



LAND RIGHTS & NATURAL DISASTER DISPLACEMENT IN SOFALA PROVINCE, MOZAMBIQUE

RESULTS & LESSONS FROM THE LAMADI ACTIVITY

The LAMADI activity under the Integrated Land and Resource Governance (ILRG) program was conceived to address land tenure issues in the context of displacement. The initial focus was to look at two situations of displacement, arising from different drivers that were manifesting in different parts of Mozambique. Firstly, displacement arising from the conflict in Cabo Delgado, which was assumed to be of a more temporary nature, and secondly, displacement caused through extreme weather events in the center of the country, which in the context of accelerating climate change and the advent of areas of high ongoing risk, could take on a more permanent character.

The focus on Cabo Delgado grew out of an engagement with the World Bank and the National Sustainable Development Fund (FNDS) to design safeguards and a methodology for addressing land issues for those displaced by the conflict. On completion of this task, the ILRG offered to pilot the implementation of the methodology as part of the LAMADI activity. Unfortunately, because of significant objections to the scope and strategy of the proposed pilot coming from the National Directorate of Land and Territorial Development, the FNDS and ILRG decided not to continue with this initiative.

The LAMADI activity therefore focused solely on the displacement which had arisen two years previously in Sofala province. Cyclone Idai made landfall in March 2019 near Beira City, bringing strong winds and torrential rains to Sofala, Zambézia, Tete, and Manica Provinces. It resulted in widespread

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flooding and caused significant and ongoing displacement. Approximately 94,000 people were displaced from their places of origin to resettlement areas across Nhamatanda, Buzi, and Dondo Districts. The aim in this context was to strengthen local capacities and resilience for dealing with land tenure challenges arising from displacements caused specifically by natural disasters and conflict. In addition to delimiting the land of host communities and addressing access and tenure issues of displaced populations, the activity was designed to pilot a variety of tools for the mapping of risk & vulnerability, as part of increasing local capacities to proactively plan for and respond to these short and long-term challenges. The activity was to be undertaken in close coordination with local government and local community leadership, and to include a significant capacity building focus at the local level.

This final report provides a summary of activities, results and lessons learned.

KEY OBJECTIVES OF THE LAMADI ACTIVITY

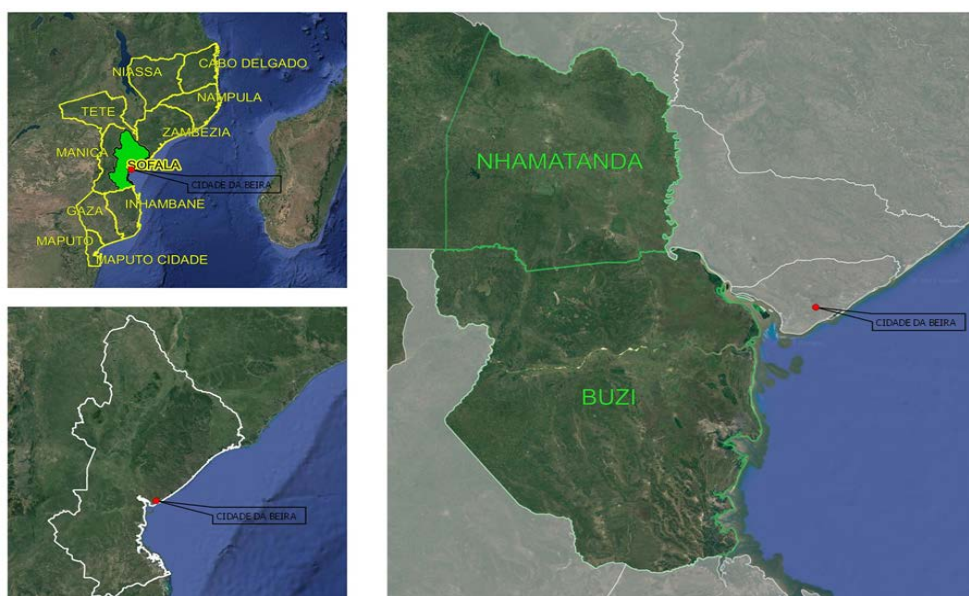
The main objective of the LAMADI activity was to increase the capacity of decentralized authorities, primarily at district level (including local government), to plan for, manage, facilitate, and/or mitigate land-related issues, through community delimitation and land use planning, with a special focus on communities that receive people displaced by weather events. Specific objectives were:

- To pilot tools for risk and vulnerability mapping & local capacity building.
- To identify the best ways to help resolve ongoing constraints being faced by displaced populations in respect to land tenure and land access.
- To build local capacities in the use of data, tools, and methodologies for land administration in these contexts.
- To identify current elements of the Land Law that already support land tenure and land access in the context of displacement, and lobby for any additional changes needed.

PROJECT AREA

The LAMADI Activity area covers the districts of Nhamatanda and Buzi, in the central province of Sofala (see Map 1).

MAP 1. LAMADI PROJECT AREA



PROGRESS: IMPLEMENTATION OF ACTIVITIES

This LAMADI activity was implemented between July 2022 and October 2023.

HAZARD/RISK MAPPING

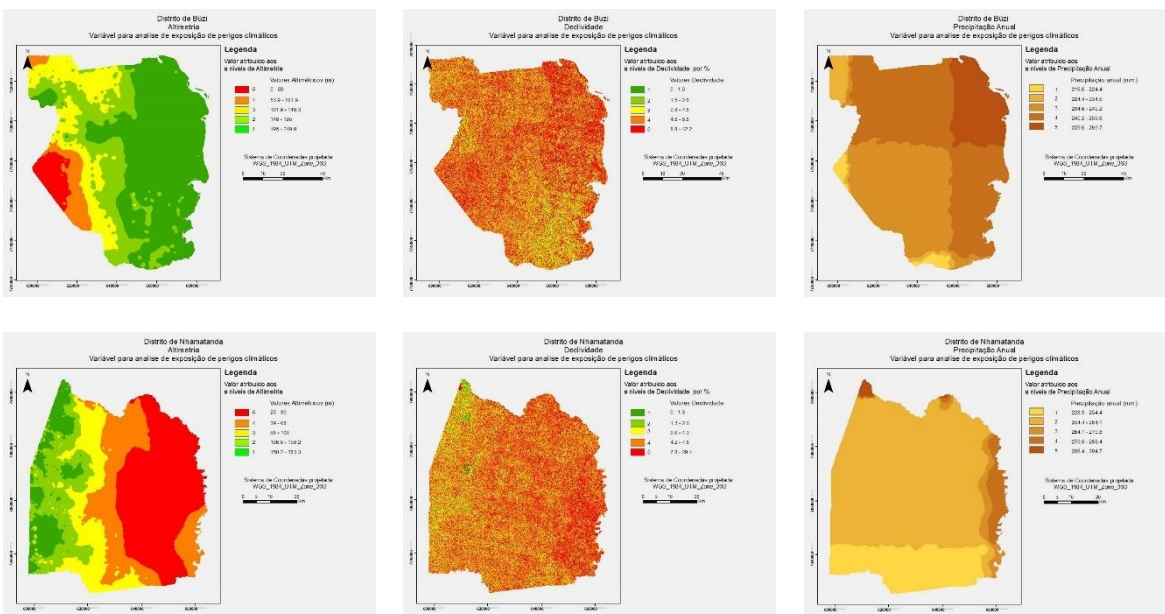
In the initial phases of the Activity, the service provider produced a first draft of an integrated district-level map and database, combining cadastral information as well as hazard and exposure data (with particular attention to climate-based events). Up-to-date data on land rights as recorded at district, provincial and national levels, and current infrastructural and public service data from each district, was hard to come by, but subsequent engagements with local communities helped to refine those limited data sets which were provided.

