



THEMATIC STUDY

CLIMATE – SCOPING STUDY

Land Governance for Climate Resilience

A review and case studies from LAND-at-scale projects



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LIST OF ABBREVIATIONS

CLD	Closed Loop Diagram
DAC	Displacement Affected Communities
FFP	Fit-for-Purpose
GLTN	Global Land Tool Network
IDP	Internally Displaced Person
IPCC	Intergovernmental Panel on Climate Change
KM	Knowledge Management
LAS	LAND-at-scale
RVO	Rijksdienst voor Ondernemers / Netherlands Enterprise Agency
STDM	Social Tenure Domain Model
UNDRR	United Nations Office for Disaster Risk Reduction

1 INTRODUCTION

This report is a contribution of the knowledge management component of the [LAND-at-scale](#) programme (LAS) which is funded by the Netherlands Ministry of Foreign Affairs, and implemented by the Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland - RVO). LAND-at-scale is a seven-year programme (2019-2026), that aims to contribute to fair and just tenure security, access to land and natural resources for all. In so doing, it is expected to lead to more sustainable and efficient use of land and natural resources for food, housing and production and reduce conflicts and competing claims over land. By contrast with many other development related projects, LAND-at-scale has an explicit focus on supporting the upscaling of successful pilots, providing support to innovative interventions with upscaling potential, integrating tested and new initiatives, and investing in increased knowledge and learning. Together with the land governance issues of tenure security, gender, conflict and scaling, climate change is a special theme for mainstreaming within the LAND-at-scale programme. Climate change is now generally accepted as one of the world's most pressing global challenges, and it has very strong links to land and land use and therefore to land governance (Intergovernmental Panel on Climate Change, 2022). The importance of this link is also clear from the inclusion of *“the degree in which the potential intervention contributes to improved adaptation to climate change”* as one of the criteria for selecting projects for funding under the programme.

This report should be read as a scoping study into the nexus between land governance interventions and climate resilience, as found and expressed in the LAND-at-scale programme. The term scoping study refers to the nature of the work that has largely involved conceptual review and development by the main author, Richard Sliuzas from the University of Twente, with some interaction with collaborators from the implementation teams of four LAND-at scale projects and the LAND-at-scale Knowledge Management Coordinator, Dr Wytse Chamberlain-van der Werf, Utrecht University, over the period March-September 2023. Therefore, this study provides insights into the land-climate nexus but should not be considered as a comprehensive and exhaustive investigation of the relations. Specifically, this study paid particular attention to land governance project interventions aimed at enhancing tenure security and improving land use planning and, if and how these pay off in terms of strengthening the climate resilience of the targeted communities and their living environments.

Three main questions guided the study:

- How is the nexus between land governance and climate resilience conceived in recent scientific literature, including links with social diversity and intersectionality?
- In what ways is climate change expected to affect the territories and communities of selected LAND-at-scale projects by 2030-50?
- How can land governance, through improved tenure security and land use planning, contribute to effective climate change mitigation and adaptation and increased climate resilience, in different project settings?

By collating and documenting the experiences of several project partners in developing and using different types of land governance instruments with a view to increasing climate resilience in different contexts, knowledge on the nexus may be identified and shared within and beyond the LAND-at-scale community. The remainder of the report is divided into four sections. The following section briefly explains the methodology used for the study, section three reviews some key literature on the land-climate resilience nexus and uses this to develop a framework that guides the case studies. LAND-at-scale projects from Colombia, Mozambique, Uganda and Somalia were examined in the study, with each project separately described in Annex B. The last section seeks to extract cross cutting lessons from the previous analysis by relating theoretical perspectives with project implementation practices.

2 METHODOLOGY

This section briefly describes the approach used to conduct this study that was designed in a manner which would lead to general, though reliable and useful insights, into the land-climate nexus. The work was therefore undertaken as a scoping study, requiring an appropriate mix of scientific and practical knowledge obtained from LAND-at-scale implementation teams. Broadly, there were two main activities: a literature review to produce a framework to guide the investigation of project implementation experiences and a series of activities designed to document the experiences and insights from four of the LAND-at-scale projects in Colombia, Mozambique, Uganda and Somalia. The first three projects are focussed on rural settings while the Somalia case has a more urban focus though it too has strong links to climate impacts in rural areas of Somalia. Each component is discussed in more detail below.

2.1 LITERATURE STUDY AND FRAMEWORK DEVELOPMENT

Knowledge management is an important component of the LAND-at-scale programme. All projects are designed with a knowledge cycle approach. Knowledge generation and dissemination should lead to lessons that can be taken up through projects and form a basis for further reflection that informs further cycles of learning within and beyond the LAND-at-scale network. The juxtaposition of the practical experiences of project work within a scientific framework adds rigour and value to the lessons learned and makes them of greater importance to the global community.

Three main lines were used to identify relevant literature for this study:

1. Key documents from recent IPCC reports were selected as references as these provide a general framework for the study and they have already been subjected to intensive peer review process and can be considered to represent the state of the art in climate science reporting.
2. A set of academic papers published since 2012 were selected via two online searches with the SCOPUS search engine. Bibliographic details of these articles are provided as supplementary material.
3. Selected reports from UN-HABITAT's Global Land Tool Network (GLTN) that specifically addressed land governance and climate resilience were included. GLTN's publications are

relevant to this study as its mandate is to improve tenure security and land governance, and to produce and share innovative land tools.

The selected sources were screened and the most relevant have formed the basis for the development of the framework for this study.

2.2 ONLINE WORKSHOPS

A two-hour online workshop was held with each of the case study teams in the period May-June 2023. Each workshop was facilitated by the LAND-at-scale Knowledge Management (KM) representatives (the lead author Prof Richard Sliuzas and Dr Wytske Chamberlain-van der Werf acted as co-lead and prepared notes based on each workshop). During the workshops the participants explored the three study questions (1 Introduction) for their project's context, providing the KM team with more insights into the project and especially the connections between land governance and climate resilience in the project. Later, the lead author prepared a causal loop diagram to act as a visual summary of the relations highlighted in each discussion (Dhirasasna & Sahin, 2019). A causal loop diagram (CLD) is a useful tool for exploring the structure of a socio-ecological system in a qualitative way and can form the basis for the quantitative modelling, for example with a systems dynamics model (Gray, Paolisso, Jordan, & Gray, 2016). A CLD was developed for each case study to illustrate the chain of causal relations between a set of variables that characterise the dynamic issues at play in each setting. CLDs can be used to show both positive and negative relations¹ between two variables and to identify the presence feedback loops that can be either reinforcing (i.e., that encompass positive feedback between two or more variables that can lead to growth in systems and potentially system collapse) or balancing loops (i.e., that encompass negative feedback between two or more variables that promote self-correcting or stabilising behaviour in systems) (Figure 1). The CLDs were shared with the workshop participants for validation and feedback that was used for revision purposes.

¹ For readers unfamiliar with systems thinking and modelling, it is important to realise that the nature of the relation between two variables in a system is not necessarily the same as the societal impact. For example, hurricanes and floods have a positive relation; an increase in the number of hurricanes will lead to an increase in flooding, both of which will lead to an increase in damage and loss. Consequently, the reverse is also true. If hurricanes decrease, floods will also decrease and both will lead to a decrease in loss and damage.

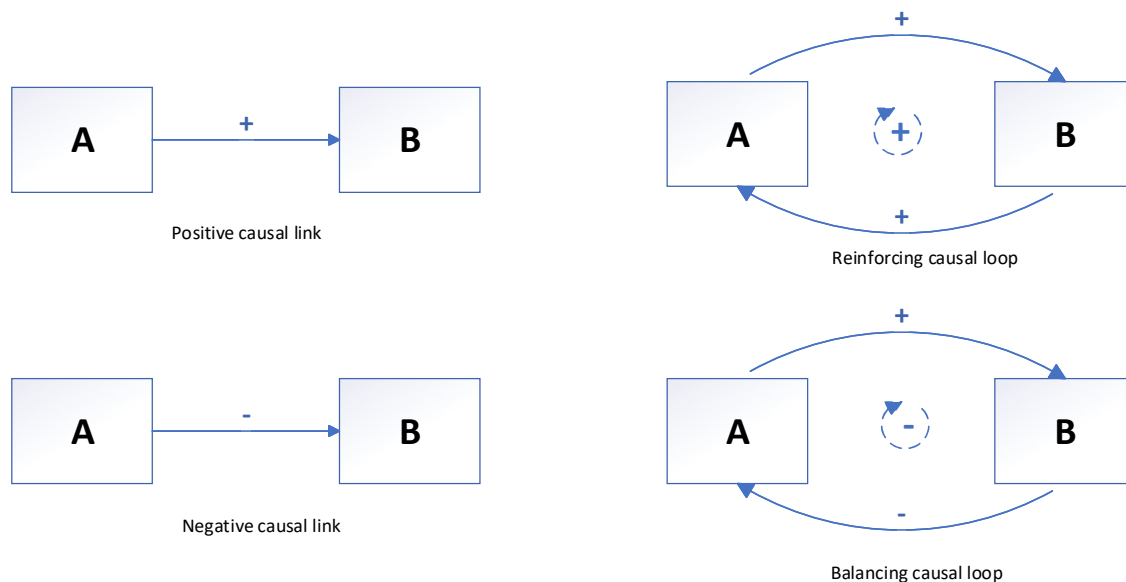


Figure 1: Relations between variables and feedback loops as shown in CLDs (adapted from Gray et al., 2016)

2.3 OTHER ACTIVITIES

Knowledge on the different case studies was also shared during in-person activities conducted at the 2023 LAND-at-scale Exchange in Utrecht organised by RVO to bring project partners together for knowledge sharing and learning activities as a basis for programme planning. In this two-day event (26-27 June) project partners had opportunities to share their insights and lessons concerning land governance and climate relations through a world café process and additional interactive sessions that allowed for deeper discussions on specific issues and projects. Also, the four case study projects for this study were presented during a special session ([Does strengthening land governance align with fair climate transitions?](#)) co-organised by the lead author and Dr Chamberlain-van der Werf) during the IOS Fair Transitions / LANDac Conference 2023 that took place from 28-30 June in Utrecht. These additional activities have provided additional context and information that have enriched this report.

3 THE RELATION BETWEEN LAND GOVERNANCE AND CLIMATE RESILIENCE

3.1 LITERATURE SEARCH WITH SCOPUS

Two main search strategies were used in Scopus (Table 1). Both concentrated on selecting open access articles that can be readily accessed by any LAND-at-scale partner. Initially, no country filter was used for search strategy #2 resulting in almost 4,000 selected papers. Including the specific countries addressed in the case studies as a filter resulted in 29 papers, including one review paper. Given the available resources for this study these papers have not been explicitly analysed and discussed in this report, but they may be useful for future reference.

Table 1: Keywords used to identify key literature in the Scopus search engine

ID	Search keywords	Number of papers	Review papers
1	TITLE-ABS-KEY ("tenure security" OR "land title" AND ("climate resilience" OR "climate change")) AND PUBYEAR > 2011 AND (EXCLUDE (SUBJAREA , "CENG") OR EXCLUDE (SUBJAREA , "COMP") OR EXCLUDE (SUBJAREA , "MEDI") OR EXCLUDE (SUBJAREA , "ENGI") OR EXCLUDE (SUBJAREA , "BIOC")) AND (LIMIT-TO (OA , "all"))	18	1
2	(((TITLE-ABS-KEY ("urban planning") OR TITLE-ABS-KEY ("land use planning") OR TITLE-ABS-KEY ("spatial planning"))) AND TITLE-ABS-KEY (("climate change" OR "climate action" OR "climate mitigation" OR "climate adaptation")) AND TITLE-ABS-KEY (((somalia OR uganda OR mozambique OR colombia OR rwanda OR burundi OR chad OR mali)))) AND PUBYEAR > 2011 AND PUBYEAR < 2024 AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (OA , "all"))	29	1

3.2 A FRAMEWORK FOR RELATING LAND GOVERNANCE AND CLIMATE RESILIENCE

This section presents some key literature concerning land governance and climate resilience leading to a framework that will be used to examine this relation specifically in four selected LAND-at-scale projects. Ideally, the framework should also be applicable to other LAND-at-scale projects and more broadly. Throughout the section frequent use is made of certain terms that require clear definitions to aid understanding. These terms are found in Annex A and their definitions are drawn from a recent publication of the IPCC that deals specifically with climate change and land (IPCC, 2022).

The connection between land use, climate change and climate risk has long been recognised in IPCC literature and elsewhere. Since their AR5 report of 2014, the IPCC has adopted a notion of climate risk that is aligned with that notion of risk as conceptualised by the UNDRR (Figure 2). In other words, climate risk is seen as a product of the interplay of climate hazards (e.g., heatwaves, drought, severe windstorms, sea level rise, floods of various kinds, landslides), the vulnerability of the potentially affected population or eco-system, and the degree of exposure to the hazards. On the right-hand side of this diagram, we see three types of socio-economic processes (i.e., socio-economic pathways, adaptation and mitigation actions, and governance arrangements) which together largely determine the levels of vulnerability and exposure and to a lesser degree, the climate-related hazards in any socio-ecological system (SES). They also determine how land is used and how this land use changes, and as such drives the anthropogenic component of climate change. Combined with the natural variability of climate, these are the main drivers of climate change. Climate-related risks can have severe impacts such as effects on lives, livelihoods, health and well-being, ecosystems and species, economic, social and cultural assets, services (including ecosystem services), and infrastructure. Ideally, such impacts should result in learning and adjustment of the socio-economic processes to reduce risks by taking adaptation measures that will seek to mitigate the hazards, or reduce vulnerability and exposure.

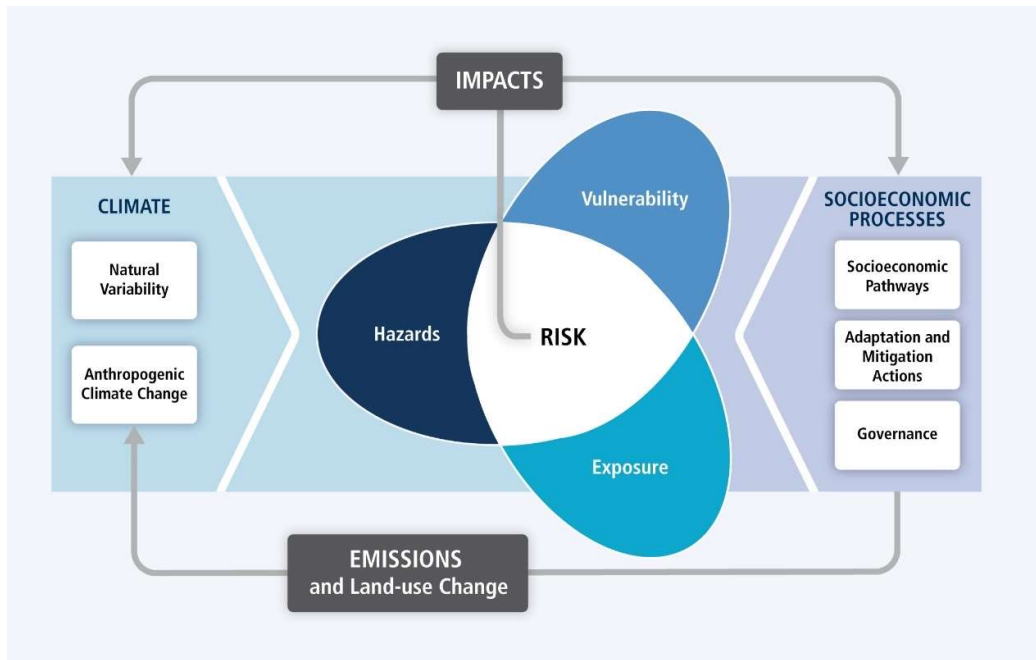


Figure 2: The relationship between socio-economic pathways and climate related risks
 Source IPCC AR5, 2014

To illustrate the possible directions of change we can add green and red arrows to represent decreasing or increasing influence of the three risk components on risk (Figure 3). Recent research has also shown that this diagram hides a great deal of complexity and interactions between responses to climate risk or climate actions and the components of risk (Simpson et al., 2021). For example, climate-related hazards often are complex events that combine multiple types of hazards and cascading effects. And adaptation responses, however well considered, may have unforeseen effects, some of which may entail a degree of maladaptation (Reckien et al., 2023).

