# LEVERAGING COLLECTIVE INTELLIGENCE METHODS

## Participatory Mapping and Citizen-Generated Data to Address Environmental Degradation and Displacement

A BURUNDI CASE STUDY


IOM UN MIGRATION | GLOBAL DATA INSTITUTE DISPLACEMENT TRACKING MATRIX

JIPS informing solutions to internal displacement

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Burundi, IDPs, returnees and members of the host community are mobilized in a cash-for-work activity to build latrines.

# TABLE OF CONTENTS

# 1. BACKGROUND

Since June 2022, the International Organization for Migration (IOM) Displacement Tracking Matrix (DTM) and the Joint IDP Profiling Service (JIPS) have been collaborating on the ECHO-funded project titled "Environmental Degradation and Displacement: Leveraging Citizen-Centred Data to Enhance Humanitarian Programming." This initiative aims to address the growing challenge of displacement driven by environmental factors. To address this, IOM and JIPS are spearheading a Collective Intelligence (CI) initiative focused on Disaster Displacement and Anticipatory Action, particularly in Humanitarian Implementation Plan (HIP) priority areas in the East and Horn of Africa.[1] The study's findings will contribute to strengthening early warning systems already operational in Burundi.

## COLLECTIVE INTELLIGENCE TO ADDRESS ENVIRONMENTAL DEGRADATION AND DISPLACEMENT

Collective Intelligence can be understood as the enhanced capability that emerges when groups of people work together, pooling their knowledge, skills, and insights to solve problems and make decisions more effectively than individuals working alone (UNDP, 2021). Using analytical tools to process and synthesise this information, CI can reveal patterns and insights that might not be evident otherwise and ensures that solutions and decisions reflect the collective input of the group, creating effective and inclusive outcomes.

## COLLECTIVE INTELLIGENCE PROJECT

The project, as described below, included Community Consultations in nine collines[2] with 115 Focus Group Discussions (FGDs) participants (51% male, 49% female). Data collection using the CI tool covered 65 collines in six communes across four provinces in Burundi, three of which border Lake Tanaganyika, which included 3,373 survey respondents (59% male, 42% female). Throughout the project 2,520 incidences of damage or impacts of weather-related disasters as well as 2,311 prevention and mitigation measures were mapped. The project closed with Community Validation Sessions held in nine collines with 144 FGD participants (52% male, 48% female). This case study can be used to replicate this CI approach in other regions facing similar challenges. As such, this approach will contribute to global efforts in disaster risk reduction (DRR) and enhance community resilience, demonstrating how leveraging the collective knowledge of affected populations can lead to sustainable and impactful solutions.

A report, titled UNTAPPED: Collective Intelligence for Climate Action, published by UNDP and the Nesta Center for Collective Intelligence in early 2024 found that the use of CI methods including participatory mapping and citizens science proved particularly beneficial in addressing the impacts of hazards, creating local solutions, and providing useful data to decision makers (UNDP; Nesta, 2023)

1 European Commission's Directorate-General for ECHO. Humanitarian Implementation Plans *(HIPs)*,

2 In Burundi, the administrative structure is divided into several levels. The country is divided into provinces, which are further subdivided into communes. Communes are the second-level administrative units and serve as the principal local government entity, often including several towns or villages. Below the communes are collines, which are the smallest administrative units in rural areas and often correspond to hills or communities within a commune. These administrative divisions play an important role in local governance, data collection, and project implementation.



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Flodings in Gatumba, near Bujumbura.



## CASE STUDY

This case study aims to produce actionable recommendations for improving community engagement and collaboration as well as lessons learned from the pilot application of CI methods to address the impacts of weather-related hazards. IOM's DTM and JIPS partnered to create a CI approach that captures diverse perspectives and better understanding of weather-related hazards and their impact on the community groups most vulnerable to natural hazards. In addition, the approach seeks to understand coping mechanisms and additional needs to improve preparedness and resilience as well as linking weather-related hazards to land tenure and conflicts.

## VULNERABILITY TO WEATHER-RELATED HAZARDS IN BURUNDI

Landlocked Burundi has a low-income economy, with 80 per cent of the population relying on agriculture-based employment (World Bank, 2024). Rising food and fuel prices have strained the economy that is already highly vulnerable to shocks. Burundi also has a high-risk class based on the INFORM Country Risk Profiles (INFORM, 2024), with land degradation, deforestation, and rapid urbanization exacerbating risks and 93 per cent of internal displacement triggered by disasters (IOM DTM, 2024). The 2024 Humanitarian Needs Overview (HNO) for Burundi notes that priority areas include regions bordering Lake Tanganyika in northern, eastern and western provinces of Burundi (OCHA, 2024).

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# 2. CASE STUDY:

## COLLECTIVE INTELLIGENCE TO ADDRESS THE IMPACTS OF WEATHER RELATED HAZARDS.

This case study is a part of a broader set of analytical products produced through the DTM JIPS CI approach. In addition to this case study, the project has generated a fact sheet, a detailed report on the findings from Community Consultations, data collection, and Validation Sessions, as well as specific steps for scaling the approach and ensuring long-term sustainability post-project.

The study is centred on the application of CI in addressing challenges exacerbated by weather-related hazards. It focuses on gathering and synthesizing the collective knowledge and experiences of the community, which improved the understanding of impacts on communities, including IDPs, and the mitigation strategies and resilience measures implemented therein. By engaging community members directly in data collection and analysis, the project aimed to capture a diverse range of insights and perspectives, ensuring that the data collected is representative of the entire community, including under-represented groups.