The 6 data sets, with their comparative weightings as used to complete the integrated map, were:

- Land use and cover, in shapefile format obtained from (National Cartography and Remote Sensing Center (CENACARTA) (15% weighting)
- Terrain slope, derived from a Digital Elevation Model (DEM - ASTER) (20% weighting)
- Rivers derived from hydrology map (shapefile format) (15% weighting)
- Soil types, in shapefile format obtained from CENACARTA/Mozambique Institute of Agricultural Research (IIAM) (15% weighting)
- Hypsometry (altitude) obtained from the DEM (ASTER) (25% weighting)
- Precipitation, in shapefile format, obtained from raster (worldindata.org) (10% weighting)

Below are thumbnail images of some of the maps produced from these data sets; the original maps and the data used to produce them are available through the Terra Firma GeoPortal.

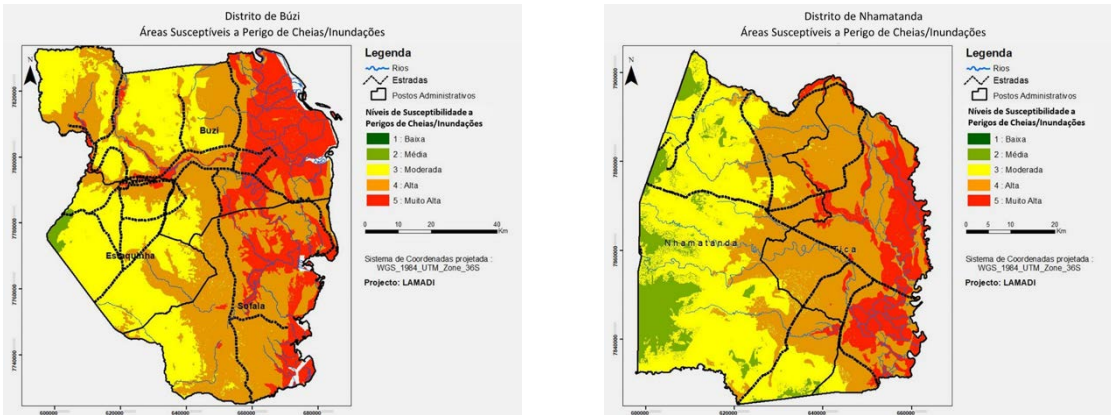
MAP 2. MAPS SHOWING SOME OF THE LAYERS USED AS VARIABLES IN RISK ANALYSIS



The Multicriteria Methodology (MCDA – Multi Criteria Decision Analysis/Aid) was applied based on the weighting of the classes of each variable. Weighted Overlay, an algorithm that brings together all variables and their respective properties with their weightings, was then used to obtain a map of relative

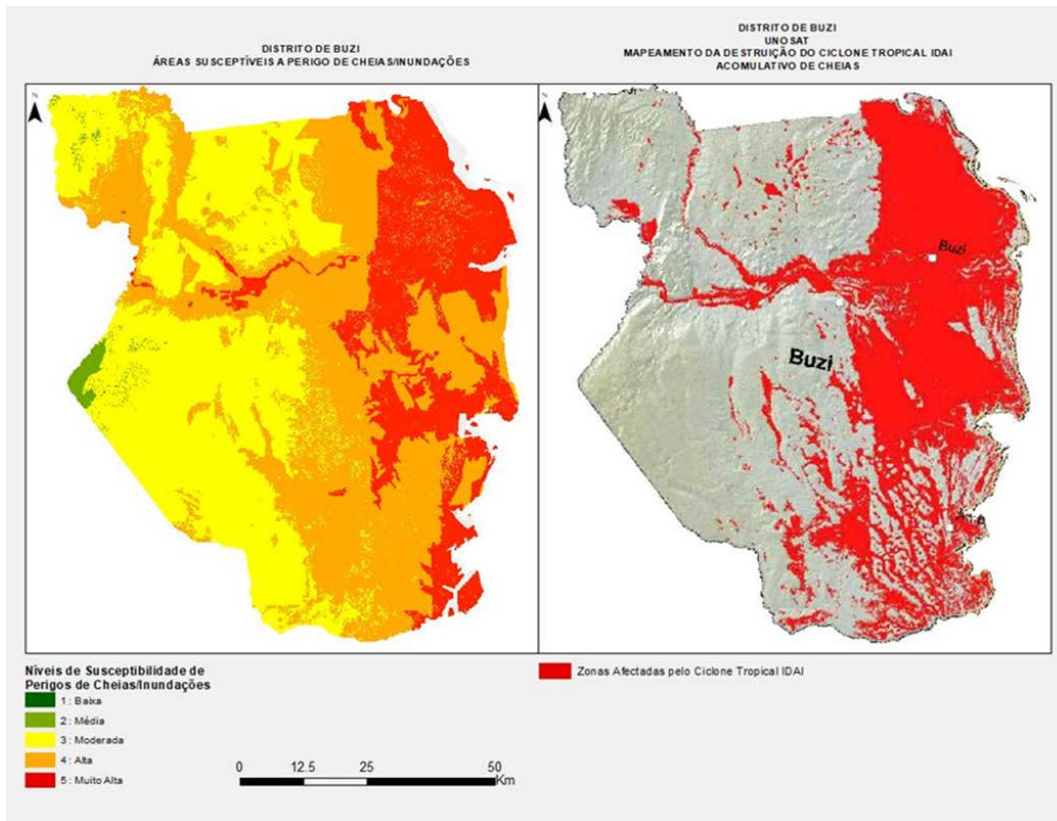
risk. The classification adopted was used by Boanha (2010), namely Low, Medium, Moderate, High, and Very High. Thumbnails of the resulting maps are shown below:

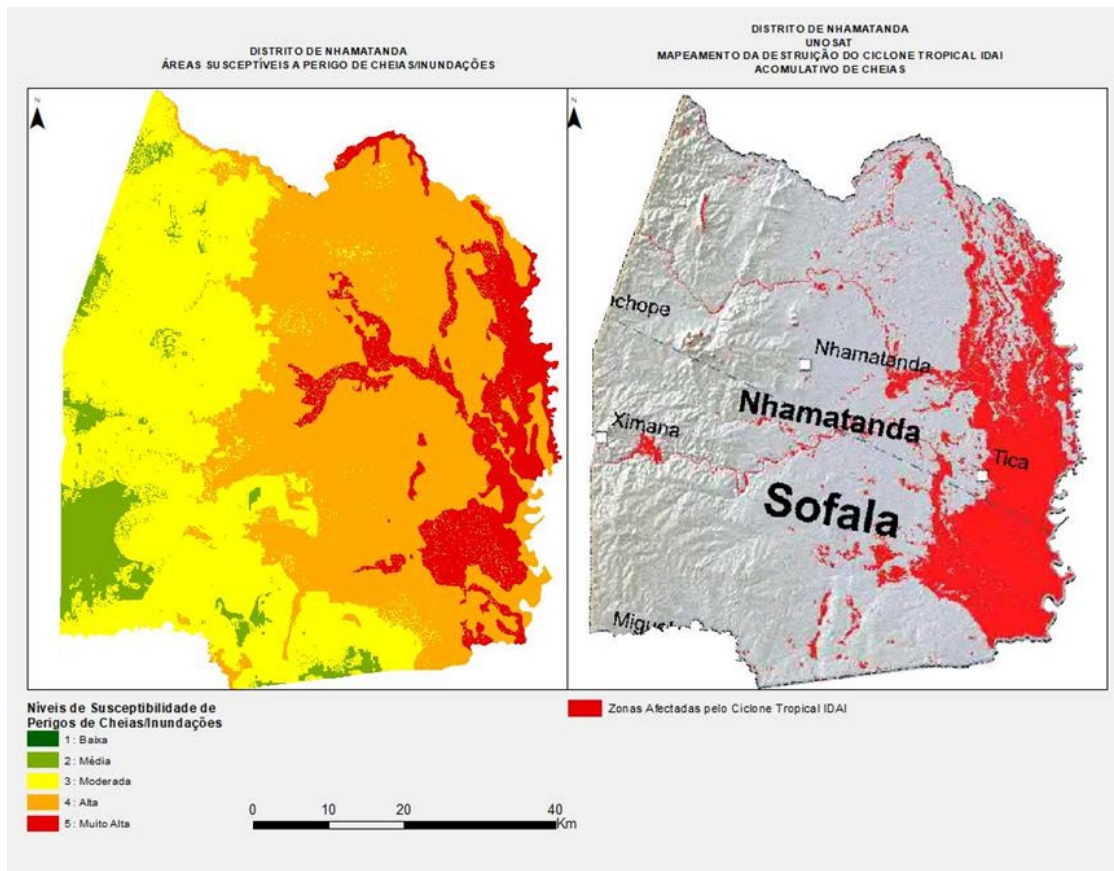
MAP 3: INTEGRATED RISK MAPS FOR BUZI & NHAMATANDA



As a means of testing the accuracy of the risk identification, these maps were compared against the maps of actual impacts from Cyclone Idai, a process which revealed a high level of coincidence (see Map 4).

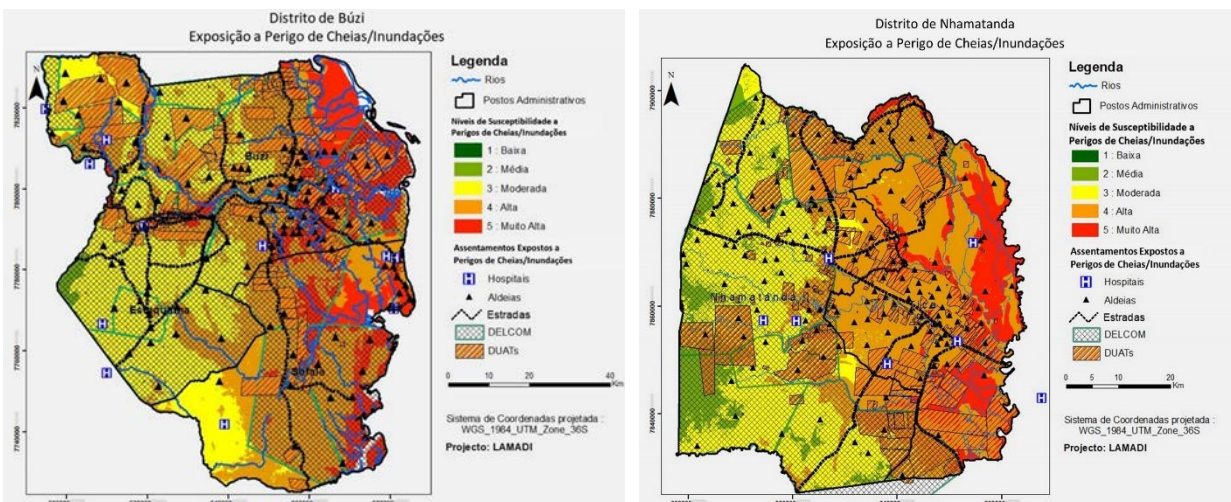
MAP 4: MAPS COMPARING RISK MAPPING WITH ACTUAL IMPACT OF CYCLONE IDAI



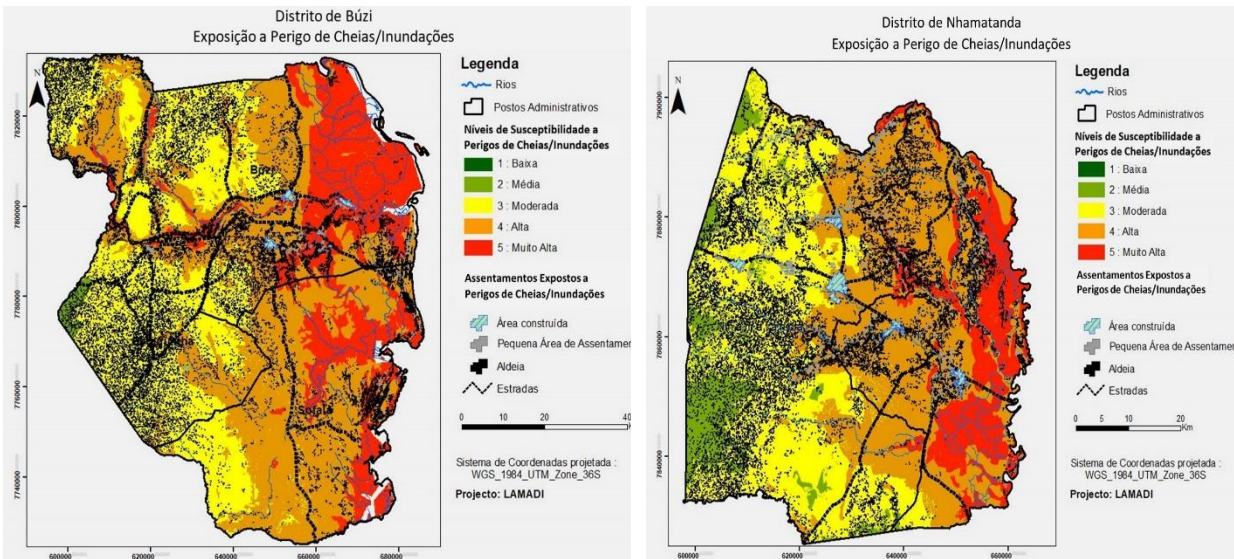


Based on these 'risk maps', further layers in respect to infrastructure (hospitals, schools, roads) and demographics (using data from GRID3) were used to show the extent of exposure to risk in each district. Thumbnails of the 'exposure maps' produced by the service provider are shown below, but the data to reconstruct and restyle these maps is available via the LAMADI Geoportal Repository, which was developed explicitly for the project team and partners to monitor performance. .

MAP 5: MAPS SHOWING RISK VS INFRASTRUCTURE



MAP 6: MAPS SHOWING RISK VS POPULATION DISTRIBUTION



These initial integrated risk/exposure maps were subsequently further developed on completion of the vulnerability mapping processes (see below). These exposure maps were designed to stimulate discussion amongst stakeholders to examine risks and the subsequent impacts of Cyclone Idai. These were used to orient stakeholders at both the district and community levels.

ASSOCIATION ESTABLISHMENT & CAPACITY BUILDING

New community land associations were established in each target host community, following the processes of Law 2/2006 (Associações Agropecuárias). This law provides the simplest way to establish legal entities that can represent the entire community. The associations were established to represent the host communities as entities, and to guide the subsequent activities related to community land delimitation, zoning, and community land use planning. The LAMADI service provider undertook the training of founding association members, covering institutional issues (how to manage a representative association), legal issues (community and individual land and natural resource rights, as laid out in the Land Law and associated legislation), and the process of land delimitation according to the Technical Annex of the Land Law. They also underwent training on approaches to integrate gender and social inclusion into their field practices.