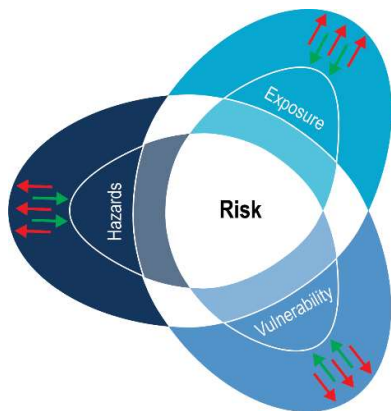


Figure 3: An adapted climate risk figure showing that the three components may decrease (green arrows) or increase (red arrows)

Mitchell and McEvoy (2019) showed how land governance is strongly connected to climate vulnerability and therefore to climate resilience. Though they used an earlier climate risk framework, from the IPCC AR4 report, their work provides some valuable insights and that “good

land governance is a critical component in enhancing community resilience to a variety of natural and human-induced shocks and stresses” (op cit, pXI). Their study shows that actions to increase tenure security should be strongly connected to land use planning processes and instruments if land governance is to reduce vulnerability and exposure to different shocks and stresses, including those that are climate related. Moreover, they show that both tenure security and land use planning need to be implemented in a climate sensitive manner. In other words, when issuing land tenure documents of whatever kind or when making spatial plans, it is important to consider to what extent the land parcels and land use zones are or will be affected by climate-related hazards. Such an approach is consistent with other authors who advocate the mainstreaming of climate adaptation in spatial planning processes and spatial plans (Runhaar, Wilk, Persson, Uittenbroek, & Wamsler, 2018). Further, Mitchell and McEvoy (2019) promote an approach that recognises diversity within communities and gives specific attention to the most vulnerable groups based upon an intersectional view that considers multiple forms of vulnerability amongst community members. Moreover, they show that there is also a need to related climate change adaptation actions to more general disaster risk reduction measures (Figure 4).

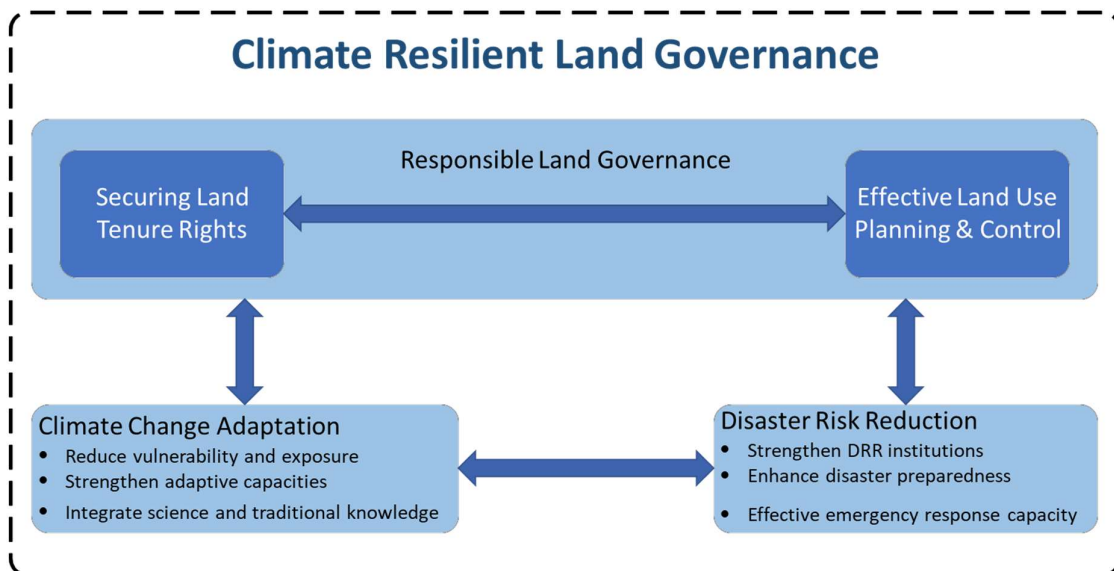


Figure 4: Relations between land tenure, land use planning, climate change adaptation and disaster risk reduction (Adapted from Mitchell and McEvoy, 2019)

What is important to realise is that in many countries of the majority world there are often many barriers to overcome. Institutions related to land and land use planning may be weak and in some cases largely absent (see for example the case of Somalia in this report). In remote rural areas public land institutions may be barely functioning and have insufficient knowledge and resources to actually administer the multiple forms of land tenure systems within their jurisdiction, let alone conduct regular land use inventories, prepare strategic and annual land use plans and then implement them. In such circumstances it is necessary to consider the role of Fit-for-Purpose (FFP) land tenure registration and adopt more collaborative, community-based approaches to spatial planning that may fill some of the gaps in formal land use planning processes (IPCC, 2022; Mitchell and McEvoy, 2019).

Ultimately, in addition to the mapping of land rights and the production of land use plans to guide and regulate how communities use their land, climate resilience requires investments that enable present and future climate risk to be properly assessed. This requires the ability to conduct and use hazard assessments and vulnerability assessments, and to effectively determine the levels of exposure that are likely to occur under different scenarios that consider hazards and vulnerability in an integrated manner (Figure 5). Such efforts also assume a national and local capacity for risk management planning (Tagarev et al., 2020) and implementation that may not be present or within reach of a specific community. One consequence of weak formal institutions in risk management and land governance is that local, community-based solutions may be required to fill the gaps, both in climate risk management and in land governance. The latter approach is strongly evident in the cases included in this report.

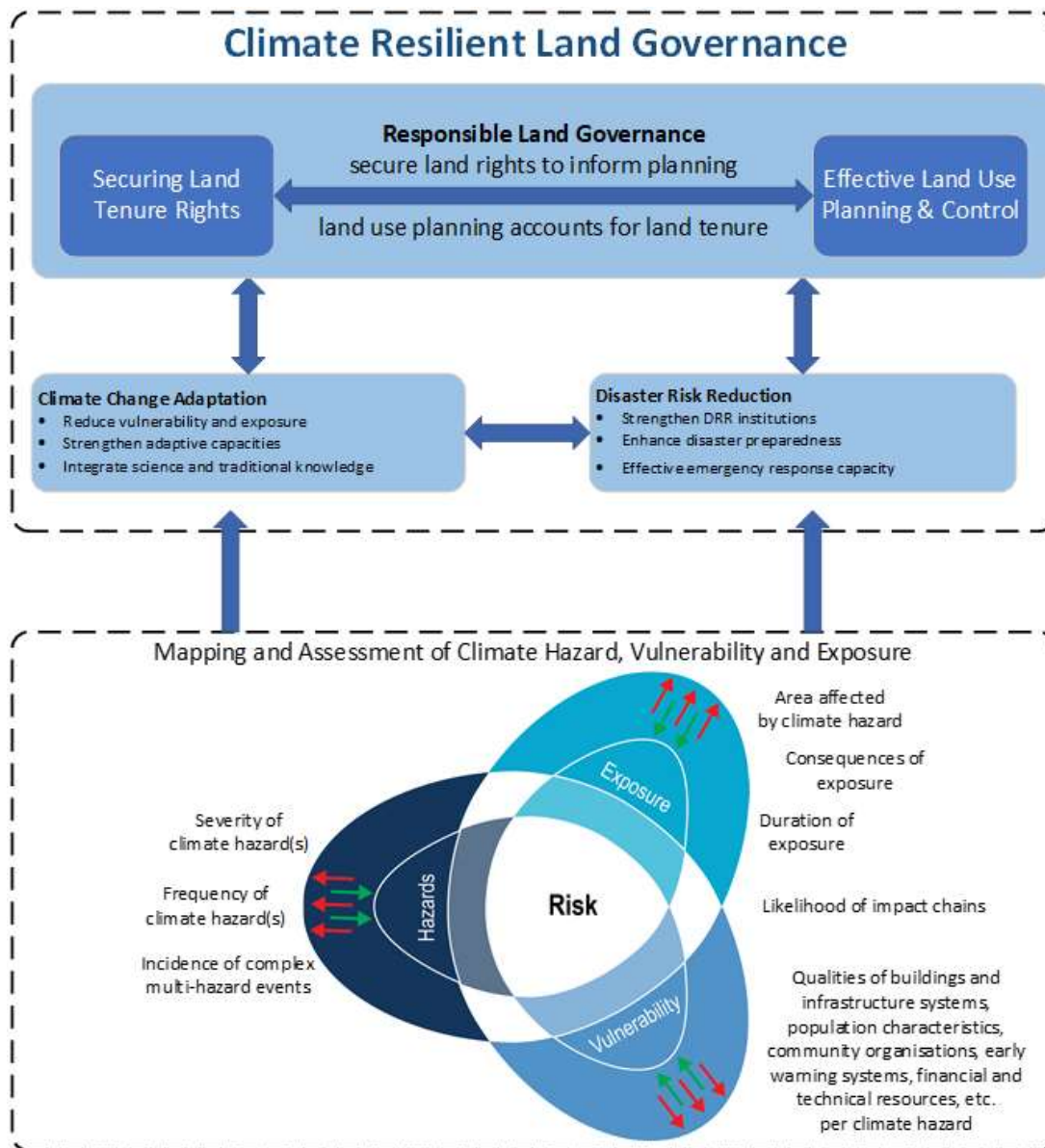


Figure 5: Components of climate resilient land governance (adapted from Mitchell and McEvoy, 2019)

The report, *Climate Change and Land* (IPCC, 2022), is of particular relevance to many of the LAND-at-scale projects, which are mostly directed at rural settings and communities. In such settings there is a strong focus on rural livelihoods and ecosystems and this report gives much attention to issues such as crop production, land degradation, deforestation, desertification and water. It also identifies many response options grouped into three main categories (responses based on

Response options based on land management		Mitigation	Adaptation	Desertification	Land Degradation	Food Security	Cost
Agriculture	Increased food productivity	L	M	L	M	H	---
	Agro-forestry	M	M	M	M	L	●●●
	Improved cropland management	M	L	L	L	L	●●●●
	Improved livestock management	M	L	L	L	L	●●●●●
	Agricultural diversification	L	L	L	M	L	●●
	Improved grazing land management	M	L	L	L	L	---
	Integrated water management	L	L	L	L	L	●●●
	Reduced grassland conversion to cropland	L	---	L	L	L	●●
Forests	Forest management	M	L	L	L	L	●●●
	Reduced deforestation and forest degradation	H	L	L	L	L	●●●
Soils	Increased soil organic carbon content	H	L	M	M	L	●●●
	Reduced soil erosion	↔ L	L	M	M	L	●●●
	Reduced soil salinization	---	L	L	L	L	●●●
	Reduced soil compaction	---	L	---	L	L	●
Other ecosystems	Fire management	M	M	M	M	L	●
	Reduced landslides and natural hazards	L	L	L	L	L	---
	Reduced pollution including acidification	↔ M	M	L	L	L	---
	Restoration & reduced conversion of coastal wetlands	M	L	---	M	L	---
	Restoration & reduced conversion of peatlands	M	---	na	M	L	●
Response options based on value chain management		Mitigation	Adaptation	Desertification	Land Degradation	Food Security	Cost
Demand	Reduced post-harvest losses	H	M	L	L	H	---
	Dietary change	H	---	L	H	H	---
	Reduced food waste (consumer or retailer)	H	---	L	M	M	---
Supply	Sustainable sourcing	---	L	---	L	L	---
	Improved food processing and retailing	L	L	---	---	L	---
	Improved energy use in food systems	L	L	---	---	L	---
Response options based on risk management		Mitigation	Adaptation	Desertification	Land Degradation	Food Security	Cost
Risk	Livelihood diversification	---	L	---	L	L	---
	Management of urban sprawl	---	L	L	M	L	---
	Risk sharing instruments	↔ L	L	---	↔ L	L	●●●

Options shown are those for which data are available to assess global potential for three or more land challenges. The magnitudes are assessed independently for each option and are not additive.

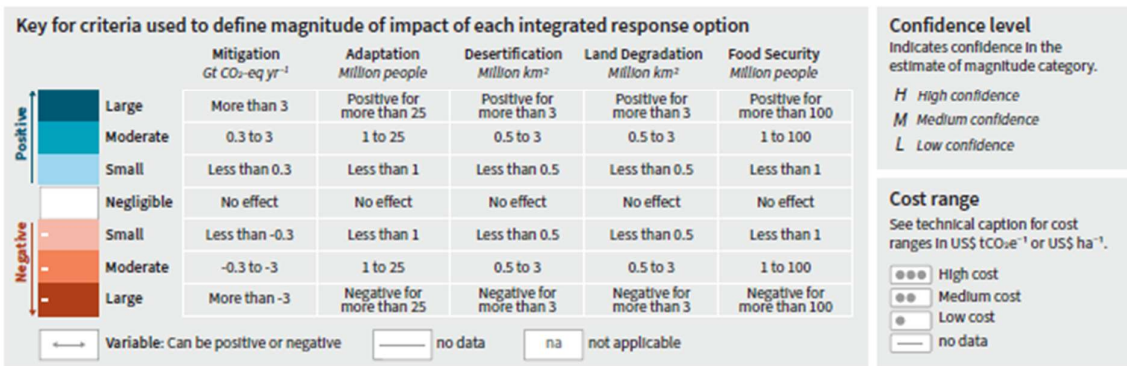


Figure 6: Potential global contribution of response options to mitigation, adaptation, combating desertification and land degradation, and enhancing food security (Panel A) (Source: IPCC, 2022, p64)

land management, responses based on value chain management, and responses based on risk management). Moreover, they identify the potential role of many measures for climate mitigation, adaptation and specifically to combat desertification, land degradation and food security (Figure 6). Their data also indicates the degree of certainty that applies for each evaluation item and the estimated cost. Also relevant for this study, is that they identify two land related response options that may have negative implications for food security (i.e. reduced grassland conversion to cropland, and restoration and reduced conversion of peatlands) while also indicating that in some cases the effects can be positive or negative or may not yet be determinable due to a lack of data. Furthermore, they include management of urban sprawl as a risk management option, an issue that is specifically relevant for the Somalian case.

The nature of the relations between land governance and climate resilience is well voiced in the following statement by the IPCC:

“The complex spatial, cultural and temporal dynamics of risk and uncertainty in relation to land and climate interactions and food security, require a flexible, adaptive, iterative approach to assessing risks, revising decisions and policy instruments. Adaptive, iterative decision making moves beyond standard economic appraisal techniques to new methods such as dynamic adaptation pathways with risks identified by trigger points through indicators. Scenarios can provide valuable information at all planning stages in relation to land, climate and food; adaptive management addresses uncertainty in scenario planning with pathway choices made and reassessed to respond to new information and data as it becomes available.” (adapted from IPCC, 2022).

In the workshops with the team members from the four LAND-at-scale projects we endeavoured to do justice to this view by seeking to identify where land governance interventions and climate responses (adaptation and mitigation) reinforce each other and can be considered to represent climate smart solutions and where there is potential for maladaptation to occur (Figure 7). In the following section the key features of each project are explained, while fuller descriptions can be found in Annex B.

