REPORT 03/2019






# LAND TENURE AND CLIMATE VULNERABILITY

*A WORLD IN WHICH EVERYONE ENJOYS SECURE LAND RIGHTS*

UN HABITAT
FOR A BETTER URBAN FUTURE

RMIT
UNIVERSITY

GLTN
GLOBAL LAND TOOL NETWORK

REPORT 03/2019

**Land Tenure and Climate Vulnerability**



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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ACHR | Asian Coalition for Housing Rights |
| ANGOC | Asian NGO Coalition for Agrarian Reform and Rural Development |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| CRPT | City Resilience Profiling Tool |
| DRRMC | Disaster Risk Reduction and Management Council |
| DENR | Department of Environmental and Natural Resources |
| FAO | Food and Agricultural Organization of the United Nations |
| FFP | Fit-For-Purpose |
| FIG | International Federation of Surveyors |
| FTE | Fixed Term Estate |
| GEC | Gender Evaluation Criteria |
| GHG | Greenhouse Gas |
| GLTN | Global Land Tool Network |
| GNSS | Global Navigation Satellite System |
| HURCAP | Honiara Urban Resilience and Climate Action Plan |
| IDPs | Internally Displaced Persons |
| IIRR | International Institute of Rural Reconstruction |
| ILO | International Labour Organization |
| ILC | International Land Coalition |
| IPs | Indigenous Peoples |
| IPCC | Intergovernmental Panel on Climate Change |
| NFA | National Forestry Authority |
| NEMO | National Emergency Management Organization |
| ODI | Overseas Development Institute |
| PiLAR | Participatory and Inclusive Land Readjustment |
| QUT | Queensland University of Technology |
| REDD+ | Reducing Emissions from Deforestation and Forest Degradation |
| SIDS | Small Island and Developing States |
| SPREP | Secretariat of the Pacific Regional Environment Programme |
| STDM | Social Tenure Domain Model |
| TOL | Temporary Occupation Licences |
| UNDRIP | United Nations Declaration on the Rights of Indigenous Peoples |
| UNFCC | United Nations Framework Convention on Climate Change |
| UN-Habitat | United Nations Human Settlement Programme |
| UNISDR | United Nations International Strategy for Disaster Reduction |
| UWA | Uganda Wildlife Authority |
| VGGTs | Voluntary Guidelines on the Responsible Governance of Tenure Of Land, Fisheries And Forests In The Context Of National Food Security |

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# EXECUTIVE SUMMARY

It has long been recognized that good land governance and secure land tenure are the fundamental building blocks of sustainable and equitable development; this is evidenced from the macro level (livelihoods, human rights, poverty reduction, etc.) down to individual households (supporting improvements in household income, the social and economic empowerment of women and girls, food security, etc.). However, a significant proportion of urban and rural communities is still without adequate access to land and the multiple benefits that derive from having secure land tenure. A changing climate – in combination with other contemporary stressors such as population growth, migration, land reform and increasing urbanization – will act to amplify existing societal stresses. Consequently, the principles of responsible land governance have never been more important as governments strive to address the complex resilience challenges that we face today and into the future.

This report examines the inter-relationships between land tenure and climate vulnerability. The analysis was framed according to peoples' exposure to climate-related hazards, the sensitivity of different elements at risk in both urban and rural contexts, and understanding how insecure land tenure influences the adaptive capacity of communities and individuals. Potential feedback loops from climate adaptation measures that may act to undermine peoples' security of tenure were also considered.

The report was written with a broad audience in mind, including development, climate change adaptation, disaster risk reduction, emergency management and land sector communities of practice. The aim is to highlight some of the complex and inter-linked challenges facing marginalized communities and, based on this evidence, signpost possible pathways to positive change.

