Community Mapping Project Colombia – National System for Disaster Risk Management (NSDRM)

June 2025

The Project

The Community Maps Project, led by the National Unit for Disaster Risk Management's (UNGRD) Risk Knowledge Sub-Directorate, is part of the strategic actions of the National Disaster Risk Management System (SNGRD) to strengthen local capacities and processes for socialization, analysis, and risk reduction at the territorial level.

The project is of high national relevance and seeks to promote participatory mapping as a means of integrating technical and local knowledge as well as recognising environmental conditions, such as existing hazards, availabe resources, safe routes, among other critical factors in the event of emergencies.

Through focus groups and the facilitation of the use of digital tools, such as geographic information systems (GIS), mobile applications, and Sketch Map Tool, community risk maps were developed that adequately reflect the perception of their territory. These products inform both, authorities and the Municipal Disaster Risk Management Councils (CMGRD) for development planning, risk management, and emergency response.

The project has generated more than 270 community maps with different risk scenarios prioritized by the community; 4,092 people have participated in 147 municipalities in Colombia.

Why was the Sketch Map Tool used?

The use of the Sketch Map Tool (SMT) made it possible to capture the communities' territorial knowledge through a participatory and visual methodology. This tool facilitates the identification of hazards and

SketchMapTool

HeiGIT | HEIDELBERG INSTITUTE FOR GEOINFORMATION TECHNOLOGY

vulnerabilities, capacities, and resources from a local perspective, strengthening community ownership of risk-management processes. Furthermore, as it is a tool that can be used directly by communities, allowing for easy printing and data digitization from the website, it is suitable for communities that do not have professional mapping knowledge, which helps the team to achieve the objective of strengthening community capacities in the most vulnerable areas of the country.

How was the mappping organized?

The mapping process was part of the activities organized by the national government, in coordination with the prioritized municipalities, which facilitated the participation of community leaders, representatives of organizations and local governments, and members of local risk management committees.

During the workshops, the equitable participation of women, young people, and ethnic groups was promoted, encouraging inclusion and diversity of perspectives. Project facilitators guided the development of maps using the Sketch Map Tool in urban areas, where scales are smaller. In Cali, Colombia, two areas with active risk management processes were selected: Pance and Comuna 18. The local government wanted to develop a participatory and more detailed methodology for the generation of Community Risk Management Plans, using the Sketch Map Tool to provide communities with tools to map points and areas of interest.
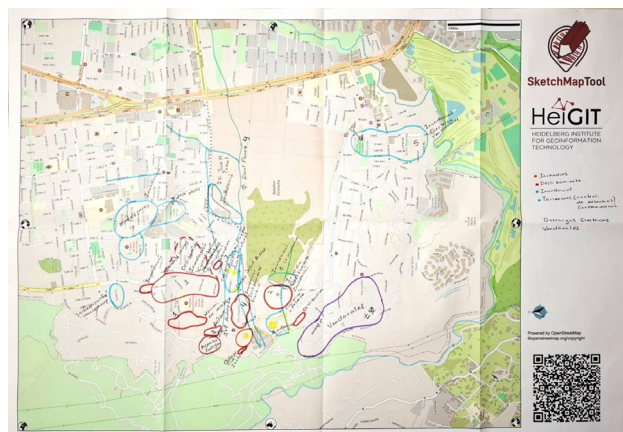

Community mapping process as a group activity.
Foto: UNGRD's Community Maps [1]

How were the Sketch Maps analyzed?

The maps produced by the communities were digitized using Sketch Map Tool and analyzed using other Geographic Information System (GIS) tools, such as MapHub, which allows information, text, areas,

and colors to be added, making them easier for communities to use. The analysis made it possible to identify spatial patterns of hazard and vulnerability, prioritize areas for intervention, and strengthen municipal planning instruments. During the process, several stakeholders expressed the need to also represent administrative boundaries and land use regulations in the areas; this helped participants describe the issues and, in some cases, ask local authorities about previous commitments or the progress of projects of their or their territory's interest.

Multi-hazard Sketch Map resulting from Communa 18, Cali.
Foto: UNGRD's Community Maps [1]

Results and Impact

During the project up-to-date and relevant information for communities and authorities in two areas of the city of Cali were generated [2][3]. The activities help to consolidate a network of communities with strengthened risk management capacities, generating updated and validated community maps in a participatory manner. The information generated with the communities was digitized and integrated into the territorial planning processes known as "Municipal Disaster Risk Management Plans (PMGRD)" and "Community Risk Management Plans."

