards or local food hazard data provided by internal or external experts/institutions. Local data, if available, should be preferred, as the outcome tends to be much more adequate and precise. Information of pluvial/storm water floods needs to be collected locally in any case, as no global data is available at the moment. We propose a two-step data collection process for the local data input.

Collection of existing information

Firstly, we propose to do a review of existing local information. Contacting local institutions, may they be governmental or non-governmental, other UNHCR departments, other NGOs or INGOs, might provide flood hazard maps and other data available for the region or site. Even if the documents cover a wider area (regional or even national scale) and not specifically the specific site, this information can be useful for a hazard mapping exercise. Digital Maps or hardcopies, as well as GIS or CAD files are beneficial. We suggest asking relevant people from the following sources for relevant data:

- Flood hazard maps/analyses of the area available from respective organizations within the UN.
- Flood hazard maps/analyses from local, regional or national environmental agencies (possibly check with contact persons in the local, regional or national administrations).
- Flood hazard maps/analyses from other NGOS for the relevant area (possibly check with relevant interorganisational bodies).

Collection of new information

The second element of the local flood hazards data collection is gathering of new information, or information not found in official studies or reports. This can happen through interviews of local experts or longtime residents to gather oral expertise on local hazard characteristics and/or in a workshop with residents and local experts including participatory mapping exercises. Even though the collected data is mostly verbal or visual, it can be an important input for the hazard mapping process.

- **Interviews:** An example for an interview guideline and more guidance on the method for these interviews is provided in the annex.

- **Participatory mapping workshop:** In order to collectively gather experiences and local knowledge, we propose to organize a workshop with residents, members of the host community, UNHCR field staff and other experts including a participatory mapping exercise.

In this workshop, additional experiences on past events can be collected and jointly mapped. More information on the methodology and a sample workshop plan can be found in the annex.

04 | Vulnerable assets

Vulnerable assets are spaces or elements of the built environment in the settlement that might be suffering in case of a flood event. These assets (buildings or open spaces) can be damaged in a hazardous event, causing suffering for humans, structures or social, economic and operational processes as well as environmental services crucial to the settlement. We define possible vulnerable assets in the context of flood hazards and the framework of this project as:

- **Residential Shelters (individual or collective)**
- **Social infrastructure housing important functions in the settlement:**
  - Schools
  - Health facilities
  - Cultural/Community facilities
  - Youth/Women centers
  - Administrative buildings
  - Security (police)
  - Nutrition centers
  - Distribution centers
  - Storage of goods/NFI
- **Technical infrastructures relevant to the settlements functioning:**
  - Sanitation facilities
  - Power station
  - Water storage (tanks)
  - Drainage
  - Communication infrastructure
- **Transport infrastructure for internal and external mobility:**
  - Internal roads and walkways
  - Access roads
  - Bridges
- **Open spaces that incorporate important social, organizational or economic functions** (e.g. gathering spaces, spaces used for recreation, social events, religious functions, markets)
- **Any other built or non-built spaces that are deemed a vulnerability by local staff and community**

We use either globally available data or detailed maps provided by UN for a first mapping of vulnerable buildings and roads. Especially when using global data, we consider it crucial to add local data and knowledge in order to map all relevant vulnerable assets. Again, we propose a two-step data collection process.

Collection of existing information

The global data only identifies buildings without being able to categorize them. Roads are also imported from global datasets. In order to complete and adjust this global data, already available UNHCR data can be used. Most settlements count with data, including maps of shelters and social and technical infrastructure. Information beyond UNHCR (NGOs,government) on vulnerabilities in and around the settlement is also useful.

Collection of new information

Especially in the vulnerability mapping stage, the input of field staff, residents and other experts can contribute valuable information. We propose two strategies of data collection:

- **Manual mapping by field staff:** The field staff is the greatest source of information about vulnerabilities in the settlement. The manual mapping (digitally or on paper) of vulnerable assets marks an important data input. We suggest doing this by marking, writing or drawing over the most recent map of the settlement. We are looking for vulnerabilities beyond those already included on the map. Especially vulnerabilities that are not buildings are hardly represented in settlement maps. In addition, vulnerable assets outside of the settlement might be relevant. If there are essential services to refugees outside the settlements premises, then these buildings/infrastructures/spaces should be included in the vulnerability map. The settlement planning or shelter officer should lead this exercise, but including other field staff is also a good idea. This can be done in individual meetings or in a participatory mapping workshop (*see below*).

- **Participatory mapping workshop:** In a workshop with the settlement community, members of the host community, UNHCR field staff and other experts, we propose to hold a participatory mapping exercise. In this process, additional vulnerable assets that have not yet been included can be collected and jointly mapped. More information on the methodology and a sample workshop plan can be found in the annex.