The content of the report draws from an extensive literature review and evidence from five international case studies contributed by regional experts. The case studies were selected to enable consideration of differing land tenure and climate vulnerability contexts in different parts of the developing world. The case studies were: Honiara, the capital city of the Solomon Islands in the South Pacific (informal urban settlements); Mindanao in the Philippines (community recovery from Typhoon Sendong); St Vincent and the Grenadines in the Caribbean (the impacts of flash floods on different community types); north-eastern Syria (drought, conflict and migration), and the Karamoja region in Uganda (pastoralist livelihoods). In each case, those without secure land tenure were not only the most exposed to climate risks, for example being in areas at risk of flooding, storm surge, landslides, drought etc., but they were also identified as being the most sensitive to climate impacts. Furthermore, insecure tenure constrains adaptive capacity; this is a consequence of being disconnected from formal governance processes, lacking the knowledge and information for informed decision-making, and having restricted access to finance for implementing resilience-enhancing actions. Findings, therefore, strongly reinforce the central message: that insecure land tenure exacerbates vulnerability to natural and climate-related hazards, both directly and indirectly.

The literature review not only provides supporting documentation for each of the case studies but is also used to illustrate some of the important cross-cutting dimensions of the inter-relationships between land tenure and climate vulnerability (thereby highlighting the relevance to broader global agendas beyond just the issues of climate change and disaster risk reduction). These dimensions have been categorized and discussed according to: human mobility, gender inequality, ecological integrity, food and water security, Indigenous and tribal peoples' land tenure rights, and conflict over land and natural resources.

# EXECUTIVE SUMMARY

Given the evidence of strong linkages between tenure insecurity and climate vulnerability, improved tenure security should be considered to be an important enabler of climate-change adaptation. It will not only lead to the increased resilience of poor and vulnerable communities that are currently marginalized but, by explicitly considering land tenure issues in the development of adaptation strategies and actions, it will also increase the likelihood of acceptance (and ownership) of measures by affected communities, reducing adverse impacts on existing land tenure arrangements and potential conflict between adaptation "winners" and "losers".

Whilst there is a growing body of literature on land tenure and disasters caused by climate-related extremes, less attention has been paid to longer-term changes. Slow onset events - such as sea-level rise, drought and desertification - have the potential to not only amplify existing vulnerabilities but to also create new ones. In the most extreme cases, events may lead to permanent (rather than temporary) displacement and a need for relocation programmes. In such cases, culturally appropriate relocations will be needed. Any actions will need to consider the land tenure issues of the resettling and receiving communities, as well as protecting social connections and livelihood options.

Despite the emphasis on climate vulnerability for this study, the authors recognize that it is also important for land governance to be a central consideration when addressing a range of other human vulnerabilities, e.g. arising from natural disasters, conflict, land reform and redistribution, environmental migration, water and food security, etc. Insecure land tenure is an influential variable contributing to vulnerability in the broadest sense but, conversely, good land governance is a critical component in enhancing community resilience to a variety of natural and human-induced shocks and stresses. Strategies that improve tenure security will simultaneously contribute to improved food and water security, more sustainable livelihoods, reduced forced and unplanned human mobility that leads to landlessness, reduced environmental degradation, less urban and rural poverty, reduced conflict over land and resources, etc.

The latter sections of this report move beyond an assessment of the links between land tenure and climate vulnerability to explore the opportunities for alternative pathways towards more integrated approaches for climate-resilient land governance. The first entry point for improved integration is the institutional framework. This requires identifying and building on synergies between the different communities of practice and their respective agendas, from global frameworks to local plans and implementation. Peoples' access to land is a core concern beyond a climate-change focus for many international agendas, e.g. human rights, the Sustainable Development Goals, the Sendai Framework, the New Urban Agenda etc. Given the importance of secure land tenure to reducing vulnerability to multiple shocks and stresses, investments in responsible land governance will not only enhance climate resilience but will also improve policy performance when measured against a range of global frameworks. Importantly, desired improvements in these broader development areas will be significantly hampered without explicitly addressing principles of responsible land governance. In addition to the Paris Declaration (climate change) and the Sendai Framework (disaster risk reduction), good land governance will also contribute to many of the land-related Sustainable Development Goals (SDGs) e.g. 1 (poverty), 2 (hunger), 5 (gender), 6 (water), 7 (energy), 8 (work), 10 (inequality), 11 (cities and communities), 13 (climate), 15 (life on land) and 16 (peace and justice). It is also important consideration for Section 35 of the New Urban Agenda.