Among the main impacts are:

→ Active participation of more than 60 people from Pance and Commune 18 in Cali, as well as delegates from the local government and other entities of the local risk management system.

→ The event allowed for direct interaction between authorities and residents, mainly on risk management, but also addressed issues such as investments and works that the city is carrying out in these territories.

→ The appropriation of local knowledge as a source of information for risk management.

→ The articulation between communities and institutions.

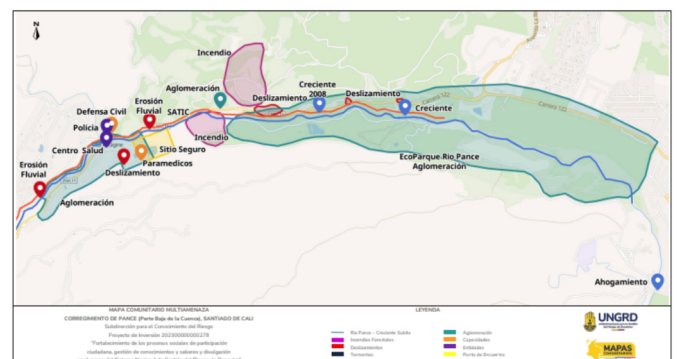→ The strengthening of community resilience and response capacity.

Lessons Learned

→ Active community participation is essential to en sure map's accuracy and legitimacy. Participatory processes foster trust, cooperation and a sense of belonging within communities.

→ Digital tools such as the Sketch Map Tool must be accompanied by training and awareness raising processes to ensure their appropriate use.

→ There are complementary tools (ChatMap, uMap, GIS, etc.) for generating and analyzing information.

→ The process involves dialogue, coordination, and activity planning; in this way, each actor fulfills a role, interaction with communities is relevant and respectful, and concrete outcomes are achieved.

→ The combination of technical knowledge and local knowledge enriches risk analysis.

→ It is essential to establish mechanisms for updating and sustaining maps in order to maintain their validity over time.

→ It is essential to instruct facilitators and participants in appropriate marking techniques the quality of manual drawings directly determines the successs of the automatic detection.

→ Using a pencil to write explanatory texts alongside the drawings allows for adding valuable qualitative context without interfering with the automated digitization..

For the specific case of community-based risk management plans, the use of SMT still presents certain limitations:

→ When maps are created using the Sketch Map Tool it is difficult to integrate official information that is relevant for authorities and recognized by community members (land-use layers, administrative boundaries, place names, etc.).

→ There are Points of Interest (e.g. hospitals, meeting points, fire stations) that are not highlighted in the default base maps and would help participants to better interpret the map.

→ There are multiple categories that can be mapped in risk management. SMT has limitations in recognizing a wide variety of colors or symbols As a result, automatic detection must be complemented by editing in GIS.

→ In mountainous areas, the OpenStreetMap (OSM) base map may obscure natural barriers or connections with other settlements.

→ Including OSM mapping and updating activities is key to improving the basemap and developing community data management skills. Furthermore, strong facilitation is essential to communicate limitations and manage expectations.

→ For official processes, maps should include the logos of the participating institutions, which is important to demonstrate the formality of the exercise.

→ When participants have attended similar mapping activities before, there is often an intention to represent objects directly rather than limiting representation to areas, lines, or points. The use of symbol stickers is quite common in community mapping.

→ The automatic detection of lines presented technical challenges that, in some cases, affected the identification of other elements.

→ Multiple tests using icons, stickers, and markers of different sizes were necessary for the team to refine the methodology and enable effective use of SMT.

→ The use of satellite base maps can complicate the process in urban areas due to rapid changes or low spatial resolution of the imagery. In areas with forest cover, it is difficult to mark features in a way that can be reliably detected by the tool.

Multi Hazard Community Map, Pance.
Map: UNGRD's Community Maps Team [3]

Sources:

[1] Urban Community Maps Cali

[2] MapHub Community Map Comuna 18

[3] MapHub Community Map Pance

Written by UNGRD'Community Maps Team, Urban Big Data Centre & Heidelberg Institute for Geoinformation Technology