Currently, affected populations rarely provide feedback or validate the results of data collection and analysis processes, and there is a significant gap in involving affected populations in the planning of subsequent interventions (IOM, 2022a). This is especially true in terms of how the data and analyses generated are utilised to shape response strategies. This project aimed to pilot a new approach to overcome these issues and ensure active engagement these issues by implementing strategies that actively engage affected communities throughout the data collection, analysis, and response planning phases, ensuring their inputs are integral to the decision-making process in humanitarian efforts.

Aggregation bias can obscure important local variations and nuances. To address this, data should be disaggregated to capture specific details at the colline-level,[1] This level of detail can reveal unique vulnerabilities and strengths within different parts of the community. By avoiding over-generalization, the CI approach can develop tailored interventions that address specific needs and conditions.

This case study aims to produce actionable recommendations for improving community engagement and collaboration as well as lessons learned from the pilot application of CI methods to address the impacts of weather-related hazards. DTM and JIPS partnered to create a CI approach that captures diverse perspectives and better understanding of weather-related hazards and their impact on the community groups most vulnerable to natural hazards. In addition, the approach seeks to understand coping mechanisms and additional needs to improve preparedness and resilience as well as linking weather-related hazards to land tenure and conflicts.

### PROJECT GOALS AND COLLECTIVE INTELLIGENCE METHODS

This initiative aimed to gather comprehensive data from various population groups within communities repeatedly affected by climate shocks, ensuring inclusivity and representation of different perspectives. By engaging with communities living in varied geographical locations, from lake banks to hillside regions, the project sought to understand the differential impacts of natural hazards and the existing mitigation strategies and resilience mechanisms employed by communities. An important aspect of the study was to collect feedback on the CI approach itself, assessing whether it effectively represents the diverse population groups involved. Ultimately, the project seeks to create a replicable model that can be applied in other regions facing similar challenges.

1 Burundi is sub-divided at three admin levels: provinces, communes and collines.



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# 3. COLLECTIVE INTELLIGENCE APPROACH

IOM and JIPS developed and implemented a pilot CI approach, harnessing the benefits of methods including citizen-generated data and participatory mapping. This approach prioritises the influence of community insights in shaping subsequent data collection and analysis phases, emphasising a participatory and community-driven approach to risk assessment. This innovative approach consists of three distinct tiers outlined below.

Tier 1: Community Consultations (Qualitative): Engages affected communities to gather insights on recurring natural hazards, their impacts, and coping strategies, refining the data collection process.

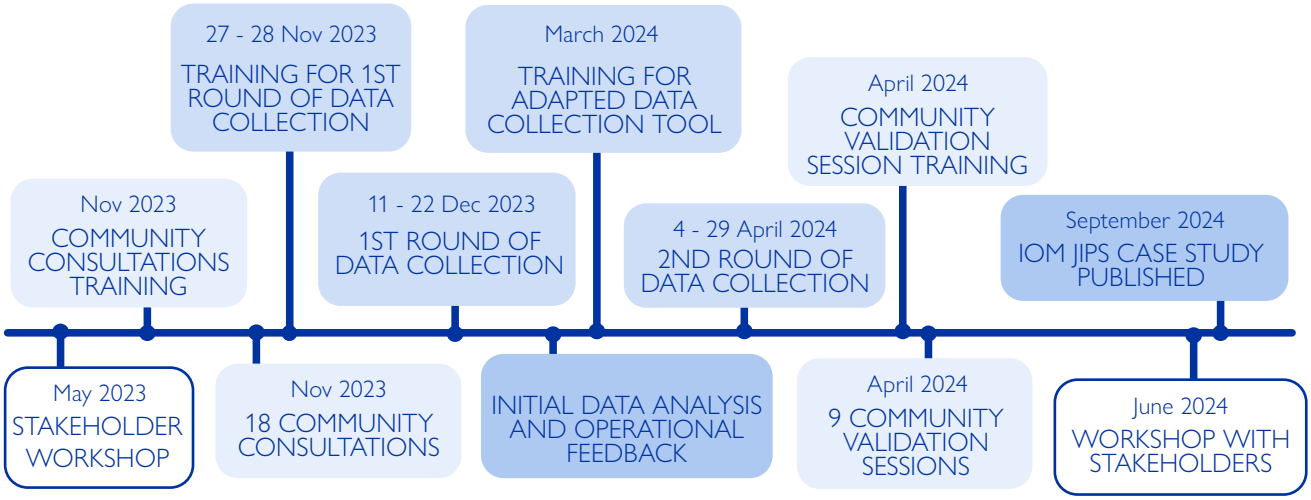
Tier 2: Data Collection & Mapping (Quantitative): Utilizes surveys and participatory mapping to identify the most affected areas. Community members provide input across various factors, and spatial analysis helps prioritize interventions in the hardest-hit areas.

Tier 3: Community Validation Sessions (Qualitative): Validates collected data, contextualizes findings, and refines the approach for future scalability, ensuring that interventions are community-driven and evidence-based.