05 | Risk mitigation measures

Based on the steps before (hazard and vulnerabilities mapping), the GIS tool provides information on possible risk mitigation actions. We understand risk mitigation measures as either physical interventions, such as retention walls, or soft measures, like alert systems or education programs leading to behavioral changes. We focus on cost efficient and practical mitigation solutions.
A variety of risk mitigation measures comes from experiences worldwide. These are good practices implemented in contexts that are similar to refugee settlements. In order to include additional local knowledge and experiences in risk mitigation, field staff should consider local mitigation measures. These are local or regional good practices, common strategies by the local population or the refugees to mitigate flood hazards. The data can come from various sources and we propose the following strategy.

Collection of new information

The collection of knowledge on local flood risk mitigation strategies builds strongly on the local practice and knowledge. Field staff might be aware of local flood risk mitigation strategies applied in the camp or other settlements in the area (e.g. specific modification to buildings or tents to mitigate flood risk). To add to the field staffs' knowledge, we propose two data collection strategies.

- **Conduct interviews:** Possible interviewees include professionals working in the field of planning or environmental contexts, longtime residents of the area or people working in the areas. They might know of local mitigation actions and good practices. Possible questions for the interviews and information on the methodology can be found in the annex.

- **Participatory workshop:** In order to collectively gather experiences and local knowledge on mitigation strategies we propose to hold a workshop with residents, members of the host community, UNHCR field staff and other experts. In this workshop, additional mitigation measures can be collected and discussed. More information on the methodology and a sample workshop plan can be found in the annex.

Annex I: Methodological guide interviews

Annex I | Methodological guide interviews

Introduction

Interviews are one of the most common forms of local data collection. They can be following a methodology below, but can also be conversations that are more informal.

There are two themes that need local data and knowledge gathered in interviews (flood hazards, mitigation measures). However, there is no need to conduct separate interviews for each theme as they can be easily combined in a single interview.

Whom to interview?

Anyone with information or experiences on flooding, occurrence and characteristics of the flood events in the area as well as with possible mitigation measures are possible interview partners. Interview partners can be local experts and/or residents. The definition of “expert” is very broad. This includes not only professionals in the field of planning or environmental contexts but also other persons with knowledge, e.g. people with long term work experience in the area. Local residents, refugees or from the host communities are also valuable local interviewees.

We cannot give an exact guidance of how to choose and contact the relevant interview partners. This process will differ from field to field and relies on existing networks. In practice, asking around and asking interview partners who else could have relevant information on the issue, is a good strategy.

Before the interview

The interviewer should be transparent about the motivation behind the interview and the way the collected information might be used. Interviewees should have the option to decline or end the interview at any time. An informal (or formal written) consent by the interviewee prior to the interview is important. If preferred, the information should be collected keeping the interviewee anonymous.

The interview

The interviews suggested in this document can take many forms. They can be informal conversations but also semi-structured interviews. A semi-structured interview is a meeting in which the interviewer asks open-ended questions (no yes/no questions) from an interview checklist, but allows for a discussion with the interviewee rather than a straightforward question and answer format. The questions are a starting point for further discussion rather than trying to cover all possible aspects of the issue of interest. For more guidance on semi-structured interviews, check here. A possible interview checklist can be found below.

The interview can be held at any location deemed appropriate. In some contexts, the method of a walking interview can be useful. In a walking interview, the interview partners guides the interviewer through the settlement or wider area, showing relevant sites and linking the verbal information with actual places. The interviewer can record the spatial information by drawing on a map.

What to do with the information

The interview can be recorded, with the agreement of the interview partner, or the interviewer can take notes. If possible, new information should be mapped during or after the interviews on top of existing maps of the camp.

As we are looking for mostly spatial information, the main goal is to spatialize the information gathered on maps. However, information that cannot be shown on a map and is still deemed relevant should still be gathered and organized in a text document for future use.

Interview checklist

The provided questions are only suggestions and can/should be adjusted, new questions added if needed. However, in a semi-structured interview, the questions are only the base to start a conversation that can lead into many different directions, as long as still relevant to the project. Note that the questions ask for information more detailed than needed for the GIS tool. However, this additional information might be useful for planning specific flood mitigation actions.

Questions hazards

• Do you know of any past flooding events in the settlement or close by (e.g. in the surrounding villages)?

• If yes, when did they occur?

• How often do such events occur?

• How intense were these flood events in terms of water quantity and depth?

• Where exactly did they occur? The whole area or specific areas? (Important to map the answers)

• How quickly did the flooding develop?

• How quickly did the water disappear?

• Were the flood events linked to a specific time of the year or a specific weather pattern?

• How is the occurrence of flood events changing over the last decades or years?

• Are the characteristics of the flood events changing over the last years or decades?

• What was the damage suffered from these events?

• Can you suggest other persons or organizations to talk to about these issues?

Space for additional Questions:

Questions Risk Mitigation Measures

• Are you aware of any typical measures taken by the local or refugee population to mitigate or adapt to the flood events?