Using the Community Land Value Chain (CaVaTeCo) Platform, the training and establishment meetings in each community were tracked in respect to attendance and participation, allowing stakeholders to assess the level of engagement in the process. The figure below shows some of these metrics and photographs from the process, a full set of which is available via the [CaVaTeCo Monitoring Portal](#). This website is a project-specific tool that allows the community, government, service providers and funders to monitor progress in the activity. The CaVaTeCo Portal/Platform allows for a consistent approach to gathering the materials and evidence that are required to form associations, as well as document boundaries, meetings and processes. It is managed by Terra Firma (ILRG partner) with technical inputs from each of the project grantees and subcontractors. In summary, a total of 223 separate meetings were held across the 19 target communities.

FIGURE 1: PARTICIPATION IN ASSOCIATION FORMATION ACTIVITIES



These processes culminated in the formation of 16 new community land associations with 306 founding members, all whose details and identities were registered through the CaVaTeCo Platform (one association was ‘revitalized’ - Metuchira Community in Nhamatanda district).

The gender balance amongst the founding members was 49%/51% women to men. Copies of the founding statutes were registered and uploaded to the CaVaTeCo Portal, as were copies of the provincial dispatch (published in the government gazette) and copies of the registration of the associations in the provincial register of legal entities.

COMMUNITY LAND DELIMITATION

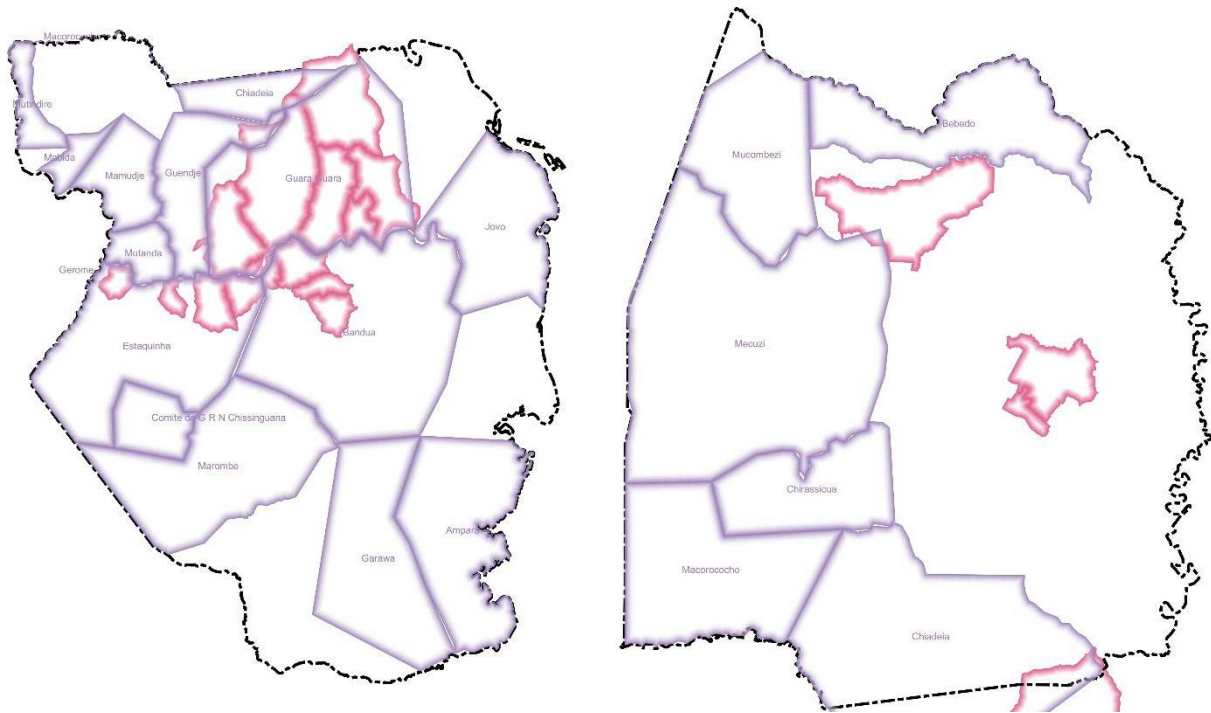
At the start of the Activity, a total of 19 communities were identified as suitable targets for land delimitation work. By the end of the Activity, 17 of these communities had been delimited, securing the collective land rights of more than 60,000 people over more than 127,000 hectares.

TABLE 1: DELIMITED COMMUNITIES, ESTIMATED POPULATION & AREA

Name Association & Villages	Male	Female	TOTAL	Area	Density
Mabida	-	-	-		
Nhabziconja	-	-	-		
Associação Boa Vista de Machiquile - Machiquile	3,532	3,498	7,030	3,216	0.46
Associação cunugarira maquachaedu de Buandua Régulo - Bândua Regulo	1,627	1,611	3,238	4,008	1.24
Associação do Comité de Gestão de Recursos Naturais de Metuchira – Metuchira Sede	9,573	8,845	18,418	13,373	0.73
Associação Khubatana Yo Begaja - Begaja	932	923	1,855	5,235	2.82
Associação Kubverana_John Segredo - Jhone Segredo	1,020	942	1,962	1,157	0.59
Associação Kudhacara - Ndeja	3,181	2,940	6,121	6,378	1.04
Associação Kuenja ye Inhanjou - Inhanjou	1,189	1,177	2,366	4,909	2.07
Associação Kungualirira Recursos de Buini - Buini	833	823	1,656	18,271	11.03
Associação Kunguarira upfumi de Pavo - Pavo	3,268	3,236	6,504	2,734	0.42
Dabudjico tinaro de Mussinemue - Mussinemue	392	388	780	628	0.81
Hama I Badja de Inhamita - Inhamita	1,405	1,391	2,796	5,192	1.86
Hatidhi kutorewha ufumi weddug - Guarra guarra Sede	605	599	1,204	10,431	8.66
Kuzwana Mabupira - Bopira	650	644	1,294	11,060	8.55
Moioumue Maxemedje - Maxemedje Sede	433	429	862	2,439	2.83
Mutendere Hohyika Ngonwedu These Estaquinha Sede - Estaquinha Sede	1,126	1,115	2,241	3,304	1.47
Unfumi wavia Munhica Mwuedo de Manheche - Manheche	1,481	1,467	2,948	24,345	8.26
Urombo wapera de chindo - Chindo	923	914	1,837	10,737	5.84
TOTAL	32,170	30,942	63,112	127,417	2.02

An innovation of the delimitation work undertaken through the LAMADI Activity was that the process was conducted at lower levels of the customary hierarchy, in some places replacing prior delimitations that had been completed in the early 2000s and which had taken the paramount chieftaincies as their point of entry. This approach was universally accepted as having closed the gap between the community members and the customary land administration authorities. However, a challenge remains for the cadastral authorities, which have not yet completed the removal of the previously delimited areas from the national cadaster and are unsure as to the technical and legal procedures to be followed. Until this happens, the new, smaller community areas cannot be formally registered within the cadaster; while this has little practical impact on the ground, it remains an important step and the service provider and Terra Firma will be following through with the provincial and national authorities.

