Community Flood Risk Mapping in Honduras

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GRC Central America Delegation

The GRC Central America Delegation focuses on risk analyses to support anticipatory action planning. As team with Information Management personnel, they integrate Geographic Information Systems to enhance our analysis and decision-making processes.

The Sketch Map Tool was used to map local knowledge about areas affected by flooding and critical infrastructure to update municipal response plan and develop a plan for anticipatory action.

Why was the Sketch Map Tool used?

The opportunity to engage directly with local community members, was essential part of the workshop. The Sketch Map Tool was considered an excellent way to collect localized information on flood risk in a participatory and visual manner.

The Project

This Pilotstudy workshop was part of a joint effort between the Honduran Red Cross and the municipal government to update the municipal response plan and develop an annex focused on anticipatory actions.

The Sketch Map Tool was used during a one-day workshop held in the municipality of Alianza, in the department of Valle, Honduras. The activity was carried out at the request of the Honduran Red Cross, and as part of the GRC (German Red Cross) team, HeiGIT accompanied the workshop, introduced the tool, and worked alongside the National Society to support its implementation.

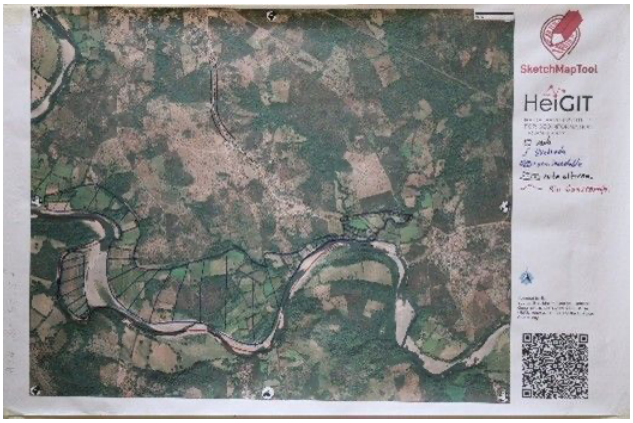
The main objective of the exercise was to collect community-level data on flood risk. Local participants from various towns used the Sketch Map Tool to identify and map flood-prone areas in their respective communities. This participatory mapping complemented existing data from Fathom's flood models by incorporating local knowledge and observations.

How was the Sketch Mapping organized?

The mapping process was organized by grouping participants according to their respective neighbourhoods. This ensured that each group could focus on the specific geographic area they were most familiar with. Attendees were instructed to map flood-prone areas based on their local knowledge and past experiences.

We did not use a questionnaire, as the focus was on open, map-based discussions. Our role as part of the GRC team was to introduce the Sketch Map Tool, explain how to use it, and then rotate between groups to provide support, answer questions, and ensure consistency in how data was being collected.

Participants included community members, a representative from COPECO (the Permanent Contingency Commission of Honduras, responsible for disaster preparedness and response), and a municipal employee from the cadastre office. These target groups were chosen because of their direct knowledge of the area, institutional memory of past flood events, and their role in municipal planning and emergency response.



Sketch Mapping of flood risk in Honduras.

How were the Sketch Maps analyzed?

The digitized Sketch Map results were analysed in QGIS. In the first the cleaning process, any features or shapefiles that were not related to flood risk were removed to ensure the accuracy and relevance of the data. The cleaned vector file—containing the flood-prone areas identified by the communities—was then combined with Fathom's flood simulation data. This integration allowed us to complement the exposure analysis by bringing together scientific modeling with local knowledge, resulting in a more comprehensive and context-specific understanding of flood risk in the municipality.

Results and Impact

The resulting information was then integrated into a broader risk analysis using the INFORM methodology, which allowed us to generate maps reflecting key dimensions of risk: exposure, vulnerability, and lack of capacity. These maps were incorporated into the documents supporting the updated municipal response plan and the annex for anticipatory actions.

To further analyze the potential impact, we created flood maps to calculate the percentage of each community's area identified as prone to flooding. Additionally, we overlaid these flood masks with georeferenced population density data to estimate the percentage of the population living within the identified flood-prone zones. This allows for a more targeted and informed risk assessment, useful for planning anticipatory actions and improving emergency preparedness at the municipal level.

Participants from the community received the resulting risk maps, which are annexed to the municipal response plan. We plan to work with the municipality's cadastral focal point to produce a flood plain map.

Lessons Learnt

1. The experience with participatory mapping in the community and using Sketch Mapswas very positive. Participants were fully engaged and motivated, expressing that the exercise was a great opportunity to share their knowledge on local flood risks.

2. Working in small groups based on their respective communities proved to be especially effective. It allowed participants to focus on familiar areas and facilitated better group dynamics. In contrast, larger groups tended to become disorganized, and not everyone had the chance to contribute equally—so we highly recommend the small group approach for future activities.

3. Orientation Challenges: A few participants had difficulties orienting themselves on the map, especially older participants or those with limited vision. One participant noted that the name of a location appeared differently on the base map than it is commonly known in the community, which created some confusion. These issues highlighted the value of being able to upload alternative or customized base maps and integrate reference data (such as local landmarks or community-agreed place names) to improve orientation and clarity.