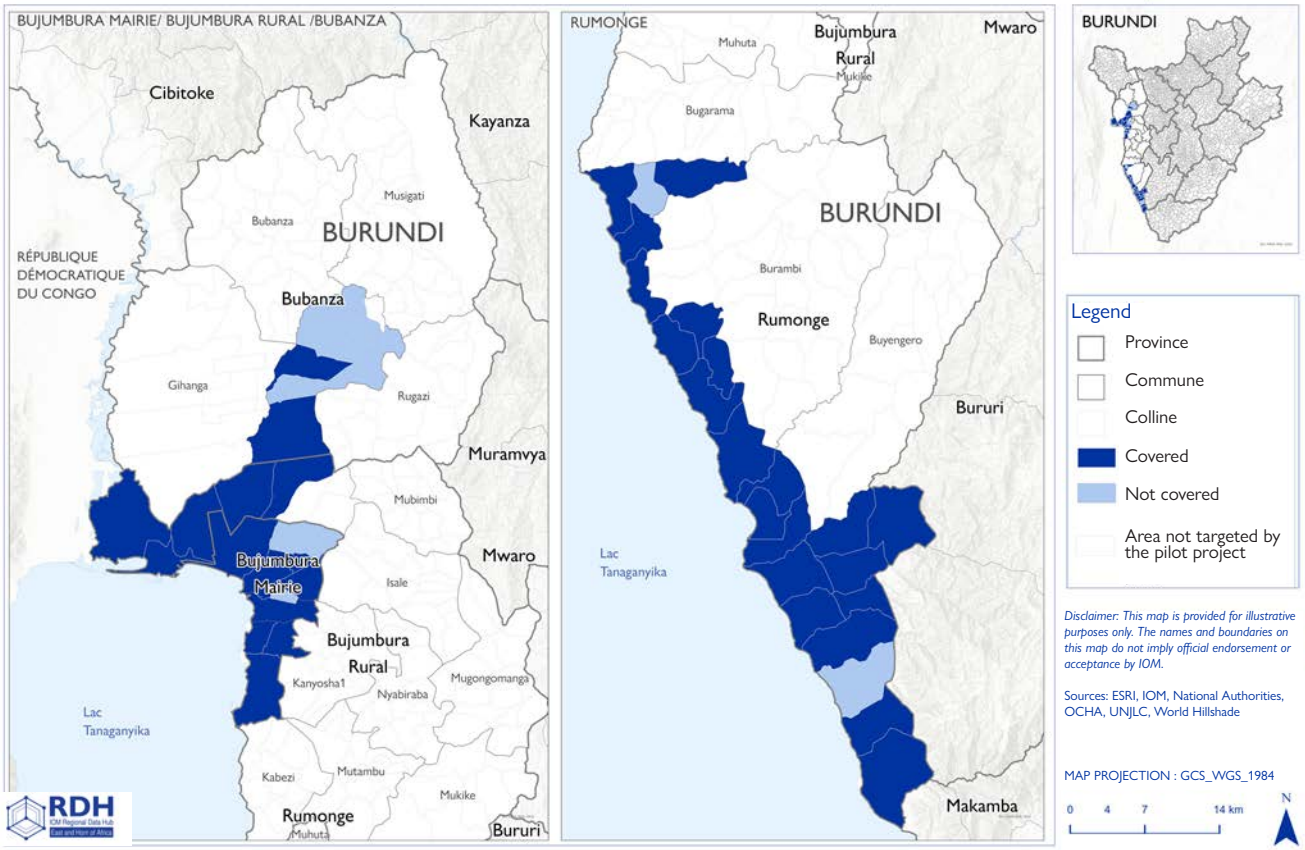
The approach and tiers are outlined in more detail below.

## PROJECT TIMELINE & SCOPE

The project was carried out in four Provinces, six Communes, and 65 collines. The quantitative component included a total of 3,373 respondents while the qualitative component involved 259 participants. Collines were selected across four provinces to ensure ensured that the pilot would take into account diverse contexts, such as urbanization levels, types of weather-related hazards and damages.[1] The presence of existing Community Disaster Risk Reduction Committees (CCRRCs)[2] was also used as a selection criterion.




### Map of project coverage




1 Colline selection for the pilot was informed by cross-tabulated data from previous IOM Burundi's Displacement Tracking Matrix (DTM) exercises, in particular the Emergency Tracking Tool (ETT), which has been running since January 2018. In addition, findings from the DTM Multi-Hazard Risk Assessment in Burundi (2022) were taken into consideration (IOM, 2022a). The Multi-Hazard Risk Assessment ranked communes based on estimated damage (defined in USD/m2) while the DTM data used to inform colline selection was based on ETT data since 2018. These two variables were cross tabulated and the top communes in each category (urban, peri-urban and rural) were selected, in order to ensure thorough testing of the method under different Context, the probability of collecting on different types of incidents (flooding, landslides) and in terms of potential impact from lessons learned an data collected given areas most affected.

2 IOM, in partnership with the Burundian government, launched the TUBEHONEZA project on 7 July 2020, which supported the creation of Community Disaster Risk Reduction Committees (Comités Communautaires de Réduction des Risques de Catastrophes in French, CCRRCs). CCRRCs aim to strengthen the involvement of communities in defining and implementing resilience-building measures.



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# TIER 1: QUALITATIVE APPROACH TO COLLECTIVE INTELLIGENCE METHODS THROUGH COMMUNITY CONSULTATIONS:

The first tier of the implementation of CI methods was the qualitative Community Consultations, which were closely interlinked with the quantitative approach.