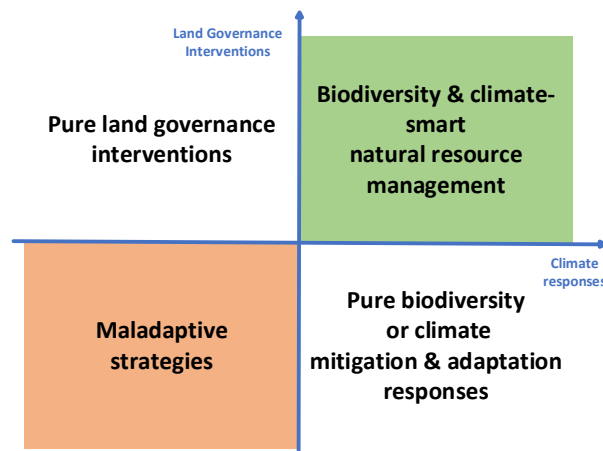


Figure 7: Framework used to guide discussions on how land governance interventions add to or detract from climate resilience (as proposed by Rebecca Hallin, KIT, Amsterdam)

4 DISCUSSION OF THE FOUR CASES

4.1 OVERVIEW OF THE CASE STUDIES

The case studies are drawn from four projects, in Búzi District, Mozambique; Butaleja District, Uganda; Solano, Colombia and the city of Baidoa, Somalia. The first two of these are similar in that they focus on rural communities with agricultural economies bordering water resources (rivers and wetlands respectively). Land tenure and land governance are key foci of each project, albeit in a context specific manner. In the Búzi case, there is a strong focus on capacity building for community members on existing land laws and institutions, including the management of resettlement from flood prone lands. By contrast, in Butaleja, there is a focus on building community capacities for wetland planning and management, including the creation of community-based committees for these functions. Improving land tenure security through a Fit-for-Purpose approach based on the Social Tenure Domain Model is a key component of this work. The new community-based bodies are expected to become institutionalised over time, especially as the project also engages strongly with local government officials who can see the benefit of more empowered communities managing their own land and environmental affairs. In both cases, Búzi and Butaleja, there is considerable attention for climate related hazards such as flooding and the changing weather patterns that are affecting agricultural practices and increasing pressure on sensitive wetland areas that, in addition to food, also have important roles in flood water retention and storage.

The case in Solano municipality, Colombia, is situated in the deforestation frontier of the Amazon forest. Indigenous people are seeking verification and expansion of the boundaries of their reserves, the rights over which are protected by law. At the same time, the indigenous people are supported in the improvement of their livelihood through the commercialisation of a local oil palm, in dedicated areas within the reserve. By using a small part of the forest for economic activities, they are able to conserve the forest. The collaboration within the LAND-at-scale intervention has spilled over into the municipal planning spaces in which the indigenous people are regarded as agents of change. *“According to the logic of the project, it is expected that by generating greater formality in tenure, with economic empowerment and good environmental management, it will contribute to the stability of the area and stop deforestation.”* (ICCO Conexión and Tropenbos Colombia, 2023).

In Baidoa, Somalia, a massive influx of Internally Displaced Persons (IDPs) has put extreme pressure on an already weak local government system. Baidoa’s population has surged from about 70,000 to more than 700,000 and is expected to grow to more than 1 million by 2035. Most IDP mobilities are attributed to severe droughts that have decimated crop yields and livestock, thereby reducing the liveability of many rural areas that are also settings for political conflict. The majority of IDPs locate in autonomously identified locations, some of which may be flood-prone, or live as tenants on privately owned land. In either case, such areas are unplanned, and usually poorly serviced with basic infrastructures (water, sanitation, health, education, electricity, transport). The project seeks to create new institutions and processes that can offer durable

solutions for generating sustainable neighbourhoods for large IDP populations. It is expected that most IDPs will remain in Baidoa regardless of improvements in the liveability of their places of origin. It is thus important to develop strategies that address needs that go beyond those normally handled by humanitarian aid.

As Table 2 shows, each of the cases uses a variety of response options that may contribute to climate resilience. Many of the response options already identified by the IPCC have a strong link to land and therefore to land governance (see shaded cells in Table 2, column 1). In addition to those options that originate from the IPCC, the table includes several options that originate specifically from land governance or disaster risk reduction that have been added to the bottom of the table.

Table 2: Response options applied in each case study (adapted from IPCC, 2022)

Response option	Búzi Mozambique	Butaleja Uganda	Solano Colombia	Baidoa Somalia
Increased food productivity	X	X	X	X
Agro-forestry			X	
Improved cropland management	X	X	X	X
Improved livestock management				
Agricultural diversification				
Improved grazing land management				
Integrated water management	X	X		X
Reduced grassland to cropland conversion				
Forest management			X	
Reduced deforestation & forest degradation	X	X	X	
Increased soil organic carbon content				
Reduced soil erosion		X		
Reduced soil salinization				
Reduced soil compaction				
Fire management				X
Reduced landslides and natural hazards	X	X	X	X
Reduced pollution including acidification				
Restoration & reduced conversion of coastal wetlands				
Restoration & reduced conversion of peatlands and wetlands		X		
Reduced post-harvest loss				
Dietary change				
Reduced food waste (consumer or retailer)				
Sustainable sourcing				
Improved food processing & retailing				
Improved energy use in food systems				
Livelihood diversification	X	X	X	X
Management of urban sprawl				X
Risk-sharing instruments				
Management of IDPs & resettlement	X			X
Fit for purpose land tenure	X	X	X	X
Improved community planning capacity		X	X	X
Community sensitization on land and environmental issues	X	X	X	X
Improved community management capacity		X		X

Response option	Búzi Mozambique	Butaleja Uganda	Solano Colombia	Baidoa Somalia
Creation of new land related legislation				X
Creation of new land institutions		X		X
Community capacity building on land laws	X	X	X	X
Community capacity building on natural resource management	X	X	X	X
Training of government officers	X	X	X	X
Environmental or land use plan	X	X	X	X
Risk assessment and management plan	X	X		X
Early Warning Systems for floods				
Creation of a local adaptation plan (LAP)	X		X	
Improve urban infrastructures and services				X

Shaded options have a strong land governance or disaster risk management focus

X = response options applied in case

Given the interdependency between land tenure security and land use planning, as shown in the framework of Mitchell and McEvoy (2019) presented in section 3.2, we can conclude that the response options shown in Table 2 that relate to some form of environmental or land use planning and management processes for plan implementation will all rely on communities having a strong perception of secure land tenure. In this respect, we can argue that land tenure is a pre-condition for various types of spatial planning and associated management practices and for many response options that seek to increase the climate resilience of communities. As many climate responses require changes in behaviour or investment of often scarce resources, it is logical that community members will be more willing to make such land-based investments if their ownership or use rights to their land is documented and secure.

On the other hand, we must also be cognisant of the fact that in some locations, climate-related hazards may make land unusable, even despite tenure security. Already some coastal communities, in the Pacific Islands and elsewhere, have experienced the loss of their lands due to sea-level rise (McEvoy, Mitchell, & Trundle, 2020), a phenomenon that is expected to become more common over the coming decades as global warming proceeds. Similarly, processes such as desertification and severe land degradation may render much land unusable, irrespective of the land tenure situation. It is therefore imperative that land governance issues are explicitly considered and mainstreamed within climate resilience thinking and actions, and vice versa.

Each case can be considered as a complex socio-ecological system with multiple cross-scale connections. Such complexity inevitably poses great difficulty for any project that proports to deal with sustainable, climate resilient development. Project frameworks may over-simplify complex system structures and relationships and assume away issues which ultimately may derail or redirect a project from its original goals and targets. In part, such problems are inherent in any socio-ecological system, though in the relatively data poor situations that exist in several of the cases discussed here, there is considerable space and opportunity for scientific research and development that incorporates open (citizen) science approaches.

4.2 REFLECTIONS FROM THE CASE STUDIES

In reflecting on the literature and the four cases, several key observations can be made:

- It is important to have clear legal frameworks and institutions to guide land governance and climate resilience building. Nevertheless, this does not imply that the making of development plans and local adaptation plans is the sole prerogative of government. The signs are that, where there is government support and backing, community-based planning and management systems that are fit-for-purpose and well aligned to land tenure issues can produce durable and sustainable outcomes.
- Many connections between land governance and climate resilience have been identified, and it is important that adequate attention is given to mainstreaming between all fields before decisions are taken that may give rise to maladaptation. It is important that the consequences of any land governance measure on climate resilience are considered in decision making and vice versa.
- In all situations, even those with relatively weak public sector institutions, LAND-at-scale projects should seek to develop supportive and productive relations with government bodies and officials. Their support adds to the legitimacy of the projects and their actions and therefore their sustainability.
- Having sufficient good quality and timely data is a major issue. Downscaled data on climate-related hazard scenarios for the Africa region is often poor.
 - There is an absence of data and information to determine the risks for communities (climate models). It is important to improve our understanding of what current and future climate hazards are likely to impact communities - the extent, frequency and intensity and duration of events - and what levels of exposure will be experienced by whom. This information needs to be made available for those actors responsible for land-use planning.
 - In addition to mapping land rights through a Fit-for-Purpose approach it is also necessary to map vulnerability from a multi-dimensional perspective. Many aspects of vulnerability are intersectional, requiring combinations of gender, age, health, education and other characteristics.
- Large-scale displacement and migration create major challenges for communities and governments alike. Guidelines and regulations on how to deal with climate-related migration (either temporary or permanent) in a systematic and humane manner that considers the needs of both the displaced persons and the host communities are required. Attention needs to be given to the legal tenure rights of migrants, both within their host communities and the lands they leave behind. Here too, questions of scaling while recognizing substantive and procedural legitimacy and justice are of paramount importance. Large-scale mobility may also generate climate-related effects. For example,

the large-scale unplanned urbanization of cities like Baidoa, reduces its climate resilience through the reliance on poor-quality shelter options that do not provide adequate protection from environmental conditions and inappropriate siting of migrant camps in floodplains. Therefore, it is important to address the complex interactions associated with displacement and migration; both for those who migrate and for the receiving communities.

- Though community-based approaches are to be welcomed, we should not be naïve about them. There is also diversity within communities – gender, age, wealth, health, knowledge, ability, power – and methods and practices need to acknowledge and address differences and intersectionality.
- Scaling should address spatial and temporal issues. In addition to scaling by expanding spatially to new communities, mappings, plans and management systems must be updated over time and beyond the project timeframe to be sustainable.
- For some types of climate-related hazards (e.g., severe windstorms and precipitation that generate large scale flooding) watershed-based approaches should be adopted when planning hazard mitigation measures.

As stated in section 1, this is a scoping study into the relations between land governance and climate resilience, as they emerge in four LAND-at-scale projects. With more resources much more could be learned and shared from these and other projects within this programme. Nevertheless, this report can serve as a foundation for a deeper investigation into these relations, which are becoming increasingly important. In any event, its findings should be shared and debated more widely and become part of the Knowledge Management infrastructure on the LAND-at-scale programme.

REFERENCES

- Dhirasasna, N., & Sahin, O. (2019). A Multi-Methodology Approach to Creating a Causal Loop Diagram. *Systems*, 7(42). <https://doi.org/10.3390/systems7030042>
- Gray, S., Paolisso, M., Jordan, R., & Gray, S. (2016). Environmental Modeling with Stakeholders. In *Environmental Modeling with Stakeholders*. <https://doi.org/10.1007/978-3-319-25053-3>
- ICCO Conexión and Tropenbos Colombia (2023). *Visions and expectations of young people in the municipality of Solano Caquetá, Colombia*. ICCO Conexión and Tropenbos Colombia, LAND-at-scale. <https://www.landportal.org/library/resources/visions-and-expectations-young-people-municipality-solano-caquet%C3%A1-colombia>
- Intergovernmental Panel on Climate Change. (2022). Climate Change and Land. In *Climate Change and Land*. <https://doi.org/10.1017/9781009157988>
- McEvoy, D., Mitchell, D., & Trundle, A. (2020). Land tenure and urban climate resilience in the South Pacific. *Climate and Development*, 12(1), 1–11. <https://doi.org/10.1080/17565529.2019.1594666>
- Mitchell, D., & McEvoy, D. (2019). *LAND TENURE AND CLIMATE VULNERABILITY*. Nairobi: UN-HABITAT & GLTN.
- Reckien, D., Magnan, A. K., Singh, C., Lukas-sithole, M., Orlove, B., & Schipper, E. L. F. (2023). *Navigating the continuum between adaptation and maladaptation*. <https://doi.org/10.1038/s41558-023-01774-6>
- Runhaar, H., Wilk, B., Persson, A., Uittenbroek, C., & Wamsler, C. (2018). Mainstreaming climate adaptation: taking stock about what works from empirical research worldwide. *Regional Environmental Change*, 18, 1201–1210.
- Simpson, N. P., Mach, K. J., Constable, A., Hess, J., Hogarth, R., Howden, M., ... Trisos, C. H. (2021). A framework for complex climate change risk assessment. *One Earth*, 4(4), 489–501. <https://doi.org/10.1016/j.oneear.2021.03.005>
- Tagarev, T., Papadopoulos, G. A., Hagenlocher, M., Sliuzas, R., Ishiwatari, M., & Gallego, E. (2020). Integrating the risk management cycle. In A. Casajus Valles, M. Marin Ferrer, K. Poljanšek, & I. Clark (Eds.), *Science for Disaster Risk Management 2020: acting today, protecting tomorrow* (pp. 49–108). <https://doi.org/10.2760/571085>

ANNEX A: GLOSSARY

Terminology on climate risks and climate resilience (from IPCC, 2022, Annex I)

Adaptation: In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.

Climate-resilient development pathways (CRDPs): Trajectories that strengthen sustainable development and efforts to eradicate poverty and reduce inequalities while promoting fair and cross-scalar adaptation to and resilience in a changing climate. They raise the ethics, equity, and feasibility aspects of the deep societal transformation needed to drastically reduce emissions to limit global warming (e.g., to 2°C) and achieve desirable and liveable futures and well-being for all.

Co-benefit: The positive effects that a policy or measure aimed at one objective might have on other objectives, thereby increasing the total benefits for society or the environment. Co-benefits are often subject to uncertainty and depend on local circumstances and implementation practices, among other factors. Co-benefits are also referred to as ancillary benefits. See also Adverse side-effects, and Risk.

Exposure: The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected. See also Hazard, Risk, and Vulnerability.

Governance: A comprehensive and inclusive concept of the full range of means for deciding, managing, implementing and monitoring policies and measures. Whereas government is defined strictly in terms of the nation-state, the more inclusive concept of governance recognises the contributions of various levels of government (global, international, regional, sub-national and local) and the contributing roles of the private sector, of nongovernmental actors, and of civil society to addressing the many types of issues facing the global community, and the local context where the effectiveness of policies and measures are determined.

Adaptive governance: An emerging term in the literature for the evolution of formal and informal institutions of governance that prioritise planning, implementation and evaluation of policy through iterative social learning; in the context of climate change, governance facilitating social learning to steer the use and protection of natural resources, and ecosystem services, particularly in situations of complexity and uncertainty.

Climate governance: Purposeful mechanisms and measures aimed at steering social systems towards preventing, mitigating, or adapting to the risks posed by climate change.

Participatory governance: A governance system that enables direct public engagement in decision-making using a variety of techniques for example, referenda, community deliberation, citizen juries or participatory budgeting. The approach can be applied in formal

and informal institutional contexts from national to local, but is usually associated with devolved decision making.

Impacts (consequences, outcomes): The consequences of realised risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather and climate events), exposure, and vulnerability. Impacts generally refer to effects on lives, livelihoods, health and well-being, ecosystems and species, economic, social and cultural assets, services (including ecosystem services), and infrastructure. Impacts may be referred to as consequences or outcomes, and can be adverse or beneficial.

Land: The terrestrial portion of the biosphere that comprises the natural resources (soil, near surface air, vegetation and other biota, and water), the ecological processes, topography, and human settlements and infrastructure that operate within that system.

Land use: The total of arrangements, activities and inputs applied to a parcel of land. The term land use is also used in the sense of the social and economic purposes for which land is managed (e.g., grazing, timber extraction, conservation and city dwelling). In national GHG inventories, land use is classified according to the IPCC land use categories of forest land, cropland, grassland, wetlands, settlements, other lands.