The second point of entry for integration is policies, plans and programmes that are better designed to

# EXECUTIVE SUMMARY

address the complex land-related climate-resilience challenges of the twenty-first century. The most obvious of these are land-use plans (operating at different scales) which need to be both tenure responsive and fit-for-purpose for those areas at risk from climate change. Climate considerations also need to be mainstreamed more effectively into land governance processes.

From a climate change adaptation perspective, it is recommended that land tenure be explicitly considered during climate-vulnerability assessments and adaptation-planning processes to inform more equitable gender-responsive and pro-poor actions, as well as to avoid situations of maladaptation. This could involve ensuring that local tenure arrangements are recorded using fit-for-purpose methods during the initial community profiling, as well as integrating cadastral and hazard mapping to provide a more comprehensive understanding of local vulnerabilities. When addressing land governance issues, a useful starting point is to carry out tenure security mapping and assessments based on an understanding of the continuum of land rights. This provides the necessary baseline data to inform tenure-responsive land-use planning (using relevant approaches that are fit-for-purpose and pro-poor).

The third point of entry is land administration processes and tools. Depending on the context, guidelines such as those provided by the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT), alternative conflict-resolution methods and the Gender Evaluation Criteria tool can all potentially provide useful support for achieving the goal of responsible land governance. The Social Tenure Domain Model (STDM) is one example of a pro-poor land administration tool that has the potential to support this integrative process. Participatory approaches, involving the most vulnerable groups in society, should underpin vulnerability assessments and adaptation planning to enhance equity of decision making.

Improving the basic living conditions of slums and informal settlements is central to reducing the vulnerability of low-income families in urban and peri-urban settings. The Participatory and Inclusive Land Readjustment (PiLaR) tool is a mechanism through which land units that have different owners and/or claimants are combined into a single area through a participatory and inclusive process for unified planning, re-parcelling and development. The development usually includes serviced urban land delivery made possible by the provision of infrastructure, public space and other urban amenities. A PiLAR process can also be used for incorporating informal settlers into the formal city (as is occurring in Honiara) and for ensuring that they not only have more secure land tenure but also have improved access to infrastructure and basic services such as energy, water and sanitation. The implementation of PiLaR will need to be accompanied by other decision-support tools during settlement formalization and upgrading, e.g. valuation of unregistered land.

In conclusion, it is worth highlighting that while insecure land tenure is a major influence on existing vulnerabilities (with land pressures likely to intensify in the face of contemporary human and climate-change drivers), public investment - and determined efforts by governments - to improve the land tenure status of the poor and vulnerable can lead to greater community resilience to multiple stresses. Secure land tenure rights should therefore be a central consideration in all global frameworks that target human wellbeing.

Women and children filling jerrycans with water from a collection tank filled by an emergency water tanker truck. Melbana village, Borena zone in the Oromia region. Photo ©UNICEF Ethiopia/Lemma

# CHAPTER I

# INTRODUCTION

# INTRODUCTION

The importance of good land governance for equitable and sustainable development has long been recognized (for a recent international review of international frameworks, see UN-Habitat 2017). However, contemporary drivers such as rural to urban migration, rapid urbanization (and the unplanned growth of slums and informal settlements), land reform, civil conflict, increasing damage caused by natural disasters worldwide, and the future impacts of a changing climate are combining to generate new vulnerabilities and increased marginalization of already vulnerable people.

In this report, we argue that there are strong links between climate vulnerability and insecure land tenure. We also argue that progress against the broad development goals of the SDGs, the NUA, the Sendai Framework and the Paris Agreement are undermined by land impacts, including conflict over land. Improved understanding of the links between these complex human and natural drivers and contemporary issues of responsible land governance is needed to inform more integrated approaches that are designed to address these fast-evolving challenges. In essence, people-land relationships should be front and centre in efforts to address climate vulnerability.

The past decade has seen increasing attention paid to the relationship between land tenure and natural disasters (Mitchell, 2011; Caron, Menon and Kuritz,

**A view of heavy floods caused by monsoon rains in Punjab Province, near the city of Multan, Pakistan.**
**Photo ©United Nations/Evan Schneider**

**Mangrove shoots planted in Tarawa, an atoll in the Pacific island nation of Kiribati. Mangroves are critical natural barriers against floods and storm surges and could help prevent a lot of costly projected damage from coastal flooding as sea levels rise. Photo ©United Nations/Eskinder Debebe**

2014) land tenure and climate change generally (Quan and Dyer, 2008; Freudenberger and Miller, 2010) and land tenure and climate change mitigation specifically (Runsten, 2011; Knox *et al.*, 2011). To add to this emergent knowledge base, this international review analysed the inter-relationships between land tenure and climate vulnerability (expressed as a function of exposure, sensitivity and adaptive capacity).