## Community Consultation sessions

The initial community consultation sessions were conducted across specific target collines, aiming to gather nuanced insights into the challenges posed by natural hazards. The community sessions were conducted by two local enumerators, one facilitating and one note-taking. The session included a ranking exercise to identify most impactful natural hazards and then facilitated a discussion around key questions to ensure a comprehensive capture of diverse perspectives and better understanding of 1) Natural hazards and their impact on the community groups most vulnerable to natural hazards, 2) Coping mechanisms and additional needs to improve preparedness and resilience, and 3) Links of natural hazards to land tenure and conflicts.

These consultations were pivotal in refining the quantitative data collection tools as they revealed relevant themes and patterns which require further exploration and should thus be included in the quantitative tools. These consultations thereby ensured that the quantitative data collected is reflecting issues identified by the communities themselves and responds to existing information needs within the community.

The Community engagement component allows for two-way exchanges between project staff and community representatives to strengthen ownership and buy-in of the community and to ensure that the community plays a vital role in the design and execution of the CI approach.

This process enhances the accuracy and relevance of the data collected and ensures that data is grounded in the actual experiences and needs of the community. As a result, this approach can deliver more sustainable and impactful outcomes, contributing to the overall resilience and well-being of the affected populations.

The selection of community participants ahead of the community sessions aimed to ensure that participants accurately represent the community fabric. The first step therefore was to compile a list of relevant key informants (community leaders) who possess a deep understanding of local community structures, are well-acquainted with the existing population groups and have insights into the dynamics between these groups.

### ENGAGING WITH COMMUNITIES IN DATA COLLECTION PROCESSES.

Community engagement approaches must pay close attention to the fabric of "a community". A community itself can be described as "a group of people who identify themselves or are identified by others as sharing common cultural, religious, or other social features, backgrounds, and interests, forming a collective identity with shared goals. However, what is externally perceived as a community might actually consist of numerous subgroups or communities, divided by clans, castes, social class, language, or religion" (UNHCR, 2008). Community engagement extends the focus from the individual to the collective, ensuring inclusiveness by considering the diversity that exists within the community.



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# TIER 2: QUANTITATIVE COMPONENT USING KOBO & MAPPING COMPONENT FOR IDENTIFYING MOST AFFECTED AREAS:

Collective Intelligence data collection approaches can complement and enhance traditional methods by empowering local communities to collect data using smartphones through accessible interfaces. This bottom-up approach allows an understanding of varied perspectives among different population groups within collines.

Participatory mapping and citizen science methods of CI can both enrich our understanding of disaster risk and ensure that community insights shape subsequent data collection and analysis phases, fostering a participatory and community-driven approach that provides decision makers with quality actionable data. Data collection covered 65 collines in six communes across four provinces in Burundi, which included 3,373 survey respondents (58% male, 42% female). Throughout the project 2,520 incidences of damage or impacts of weather-related disasters as well as 2,311 prevention and mitigation measures were mapped. Non-traditional data collectors in each colline conducted at least three individual interviews per day (a minimum of 30 interviews). As patterns emerged, non-traditional data collectors mapped specific hazard impacts or relevant solutions. Enumerators prioritised incidents with recent significant impact, typically within the past year.

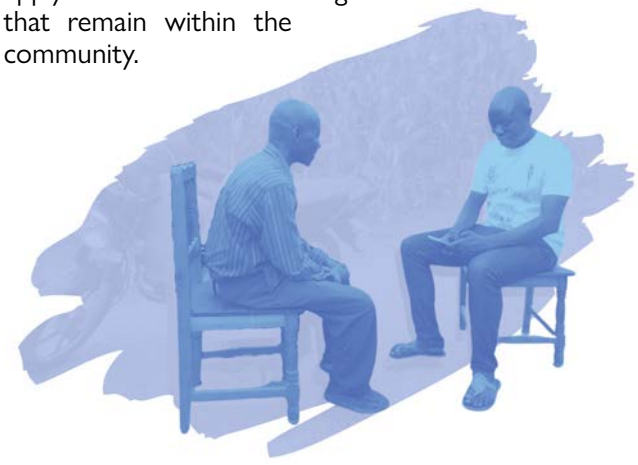
## Enhancing Data Collection with CI

Traditional data collection often relies on enumerators conducting surveys with individuals or key in-formants within communities. While effective, these methods have limitations, including challenges in achieving representative participation and location-specific data and community generated solutions that are location specific in tandem with understanding how different population groups are differentially impacted.

The Kobo Toolbox Design obtained community perspectives through a mix of household and individual interviews, covering both respondents' views on the situation in the colline (similar to a key informant interview, but with a much larger and more diverse/representative group of respondents) and the situation of their household. In the first iteration of the tool used during the first round of data collection, over 150 questions and multiple-choice responses were audio-recorded in spoken Kirundi and uploaded into the form. This allowed enumerators to listen to the text in Kirundi. This was removed in the updated version of the tool used in the second round of data collection (See lessons learned: Icons and Audio Prompts to Improve Comprehension Among Non-traditional Enumerators.

The Participatory Mapping exercise provided an understanding of the concrete impacts of hazards on the community, including flooded houses, landslides and other weather events. It also covers proposed or implemented prevention and mitigation measures.