Land-use change (LUC): The change from one land use category to another. [Note: In some of the scientific literature assessed in this report, land-use change encompasses changes in land-use categories as well as changes in land management.

Maladaptive actions (Maladaptation): Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased vulnerability to climate change, or diminished welfare, now or in the future. Maladaptation is usually an unintended consequence.

Mitigation (of climate change): A human intervention to reduce emissions or enhance the sinks of greenhouse gases.

Mitigation measures: In climate policy, mitigation measures are technologies, processes or practices that contribute to mitigation, for example renewable energy technologies, waste minimisation processes, public transport commuting practices.

Resilience The capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation (adapted from the Arctic Council, 2013).

Risk: The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems. In the context of climate change, risks can arise from potential impacts of climate change as well as human responses to climate change. Relevant adverse consequences include those on lives, livelihoods, health and well-being,

economic, social and cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species. In the context of climate change impacts, risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system to the hazards. Hazards, exposure and vulnerability may each be subject to uncertainty in terms of magnitude and likelihood of occurrence, and each may change over time and space due to socio-economic changes and human decision-making. In the context of climate change responses, risks result from the potential for such responses not achieving the intended objective(s), or from potential trade-offs with, or negative side-effects on, other societal objectives, such as the Sustainable Development Goals. Risks can arise for example from uncertainty in implementation, effectiveness or outcomes of climate policy, climate-related investments, technology development or adoption, and system transitions.

Sustainable land management: The stewardship and use of land resources, including soils, water, animals and plants, to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions (Adapted from WOCAT, undated).

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

ANNEX B: DETAILED CASE STUDIES

This annex to the main report contains detailed descriptions of the land governance relations with climate resilience as they play out in four different contexts. The first three cases (Mozambique, Uganda and Colombia), are focussed on LAND-at-scale projects in rural settings where there is a strong emphasis on land tenure security, environmental and land use planning in relation to climate adaptation and, to a lesser extent, mitigation. The fourth case (Somalia), has a more urban focus, though it also has strong links with climate impacts in rural settings and how drought and conflict drive rural-urban migration which creates challenges in land governance and climate resilience for urban local authorities.

CASE 1: THE NEXUS BETWEEN LAND GOVERNANCE AND CLIMATE CHANGE, BÚZI DISTRICT, SOFALA PROVINCE, MOZAMBIQUE

Authors: Borges Chivambo & Berta Rafael

1. Introduction

This case study aims to understand and describe the relationship between land governance and climate resilience as it is expressed in Búzi District, Mozambique. This district was chosen because of its climatic characteristics, because of the phenomena that have taken place in the district, and because it is one of the 33 districts where the LAND-at-scale project is being implemented in Mozambique. To begin, a summary is given of the project's objective in Mozambique and its geographical coverage. This includes a more detailed description of Búzi district and the reasons for its selection.

2. LAND-at-scale Mozambique: “Scaling Community Legal Literacy, Land Rights Certification and Climate Resilience in Mozambique.”

The main objective of the project is to increase the community's legal awareness and strengthen the security of land tenure rights, creating capacity at the local level to implement and leverage the progressive provisions of the Mozambican legal framework. The project is contributing to preparing the community to intervene in an informed way in the land sector and to the delimitation of community and individual land use rights based on bona fide occupation and customary rights, and their integration into the formal land system.

To achieve the objectives, CTV is carrying out a large-scale campaign in selected districts in the three regions of Mozambique, with an intervention called *Social Preparedness & Legal Literacy (Component A)*. This component builds on ongoing systematic attempts to provide support for the protection of land rights at the local level: the "Community Paralegal Training Program", a program that promotes community legal literacy and institutional capacity building for rights protection and political and economic inclusion by providing knowledge, tools, and data to rural communities.

Climate change and its growing impacts and effects on Mozambican society and land governance practices are seen as a cross-cutting issue and are integrated throughout the project. Specifically, the project:

1. Scales up interventions for community institutional preparedness and legal literacy for land and natural resource management over a wider geographical area.
2. Develops and implements tools and approaches that support the resilience of rural communities in the face of climate change and climate-induced resettlement.
3. Trains district governments and local community associations in land management and administration and supports the integration of community knowledge and data into district land use planning and strategic development processes.
4. Shares lessons with and inspires government entities at all levels on the importance and urgency of innovative and participatory approaches to land management and administration that will ultimately place local communities and their institutions, as well as local governments, at the centre of natural resource management as determined by the Constitution and the National Land Policy.

In terms of geographical coverage, the project covers 33 of the 154 districts across all of Mozambique's provinces (Figure 8).

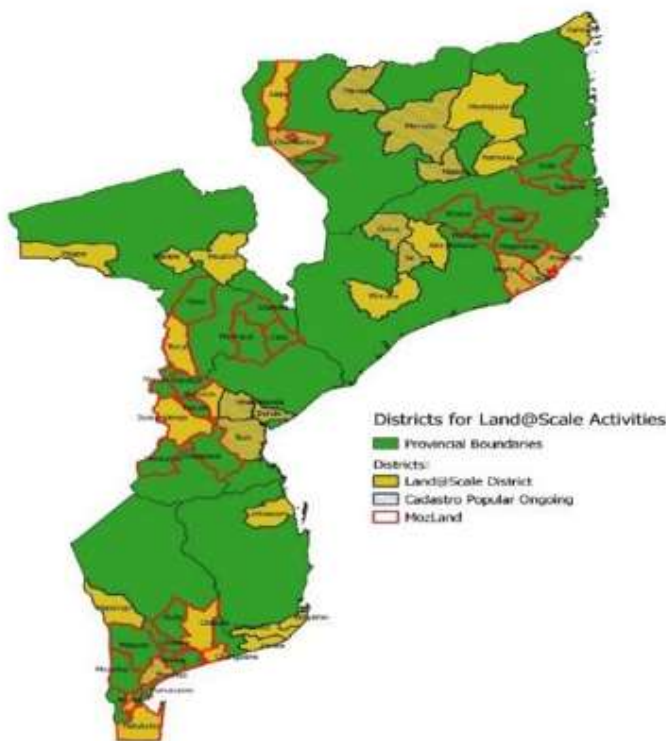


Figure 8: Map of the districts where LAND-at-scale is being implemented

3. Búzi District

Búzi district is in the southern region of Sofala Province, about 180 km from the provincial capital Beira. Búzi is one of the province's coastal districts and forms an integral part of the Sofala Bank, giving it a wealth of commercially valuable fishing resources. The district headquarters are about 30 miles from the city of Beira with direct access by sea.

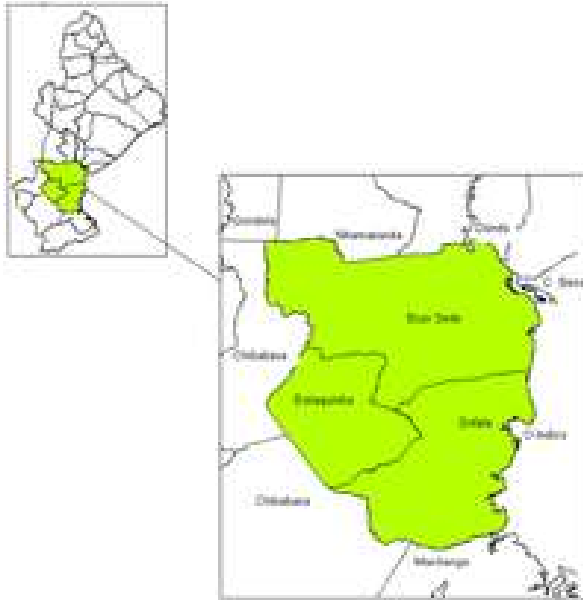


Figure 9: Administrative divisions of Búzi district

Búzi District has an area of 7,160 km² and is found between the geographical coordinates of 19°34'08" and 20°33'09" South latitude and 34°46'57" and 33°53'07" East longitude². The Búzi River, which crosses the district, has its origins in Zimbabwe. It has borders with the following districts: to the North - Dondo and Nhamatanda Districts; to the South - Machanga and Chibabava Districts; to the East - Indian Ocean, near the Búzi and Púnguè River estuary and to the West - Chibabava District (Figure 9).

The district has three administrative posts and ten localities. According to the most recent population census of 2017, the district had around 177,415 inhabitants, of whom 83,211 were men and 94,204 were women.

4. Climate

The district's entire coastline is influenced by the warm surface water current of the Mozambique Channel, which leads to higher average air temperatures. Thermal amplitudes in relation to inland temperatures are high, favouring an increase in evaporation and the consequent high humidity, a factor that is aggravated by the influence of the South-Easterly winds. Humidity varies between 74.1% on the coast and 73.0% inland, while average annual rainfall is less than 1000mm³. According to the Sofala provincial government website, the El Niño and La Niña phenomena affect local weather patterns and meteorological events, also in Búzi District⁴. In the last twenty

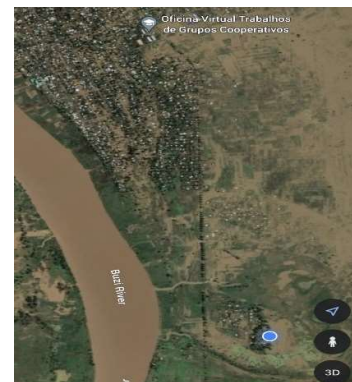


Figure 10: Satellite image of the Maringué neighbourhood – Búzi (Source: Google Earth)

² <https://www.sofala.gov.mz/por/Ver-Meu-Distrito/Buzi/O-Distrito/CARACTERISTICAS-DO-DISTRITO-DE-BUZI-E-DIVISAO-ADMINISTRATIVA> (accessed 10 October 2023)

³ https://www.inam.gov.mz/images/Bolentis_DPP/Avaliacao_PCS_e_Epocachuvosa/Avaliacao-PCS-2021-22/Avaliao_da_epoca_chuvosa_2021_22.pdf (Accessed 6 November 2023)

⁴ See <https://www.sofala.gov.mz/por/Ver-Meu-Distrito/Buzi/O-Distrito/CLIMA#> (accessed 29 September 2023)

years the district has been hit five times by major cyclones (2000, 2008, 2019, 2020 and 2021) that resulted in severe flooding, property damage and loss of life.

These events displaced many people from the lower areas along the Búzi river and has led to resettlement on higher ground. Though cyclones are not new to Mozambique, climate experts expect them to become more severe and more frequent.

Historically, the wettest period is from November to January. However, heavy rains and cyclones have been recurrent between January and February and extending into March in recent years. According to the prognosis for the rainy season carried out by the National Meteorological Institute, for the period January, February, and March 2022 a moderate to high risk of flooding was predicted for the Búzi and other river basins.⁵



Figure 11: Photo of an abandoned house showing marks left by flood waters

5. Project objectives and approach

In March 2019, Cyclone Idai (a category 4 cyclone with wind speeds of up to 213 km/hr⁶) clearly showed the need for proactive interventions in the land sector aimed at preparing districts and local communities to face and plan for severe climatic phenomena and their impacts.

For the LAND-at-scale project in Mozambique, climate change and its associated meteorological hazards are approached as a cross-cutting issue that is integrated into the project. Thus, tools and approaches are being developed and applied to support the resilience of rural communities to climate change and climate-induced resettlements.

The geographical coverage of the districts was partly based on the search for districts that have recently been affected by extreme weather phenomena with direct impacts on land rights, such as Cyclone Idai in Sofala province and especially in the district of Búzi. Also in this context, environmental education, and the dissemination of information on climate change are seen as practical approaches to climate adaptation and mitigation.

⁵ <https://www.sofala.gov.mz/por/Ver-Meu-Distrito/Buzi/O-Distrito/CARACTERISTICAS-DO-DISTRITO-DE-BUZI-E-DIVISAO-ADMINISTRATIVA> (accessed 10 October 2023)

⁶ <https://www.worlddata.info/africa/mozambique/cyclones.php> (accessed 29 September 2023)

The Local Adaptation Plan (LAP) is an instrument created by the district, that needs to be revised and approved. Also, the District Land Use Plan (DLUP) needs to be revised and approved; the latter being more pertinent as the district is undergoing several transformations in terms of land use as populations are being forced to leave low-lying high-risk lands for higher and safer locations, at least in terms of flooding.

In this context, the project aim is to support the design of a district land use plan with a view to involving the district's government officials to take ownership of the plan and make better use of it during its 10-year lifespan. Ideally, the DLUP should be also conceived as an instrument that is aligned with the LAP. Mainstreaming risk reduction in land use planning is considered an important way to achieve more resilient communities (Wamsler, 2014).

6. Land governance (LG) and climate resilience (CR) relations

That there is a relationship between land governance (LG) and climate change (CC) is inevitable. However, it requires a considerable effort to figure out the specific relationships for a specific context.

On the one hand, in Mozambique, there is a body of law that regulates land, starting with the Constitution of the Republic of Mozambique, article 109 which states that land is state property and cannot be sold, alienated in any way, mortgaged, or pledged. Therefore, all other legal provisions that regulate land do not contradict this constitutional guideline; here we are referring to the National Land Policy (recently revised and approved after more than 20 years of its application), the Land Law (currently under revision, also more than 20 years after its entry into force), and other legal provisions such as the Regulations of the Land Law, and the Regulation of Urban Land. *"...the current context and challenges of economic and social growth and development in the country brings us to the need to launch an assessment of land governance in the country, and to look at the small course adjustments that should be designed to improve the use and exploitation of land."* This statement is part of the speech given by the President of the Republic of Mozambique, Jacinto Filipe Nyusi at the IX Session of the Land Consultation Forum in November 2018.

On the other hand, the government recognizes that climate change is a phenomenon that affects the lives of Mozambicans. Article 9 (1)(a) and (b) of Law 10/2020 of August 24 states that the government is responsible for approving policies, strategies and plans for managing and reducing disaster risk, building resilience, and adapting to climate change, as well as strengthening climate resilience programs. Moreover, Article 18(2)(f) of this law states that resettlement alternatives must be selected in good time, considering the needs and socio-cultural aspects of the population. Therefore, considering the above, it is evident that climate related legislation already mentions the need for state spaces or reserves to relocate populations in the event of disasters, including climate related disasters.

However, after cyclone Idai, Búzi District had to relocate more than half of its population to resettlement areas, far from the risk zones. Nevertheless, several people chose to remain in high-risk areas since, from a legal point of view, there is no specific legislation governing resettlements resulting from disasters, unlike for resettlements resulting from economic investments.

Regarding the process of identifying resettlement zones, it should be noted that according to information obtained on the ground, they were identified because they were places that had proved to be safe during all the natural disasters and because there was plenty of space that could accommodate more people to live in those areas, it was decided that they could be resettlement zones.

Once the safe areas had been identified as potential resettlement areas, the people living there, and the local leadership were contacted to find out if they could receive the people who were being evacuated from the high-risk areas. The host communities did not object, as they were aware of the benefits of receiving the flood victims.

On the other hand, the resettled communities did not have the opportunity to participate in the process of identifying the resettlement zones due to their situation. The resettlement areas were identified during the emergency period, when the resettled people were in organized emergency shelters and then moved to safe areas once the conditions had been created.

The resettled people already have automatic tenure of the land in the resettlement areas and are in the process of obtaining titles for the right to use and enjoy the land. As far as tenure of the land where they once lived is concerned, they retain possession, but they can only farm in those areas, as they cannot live there.

In community workshops held in two resettlements zones in Bandua and Guara-guara from 16-18 August 2023 (Figure 12), we were able to ascertain that there has been no conflict over land between the local people and the resettled people, i.e., there has been peaceful coexistence.



Figure 12: Scene from a workshop in the resettlement area of Guara-guara (Búzi)

One of the measures adopted by the district government to encourage people to leave the district headquarters' village, which is in a high-risk zone, is the non-allocation of building permits for the headquarters village and the cessation of issuing land use rights for this village. It is true that this is a local measure and does not contradict the legal framework for land, but it has no legal basis other than a justifiable fear that the holders of these rights will have to be resettled soon.