• Are there any implemented adaptations of houses to mitigate the flood risk?

• Are you aware of any implemented adaptations of infrastructure to mitigate flood risk?

• Can you think of ideas of flood mitigation not yet implemented?

• Can you suggest other persons or organizations to talk to about this issue?

Referring to individual mitigation measures:

• How regularly is this measure implemented?

• Where exactly is it implemented? (Buildings; transport infrastructures like roads, bridges; Technical infrastructures like power stations; other land uses, like agricultural land)

• Is it used against pluvial/storm water floods or riverine/coastal floods?

• Do individual households, communities, authorities, or organizations implement it?

• What are the materials needed to implement it?

• What are the financial costs of this action?

• How efficient is the action over time?

• How long does it take to implement?

• What are the advantages of this action?

• What are the disadvantages of this action?

• Are there problems replicating this action in the camp?

Space for additional Questions:

Annex II: Methodological guide: participatory mapping workshop

Annex II | Methodological guide: participatory mapping workshop

Introduction

A participatory mapping workshop gathers people with relevant knowledge and experiences and provides a comfortable and trusting environment for all participants to collectively discuss and map certain questions or issues.

There are three themes that need local data and knowledge gathered in a participatory workshop (flood hazards, vulnerabilities mitigation measures). However, there is no need to conduct separate workshops for each theme as they can be easily combined in a single workshop.

Whom participates?

Anyone with information or experiences on flooding, possible vulnerabilities and mitigation measures in the area are possible participants. In order to collectively gather valuable experiences and local knowledge we propose to invite residents, members of the host community, UNHCR field staff and other experts. The definition of "expert" is very broad. This includes not only professionals in the field of planning or environmental contexts but also other persons with knowledge, e.g. people with long term work experience in the area. We cannot give exact guidance of how to choose and contact the relevant participants. This process will differ from field to field and relies on existing networks.

Before the workshop

A participatory workshop needs preparation, a set of methods and a moderator leading the workshop to create a productive and trusting environment. The workshop can include teamwork, presentations, group discussions, mappings and voting. Guidance on the planning of such a workshop can be found below. Tips with moderating a participatory workshop can be found **here**.

The organizers should be transparent about the motivation behind the workshop, the kind of information needed and the use of the information in future.

The workshop

This workshop focuses on participatory mapping. Participatory mapping combines the tools of cartography with participatory methods to record and represent the spatial knowledge of local communities and experts.
The workshop can be held at any location deemed appropriate, but should provide a relaxed and calm work environment. In some contexts, it can be accompanied with collective visits of the places and spaces in question.

To facilitate the mapping exercise, we propose to use print outs of existing maps of the camp (could also be sketched on a blackboard if printing is a challenge). For participants with difficulties reading maps, photos or drawings could be a useful addition. Visiting sites relevant to the workshop as a group might also be helpful. Adding elements to the maps could be done by drawing on the map or with post-its.

What to do with the information

The workshop can be recorded on tape or video, with the agreement of all participants, or the organizers can take notes. If possible, new information should be mapped during or after the workshop on top of existing maps of the camp.

As we are looking for mostly spatial information, the main goal is to spatialize the information gathered on maps. However, information that cannot be shown on a map and is still deemed relevant should still be gathered and organized in a text document for future use.

Possible work plan

The provided plan should be seen as a workable example. It can be adjusted to the needs or of the specific context and past experience of the organizers.

The workshop should not last more than 2,5 hours. The number participants can range from around 4-10.

Item	Minutes
Introduction of the propose or the workshop and of the participants	10 - 20
Introduction of the **workshop agenda and methods**	5
Collective mapping exercise I: Participants can draw or stick post-its on one or several printed maps of the camp, indicating past flood events in the area. The moderator then goes through the mapped flood events and tries to cluster them to different groups of events with similar characteristics	5 - 10
Group exercise I: Groups are formed and each group takes one of the defined flood event clusters and discusses the respective flood events using the questionnaire from the interviews (see other annex) as guidelines. The results are then presented by representatives of the groups in front of all participants.	20 - 30
Break	10
Collective Mapping Exercise II: The moderator explains what we understand as relevant vulnerabilities (see document) and presents the already identified vulnerabilities on a map. Together, new vulnerabilities are mapped and discussed. Maybe voting can be used to identify the importance of different vulnerabilities.	10 - 30
Brainstorming exercise I: The moderator explains the concept of a risk mitigation measures and shows examples (see Risk Mitigation Measures Catalog). Together, additional local experiences of risk mitigation actions are collected on posters.	10 - 15
Group exercise II: Teams are formed according to different risk mitigation measures collected before. The groups discuss the respective action according to the questions of the interview. A group representative presents the conclusions to all participants.	20 - 30
Conclusion: The moderator reflects on the workshop, summarizes its main findings and thanks the participants for joining. The moderator also sketches the next steps of the project and ways for the participants to engage with it.	5