Who is considered a non-traditional data collector? Non-traditional data collectors were more diverse in terms of age, education, experience, and literacy than the "typical" enumerator cohort, which favors university students or graduates with many years of experience and knowledge of the French and or English depending on the context. As a result of close community participation, community volunteers were trained in data collection methods, the use of digital tools, and basic data analysis, and could conduct regular surveys using the CI tool created (e.g. on soil quality, crop health, and rainfall patterns). Training and empowering local volunteers to collect and interpret data, allowing non-traditional data collectors to apply skills and knowledge that remain within the community.





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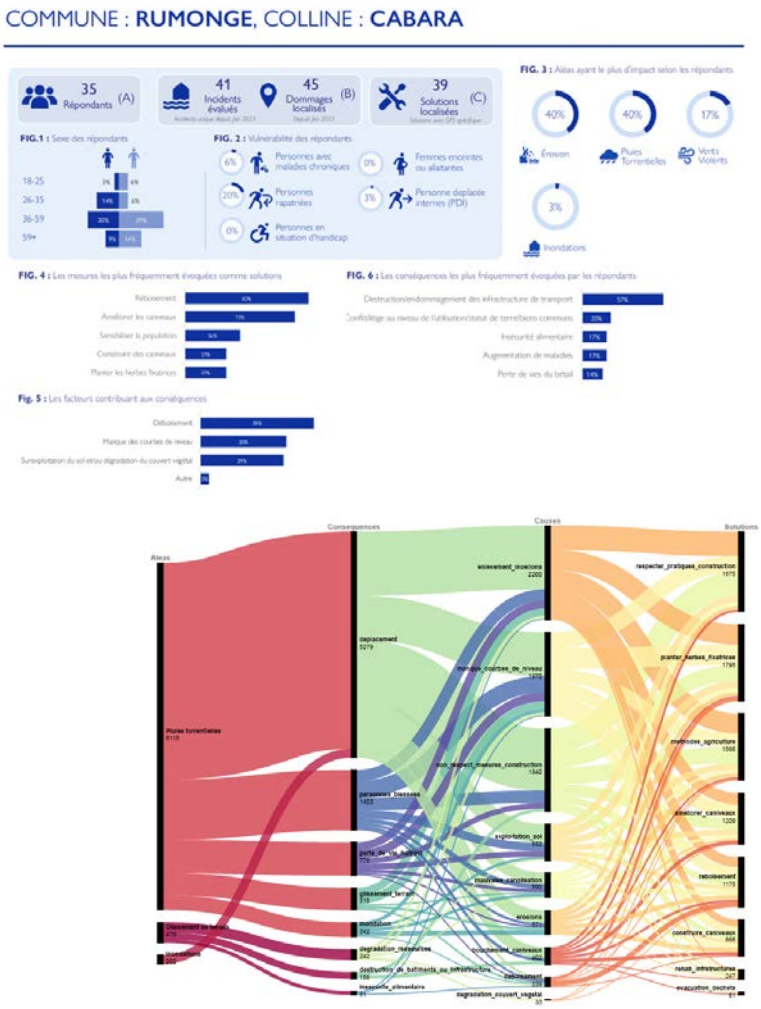
## DATA COLLECTION OUTPUTS

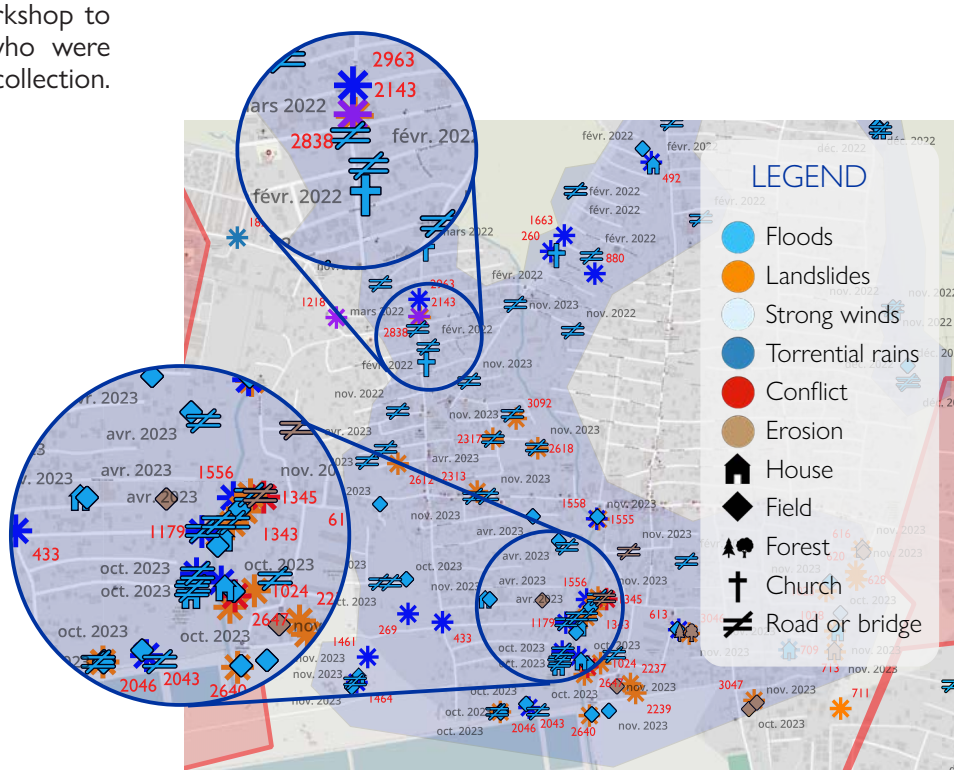
Colline-level Snapshots and maps were created and distributed to ensure that the data collected was made easily available to colline-level CCRRCs, humanitarian actors and decision makers. Summaries and maps outlining colline-level data collected during the pilot project was circulated and made available to stakeholders.