The study was informed by a comprehensive literature review (including academic as well as grey literature such as multilateral or government reports, working papers, documents and white papers), five detailed case studies compiled by local experts (Philippines, Solomon Islands, Uganda, Syria and St Vincent and the Grenadines), and contributions from an expert reference group who undertook a final peer review of the report contents. The analysis was framed according to five main questions:

1. How do current and future climate impacts affect, or potentially affect, tenure security in different landscape contexts (e.g. urban, agriculture, forest, pastoral, etc.)?
2. How does security of land tenure influence local exposure and sensitivity to climate change?
3. How does security of land tenure influence adaptive capacity and the implementation of actions to increase climate resilience?
4. How do climate-adaptation actions (building sea

walls, relocation of communities, upgrading water supply, etc.) impact tenure security (in either a positive or negative way)?

5. What are the critical land tenure security and land governance issues that need to be addressed to enable successful and equitable adaptation?

By investigating these questions, the research identified gaps in existing tools and capacity for addressing the issues, what land tools exist, and those that still need to be developed. This study, therefore, contributes to international knowledge and awareness of how land-related policies, tools and approaches - that are pro-poor and gender appropriate - can reduce climate exposure and sensitivity, and support the strengthening of adaptive capacity at the local scale.

The report is structured to firstly set out a broad introduction to land tenure and property rights, and explores the links with climate exposure, sensitivity and adaptive capacity (Section 2). Section 3 describes the cross-cutting consequences of the impacts of climate on land and people. Section 4 then highlights summary findings from each of the five case studies (representative of different landscape types, issues, human and natural drivers), with each case study sub-section supported by an analysis of relevant literature. Section 5 revisits the main research questions in the light of the review and case study material. Section 6 sets out the conceptual framework for climate-resilient land governance, followed by detail on the key entry points: institutional framework (section 7), policies, plans and programmes (section 8) and land governance processes and support tools (section 9). Section 10 presents the concluding remarks, highlighting the critical importance of ensuring that good land governance is a core component of contemporary global frameworks and agendas, from the Sendai Framework and Paris Agreement through to migration, gender equality and human rights.

CHAPTER 2

# CLIMATE VULNERABILITY AND LAND TENURE

## 2.1. VULNERABILITY TO A CHANGING CLIMATE

Following scientific consensus that human activities are forcing climate change at an unprecedented rate, there have been increasing policy efforts to mitigate greenhouse gas emissions (GHG) in an attempt to avoid "dangerous" levels of climate change (actions also include carbon sequestration). In addition to decarbonization action, there has been increasing scientific and policy attention paid to the need to adapt to change that is unavoidable, with long-lasting emissions already fixed into the atmosphere. It is this second policy agenda that is of greatest importance to developing countries and Small Island Developing States (SIDS) that are often the most vulnerable to the impacts of a changing climate (and have contributed least in terms of historical GHG emissions).

As illustrated in Figure 1 and discussed in Sections 5 and 6 of this report, climate vulnerability is usefully understood as a function of **exposure** to a climate-related hazard and the ***sensitivity*** of the exposed unit in question to a particular hazard (people, land, economic activity, infrastructure, buildings, etc.), counter-acted by ***adaptive capacity*** (e.g. access to insurance to respond after an extreme event, etc.) (Figure 1). Climate-related variables include temperature, rainfall (either too much or too little), storms (and in some instances, related storm surge), sea-level rise and ocean warming. Resultant hazards include heatwaves, floods, droughts, coastal erosion, landslides, ocean acidification (leading to the death of coral reefs following episodes of bleaching), etc. Although not climate related, other natural hazards of concern are earthquakes, tsunamis, etc.