Therefore, we believe there is an informal relationship between land governance and climate change. We say informal because, on the one hand, the legal framework for land, although it mentions climate change, does not determine how land should be managed according to the

needs arising from climate change. On the other hand, the legislation that regulates calamities and disasters provides for resettlement as a mitigation measure and gives room for the constitution of land use rights, which is a matter of land governance.

The Búzi CLD that was prepared after an online discussion with project team members attempts to visualise some of the key relations between land governance and environmental variables (fig 4.8). A large number of positive and fewer negative relations are shown. The complexity of the case is evident from the CLD. There is considerable potential for multiple feedback loops and, for example, multiple drivers of poverty, that make it difficult to judge exactly what effect a given land governance action may have on climate resilience and vice versa how climate adaptation actions may result in maladaptive outcomes from land governance or poverty perspectives. Though the project team reports that there are currently good relations between host communities and resettled populations, the diagram illustrates that there is potential for land resource related conflicts to emerge. The creation of a District Land Use Plan is also seen to be beneficial for reducing deforestation and reducing host-migrant conflicts, though it is a theoretical view that should be confirmed through empirical investigation of plan implementation and enforcement processes.

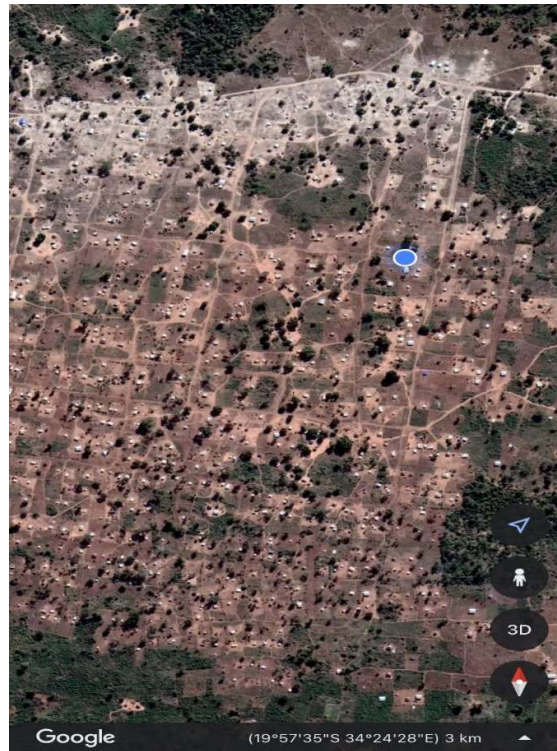


Figure 13: Aerial view of one of the resettlement areas

The relationships between climate change and land governance in the context of the Búzi district have been discussed during a workshop between academic knowledge management team (Richard Sliuzas and Wytse Chamberlain – van der Werf) and the project partners in Mozambique. They are visualised in a causal loop diagram depicted in Figure 14.

- Despite recent experiences with severe cyclones, awareness-raising has been ineffective in mobilizing all people from high-risk locations. More work is needed to identify and understand the underlying barriers and resistance to resettlement.
- It is very important to know the characteristics of the people to be resettled to ensure that the resettlement zones accommodate the main needs of the resettled. Both those to be resettled and the host communities must be involved in the planning and implementation processes for successful resettlement.

8. Conclusions

This case study shows that it is important to recognise and act on the assumption that there is a relationship between land governance and climate resilience. Also, it is important to study how this relationship is triggered and based on the analysis, to influence it so that it becomes a formal relationship that can be shared and widely disseminated. Finally, it is necessary for land governance interventions to anticipate climate change and to design, build and implement land governance mechanisms that will also aid in increasing the climate resilience of citizens, communities, and society in general. Whereas there is a recognition of the importance of land governance to increase climate resilience, in practice, this is difficult to implement as the Mozambique case illustrates.

9. Case study references

Constitution of the Republic of Mozambique

Law 10/2020 of August 24 approving the Disaster Risk Reduction and Management Act

Wamsler, C. (2014). Cities, disaster risk and adaptation. Routledge.

Case 2: Community-Based Approach on Wetland Management Planning in Butaleja District Uganda

Authors: Simon-Peter Mwesigye, Teddy Kiseembo, Jordana Wamboga and Evelyne Ajambo

This case study highlights experiences from the community-based wetland management planning approach in Butaleja, Uganda, under the LAND-at-scale Uganda project, focusing on how the approach is addressing land governance issues and contributing to community climate resilience.

1. Overview of the LAND-at-scale Uganda

The project *"Scaling up community-based land registration and land use planning on customary land in Uganda"* aims to contribute to the development of a structured and scalable approach towards improved tenure security and sustainable land use for men, women, and youth on customary land, which is obtained using fit-for-purpose and participatory tools and approaches. With three specific objectives:

1. Improved tenure security for men, women, and youth
2. Inclusive, climate-smart and sustainable land use planning
3. Improved capacities and awareness of key land stakeholders on customary land registration and land use planning

The project targets to improve land tenure security and land use of at least 30,000 smallholder farmers in customary lands, in four regions namely: Southwestern Uganda (Zone 1), the Kyoga Plains (Zone 2), Mt. Elgon Region (Zone 3) and West Nile Region (Zone 4) (Figure 15).

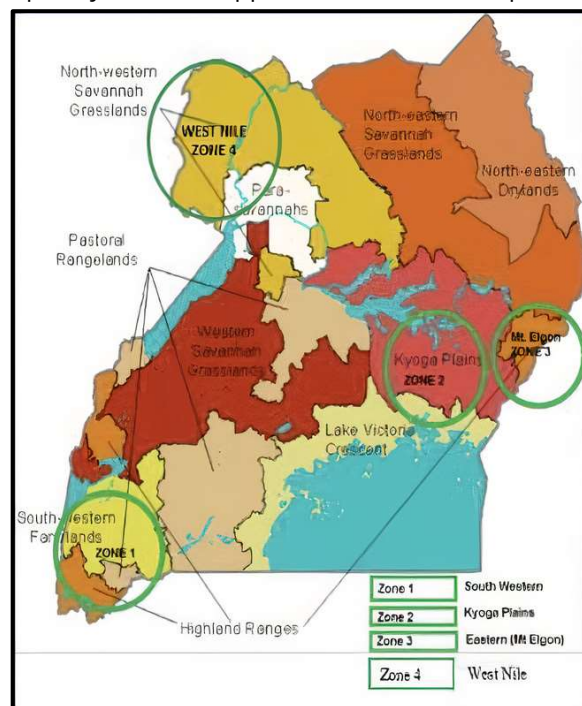


Figure 15: Map of Uganda project sites

2. Location

In Butaleja District, located in the Kyoga plains, one of the project objectives is to promote sustainable climate-smart inclusive use of wetland resources, through community-led approaches using the Social Tenure Domain Model (STDM) and apply Alternative Dispute Resolution (ADR) tools to address land conflicts in the district.

The Lake Kyoga basin is in the eastern and north-eastern lowlands of Uganda (see Figure 16). It is the second largest drainage basin and covers an area of 57,233 km², of which 3,152 km² is open water and 2,356 km² is wetland (Government of Uganda, 2016). The entire basin covers 41 districts,

including Butaleja. The main human activities in the Lake Kyoga basin are fishing, cultivation and livestock keeping.

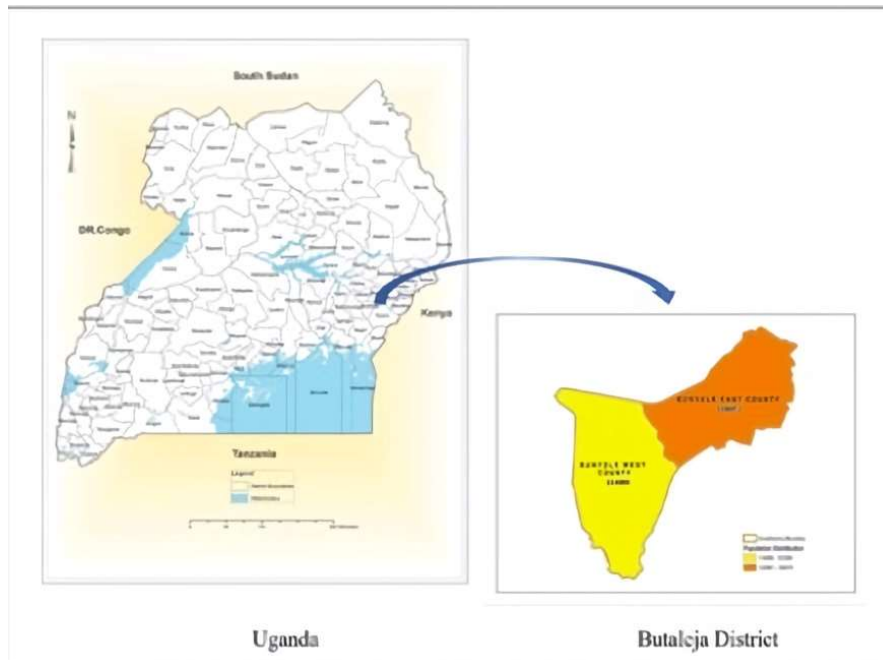


Figure 16: Butaleja District location map
(by Yahaya Gavamukulya)

Butaleja District is situated in the Eastern Region of Uganda, and neighbours the districts Budaka, Mbale, Tororo, Bugiri, and Namutumba. Butaleja District is generally low-lying, with 40% of its total area covered by wetlands (UBOS, 2017). These wetlands have traditionally been used for agriculture; about 73.9% of Butaleja's farmers rely on them for irrigation and fertile soil (Ministry of Water and Environment, 2011). However, with an increasing population, coupled with land shortage and weather variations, wetlands in the Butaleja have been facing degradation, mainly due to their conversion for rice production, leading to long-term environmental impacts. Also, there is illegal use of wetlands as per the National Environmental Regulations, and a high level of discrimination social norms against women land rights (GLTN & UCOBAC, 2019).

The interaction between the community and the wetlands raises challenges such as conflicts over wetland use, giving rise to social unrest among the wetland users from different locations.



Figure 17: Rice farmers in the wetlands

3. Current climate related hazards and prospects in Butaleja District

Butaleja District experiences a tropical climate with two main rainy and dry seasons. The wet seasons usually occur from March to May and August to November, while the dry seasons occur from December to February and June to July (Oonyu, 2011).

Three main climate-related challenges and risks are observed:

- **Flooding:** Heavy rainfall during the wet seasons often leads to flooding, especially in low-lying wetland areas, causing erosion, damage to vegetation, and alteration of wetland ecosystems. The floods in wetland communities also disrupt agriculture, damage infrastructure, displace people and cause the loss of lives.
- **Drought:** Prolonged dry seasons result in drought conditions that reduce wetland water levels, affecting aquatic life, vegetation, and overall wetland health, which in turn impacts agriculture and water supply.
- **Wetland Degradation and Encroachment:** human activities, particularly rice farming practices in and around wetlands, lead to loss of biodiversity, and permanent alteration of wetland ecosystems. Degrading wetlands, in turn, undermines their ability to support livelihoods and act as natural buffers against floods and droughts.

There are therefore many interrelated issues and positive and negative feedbacks within the wetland communities that form a complex socio-ecological system, in which land governance is connected to environmental issues, including climate-related issues, in myriad ways. The main relations between key variables are shown in Figure 18. Similar to the Mozambique case study, the CLD shows the situation to be complex, with multiple positive and negative relations and potential feedbacks that make it difficult to determine if and how a land governance intervention is affecting climate resilience and vice versa.

4. Scope of the work

The project sites included Naweyo and Kachonga sub-counties with wetlands that are served by Doho-Namatala and Mpologoma water catchment systems. The project's activities include:

- Reconnaissance to gather crucial information about the wetland, the community, and the environment in general.
- Community sensitization and awareness about general information on environmental land use and policy and legal frameworks (Figure 19).
- Constitution of a Wetland Planning Committee to undertake a stakeholder analysis and establish a Wetland Management Committee to promote effective wetland governance.
- Conducting a Wetland Resource Analysis, which involves a detailed study of the wetland area to assess its condition, extent, function and values and ensures that possible environmental and societal benefits are considered during wetland management planning.
- Undertaking visioning and goal-setting processes where participants project and envision the future state of the wetlands after a specified period (Figure 19).
- Conduct transect walks where wetland resource users move in the wetland to observe land usage, identify challenges and threats, and propose solutions such as conservation zones. During this process community members identify common use areas and conservation sites which form exclusionary zones during mapping of wetland use rights. Conflict/ dispute resolution and participation in a learning exchange were also integral parts of this process.



Figure 19: Project activities: Community sensitisation meeting (l) and output from wetland users visioning (r)

5. Land governance (LG) and climate resilience (CR) relations

This section will showcase community-based strategies that build climate resilience through promoting sustainable, climate-smart, and inclusive wetland management practices. It focuses on participatory, pro-poor and gender-responsive approaches to promote the wise use of wetlands by developing community wetland management plans through the integration of fit-for-purpose land innovations and climate-smart practices. An important aspect is the collaboration with local communities and key stakeholders to ensure inclusiveness, and ensure that community needs and concerns and knowledge are integrated into the wetland management planning process.

The project interventions focus on community-based wetland management, which acknowledges and addresses the interplay between climate change and land governance as they affect hazards, vulnerability, and exposure, and thereby climate-related risk. Empowering communities and ensuring sustainable wetland use and management are vital in building resilience against challenges posed by climate change in Butaleja.

Multiple land governance interventions are employed, such as: mapping wetland users' rights and zoning of the wetlands, conflict resolution, formation of wetland associations and wetland management committees, and wetland management plans and obtaining wetland use permits that provide frameworks for the sustainable management of the wetlands. Together these interventions help mitigate climate-related hazards by regulating wetland use, protecting wetlands, and promoting more sustainable (wet)land use practices.

The experience of the project teams shows that undertaking mapping, inventory and enumeration of wetland user rights using the Social Tenure Domain Model (STDM) ensures that the wetland users have the resources and autonomy to adapt to changing conditions. For example, Environmental Wetland Zoning demarcates which wetland areas are for sustainable use (e.g. rice farming) and which should be protected from human activity (Figure 20). This separation, by demarcating areas for conservation and other areas for economic activity, helps avoid land-related conflicts through improved land governance.



Figure 20: Wetland management maps by communities using leaves and other materials (l) and paper (r)

Community involvement in wetland management planning processes leads to better decisions for the sustainable use of wetlands. It ensures the implementation of proper wetland management plans, for example maintaining the buffer zones to reduce exposure to potential hazards, like floods. The project also encourages knowledge sharing through exchange visits to model wetland demonstration sites to benchmark on best practices for coping with climatic changes.

From the work in Butaleja several important interrelations between Land Governance and Climate Resilience are seen:

- Recognising wetland user rights through mapping is key to successful community-based wetland management. If communities and community members have clear user rights;

they are more inclined to ensure the sustainable use and protection of their resources. (Wet)land user rights instils a sense of responsibility and accountability, which increases climate resilience.

- The participation of wetland users in the wetland management planning processes ensures that the people directly impacted by the wetland changes have a say in how they are managed; decisions are more relevant, accepted, and implemented, thus improving resilience against climate impacts.
- Wetland governance structures, like the Wetland Management Committees, facilitate knowledge dissemination about sustainable wetland management and climate resilience. Training local communities on the importance of wetlands, the risks of unsustainable practices, and the potential impacts of climate change empowers them to make more informed decisions. The committees are also crucial in ensuring that wetland users adhere to rules and procedures guiding the daily affairs of the wetland. Ultimately, enforcement is the Achilles heel of many policies or plans. Establishing a governance structure with clear lines of authority and accountability fosters a greater sense of responsibility among committee members and across the entire community.
- The project's land governance interventions (mapping wetland user rights, Alternative Dispute Resolution, and wetland management) ensure that wetlands are used sustainably, contributing to long-term climate resilience.