Colline-level Snapshots were created based on round one (25 Snapshots) and round two (64 Snapshots) of data collection and distributed to enumerators in between data collection rounds and at the June 2023 workshop. Each snapshot includes sex and age-disaggregated demographic data, outlining impacts, influencing factors, consequences, and hazard-related solutions. Sankey charts visually map the relationships between hazards, influencing factors, consequences, and solutions. See the Colline Snapshots here.

The participatory mapping exercise produced 75 maps and was distributed back to those who collected data using the tool. Following the second round of data collection, 14 maps with multiple collines and 63 colline-level maps were created. Maps were also used as part of the Community Validation Sessions and distributed during the workshop to Representatives of CCRRC who were enumerators during the data collection. See the Colline maps here.






### SOLUTIONS

- Improve drainage canals
- Other
- Construct drainage canals
- Relocate households
- Waste removal
- Agricultural methods
- Plant fixative grasses
- Reforestation
- Reconstruction of infrastructure
- Respect for construction practices
- Raise awareness



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## TIER 3: QUALITATIVE APPROACH TO COLLECTIVE INTELLIGENCE METHODS THROUGH COMMUNITY VALIDATION SESSIONS:

The Community Validation Sessions aimed to achieve two primary goals: first, to verify the accuracy of the gathered data, add contextual insights, and prioritize the most significant natural hazards based on community feedback; and second, to assess and improve the CI approach, promoting ongoing learning and scalability.

During community validation sessions across the nine target collines in Burundi, findings from the quantitative data collection were presented back to the community to:

1) Validate the findings of the quantitative data collection e.g. validating and mapping the impact of specific natural hazards,

2) Contextualise findings when necessary, e.g. which response to impacts of natural hazard should be prioritised,

3) Verify the usefulness of the collected data, and

4) Evaluate the overall approach of the exercise and gather feedback.

Where possible, participants of the validation session were the same participants as during the initial Community Consultation Sessions as they were best suited to understand and give feedback on the extent their inputs have been taken on board and to evaluate the overall approach taken. Therefore, this validation process solicited extensive feedback on the CI methodology's effectiveness, inclusivity, and participatory aspect, gathering invaluable community suggestions for refinement.

This dual-phase strategy ensured that the project's interventions were deeply rooted in the genuine experiences and needs of the community, thereby enhancing transparency, accountability, and ownership.

### FINAL WORKSHOP

The closing workshop of the project was held in Bujumbura on June 19, 2024. The workshop was aimed at gathering feedback and insights to enhance the pilot CI approach. In addition, the workshop aimed to improve the approach's capacity to provide relevant actionable data and encourage community participation to address environmental degradation and displacement. This workshop brought together a diverse group of stakeholders, including representatives from local authorities and community leaders. The discussions and shared experiences during both the Community validation sessions and this workshop provided a wealth of valuable information and practical suggestions.



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# 4. KEY CHALLENGES & LESSONS LEARNED

During this pilot study, the project team encountered challenges that produced valuable lessons learned that can improve the implementation of future CI methods when addressing the impacts of weather-related hazards.

## 1. CREATING THE COLLECTIVE INTELLIGENCE TOOLS

### 1.1 Icons and Audio Prompts to Improve Comprehension Among Non-traditional Enumerators

*Challenge:* As outlined in detail above (Section: The Kobo Toolbox Design), audio prompts were used in the first version of the tool. The inclusion of audio was time-intensive and problematic due to connectivity issues, and they were not widely used in the first round, therefore the feature was removed in the updated version of the tool used during the second round of data collection. The process of recording, editing, and assigning the audio files was time intensive, and the use of hundreds of small external files for icons and audio prompts in the data collection platform resulted in some issues when it came time for users to download the survey forms. With limited bandwidth or intermittent connection, forms could be downloaded but in some cases a proportion of the audio files and icons would be missing.

*Lesson learned:* For the second round of data collection, an updated version of the form was created without the audio prompts. The use of icons is encouraged to improve comprehension for non-traditional data collectors. In this, cost-benefit should be carefully considered, and audio files should potentially be constrained to key questions such as informed consent. If audio prompt is used, future projects can spend more time to load the survey forms manually onto phones or tablets.

### 1.2 Capturing Community-wide and Household-level Impacts

*Challenge:* Initially, participants were surveyed on their community-wide views regarding the impacts, consequences and mitigation measures in response to hazards. This data provided crucial information about the correlation between the hazards, their consequences, influencing factors, and mitigation measures, but didn't adequately provide a granular perspective.

*Lesson learned:* After review and discussions with enumerators following the first round of data collection, household-level questions were incorporated into the tool. This improved the understanding of correlations between the demographic characteristics and vulnerabilities of households and the impacts of hazards and related mitigation measures. Following this reflection, more questions about household-level impacts for specific reasons were added to the tool.

### 1.3 Non traditional data collectors

*Challenge:* The use of non-traditional data collectors in this pilot approach allows the tool created for citizen science CI methods to be easily distributed by a link and completed on any smartphone.