It is important to note that the actual "impact" of a hazard is often exaggerated by human influence, e.g. excess heat in high density urban settlements, flooding through factors such as upstream deforestation, settlements being built in floodplains, inadequate or blocked drainage, drought amplified by poor management regimes, etc. Indirect impacts also need

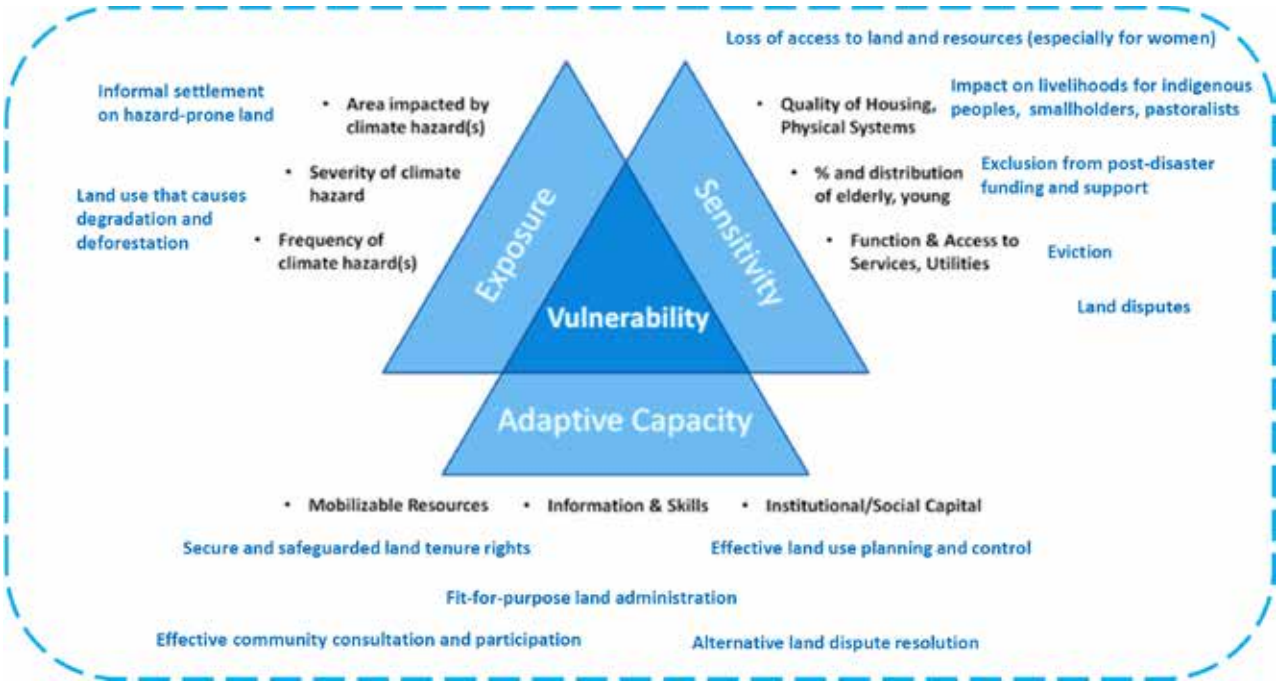


**Figure 1: Climate vulnerability and land issues (adapted from Trundle & McEvoy, 2017)**

to be considered; examples include critical sustainability issues such as food and water security, which will be increasingly under stress in the future through changes in both supply (e.g. water availability) and demand (e.g. population growth) factors.

It is also useful to differentiate between current and future climates. Extreme events such as storms and floods (a consequence of climate variability) already cause significant damage and are projected to increase in frequency and intensity in many parts of the world. "Slow onset" impacts such as rising temperatures, sea-level rise, ocean acidification etc. will also reach critical thresholds in the medium to long term.

The *sensitivity* of exposed units is an important factor in determining vulnerability, especially in developing countries. For instance, the difference in the quality of housing will determine the damage caused when two houses are exposed to the same storm. This can also apply to the elderly, women, youth, disabled etc., who are often identified as being particularly vulnerable to a variety of climate-related hazards due to a combination of high levels of sensitivity and low capacity to adapt.