6. Main lessons from the Buteleja case

- The establishment of Community Wetland Planning Committees and Management Committees plays an important role during community-led approaches.
- The participation of women and the incorporation of gender-responsive approaches in wetland management planning is essential for sustainable wetland management by ensuring that women's and men's interests, rights, needs, and concerns are considered. This leads to more equitable access to and control over wetland resources.
- Engaging a wide range of stakeholders, from local leaders to wetland users and youth groups, ensures that diverse perspectives are considered in the management planning, broadens the scope of solutions and increases community buy-in.
- Training and empowering community members to monitor, report, and manage wetland resources helps ensure the sustainability of conservation efforts.
- Aligning wetland management plans with economic benefits for the community is a powerful motivator through promoting sustainable agriculture or other income-generating activities that are compatible with wetland conservation.
- Continuous efforts are required to educate and train community members and wetland users about the importance of wetlands, their role in climate resilience, and the benefits of sustainable management. This capacity building can change behaviours and create community ambassadors for the wise use of wetlands.

7. Conclusions from the Butaleja case

The Butaleja case involves the local community in planning, managing, and conserving wetlands. The primary goal is to ensure that the wetland resources are managed sustainably, i.e., balancing economic development, social equity, and environmental protection.

Collaborative transdisciplinary approaches that involve local communities, government agencies, NGOs, and other stakeholders are required for sustainable wetland management. The community-based approach recognizes wetlands' vital role in supporting livelihoods and building climate resilience in Butaleja, where most people are highly dependent on wetlands for agriculture.

The Butaleja experiences demonstrate that adopting innovative, pro-poor, gender-sensitive, and scalable land tools and approaches promotes land and natural resource management systems that prioritize the needs of the people and their relationships to land.

8. Case study references

GLTN, & UCOBAC. (2019). *Securing land tenure for improved food security in select areas in Uganda* (Issue August 2018).

Government of Uganda. (2016). Wetlands atlas. In *Wetlands Atlas: Vol. ONE*.

Ministry of Water and Environment. (2011). Doho Irrigation Scheme turns Butaleja into food basket. In *Ministry of Water and Environment* (Vol. 49). [MoWE-2011](#)

Oonyu, J. (2011). Upland rice growing: A potential solution to declining crop yields and the degradation of the Doho wetlands, Butaleja District - Uganda. *African Journal of Agricultural Research*, 6(12), 2774–2783. <https://doi.org/10.5897/AJAR10.806>

UBOS. (2017). Area Specific Profiles Butaleja District. In *Report on National Population and Housing Census 2014 Area Specific Profiles* (Issue April).

Case 3: Climate Change and Land Governance in the Case of the Indigenous Reserve Teofina La Arenosa, in Solano, Caquetá, Colombia

Authors: Maria Clara van der Hammen and Carlos Roderiguez (Tropenbos Colombia)

1. Context

Solano is a municipality located in the department of Caquetá within the deforestation arc of the Colombian Amazon. In terms of its area, it is the second largest municipality in Colombia. Solano can usually only be reached by river, although there are already several trails that allow access to the municipal's capital by car, at certain times of the year. Solano has an area of 4.2 million hectares, of which about 2 million hectares belong to the Chiribiquete Park; 700,000 hectares are indigenous reserve lands; 200,000 hectares are protected areas by environmental determinants such as wetlands, water reserves, which are untouchable according to new regulations; 1.3 million hectares is a forest reserve area that is not subject to titling to private individuals; and only 3% of the area is excluded from the forest reserve (all figures are approximate). This means that about 3% of Solano territory, that is the area excluded from the forest reserve, is subject to titling for private ownership; of this area only 2% has title deeds. The indigenous reserve lands (resguardo), are protected by a collective form of property which provides great security as it is inalienable, unseizable and imprescriptible. This situation is a great advantage to indigenous peoples over peasants, especially in this context where most of the land cannot be awarded to private individuals. Most deforestation is occurring in the Chiribiquete Park and forest reserve areas (see Figure 21). Indigenous reserves are far better conserved than areas occupied by peasants.

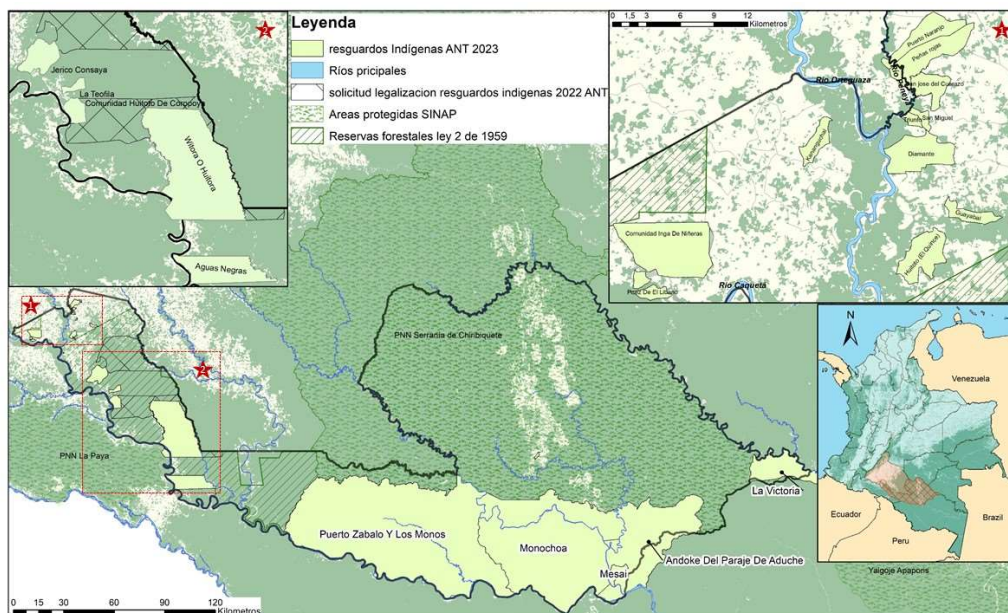


Figure 21: Map of Solano municipality and LAS project area

Solano has been rapidly transforming from a purely indigenous territory to one that today can be considered intercultural. Today, not only the Koreguaje, Makaguaje, Murui, Inga and Nasa indigenous people are present in the territory. With different economic booms, a non-indigenous

population arrived in this territory. First came the exploitation of quinine wood and fine furs, then rubber, followed by the boom in illicit crops, and now cattle farming and land grabbing are the engines of transformation in the region. This area has also experienced the presence of illegal armed groups. At present, the deforested areas are mainly used for cattle grazing and, to a lesser extent, for the cultivation of illicit crops. Indigenous communities try to maintain a traditional livelihood that combines slash and burn agriculture, fishing, hunting and gathering of forest products. Some of them also have some cattle.

Deforestation has broad impacts on the Amazon climate, with variations in temperature and hydrometeorology, impacts on ecosystems with loss of biodiversity, changes in precipitation, occurrence of extreme events, extension of dry periods, changes in aquatic ecosystems with alterations in fish populations and, most significantly, the possible occurrence of the tipping point that would turn the Amazon rainforest into savannah. The occurrence of these processes has been pointed out by several authors and summarized by the scientific panel for the Amazon SPA in its publication Amazon assessment report 2021.⁷

2. Land at scale project intervention

In this context, the LAND-at-scale project in Colombia is being developed, with the objective of contributing to security of tenure and sustainable economic development. In Solano, work is being carried out by Kadaster International, Tropenbos and ICCO Conexión together with the Teofila La Arenosa Resguardo, where the Koreguaje and Makaguaje indigenous peoples live. The goal of the collaboration is two-fold: first, to rectify the resguardo's boundaries within the context of the request for an extension and for a new resguardo in the framework of land restitution due to the armed conflict (Figure



Figure 22: Mapping activities with community members in La Teofila la Arenosa

22). Currently, the resguardo is registered with the wrong coordinates in the official data of the Colombian national authorities. Second, to strengthen the extraction and commercialisation of oil from the milpeso palm (*Oenocarpus bataua*) by developing a management plan for this extraction and the restoration of some degraded areas. It is important to establish the correct boundaries so that the management plan does not create conflicts with the neighbouring peasants. The collaboration has also facilitated the participation of representatives of this resguardo to participate in municipal spaces for the formulation of a plan to stop deforestation and the

⁷ <https://www.theamazonwewant.org/amazon-assessment-report-2021/> Chapter 22: Long-term variability, extremes, and changes in temperature and hydro meteorology. Chapter 23: Impacts of deforestation and climate change on biodiversity, ecological processes, and environmental adaptation- Chapter 24: Resilience of the Amazon forest to global changes: Assessing the risk of tipping points

updating of the land-use planning scheme.⁸ According to the logic of the project, it is expected that increasing formality in tenure, with economic empowerment and good environmental management, will contribute to the stability of the area and stop deforestation.

3. The local vision on climate change

In 2020 as part of another project⁹ Tropenbos Colombia proposed a methodology to identify the effects of climate change in different communities of Solano and possible actions to address them. This methodology involved the participation of young people and women from the communities of the Peneya Region and Laguna de Potrereros through research grants that allowed persons from each community to collect information through interviews. The topics addressed were the effects on agricultural and livestock systems caused by climate change, the contribution of productive systems to the increase in temperature, changes in water cycles and gas emissions, effects on health, food security and the well-being of the communities, as well as adaptation and mitigation measures that could be implemented. This process was accompanied by governance workshops where the other members of the communities learned about the information gathered by the fellows and built proposals that included climate change, food security and restoration as axes of forest governance.



Figure 23: Community sign La Teofila

(Source:<https://storymaps.arcgis.com/stories/91d021e4f5354bdb896cdec1f2f8b839>)

Most of the changes occurring in the territory related to climate change are imperceptible to external observers. In fact, many of these effects are still not sufficiently clear to those who study climate change, since it is only possible to identify them when they affect the daily life of the communities. For the local inhabitants, for example, the reduction of forest resources, the misalignment of the months in which winter should arrive or summer end, the appearance of new diseases or the difficulty for crops to survive, are frequent situations that can be observed and analysed in their daily lives. In addition, the local people's knowledge about the management of the territory and its resources allows for an intricate understanding of the relationship between human actions, climate variations and environmental deterioration. The difficulty in predicting climate imbalances and the effects they produce in the territory requires permanent attention to the cycles of nature and the variations in the environment that indigenous people and peasants experience daily. For this reason, local people are a fundamental ally in monitoring changes and are essential for understanding these changes and for developing proposals for action to mitigate the effects of climate change and adapting the territory to them.

⁸ Both documents are a legal requirement that the municipality must comply with, but for which it had no participatory schemes. In an alliance with several NGOs, this participation of peasants and indigenous people was promoted.

⁹ Project Working Landscapes supported by Tropenbos International and Dutch Ministry of Cooperation <http://tropenboscol.org/proyectos/working-landscapes>

People report disturbances at the two main times of the year: summer and winter. The rainy and dry seasons that previously occurred in certain months have become more variable; they now last longer than expected or disappear earlier than the expected time. For this reason, it is common to hear that it is no longer known when it is summer or winter, a situation that affects planting practices, harvesting, fruit and seed gathering, hunting and fishing, since the seasons in which each of them the seasons in which each of these activities are carried out is altered. The transformation of the climatic calendar has been accompanied by an increase in the intensity of rainfall.

Changes are also observed in the health of people, animals and the forest. Diseases related to excess rainfall or increased temperatures regularly affect communities and communities and livestock. The change in the ecological cycles of bush animals and fish has made their altered their availability, affecting food security and the economy of families. The changes in the climate have led to a deterioration of forest resources and reduced the capacity of soils and water sources to regenerate.

In summer it is much hotter than before, water is scarce, and some water sources dry up. The water scarcity changes the rhythms of the streams and creeks, the fish that need water to circulate die in the stagnant waters or must migrate due to the drought. High temperatures and prolonged droughts cause crops not to grow normally. The quality and size of the food grown is lower, affecting the food security of families.

In the rainy season, excess rainfall deteriorates soils, increasing erosion of arable areas increasing erosion of arable areas. The excess water that accumulates in the soil causes the soil to soften and the trees to fall, affecting the circulation of roads and waterways. Extreme rainfall increases the likelihood of diseases in livestock and crops. Crop fruiting times are altered, causing the fruit to take longer to ripen or, at times, prevent the plants from bearing fruit. The effects of climate change on nature are reflected in the disruption of a territory's ecological cycles.

Local people attribute the change in climate to deforestation, cattle ranching, mining, and the use of agrochemicals and propose a set of actions to adapt and mitigate locally the effects of climate change.

4. Land governance and climate resilience

The indigenous reserves have a governance process based on political and administrative autonomy recognized by law and the state. In Solano, these resguardos have their territorial management plans and livelihood plans that are their roadmaps in which they have proposed zoning of their territories to maintain and restore forest cover and biodiversity.

By contrast, the peasant communities do not have the same recognition from the state, nor even formal access to land titles and weaker mechanisms of political representation, which is reflected in their lack of participation in decision making. Moreover, their lack a broad territorial vision has led to actions that increase their vulnerability to climate change; for example, by deforesting large areas for extensive cattle ranching, which exacerbates the effects of climate change locally.

The perceptions of local people, mentioned above, have been formulated into a citizens' agenda for adaptation to climate change, which also include a set of actions to be implemented at the local level.¹⁰ This agenda includes the following actions, among others: restoration of degraded areas, care and restoration of water sources, cultural and spiritual strengthening for the good management of the territory, strengthening of traditional crops for food security, environmental education and climate monitoring. It also proposes a broad citizen participation in decision making about the territory, to the point of recognizing the communities as environmental authorities. This agenda has been discussed and presented in scenarios with the local government, that is the municipality of Solano in the context of the formulation of a plan to stop deforestation and the updating of the land-use planning scheme. It is interesting that the representatives of La Teofila Arenosa and other local leaders proposed to include in these plans their efforts to restore degraded areas and to recognize the territorial plans of the indigenous communities in which they propose their own environmental zoning to conserve forest cover, which is a basic element for climate resilience.

A causal loop diagram was developed to capture the main concepts and the relations between them for the Solanos case (Figure 24). Like other cases, the CLD shows a high degree of complexity with multiple feedback loops, presenting many opportunities for unexpected outcomes from land governance or climate adaptation to occur.

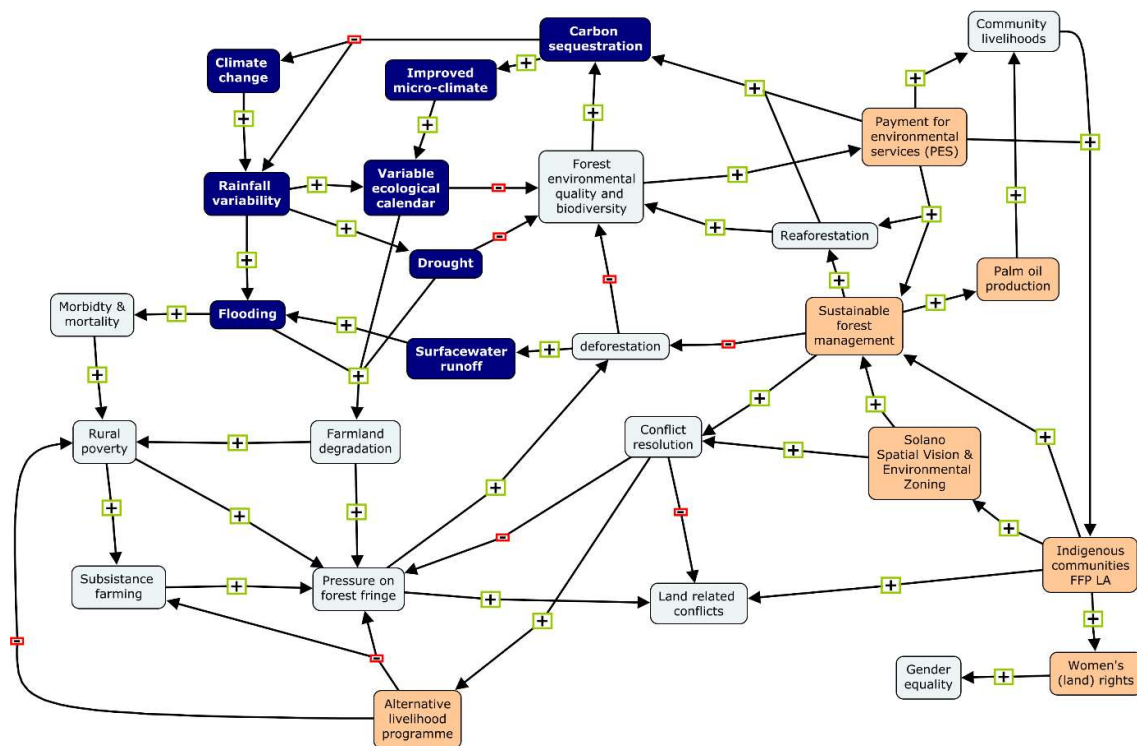


Figure 24: CLD showing relations between land governance and environmental variables in Solanos, Colombia (prepared by R. Sliuzas based on an online workshop)

¹⁰ See this agenda in <http://tropenboscol.org/recursos/publicaciones/local+climate+change+agenda>

5. Implications for the land at scale intervention.

Activities related to environmental management with the Teofila La Arenosa Reserve built upon the conclusions and proposals of the citizen's agenda, which was discussed with these communities and inspired the restoration of certain areas and the creation of tree nurseries for their own use but also to sell to neighbour peasant communities. The purpose to include in their territorial management plan specific zoning and rules for the exploitation of milpeso palm oil and commercialization of products from their agriculture plots, are ways to promote good productive practices and forest management.