MAP 7: MAPS SHOWING PRIOR DELIMITATIONS (PURPLE) AND LAMADI DELIMITATIONS (PINK) IN BUZI (LHS) AND NHAMATANDA (RHS)



Throughout the delimitation process care was taken to ensure that all the important and necessary data were properly collected and archived. This included exercises designed to capture the results of participatory mapping, the development of community historical profiles and the monitoring throughout the process of participation and engagement. Ensuring the informed participation and engagement from women was a particular focus, and the use of satellite imagery was noted as having assisted this process considerably for both men and women. Satellite imagery provided a strong reference point for all stakeholders to identify locations of interest, particularly for those who may not be used to using or seeing traditional district boundary maps. Women were proactively engaged in all steps, for example as a mandatory subgroup of the community delegations chosen to walk the community boundaries.

VULNERABILITY ANALYSIS AND MAPPING

The mapping of household vulnerabilities to shocks from extreme weather events was undertaken through the adaptation of two of the existing data collection tools. The objective was to extend the functionality of these tools, both of which are digital forms for data collection, by adding in a limited number of additional questions or metrics, while maintaining the overall simplicity and time-efficiency of the forms. These are tools designed to be administered by members of the communities who have been trained in their use, and maintaining this ability was an important consideration to promote sustainable outcomes. Some compromises had to be found, via the use of proxy metrics, to accommodate a DNDT prohibition on the measurement of the parcel boundaries¹; instead of using parcel area as a measure,

¹ In the process of negotiating the activity the directorate the National Directorate of Land verbally expressed concerns about collecting boundaries of parcels and issuing documents. They argued that, while community members may provide verbal confirmation of land rights, they lack the legal authority to put this confirmation into writing. Local officers generally understand that these documents are not intended to replace formal titling by government and agreed that they are useful within the communities to clarify rights and to reduce conflict over land. The National Directorate of Land continues to informally object; while the Directorate has never provided any written explanation, a senior staff member insists that communities may provide

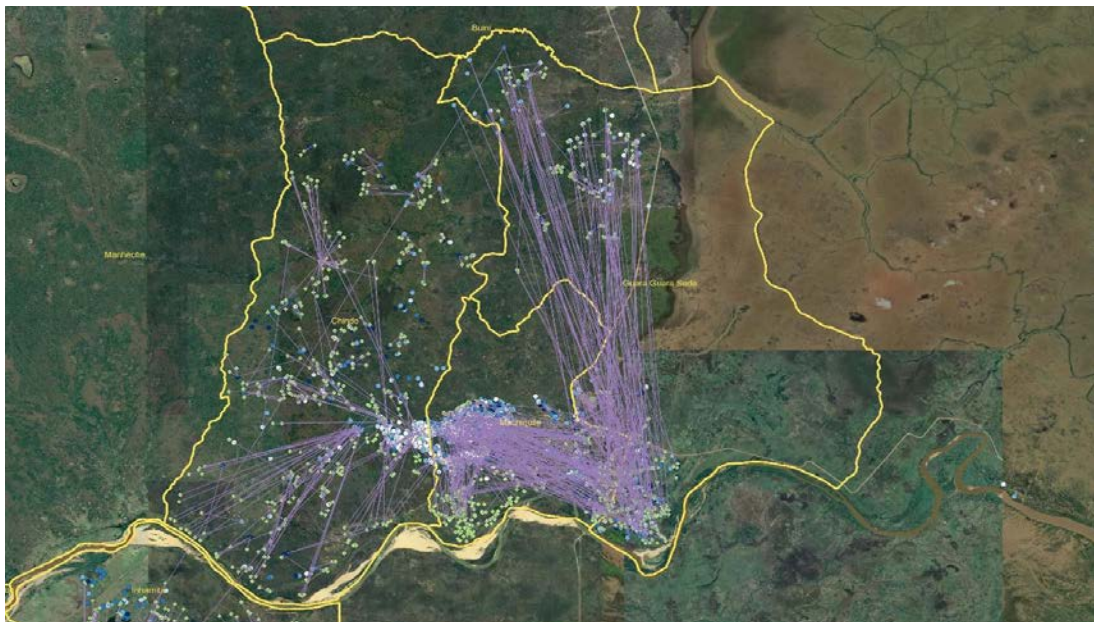
therefore, we were forced to use the number of farms and land parcels that people were in possession of.

The digital data collection form usually deployed to register the identities of titleholders (referred to as 'Form O') was extended through the introduction of 6 additional questions. These related to the primary materials used for housing and the roofs of residences, whether the household had access to off-farm income in the last 12 months and the total number of parcels available for residential and farming purposes. These questions were in addition to existing metrics regarding the age, gender, and marital status of the landholder/head of household. Additionally, the enumerators were instructed to register the respondents at their place of residence and to capture the geographical coordinates. The data form ('Form P'), normally used to register parcel boundaries, was repurposed to capture instead a single point in the center of the parcel, whilst also capturing additional data in respect to past climatic events which may have prevented access to, or use of, the parcel.

In all, 11,439 respondents were able to register their households through the deployment of Form O, with a total of 5,052 parcels registered via Form P. These provided more than sufficient data for a process of review and fine tuning of the metrics and the weightings according to the different variables. The process also proved the concept that these existing tools could be extended without compromising their simplicity and ease of use and were therefore possible to roll out as a standard feature of future land rights registration processes. The added value of the data by far outweighs the additional time taken to administer the data collection process.

The most immediately added value from this amended data collection process came from the ability to map and measure, for each household, the distance between residence and farm holding. While it is obviously possible to employ statistical analysis to this data, the most impactful means for visualizing the data was found to be via the use of maps, allowing stakeholders to immediately spot patterns between and amongst different communities (see Map 8).

MAP 8: LINES JOINING TITLEHOLDER RESIDENCES TO PARCELS

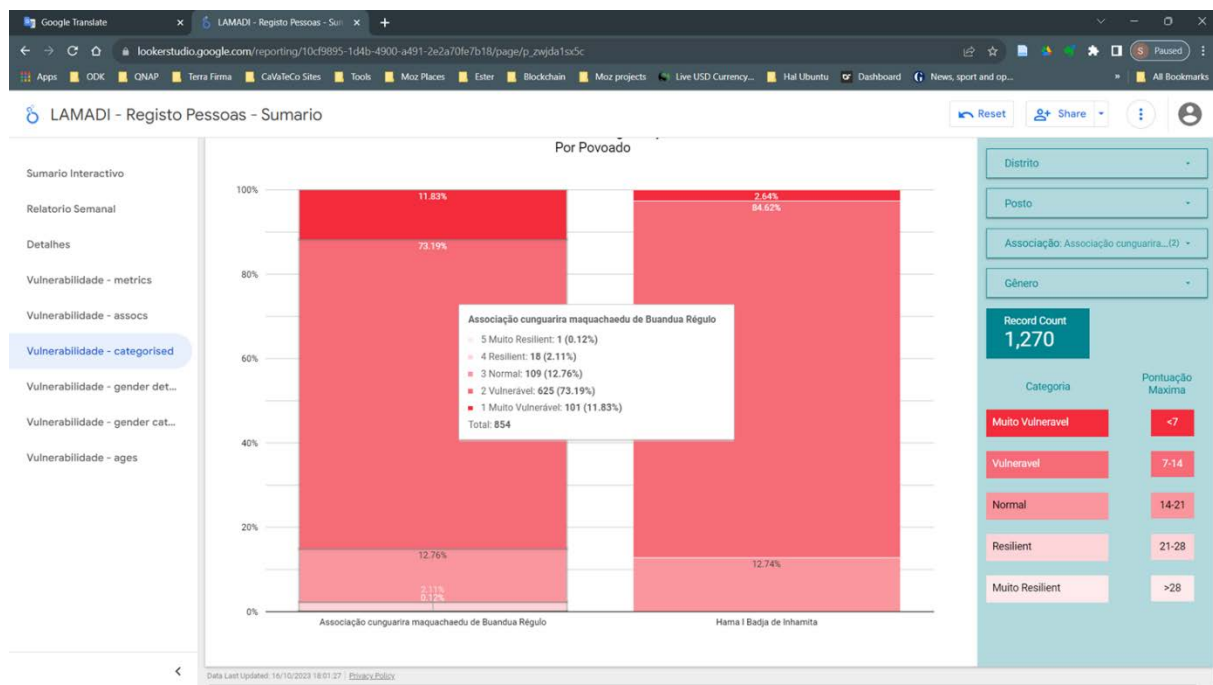


verbal confirmation of rights but do not have the authority to issue written documentation confirming rights. As a result, the ILRG activity took single points of the locations of parcels that were owned by households.