*Adaptive capacity* is reflective of the fact that humans can identify and assess risks and take actions to reduce these risks through adaptation measures. It represents the *potential* of a system or individual to change and adapt and is influenced by factors such as access to information, enabling governance structures, technology and finance. It thereby acts as a counter-balance to the exposure and sensitivity elements (Trundle and McEvoy, 2017).

Individual levels of vulnerability to everyday hazards, disasters and climate-change impacts are unevenly distributed. This disparity is exaggerated in fast-growing cities in developing countries, with low-income households and those without security of tenure typically having greater exposure to natural hazards; consequently, they are often worst affected by disasters. Impacts are compounded by sensitivity factors such as poor-quality housing, a lack of hazard-reducing infrastructure and less capacity to cope either through limitations in state provisions and other response agencies, legal protection (such as inappropriate land acquisition or an informal tenure system or insurance measures, Mitchell, 2010; Dodman et al., 2013).

Those who depend on natural resources (both land and sea) for their livelihoods will also be adversely impacted by a changing climate, particularly in cases of unequal land distribution, insecure land tenure, ineffective land-use planning or poorly developed markets. Increasing environmental stresses caused by climate change may result in people seeking alternative livelihood options (potentially informal or illegal) or migrating to urban areas in search of alternative employment opportunities. Immediate consequences of this displacement may be a loss of access to land and livelihoods, poor tenure security and conflict over land at their destination (leaving them more vulnerable to the shock of future extreme events). Alternatively, if migration decisions lead to new livelihoods or more secure access to safe land and housing, the households may experience reduced vulnerability. Populations are more likely to be displaced when they are very exposed to extreme weather events and lack the resources for planned migration (Mitchell, 2010; IPCC, 2014).

## 2.2. LAND TENURE AND PROPERTY RIGHTS

Land tenure is the way in which interests in land are held by people or legal entities capable of ownership, such as the state. In practice, land tenure involves the legal, customary or religious relationships among people with respect to land and natural resources. Land tenure rules and systems define the ways by which land is held, how property rights to land are allocated, the security of

those rights and how they are enforced. These rules vary in their legal recognition and may include very complex customary rights and dispute-resolution institutions and processes (Feder and Feeny, 1991; FAO, 2002). Property rights can be complex and include movable rights, such as livestock, and immovable rights, such as buildings and trees. Property rights may be held by an individual or a family, communal groups or the state. They may also be part of open-access regimes where specific rights are assigned with little or no operational tenure rules with respect to resource use and management. Land tenure rights, therefore, influence the way that land and natural resources are used and can impact directly on the environment and on climate change (Quizon, 2018).

In most countries, a range of tenure systems exist and the level of tenure security can vary between different types of land tenure and within the same land tenure type (Whittal, 2014). These tenure types range from registered freehold or usufruct titles to informal settlements constructed without formal records governed by the state. Customary land tenure is the predominant form of tenure in many countries, especially in parts of Africa and the Pacific Island countries. Customary systems often have complex arrangements for allocating land and resources, and dispute-resolution mechanisms which are well understood by members of the community. However, customary tenure systems are under pressure because of demographic changes, increased competition for land, urbanization encroaching on customary lands, internal conflicts and a breakdown in customary authority.

Land tenure is frequently conceptualized in binary terms: formal/informal, legal/non-legal, secure/insecure, *de facto*/*de jure*. However, in practice, a complex spectrum of appropriate and legitimate tenure arrangements exists, depending on the given context. Recognition of this important reality has been part of a global paradigm shift on tenure over the past decade or more. The continuum of land rights has been developed as a concept or metaphor for explaining, predicting and visualizing how tenure systems exist in context at a given time and place, and may also evolve over time. Tenure can take a variety of forms along this continuum: documented as well as undocumented, formal as well as informal, for individuals as well as groups, including pastoralists and residents of slums and informal settlements, which may be legal or non-legal. The rights do not lie along a single line and they may overlap. Registered individual freehold should not be seen as the preferred or ultimate form of tenure – it is one of a number of appropriate and legitimate forms (customary, leasehold, group tenure and others). There is also often movement between forms of tenure (UN-Habitat, IIRR and GLTN, 2012).