6. Lessons and conclusions

Participatory diagnoses of the impact of climate change at the local level allows people to formulate alternatives for adaptation (resilience) based on the implementation of good productive practices and forest management. These alternatives must be assumed at different levels (the community level but also at the municipal level) and need to be considered in forest and land governance.

The situation of Solano shows the importance of secure land tenure to improve land governance and climate resilience practices like participatory productive restoration, which can become an alternative for land tenure and long-term governance.

Case 4: Sustainable Solutions for Rural-Urban Migrants in Baidoa, Somalia

Authors: Karel Boers, Federica Acquaviva and Marta Cavallaro (IOM)

1. Introduction on the nexus and the case

Climate change is increasingly recognized as a multiplier of insecurity and fragility in Somalia. By exacerbating the pre-existing drivers of mobility, climate-related sudden and slow-onset disasters are driving people to leave their land and migrate. Migration is often conceptualized as a coping and adaptation strategy to climate change. While migrating allows people to find alternative livelihoods and enhance their climate resilience, it can also be associated with instances of maladaptation to climate change.

This case focuses on climate-driven displacement in Somalia. Lessons on how mobility can both offer an opportunity to adapt to climate change and a risk in terms of climate maladaptation can be drawn from the Somali context. The focus is on the activities of the UN-led Saameynta Joint Programme, whose aim is to achieve sustainable durable solutions to internal displacement in Somalia. To do so, Saameynta embraces an innovative approach that combines land governance activities, sustainable urban planning, and interventions to enhance access to services and livelihood opportunities. Therefore, Saameynta offers insightful examples of how to foster sustainable durable solutions for displacement affected communities (DACs), while incorporating climate resilience considerations.

2. Context of Somalia

Climate projections for Somalia indicate a shift towards drier, warmer, and more erratic conditions, posing a threat to livelihoods dependent on agriculture, livestock, fisheries, and forestry. This shift has serious implications for food security, given that a large portion of the population relies directly on these sectors. The impacts extend to grazing lands and water availability, greatly affecting herding and livelihoods. Also, rising sea temperatures and acidification are anticipated to disrupt fish stocks and their distribution. In the face of gradual environmental changes, households and communities might have no alternative but to leave their places of origin in search of more habitable regions. Somalia is already experiencing a significant scale of climate-related population displacement.

Presently, over 3.8 million individuals, comprising approximately 30% of the total population of around 13 million, are displaced. The majority of displacement, around 75%, is attributed to climate-related events like droughts and floods. The remaining 25% can be mainly attributed to conflicts, wherein approximately 80% of the conflicts recorded were centred on the control and utilization of natural resources such as land, water, and pasture. Despite contributing less than 0.03% of global greenhouse gas emissions,¹¹ Somalia finds itself at the forefront of climate change effects and its associated adversities. Consequently, traditional mitigation measures are not applicable to Somali cities due to their negligible contribution to emissions, while climate change

¹¹ Somalia's updated nationally determined contribution (2021), available [here](#) (last access: 14 August 2023)

impacts are already profoundly affecting these regions. Additionally, due to irreversible land degradation in their areas of origin, displacement becomes a permanent condition.

When internally displaced persons (IDPs) move to urban areas lacking proper planning, their coping strategies can often lead to maladaptive practices that can exacerbate existing stresses on destinations, like soil erosion due to logging, reduced crop diversity, and inadequate waste management resulting in health hazards.

Rural communities and nomadic pastoralists traditionally depend on predictable rainfall for their livelihood practices, particularly crop cultivation and livestock herding. However, increasing climate challenges make displacement seem like the only viable option. As coping mechanisms are exhausted, people migrate from rural to urban centres, causing rapid and unplanned urbanization. This process, in turn, intensifies social disparities, unemployment, poverty, and gender inequalities. Without effective urban management, these maladaptive short-term strategies increase vulnerability to future climate impacts. Therefore, climate change triggers both gradual environmental degradation and unplanned urbanization, both of which compound the vulnerability of displaced and host communities.

As a result of poor land use and lack of up-to-date regulatory frameworks to guide urban growth, several urban settlements in Somalia have informally encroached on public lands, peri-urban agricultural areas, forests, and wooded lands, as well as on low-lying areas and other meteorologically hazardous areas ill-suited for human settlement. In many cities, vulnerable groups, including refugees and poor rural migrants, live in areas prone to flooding risks. This unchecked urbanization via displacement settlements not only poses environmental risks in urban and peri-urban areas, but also intensifies pressure on already scarce resources like water, food, and energy. As the prospect of returning becomes unfeasible for many IDPs, adaptation measures that ensure the sustainability of rapid urbanization are fundamental.

The vulnerable situation of IDPs is further worsened by factors such as a lack of clear tenure security arrangements and competition with host communities for limited natural resources in cities. The current urbanization, driven by drought, insecurity, and displacement due to poverty, has led to an unprecedented demand for land in urban and peri-urban areas. However, much of the desired land is still owned by absentee landlords, lying unused and artificially exacerbating land scarcity. The lack of a comprehensive and reliable land inventory has triggered a surge in conflicting claims and fraudulent land titles, escalating the frequency and seriousness of land disputes. These factors, combined with widespread land speculation, have driven land prices beyond the reach of the majority, making land ownership an unattainable goal for most people, in particular for IDPs.

Urban and peri-urban regions, are characterized by ongoing land disputes that hold significant economic and political implications. These disputes provide insights into historical interactions among clans, sub-clans, pastoralists, and settled communities, as well as the complex dynamics involving IDPs, returnees, and local residents. In Somali cities, unclear land ownership and the lack of official title deeds reflect a history marked by conflict, tension between traditional and city rules,

and the intricate web of inter-ethnic and clan relationships. In this setting, IDPs are consistently at risk of being removed from their homes, unable to improve their living conditions or foster hope for the future. This exposure often leads to secondary displacement, further heightening vulnerabilities. Alongside the challenges posed by their settlements, this situation hinders IDPs' abilities to adapt to climate-related hazards.

Forced evictions mirror the upheaval caused by "conventional" crises such as droughts, floods, conflicts, and political instability, resulting in a similar type of forced displacement. The deep and enduring connection between the Somali people and their land, which has sustained their lives and livelihoods for generations, contrasts sharply with the nation's insufficient legal and policy frameworks concerning Housing, Land, and Property Rights (HLP), as well as its ineffective land management systems.

3. Baidoa

In Somalia, one city stands out: Baidoa, located in the central region of Southwest State (SWS). Initially designed for a population of around 70,000, it now houses over 700,000 due to displacements. In 2035, it could reach and surpass 1 million inhabitants.¹²

Baidoa is surrounded by expansive arid lands, currently repurposed for housing and sustainable solutions for IDPs. The area experiences strong winds and occasional floods in relatively flat low-lying zones. Drought is a persistent problem and the deforestation-triggered exposure of loose soils has led to local landslide and erosion problems (UN-Habitat, 2020). Alongside these natural hazards, human-related risks include insecurity, fire hazards, and pervasive poverty, as identified by the community.

The population growth brought by displacement trends has brought challenges, including a rapid rise in informal settlements and their negative effects on the environment: urban fragmentation, unlawful occupation, land disputes, and inadequate basic services and infrastructure. Many vulnerable households settle on land prone to flooding and landslides: a number of households are located in a flood plain that runs through the city, while others are located along the riverbanks, exposed to flooding in the event of heavy rains. Urban encroachment on the seasonal waterbeds crossing the city, and the agricultural areas to the west, are already contributing to flash floods and other disasters.¹³ This is exacerbated by deforestation, driven by charcoal burning, fencing, and vegetation clearance from overgrazing. Deforestation is also leading to soil erosion and degradation, by exposing and loosening soils that are then washed downstream, creating gullies and badlands. These concerns are magnified within Baidoa, where riverside zones are progressively developed.

Water scarcity plagues Baidoa and water-stress intensifies during drought periods. The agricultural sector consumes about 48% of total freshwater resources, with approximately 10% of cultivable land under irrigation (mainly via overhead sprinklers), leaving the rest rain-fed and

¹² Baidoa City Strategy

¹³ Baidoa City Strategy

highly vulnerable to droughts. Over half of SWS's population faces water shortages due to prolonged droughts. Urgent appeals have been made for humanitarian aid and support reinforcing weak points along the Shabelle River before the seasonal *gu'* rains. Some partners are adapting their efforts for flood preparedness and rehabilitating canals and river banks in villages.

Finally, land tenure is still an obstacle in urban and peri-urban areas, resulting in a low tenure security for people and for public investment in land. Governance of land and housing, or access to public goods such as water and electricity, is not yet developed with a view to sustainable and climate-friendly solutions.

To conclude, climate change is expected to increasingly impact Baidoa, aggravating factors like water scarcity, flooding, public health risks, food insecurity, and biodiversity loss. Actions to enhance the natural environment will be necessary to mitigate climate change effects, promote sustainability, and enhance urban living conditions for the city's population.

4. Saameynta and Durable Solutions

Saameynta (“Impact” in Somali) was designed in 2021 and launched in 2022 to find durable solutions to displacement in Somalia, using land governance as a foundational component. The overarching objective of Saameynta is to support the Federal Government of Somalia in its goal to achieve durable solutions to displacement. The project embraces the IASC Framework’s definition that *“a durable solution is achieved when internally displaced people no longer have any specific assistance and protection needs that are linked to their displacement and can enjoy their human rights without discrimination on account of their displacement.”*¹⁴ Therefore, Saameynta aims to find alternative solutions to dependency and humanitarian aid through a development-driven perspective.

Durable solutions are both Government-led and informed by community-based planning processes, that allow the consultation of DACs in formulating area-based priorities and solutions. At the same time, Saameynta functions as an *“enabling project”*: by supporting the government in the design and operationalization of a legal, economic, social and policy framework conducive to enhanced integration of IDPs, it ensures that the Somali Government has leadership and ownership of the project’s activities, enhancing local capacity building to allow the government, as well as targeted DACs, to carry out Saameynta activities also after the end of the project.

Saameynta focuses on promoting the sustainable integration of IDPs in the three cities of Baidoa, Bossaso, and Beletweyne through sustainable land governance, increasing housing tenure security, improving access to basic services, providing livelihood and employment opportunities, and developing an environment conducive for social cohesion. In a context of rapid, unplanned, and unregulated urbanization, Saameynta facilitates the decongestion of IDPs from unplanned sites within cities and promotes relocation to nearby sites in peri-urban locations. It works with municipal, regional and Federal Member States government entities to enhance their capacity to better plan, manage, and adjudicate urban and peri-urban spaces.

¹⁴ See IASC Framework on Durable Solutions for Internally Displaced Persons, available [here](#) (last access: 3 August 2023).

Finally, the project relies on the concept of climate resilience and adaptation to identify climate adaptive solutions to displacement in Somalia. Saameynta recognises that, if sustainable integration that is intended to be long-lasting, this cannot be achieved without incorporating climate resilience considerations. Apart from sudden-onset disasters, usually addressed by short-term humanitarian responses to avert immediate threats, climate change triggers also slow-onset processes, such as droughts. In this regard, Saameynta's strong focus on land governance is crucial to building climate resilience to natural hazards and decreasing environmental risk in urban settings. Through improved urban planning and land governance, the project enhances Somali authorities' ability to plan urban spaces which incorporate climate resilience for the long term and contribute to reducing the risks of secondary displacement due to natural hazards. Therefore, although Saameynta is not an environmental programme per se, its long-term vision matched with the nature of its goal and a climate-smart implementation aligns it with Sustainable Development Goals 5, 11, 13 & 15. By shifting from a humanitarian towards a developmental approach, durable solutions pertain intrinsically to the field of climate resilience, recognizing that successful implementation cannot take place in detachment from environmental considerations.¹⁵

5. Land governance interventions under Saameynta

Land governance interventions are pivotal to the good management of rural-urban migration, especially in a complex context such as Somalia. Land governance in Somalia lacks a centralised policy framework, thus entailing fragmentation of decision-making among the different levels of the State and decentralisation at the FMS level, by the overlapping of different legal frameworks governing land rights and dispute resolutions, and by the prolonged absence of sound urban planning that led to unmanaged urbanisation and lack of diversity in land allocation. Legal uncertainty over land rights and lack of sound migration management schemes to cope with the high influx of IDPs led to IDPs settling on private land, or land prone to hazards: this increases their risk of forced evictions, which as explained above, act as a multiplier factor of displacement, inhibiting climate resilience and fostering environmental degradation across the IDP camps (Figure 25).

Improved land governance is expected to create greater absorption capacity in localities where people are displaced, or where they want to return and resettle, but sound land governance and administration require operational processes to implement land policies in a comprehensive, integrated and sustainable way. Learning from the former Midnimo project, both the achievement of durable solutions for IDPs in urban areas and the achievement of sustainable urban development require land reform initiatives and steps towards improved land management, inclusive governance and urban planning. Land governance interventions, bolstering a solid land governance framework through city strategies and legal norms regarding land allocation and demarcation, are the backbone of Saameynta: participatory spatial planning carried out by UN-Habitat, guides IOM in service delivery and UNDP in catalysing public investments towards areas and sectors that most need them, thus further leading to a virtuous cycle of improved public services and economic opportunities for the targeted cities at large. By supporting government

¹⁵ Saameynta SJF note

authorities in planning for migratory inflows to cities, enhancing the sustainable integration of displaced communities in urban areas, Saameynta aims at empowering the government to leverage value generated by urbanisation and urban infrastructure investments and to increase self-reliance and access to sustainable basic services for IDPs.