In respect to the household vulnerability metrics, the project stakeholders agree that there remains some room for adjustment to the parameters selected initially, especially if the tools are to be combined with data collection of parcel areas (thereby potentially downgrading the importance of numbers of parcels). This will be work that is taken forward in close collaboration with the FNDS and the National Directorate of Land and Development Territorial (DNDDT) over the coming weeks and months. For the purposes of the LAMADI Activity, the weighting and scoring system that was adopted can be found in the final presentation on this activity [here](#).

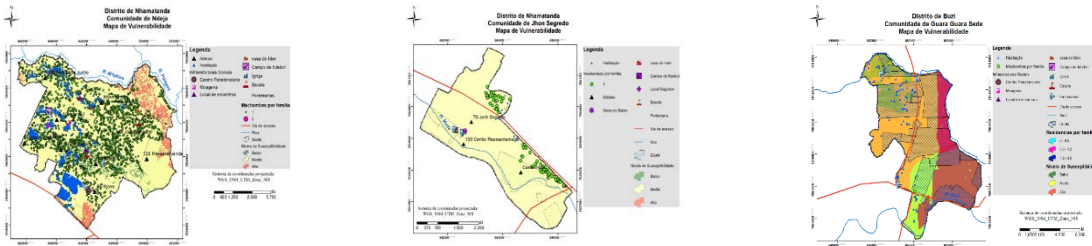
To share and visualize the data, the ILRG team deployed a web portal with a series of simple graphics showing the eventual categorization of vulnerability that was adopted. This portal was focused on supporting the teams to share data with partners during implementation. The approach is replicable for future activities/partnerships.

FIGURE 2: WEB PORTAL ESTABLISHED TO VISUALIZE VULNERABILITY DATA ACROSS ADMINISTRATIVE AREAS & COMMUNITIES



The data was then also integrated into the risk maps produced earlier, at different scales. The intention here is to look at the coincidence of vulnerability (measured via the 6 variables) with exposure to environmental risk, where three elements are present: exposure to danger, inability to react, and difficulty in adaptation on the materialization of the danger. Some of the maps produced by the service provider that integrate this data are shown in the thumbnails below.²

² An Annex of Maps, associated with the LAMADI activity provides the full set of products.



Following the end of the ILRG activity, this approach to the mapping of household vulnerability and juxtaposition with risks (of, in this case, flooding, but extendable to other forms of risk, such as drought) will be refined and is expected form the basis of future work with the FNDS and DNDT aimed at integrating these processes into national methodologies. Through the process of the activity and particularly during the final workshops and training meetings, some members of government have built a broader understanding of the utility of the maps. Their use of the maps and data for future development activities remains a question, but is something that we expect UN-Habitat and FAO partners to build on in the future, as well. Final results from workshop participants suggest that district officials are finding value in the data and maps and trainings were provided that were designed for these officials to design and use the maps themselves.

LAND USE PLANS WITH MITIGATION MEASURES

Community land use plans that include measures to enhance the sustainable management and use of land and natural resources and increase resilience in the face of threats and hazards arising from climate change were another innovation which the LAMADI Activity was designed to deploy. Prevailing practices for land use planning with communities involve merely a form of zoning based on present land use. The LAMADI process instead took into consideration these land use patterns but also used the vulnerability analysis and mapping outlined above and involved the community in developing measures and rules that they think will enhance sustainable management and use of land and natural resources, while mitigating the vulnerabilities identified. This kind of land use planning process is designed to achieve a shared community vision of future sustainable use of land, natural resources and infrastructure and address the needs and concerns of all residents, including women and youth. The resulting plans consist of a community map (based on all the mapping done so far), maps showing future intended uses, as well as an associated document with supporting information about what the zoned areas are for and associated rules concerning their access and use.

In total, 50 participatory maps were produced by different groups across the LAMADI communities, all of which are available on the project-focused CaVaTeCo portal. The selection criteria were comprehensive, involving a certain profile of participant, with emphasis on members of land associations, community groups, community leaders, representatives of the Administrative Post and Locality and various members of the community in general, drawn from elderly people, people with disabilities, women, and young people. The preparation meetings in some communities also integrated representatives from their neighboring communities; this was designed to open up the analysis of the vulnerability maps, in recognition that some communities have ‘safe areas’ that could serve as reception sites in the event of displacement and can share resources.

The process of preparing current land use maps was conducted by sector technicians from the district administration, accompanied by service provider staff. Products at the end of this process included Current Use Maps, Future Use Maps, Local Land Use Regulations and Land Use Plans with Mitigation Measures.

UPDATED DISTRICT VULNERABILITY PLAN

The updating of the District Land Use Plans focused on combining cadastral information, as well as risk and exposure data, with special attention to climate-based events. The vulnerability analysis and mapping were also integrated. Several service provider technicians participated in this exercise in coordination with government staff who at different times collected different information to build the vulnerability and geospatial database used for this activity.

The basis for updating was the initial risk map (resulting from a combination of data on land use and coverage, slope, hydrography, hypsometry, and precipitation) and the vulnerability map of the district resulting from the use of Forms 'O' and 'P'. However, these maps were then also used to identify potential sending zones and potential receiving zones for displaced people, and to describe the mitigation plan for the identified risks and dangers and provide a brief analysis of local capabilities.

LAMADI stakeholders at district level noted that the updated vulnerability plan allowed for the analysis of areas that are not only prone to flooding but that have a high concentration of resources at risk, including areas of agricultural use at risk and the most vulnerable households.

TABLE 2: GENERIC MITIGATION MATRIX

Area/Risk	Type of Vulnerability	Level of Vulnerability	Mitigation Measure	Existing Local Capacities
Flooding/Inundations	Social	High	Dikes, embankments, and rainwater drainage channels	<ul style="list-style-type: none"> - Administrative Structures - Cooperation Partners - Community Commitment - Sector Equipment - Territorial Planning undergoing improvement coordinated with authorities
Crop losses in machambas (areas prone to extreme flooding events)	Social	High	<ul style="list-style-type: none"> - Application: flood-tolerant crops and/or short-term crops - Improved conservation agriculture techniques 	<ul style="list-style-type: none"> - Multiplication fields - Water and small SAA - Earth - Private and Commercial Sector - Organized groups
Constructions/infrastructures in flood basins (schools, hospitals, markets, churches)	Social	High	Implementation of community land use plans and prohibition regulations	<ul style="list-style-type: none"> - Mobilization of resources to Partners and Local Economic Agents - Community Commitment
Collapse of houses due to erosion and landslides	Physical	High	Discourage the construction of houses less than 50 meters from the river course	<ul style="list-style-type: none"> - Land Use Plans adjusted to reality for the future with regulations - Territorial Planning in improvement coordinated with authorities
Conflict between host communities and displaced people over land occupation	Social	Moderate	Involvement of local leaders in identifying land available for reception	<ul style="list-style-type: none"> - Integrated Land Use Plans (PUTS) - PDUTS that integrate a territorial expansion mechanism adjusted to PUTS - Local Administration committed

TRAINING ON LAND AND VULNERABILITY ISSUES FOR DISTRICT TECHNICIANS AND LOCAL COMMUNITY REPRESENTATIVES

Training on land and vulnerability was based on a package of training materials, including existing and modified materials and new materials developed and used during the activity and compiled into a single Training Manual.