The continuum concept is difficult to represent diagrammatically. The two poles on the generic representation in Figure 2 do not necessarily represent formal or informal (Barry, 2015). In addition, research has shown that country- or locality-specific diagrams can be far more useful to represent the continuum in practice (Du Plessis *et al*., 2016). Also, a move towards individual title may not necessarily be the best option, as tenure may be more secure through group titles in some contexts. The concept of the continuum of land rights is particularly relevant to climate- or disaster-affected areas considering its inclusive nature, accommodating and promoting the recognition of multiple forms of tenure, and given the fact that it is the people with less secure tenure who are commonly the most vulnerable. Conversely, efforts to improve tenure security will benefit the most vulnerable.

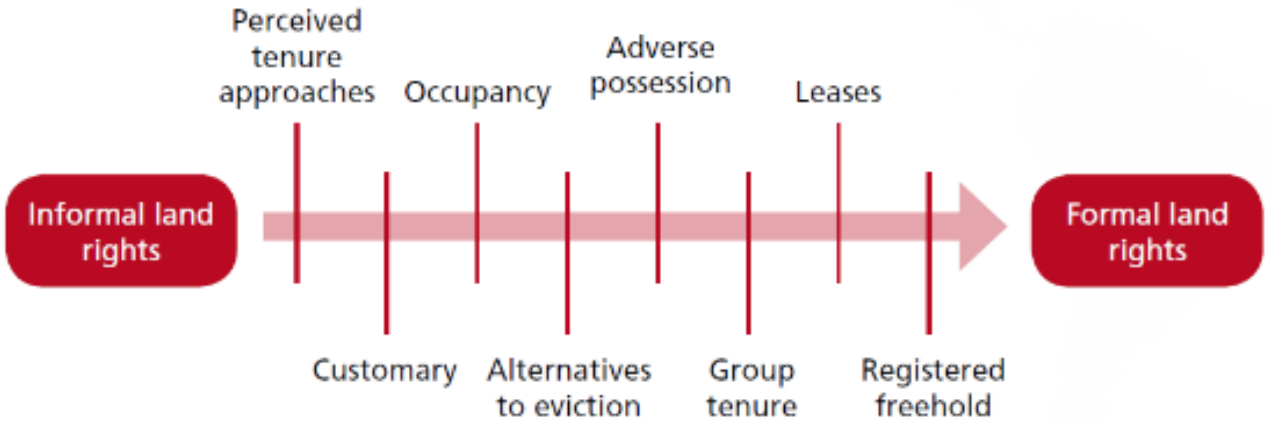


**Figure 2: Continuum of land rights (UN-Habitat, IIRR and GLTN, 2012)**

## 2.3. CLIMATE AND NATURAL HAZARDS, LAND AND PEOPLE

The following sections provide a summary overview of the main climate and natural hazards, noting important linkages to tenure security.

### 2.3.1 Oceanic

Sea-level rise will not only result in the gradual inundation of low-lying areas but will also contribute to the increasing severity of storm surges and flooding, ultimately threatening the viability of exposed coastal areas (Tacoli, 2009; Rüttinger et al., 2015). The Intergovernmental Panel on Climate Change (IPCC, 2014) estimates a global mean sea-level rise of between 26 and 98 cm by 2100 (though substantial regional variations need to be taken into account). Given the continuing growth of low-lying cities around the world, many of which are in the coastal zone, sea-level rise will continue to heighten urban climate risks in future. Rising sea levels, when combined with coastal and riverbank erosion, storm surges and flooding, could also have widespread effects on rural environments, affecting ecosystems and livelihoods.

Small Island Developing States (SIDS) are highly exposed to any increase in sea levels, however not all islands are equally exposed. Taking the Pacific region as an example, Tuvalu and Kiribati are two of the most vulnerable islands with 33 per cent and 55 per cent of their land under an elevation of 5m respectively (CIESEN, 2013), while Vanuatu (0.8 per cent of land under 5m) and the Solomon Islands (1.6 per cent), are less exposed to the threat of inundation. That said, a rise in sea level will introduce other emergent threats to these nations, with heightened storm surge, increased coastal erosion and salinization of critical groundwater resources increasingly problematic (CSIRO, BoM and SPREP, 2015; Trundle and McEvoy, 2017). The economic viability of exposed coastal areas will also decrease as land and coastal resources are lost (including agricultural productivity), with the potential for increased damage and loss of life due to storms and coastal flooding (Rüttinger *et al.*, 2015).