*Lesson learned:* Adapting the data collection process to diverse and non-traditional data collectors involved supplemental training provided before each round of data collection.



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## 2. OPERATIONAL DATA COLLECTION CHALLENGES

### 2.1 Training on Mapping Components

*Challenge:* During the refresher training before the second round of data collection, enumerators noted that in future projects using this tool, it would be beneficial to have more time to practice the use of the data collection tool in-situ and ask questions during their initial training.

*Lesson learned:* In response, after the refresher training session that was held before the second round of data collection, enumerators were given additional time to ask questions about the tool and process. In-situ training at this stage was not needed, as enumerators learned with guidance during the first round. The data collected by enumerators during the second round reflected a better understanding of the tool in comparison to the first round. This is attributed to the follow up training provided before round two of data collection.

### 2.2 Lack of precise colline boundaries

*Challenge:* One challenge posed is the ambiguity about where to take surveys given absence of clear boundaries between many collines. This meant a degree of uncertainty in terms of areas of responsibility for some collines. The lack of objective and mutually understood boundaries caused the duplication of efforts or a lack of coverage in some areas. This challenge made it more difficult to monitor data collection and data quality.

*Lesson learned:* In light of some uncertainty over boundaries between collines, an initial exercise to more clearly establish practical areas of responsibility would be beneficial, with certain technical measures implemented in the form of colline-level basemaps in the KoboCollect form.

### 2.3 Inclusion of female enumerators

*Challenge:* Due to operational constraints, the ability to have gender parity among enumerators presented as a challenge when hiring enumerators for the data collection. Fifteen per cent of enumerators included in the data collection were female. The issue of gender balance among enumerators is prevalent in the field of humanitarian data collection, however in future projects increasing buy-in and connecting with local stakeholders and organisations can support the inclusion and identification of female data collectors, allowing for improved data accuracy (JICA DTM).

*Lesson learned:* When possible, ensure gender balance among data collectors. This is proven to encourage open and inclusive participation from all members of the community. Similarly, during the community validation sessions, participants noted that the inclusion of female enumerators might encourage them to express themselves and share more freely.

### 2.4 Timely Awareness-raising and Community Briefing

*Challenge:* During community consultation and validation sessions, participants were briefly explained the methodology of the CI approach created for this pilot project. Due to time and resource constraints, the scope of the project was unable to include extensive briefing sessions for participants prior to participating in consultation and validation sessions.

*Lesson learned:* Including community briefing sessions at the project's outset can improve the participants' understanding of the objectives, methods, and importance of the data collection process. Investing more time and resources in these areas would enhance the quality and relevance of the data collected and ensure sustained community engagement.



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# 5. BEST PRACTICES & RECOMMENDATIONS

The following section presents the best practices and recommendation for future application of this pilot CI approach, utilizing both citizen science and participatory mapping methods. Findings are based on the lessons learned throughout the project and on feedback received during Community Validation Sessions in April 2024 as well as the closing workshop.

## RECOMMENDATION 1: JOINT COMMUNITY DATA ANALYSIS

Joint data analysis involves community members in interpreting the data collected. This collaborative approach outlined in the Community Validation Sessions ensures that the analysis is contextually relevant and culturally sensitive. Community members can provide insights that external analysts might miss, such as local practices, beliefs, and social dynamics that influence the data. Joint analysis sessions can also be used to validate findings and ensure their accuracy.

This process not only enhances the quality of the analysis but also builds the community's capacity to use data for decision-making. By seeing the direct link between data and actionable insights, community members are more likely to support and sustain data collection efforts. Feedback from community validation sessions has been incorporated into a separate report that covers key findings from the community consultation, data collection and validation sessions. It also outlines the projected use of data to inform humanitarian programming and future iterations of the CI approach.

## RECOMMENDATION 2: CAPACITY BUILDING & COMMUNITY OWNERSHIP

Sustainability hinges on community ownership of the data collection process. This involves engaging community members from the outset, making them active partners. This approach fosters a sense of responsibility and ownership in the process and outcomes. Training *non-traditional data collectors* allows for data collection efforts to continue, with the community driving the process to address their own needs and priorities (See Who is a non-traditional data collector?)

The pilot CI approach incorporated the community's input in the tool development and after the data collection was completed included the community in making sense of the findings by validating and contextualising them jointly. Simple adjustments such as rephrasing questions to improve contextual relevance makes both the tool and the whole process more accessible and tailored to local nuances. The data collected could be then discussed in community meetings where residents collectively interpret the findings and make informed decisions on soil conservation techniques, planting schedules, and crop diversification.



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## RECOMMENDATION 3: USE OF ICONS & TRANSLATION OF THE TOOL INTO LOCAL LANGUAGE

The translation of text into Kirundi and the use of icons were appreciated by participants who provided feedback during the Community Validation Sessions, as well as by enumerators. In addition to French, all questions prompts and response options in the data collection forms were translated into the local language, Kirundi. Questions and multiple-choice responses should be translated into local languages in future iterations of the CI approach and the use of icons is encouraged to improve comprehension for non-traditional data collectors.