Training was undertaken intensively from the 16th of July to the 2nd of August, in two phases. The first phase was directed at Government and Provincial Technicians and the second phase at the community representatives where the LAMADI project operated. Both phases involved hands-on and participatory work methodologies. The Phase I sessions were attended by technicians from five separate Provincial Government institutions, namely: Provincial Environmental Services (SPA), Provincial Directorate of Territorial Development and Environment (DPDTA), Provincial delegation of the National Institute for Management and Reduction of Risk and Disasters (INGD), Provincial Directorate of Agriculture and Fisheries (DPAP), and the Provincial Services of Economic Activities (SPAЕ). Partners from the Food and Agriculture Organization (FAO) and United Nations Human Settlements Program (UN-HABITAT) also attended. In all, the training sessions reached 255 people (see Table 3 and Table 4 below).

TABLE 3: FIRST PHASE – TRAINING OF TRAINERS (PROVINCIAL, DISTRICT, STAKEHOLDER PARTNERS)

Package	Dates	Participants District	Participants Provincial
Module I & II	17 - 21 July	<ul style="list-style-type: none"> District Services of Economic Activities (SDAE) 	
Module III	01 - 02 August	<ul style="list-style-type: none"> District Service Department of Planning and Infrastructure (SDPI) District Secretary FAO UN-HABITAT Terra Nossa 	<ul style="list-style-type: none"> SPA INGD DPDTA SPAЕ DPAP

TABLE 4: SECOND PHASE – COMMUNITY TRAINING

Package	Date	Participants Community	Participants District	Participating Communities from
Module I & II	23 - 29 July	Association members - 102 pax (45F & 57M) CLGRD members - 102 pax (40F & 62M)	<ul style="list-style-type: none"> SDAE SDPI District Secretary 	Búzi District <ul style="list-style-type: none"> Pavo, Bandua Regulo Bopira, Mussenemue Chindo, Guaraguara and Masquil Estaquinha and Machemedje Begaja, Inhajou and Inhamita Buine and Manheche
Module III	02 - 05 August	Representatives Post or Locality - 17 pax (15F & 2M) Community leaders - 34 pax (10F & 24M)	<ul style="list-style-type: none"> Terra Nossa FAO 	Nhamatanda District <ul style="list-style-type: none"> Ndeja, John Segredo Metuchira

Feedback from the training provided by participants focused on:

- Changes to the model and format of Module I and II exercises in the community (instead of plenary sessions, working more in groups, which allows for greater interactivity).
- Using the triangulation of indicators in the community as a mechanism to guarantee a better understanding of the contents related to the vulnerability of households.
- The analysis of Hazard Maps and Private Direito do Uso e Aproveitamento da Terra (DUATs) allowed communities to understand which DUATs are in the cadastral register but are not recognized by them.
- A need for greater clarification on who should use and allocate land at the community level and how community consultation processes should be conducted in a truly participatory manner.
- The need to design pamphlets or small brochures with images and simple words that portray the approach to land use and allocation.
- Holding widespread awareness meetings makes the approach more inclusive and prevents part of the community from feeling excluded in the processes of land use and allocation and the development of key instruments such as land use plans.
- In communities, the rules are seen to bring some solidity to procedures and transparency into land allocation and use processes, taking into account vulnerability issues.

JOINT MONITORING WITH NATIONAL AUTHORITIES

Throughout the LAMADI Activity, national representatives from the DNDT were kept abreast of activities and developments via the receipt of weekly progress emails. In addition, two monitoring visits were conducted, allowing for the national staff to witness work directly in the field and engage with local stakeholders.

DISTRICT CLOSE OUT MEETINGS

As part of a close-out process for the LAMADI piloting of tools, two district level meetings were held with key stakeholders. Some of the findings from these meetings included the fact that the LAMADI mapping supports other sectors, beyond land and agriculture, such as the Directorates of Education and Infrastructure. These institutions, in close coordination with the UN-HABITAT, have begun to focus on sustainable spatial and territorial development, and design strategies to:

- Expand social services considering the spatial vulnerability of infrastructure and populations; and,
- Guide the process of building infrastructures, considering human mobility in disaster contexts and prioritize these locations so that they later become potentially safe locations.

Participants also noted that the mapping allows the SPA, INGD and DPDTA sectors to develop risk analysis and resettlement models for displaced people that are “adjusted to reality” and connected to community land use plans.

NATIONAL SEMINAR

As part of a process designed to ensure that lessons are coordinated with and shared with the government, as well as other USAID and non-USAID programs within the geographic and technical areas, a national seminar was held in Beira on October 19, 2023. A separate report and set of presentations provide details on the discussions held at this event.

KEY DISCUSSION THEMES

The most discussed themes and issues from the seminar:

1. The potential positive contribution from the establishment of a ‘community cadaster’, through which local communities could administer and manage land relations and land rights within their delimited areas. Discussions centered on the legal context for this level of decentralization of land administration powers, with national stakeholders highlighting the need for further discussions and consultations. Notably, district stakeholders were firmly in support of decentralization, as were the two representatives from the Committee for Land Law Reform (CRPNT). This stands in contrast to others within the government hierarchy.
2. The processes, means, and resources necessary for integrating the tools developed through the LAMADI activity into national methodologies for land registration and community land use planning. The representatives from FNDS were especially interested in ongoing engagements with Terra Firma & Terra Nossa technical staff to discuss how best to incorporate the participatory vulnerability mapping tools.
3. The balance between adopting push/pull strategies to convince people to move from high-risk areas and the adoption of coercive mechanisms that deploy force to achieve resettlement. The provincial and district authorities were more disposed towards the latter.
4. The acceptance, in some circumstances, that the drawing of a boundary line may be unhelpful. Reflections on the intractable nature of some community boundary disputes led to an understanding that areas of doubt, or fuzzy boundaries, can be acceptable and that not everything can be resolved.
5. The process of community land use planning and the activity contributions in this respect. Participants noted the poor quality and nature of existing practices in this regard and expressed support for the inclusion of plans that indicate what local communities want to see in the future and not just the mapping of what currently exists. The mapping of risks, vulnerabilities and the elaboration of mitigation measures were also highly appreciated.
6. The need to roll out the process much more widely. The district representatives expressed their need for more resources to enable the LAMADI activities to be undertaken across their entire geographies, noting that the communities which had been through the process had ‘attained another level completely in terms of organization, cohesion and planning’.
7. The metrics and weighting from the vulnerability household mapping; participants felt that the metrics had been correctly identified that they were largely sufficient to indicate levels of household resilience (except the absence of land area) but that the weighting could be reviewed and improved.
8. The need to integrate community land use planning processes into the legal framework.