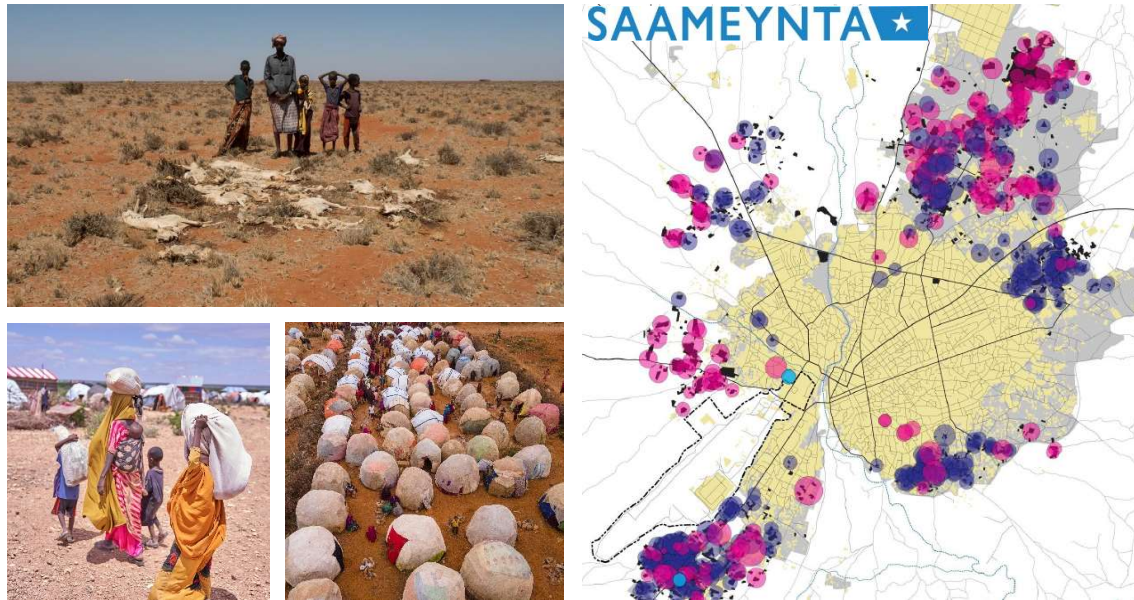


Figure 25: Images of a drought affected household, internally displaced people and a map showing locations of IDP camps in Baidoa

To tackle the barriers to land governance in Somalia, Saameynta supports the government in the implementation of land governance interventions in view of designing and deploying a range of urban planning and legal tools that can meet both IDP needs and urban development challenges. Saameynta's land governance interventions in Baidoa focus on two main areas, namely urban planning and tenure security.

Pertaining to urban planning, the Baidoa City Strategy and Extension Plan (ratified by the SWS Land Committee chaired by the State MOPWRH and endorsed by the Mayor of Baidoa in March 2023) defines a set of strategic priorities and actionable policy proposals aimed at addressing issues surrounding inclusive urban growth and future management of the territory. The strategy prioritises interventions in land use and promotes investments through an analysis of urban forms, natural and climate risks, urban infrastructure and provision of basic services and housing, to integrate IDP settlements in the official urban system that governs the city vis-à-vis unmanaged urbanisation. As written in the Baidoa City Strategy itself, *"The main objective of a City-Wide Strategy is to support the local governments to clearly understand the main constraints and strengths of their city's context, establishing a prioritisation of these challenges and opportunities to facilitate the decision-making process regarding potential urban development interventions and capital investments [...] in a more coordinated and complementary way."* It is based on a participatory multi-stakeholder consultation process which included actors from SWS, MOPWRH, Baidoa municipality and civil society (local and displaced communities), and it represents a plan to guide sustainable urban

growth and development in the medium and long term, adopting a holistic vision that encompasses spatial, legal, economic and demographic considerations.

The harsh climate experienced in Baidoa – a city that lacks green public spaces with few natural areas disconnected from each other and isolated from the existing water sources – makes it especially important to use environmental management tools to improve the quality of the local environment and to ensure the sustainability of the natural environment for the benefit of all residents.¹⁶ Baidoa City Strategy aims to create a liveable, green, and environmentally friendly city. The strategy envisions green planted open spaces throughout the city that need to be safeguarded from unauthorized development; the construction and/or upgrade of the city's drainage system and an increase in permeable surfaces, to allow a more effective water resource management that will mitigate the potential effects of extreme natural events, such as droughts and floodings; the formulation of a broader afforestation strategy to stabilize the topsoil, improve groundwater absorption, prevent soil erosion from flooding, provide natural flood attenuation, and encourage the return of wildlife.

For enhancing tenure security, Saameynta supported the enactment of the SWS Urban Land Management Law in 2022: to manage the urban land of the SWS to ensure equity in land allocation and use of resources, guarantee land ownership and registration, resolve land disputes, regulate the land and property market and so on. The law clarifies the mandate of public institutions responsible for elements of urban land administration by defining their role and responsibilities over managing urban land: it sets procedures for urban planning through the establishment of State Urban Planning Committees, and lays the foundation for the creation of land departments at the municipal level which can issue land title deeds, therefore enhancing tenure rights. Furthermore, the law dedicates separate chapters to urban private and public land allocation, land use permission, land registration and transfer, and land-based taxation. Article 59 establishes the protection of land rights for IDPs and the people in need, stressing the principle of equality and stating that the local government shall bear the responsibility of allocating habitable land during displacement, then setting forth some guarantees against forced evictions and dispute resolutions.

As a link between planning and tenure security, Saameynta will deploy the Social Tenure Domain Model (STDM) tool, tailored to the Somali context, to map the current status of individual rights over specific land plots, and their position within the continuum of land rights. The land departments as well as community leaders need to be engaged throughout the STDM model application for getting a clear picture of the various arrangements (including informal or oral arrangements) and the potential for application of rental tenure arrangements at scale (i.e., household level, site level and government relocation and land acquisition plans). This is particularly delicate when considering the overlapping of different legal frameworks governing land rights and land dispute resolution: formal State law, customary Xeer law and Shari'a law coexist and regulate the same matters (i.e., inheritance or property issues), creating legal uncertainty over who has the right of ownership or use of land.

¹⁶ Baidoa City Strategy

Increased security of land tenure and ownership can create an environment more conducive to investments that might increase climate resilience while producing climate adaptation. By contrast, weak land tenure and overlapping levels of ownership make investments in environmental sustainability more uncertain for local authorities and humanitarian and development organizations.¹⁷ Investments in infrastructure, for example, can be cancelled at any time in the event of land disputes between persons with competing ownership claims. This makes investing very risky and thereby less attractive, given the lack of a formal system for obtaining a share of land value increments from land investments.

In the end, through improved urban planning and land governance, the programme will increase the ability to plan urban spaces which incorporate climate resilience for the long term and contribute to reducing the risks of secondary displacement due to natural hazards. The strong focus on land governance is crucial to building climate resilience as part of durable solutions interventions. The CLD developed for the Baidoa case shows it be highly complex with myriad positive and negative relations and many potentially damaging feedback loops (Figure 26).

¹⁷ Identifying Climate Adaptive Solutions to Displacement, Assessment Report

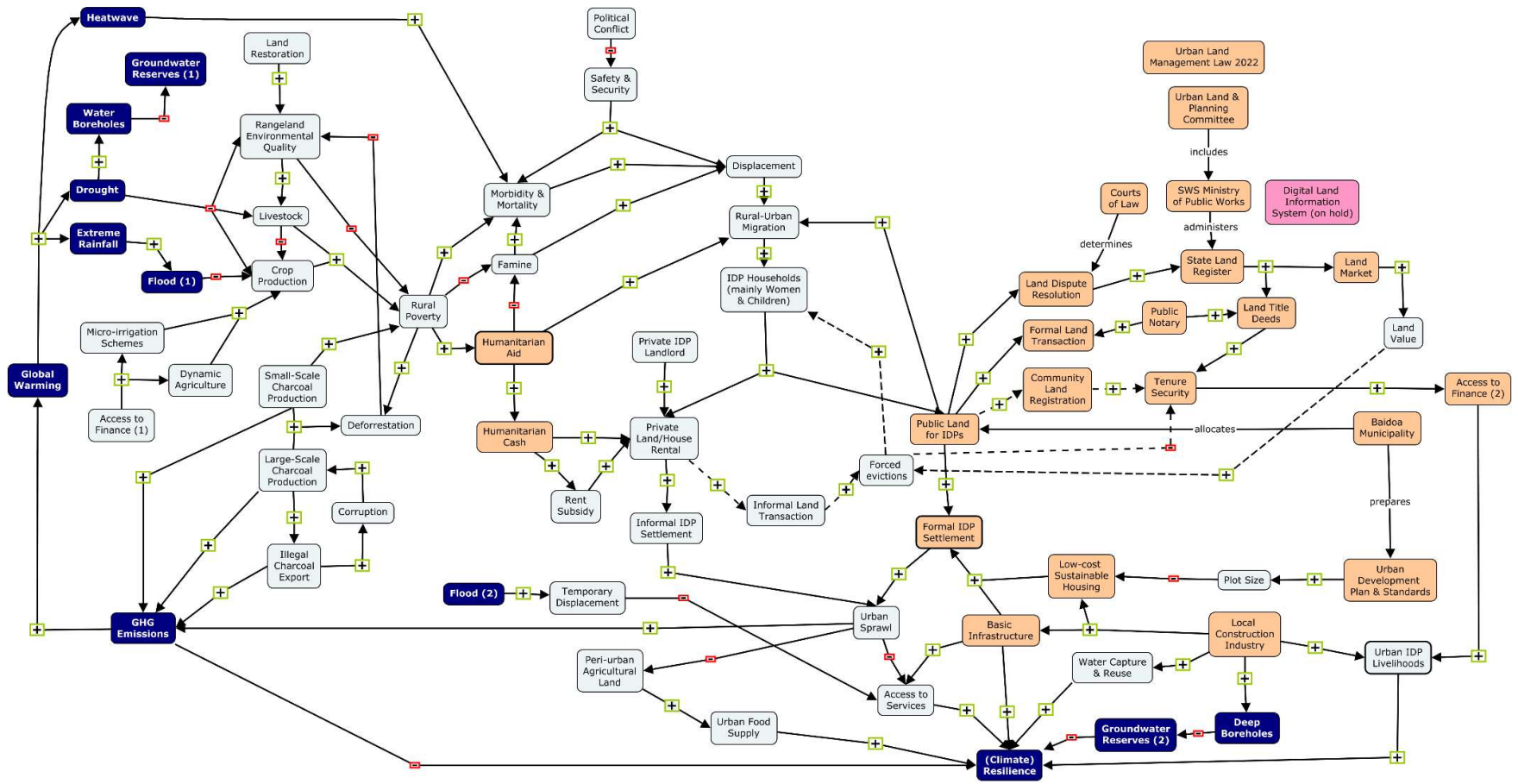


Figure 26: CLD for the Baidoa case showing relations between key variables (prepared by R Sliuzas based upon an online workshop)

6. The Barwaaqo relocation site

A tangible example of land governance interventions piloted under Saameynta is the support to the Barwaaqo relocation site, in the north of Baidoa (Figure 27). The discourse around urban planning for a relocation site in Baidoa started in 2019: under IOM Durable Solutions programming, the most vulnerable IDP households (in terms of high risk of eviction) were relocated from informal IDP sites within the city to Barwaaqo, targeting dependent upon informed consent. Barwaaqo represented a new 'norm', demonstrating that durable solutions to displacement can be achieved under enabling conditions across various displacement contexts: the model provides an approach to resettlement based on city planning to sustainably reduce humanitarian needs and enhance self-reliance and resilience towards integration of IDPs. Barwaaqo contributes to ensuring IDPs protection, enabling displaced households to receive the same treatment and rights as their surrounding host communities.



Figure 27: Aerial view of informal IDP camps (l) and a planned resettlement site (r) in Baidoa

The SWS administration purchased land from private owners and then allocated the acquired public land to displacement-affected communities for multi-purpose use, providing them with long-term tenure security in line with coherent urban development initiatives. The government donated public land for housing and public infrastructures and services, further allocating nine hectares for farming, producing crops and other household gardening for populations affected by crises. This intervention was pivotal in a durable solutions landscape because it ensured sustainability through government ownership, thus fostering resilience for IDPs through enhanced tenure security and access to services, against the risk of secondary displacement. Moreover, through community-based planning, displacement-affected communities became active participants in resettlement programming, being involved in site planning to contextualise needs and optimise solutions. To meet the priorities of targeted beneficiaries, permanent resettlement interventions provided substantially improved protection, security of tenure, access to basic services and infrastructure, as well as a solid base for income-generating activities for displacement affected communities.

Saameynta's contribution to Barwaaqo shows the importance of land governance while relocating IDPs to a permanent site, by developing it as a new neighbourhood instead of as an IDP camp site. Thanks to the SWS Urban Land Management Law, people moving to Barwaaqo were issued with

a title deed for the public land on which there were to reside, which then became theirs: improved tenure security from the perspective of formal law makes relocation a viable option to improve IDPs conditions in urban settings. Sound and participatory urban planning, achieved through the endorsement of the City Extension Plan which defines a general layout for Baidoa North (including Barwaaqo) by identifying the main requirements and directions for infrastructures, social facilities, basic services and public spaces, dictate the allocation of resources and opens the flow to further investments. It represents an endorsement of durable solutions at large, defining a clear spatial development framework for Barwaaqo by proposing demonstration projects and fast-track infrastructure projects to prioritise the urgent interventions within the area.

In the end, the transition from temporary IDP camps to permanent resettlement sites required land legislation to be enforced and urban planning. With these two land governance instruments the team improved the planning for the resettlement site, guided the provision of services, infrastructures and livelihoods not only implemented by the programme itself, but also by other development and humanitarian programmes that perform activities in Barwaaqo. The legislative and policy instruments related to land governance developed will continue to serve as a base for future developments and expansion of the relocation site (currently at phase 3): having been endorsed by the government they will continue to guide the development of Barwaaqo even after the end of the programme, thus ensuring long-term sustainability.

7. Lessons learned and conclusions

Lessons on how mobility can both offer an opportunity to adapt to climate change and a risk, in terms of climate maladaptation, can be drawn from the Somali context. Specifically, the Saameynta programme offers insightful examples of how to foster sustainable durable solutions for displacement affected communities, while incorporating climate resilience considerations.

First, in a context like Somalia, currently plagued by environmental disasters and conflict, sudden climatic shocks or political and security deterioration might hinder development-oriented activities and force a return to humanitarian response. For example, the heavy rainfall in the Hirshabelle region in May 2023, that led to floods in Beletweyne, changed the situation in one of the project's target cities. Such circumstances necessarily imply the need to recalibrate one's activities and priorities, and to focus on local communities' priorities to recover from a disaster by abiding to the principles of operational Do-no-harm and Leave-no-one behind.

At the same time, the volatile situations in many Somali locations often imply the risk of derailed and postponed activities. This was visible in Baidoa: the combination of Al-Shabaab offensives, coupled with the presence of multiple local and international actors with overlapping competencies and mandates, has at times contributed to a context of general confusion and disorder. For this reason, Baidoa acted as a testing ground for Saameynta, where lessons learned were collected to inform the project's activities in the other target locations.

Specific limitations were encountered in Baidoa concerning land governance. First, a lack of convergence between the different spheres connected to climate resilience was observed: for example, Baidoa enjoys an Urban Land Management Law but not legislation on agriculture and

agricultural land. Second, land governance activities often suffered from a lack of proper sequencing in the different implementation phases, often due to the contextual constraints mentioned above. Sometimes implementation came before planning due to urgent needs: for example, due to poor urban planning Barwaaqo was designed and constructed in a flood-prone area. Finally, the presence of a dominant humanitarian-driven approaches in some of the areas where Saameynta implemented its activities is also to be noted. Barwaaqo was, for instance, originally designed by IOM Camp Coordination and Camp Management Unit (that focuses on temporary assistance and protection of IDPs), thus reflecting the physical structure of a camp. The extremely low density contrasting with the site's design in terms of accessibility (streets appear incredibly wide if compared to the limited number of people using the extend of it) hinders spatial, social and economic development of the relocation site in its vision of becoming an integrated township within the city of Baidoa.

Finally, it is of fundamental importance to consider the role and the consequences of providing aid. The link between aid and displacement is being increasingly explored. Its presence, availability and accessibility in specific locations has been shown to be one of the factors that people take into account when deciding whether to move and where to head to. Aid has often been described as a pull factor for displacement, something that can often lead to instances of unplanned mass movement towards areas where aid is concentrated that are, however, unequipped to cope with large arrivals. Such a pattern should be considered when intervening in a context like the Somali one, in order to avoid vicious cycles and destructive reinforcing patterns.

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