## RECOMMENDATION 4: COMMUNITY LEADERSHIP

Empowering community leadership goes beyond involving individual leaders in meetings. It requires building new or supporting existing robust coordination structures within the community, such as committees or working groups. These structures could have diverse roles and responsibilities including to detect early warning signs, identify the impacts of natural hazards on population groups and facilitate local solutions. Training these committees in participatory approaches and basic data collection skills enables leaders to guide their community towards improved resilience against weather-related hazards. Equipped with the necessary skills and knowledge, these community-led groups can mobilize resources, resolve issues, and keep the community engaged. By empowering the community through structured committees and ongoing support, the project ensures that the community can take full ownership of solutions and maintain these efforts long after the project's official end.


## RECOMMENDATION 5: MAPPING EXISTING PREVENTION & MITIGATION EFFORTS AT THE COLLINE LEVEL

Participatory mapping, carried out throughout the project, linked hazards with proposed or implemented prevention and mitigation measures. Future iterations of the tool's focus on prevention and mitigation measures may have benefited from more extensive mapping of existing efforts implemented by international NGOs and local organizations at the colline level. Mapping these efforts and linking them with local authorities and the community can further support the leveraging of existing resources and ensuring that data collects information on colline-level actors that play a part in implementing prevention and mitigation measures. Such coordination can also facilitate the implementation of solutions identified through data collection. By understanding and integrating the work of various stakeholders, future projects can build a more cohesive and collaborative framework that maximizes impact and sustainability.



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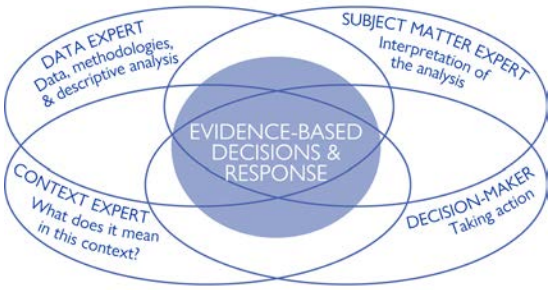
## RECOMMENDATION 6: FURTHER INCLUSION OF LOCAL AUTHORITIES IN DATA COLLECTION

The participation of local authorities is crucial for the efficiency and sustainability of interventions, allowing for data that is actionable and pertinent to decision makers and community members. Evidence-based decision making and response is generated by the interaction between four main skillsets outlined in the vendiagram (DTM Partners Toolkit). With communities playing a critical role in providing the contextual knowledge to make sense of the analysis and situate its meaning within the context of each colline.




This CI approach closely involved the inclusion of local decision makers including the CCRRCs, Ministry of Solidarity, Burundian Red Cross, and Commune-level representatives. Their involvement lends legitimacy to the data collection process, ensuring that it is accepted and trusted by the community. Local authorities understand the socio-political dynamics within their regions, which allows them to navigate local issues and facilitate access to remote or restricted areas that might be otherwise inaccessible.

In addition, stakeholders[1] attended the three workshops held throughout the project. The participation of local authorities provides historical knowledge and contextual insights that are invaluable in enriching the understanding of current environmental and social issues, providing a comprehensive backdrop against which new data can be interpreted. Furthermore, local authorities play a pivotal role in propagating information effectively throughout the community. Their established communication channels and authority enable them to disseminate information about the data collection process, its purposes, and benefits in a manner that resonates with the community. This ensures that the community is well-informed, engaged, and supportive of the initiatives being undertaken. Additionally, local authorities can help establish and strengthen linkages with various organizations operating in the area, including non-governmental organizations, and international bodies, among others. These connections are essential for creating a network of support that enhances the sustainability of the data collection efforts, and the implementation of projects informed by the valuable data generated through CI.

1 The Ministry of the Interior, the Ministry of Solidarity, the Ministry of the Environment and Agriculture, the Governors of 18 provinces as well as the INSBU, IGEBU, OCHA, UNDP, PAM, UNHCR, UNICEF, IOM, CRB and other NGOs attended.



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## RECOMMENDATION 7: LONGER & MORE CONTINUOUS DATA COLLECTION

It is recommended that future iterations of this CI approach conduct longer and more continuous data collection. Given the condensed timeline and the additional time needed to plan the pilot approach, two distinct rounds of intensive data collection cycles were conducted. This enabled feedback in between and greater geographic coverage and therefore the ability to capture a diversity of incidents, all within the available budget and time constraints of the project. Continuous data collection improves the ability to capture temporal trends and long-term changes, which are critical for understanding and responding to environmental and social dynamics. Nonetheless, conducting two distinct data collection exercises allowed for the workshopping of the tool and implementation of feedback from enumerators. This feedback mechanism is recommended should the project be scaled up. Future projects can extend the data collection periods or conduct continuous data collection efforts with intermittent feedback mechanisms, ideally over the period of a year to capture different trends and seasonal patterns.

## RECOMMENDATION 8: WIDER COMMUNITY AWARENESS EXERCISES

Awareness raising across the wider community is essential for building trust among all community members and enhancing active participation. It is therefore important that the communities informed about a project beyond just those who actively participate. Community awareness exercises can take various forms, such as workshops, radio, posters, leaflets, informational sessions, or community meetings. The goal is to explain the purpose of data collection, how it will be used, and the potential benefits to the wider community but also to manage expectations. By demystifying the process, these exercises can alleviate fears, unrealistic expectations and misconceptions and foster a sense of ownership. They also provide a platform for community members to voice their concerns and suggestions, making the process more inclusive and responsive. Awareness exercises can also highlight the importance of accurate data collection and encourage meticulousness among community data collectors.



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