KEY QUOTES FROM THE NATIONAL SEMINAR

“Since 2019 and the passing of cyclone Idai, there must have been about 70 different organizations passing through Buzi, and Terra Nossa/LAMADI is one of the very few that actually left us with a clear instrument with which we could work.” - **District Director, SDPI, Buzi**

“On the day on which we commemorate the death of Samora Machel, nothing could be more in line with his vision of development for the Mozambique people than the adoption of a community cadaster.” - **Delegate of the INGD, Sofala**

“It is not the job of Terra Nossa staff, nor is it the role of the government, to define the limits of community land; that is our job, us as the local leaders. We know where these limits lie. The government does not. This is our job alone.” - **Community Leader from Buzi district.**

GEOPORTAL

The ILRG team has provided a comprehensive set of analogue and digital versions of all the data and maps that were generated during the various activities for use by district and provincial staff as well as future implementers who would like to use a similar tool. This was accompanied by training interventions for district and provincial staff that focused on the use of spatial data and the production of maps using open-source Geographical Information Systems (GIS). However, in recognition that not all stakeholders will have these capabilities, the ILRG team has created a specific and permanent repository for the LAMADI data and maps on the Terra Firma GeoPortal, creating user accounts for staff from the district and provincial institutions. The tools are accessible for broader stakeholders, including communities, but relies on their access to internet and computers. This enables the on-going use and manipulation of the data by the project stakeholders, with functionalities for them to easily project data and create maps from the various spatial layers, including all the data generated by the communities themselves in respect to points of interest, community boundaries and household vulnerability.

PROGRESS: IMPACT & ADDRESSING THE KEY PROBLEMS

The key problems, and the extent to which LAMADI has helped address these:

LACK OF ACCESSIBLE FARMLANDS

Agricultural lands had not been provided to displaced families at the start of the LAMADI activity (three years after displacement), and it was hoped that the interventions at community level would allow for at least temporary agreements regarding increased land access in the local area to be established. However, this has not happened and is therefore a significant limitation to future livelihoods' development. Most families continue to use their old agricultural fields, which lie in most cases more than 20 kms distant from current residences and are still exposed to the risk of flooding and erosion. For many displaced, the predominant crop in their areas of origin is rice and they consistently stated that they preferred to continue cropping in these areas, rather than to try and adapt to the soil conditions at the resettlement site, which are unsuitable for rice.

In respect to the land areas held by the Búzi Company and Empresa Algodoeira in Ndeja and Metuchira community areas (which occupy extensive but underused areas), the District Administrators of Búzi and Nhamatanda report that these impose greater land access constraints than does the risk of flooding. While formal negotiations for access to the land for resettlement purposes have not yet taken place, the community land use planning process was an important instrument for setting the context for these negotiations to take place. Communities have now had a chance to validate land access and allocation patterns in their areas, and confirm the degree to which titled areas are, or are not, being effectively used. Administratively, the consolidation of this protocol will take place through the inclusion of the community land use plans within the district land use plans, ensuring that investments and land uses that are legitimated at local level can be effectively monitored and directed at district level.

MANAGING THE ON-GOING RISK OF FLOODING AND EROSION

The LAMADI activity has developed a simple yet effective risk and vulnerability mapping process within the district and provincial approaches for managing disaster responses, integrating local capacities for identifying risks and responses. It has enabled the exposure to flood risk to be made easily visible,

through a mixture of GIS analysis and participatory mapping. However, the LAMADI activity has had less impact on the responses to these scenarios; in Buzi District, for example, while the LAMADI activity has been suggesting that the forced resettlement of the remaining population from Buzi town ought to be a last resort, the authorities have been focused on the use of their power to force people to leave the high-risk areas, including through the use of intimidation by law enforcement.

PROVIDING TENURE SECURITY TO HOST AND RESETTLED COMMUNITIES

While the LAMADI activity has been successful in the implementation of a more nuanced and granular application of the community land delimitation process, and has provided improved tenure security for the host communities, there are still resettled communities that are in limbo while the government addresses the titling issues in respect to the land they are occupying. In some cases, these are still formally titled to private entities, and in other cases the government wants to issue nothing less than full titles to the resettled persons. LAMADI was not therefore successful in its ambition to introduce more temporary and flexible arrangements for documenting tenure arrangements, which would have addressed the tenure security preoccupations of both host and displaced communities.

CHALLENGES

During the implementation of the activities, key challenges arose that delayed and hampered the realization of some activities:

- A drawn-out negotiation process with the DNDT to establish an MoU that would allow the activity to go ahead. The length of negotiation led to a shorter implementation time period and some reduced impacts;
- Continuing resistance, at national level, towards the recognition of the competency of local land associations in issuing documents and maps to their own members, preventing local land rights documentation activities and the measurement of parcel boundaries;
- A deeply embedded technocratic approach to land use planning amongst provincial and some district staff;
- Degraded and impassable access roads during the rainy season;
- Land conflicts between neighboring communities, arising from opportunism over resources (e.g., conflict between communities of Machemedje and Boca); and
- Inexperience of the community, as well as district technicians, in conducting Community Land Use and Vulnerability Plans.

LESSONS LEARNED

- Direct involvement and ownership of the project can be a catalyst for resolving land conflicts. This was notable in resolving the conflict between the communities of Estaquina and Machemedje, in which service provider technicians, local government technicians and community leaders participated.
- Local communities understand the issues of land access, risk, and vulnerability in their areas, which was most evident during the preparation of Community Land Use Plans and mitigation measures.
- Local communities are aware of the areas that are effectively occupied by private DUAT titles, as well as the exploration of the respective areas; by the same token, they do not recognize the validity of areas where there is no effective use by the DUAT titleholders (e.g., in the communities of Ndeja and John Segredo).

- Community members have the skills and abilities to handle information collection instruments (electronic devices), on receipt of minimal training; this fact was verified during the collection of information on vulnerability analysis (Forms O and P), which was entirely collected by community members.
- For flood risk planning, the six identified layers of data are sufficient to build an accurate picture at district level, and the weightings accorded to each layer appear to be appropriate. There is significant potential for adopting this methodology to conduct similar desk exercises across all remaining flood-prone districts in the country.
- For vulnerability mapping, the variables and weighting scheme used to measure household vulnerability can be improved, and the existing data set provides a sufficient basis on which to do this.
- The flood risk plans become significantly more valuable when integrated with data that reveals the levels of exposure to the risks, from the perspective of social infrastructure and, especially, populations. Newly available data sets, such as the GRID3 demographic data (as modified through the LAMADI activity), can improve mapping and planning capabilities significantly when provided to district planners.
- The integrated risk/exposure plans become even more valuable when combined with the mapping of household vulnerability. This vulnerability data also improves local community capacity to understand and potentially address inequalities in land access.

FOLLOW-UP ACTIONS

Post LAMADI, the following activities are expected to be undertaken to continue to deepen the impacts from the activity:

- Monitoring by district staff of activities implemented in communities;
- Further dissemination of the Training Manual on Land Management and Vulnerability;
- Further development and dissemination of the methodology for mapping and assessing household vulnerability;
- Further sourcing and dissemination of spatial data needed for compilation of district level flood risk maps at national level;
- Identification of follow-up actions to activities in coordination with the district government;
- Monitoring coordination and/or collaboration between local communities and the Búzi company; and
- Identification of partners to support the district government in preparing a District Land Use Plan.

SUGGESTED CITATION:

Terra Firma (2023). *Land Rights & Natural Disaster Displacement in Sofala Province, Mozambique: Results & Lessons From the Lamadi Activity*. USAID Integrated Land and Resource Governance Task Order under the Strengthening Tenure and Resource Rights II (STARR II) IDIQ.

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