According to the IPCC (2014), sea-level rise will, in the worst cases, lead to permanent displacements as coastal areas (or small atoll islands) become uninhabitable. As discussed later in the report, these changes may also lead to social disruption by increasing the risk of tension and conflict in the receiving areas (Rüttinger *et al.*, 2015). What is clear is that significant efforts will be needed to implement successful, and culturally appropriate, cross-border relocations of affected people. This will need "good will" on all sides and close collaboration between the countries both sending and receiving the migrants, as well as engagement with marginalized groups (migrants and the host communities) to ensure equity, empowerment and security (Ash and Campbell, 2016). However, as noted by Connell and Lutkehaus

(2017), there are many examples of conflicts arising from migration even within country boundaries and that relocation further afield - involving different cultures - is likely to prove even more problematic.

A second important oceanic variable that is likely to have significant repercussions for island and coastal communities in the short to medium term is the *warming / acidification* of the oceans. This will not only affect those that rely on the reefs and fishing for personal subsistence and cash livelihoods but may also have indirect economic ramifications for communities, e.g. reductions in international tourist visitors resulting from a degradation of the reef systems (Hoegh-Guldberg *et al*., 2007; Moreno and Becken, 2009). A likely impact is that fishing communities encroach on the fishing grounds of other areas, which may heighten conflict with other customary or local communities. This presents a marine tenure issue.

### 2.3.2 Hydro-meteorological

***Fast-onset extremes*** include storms, e.g. tropical cyclones (also called typhoons or hurricanes), hailstorms, tornados, blizzards, coastal storm surges, riverine floods and heatwaves. The damage resulting from *storms* is caused by multiple factors, including extremely strong winds, torrential rains leading to flooding or landslides, and *storm surges* that inundate coastal areas. Loss of life, extensive damage to private and public buildings, infrastructure, livestock and crops are potential consequences of these types of severe events.

Flood events can cause short-term displacement as people leave their homes to seek safer places while heavy rains and flooding continue. However, displaced people are often extremely vulnerable and will seek to return at the earliest opportunity to reconstruct their homes and livelihoods (Tacoli, 2009; IPCC, 2014). In severe cases, it may be several months before they regain access to their land (and livelihoods). Temporary, planned relocation is often necessary and this may be at some distance from their pre-disaster lands. When people return, the destruction of boundary fences and other structures that defined land occupation can cause problems for those landholders with poor tenure security as they seek to reinforce their rights after the disaster (Mitchell, 2011).

*Heatwaves* are a fast-onset meteorological event and are projected to increase in frequency and intensity in the future, with increases in maximum temperatures and more hot days and heatwaves affecting nearly all land areas (IPCC, 2014b). Heatwaves are amplified in urban areas because of their physical characteristics and high thermal mass. Groups that lack the ability to avoid or reduce their exposure to extreme heat are often the most vulnerable. Influencing factors include age, health, housing, surrounding urban environment, socio-economic status and awareness of the risks (QUT, 2010). As such, the urban poor, who often live in slums and informal settlements with poor quality housing and a lack of cooling greenspace, are highly vulnerable to the impacts of heat (McMichael, 2000). For example, in the 2018 Japan heatwave, the most adversely affected were elderly women.

***Slow-onset hazards*** include droughts and desertification. Drought is one of the most damaging climate-related disasters on a year-by-year basis, bringing severe hardship to people, particularly in developing countries. Drought is different to other hazards as it has a cumulative effect caused by a lack of precipitation (and water supply) over a period of time. It can cause greater competition for access to resources, like grazing land, which can fuel conflicts and has a significant impact on livelihood security. Factors such as the land tenure arrangements, market infrastructure and the availability of government assistance can also affect exposure and risk (Raleigh and Jordan, 2007).

There are typically four categories of drought (Wilhite & Glantz, 1985). In addition to a meteorological drought (a lack of rainfall), there is also a hydrological category which relates to the supply of surface and groundwater (which will be affected by a lag element to the meteorological impact). A third category is agricultural, which is reflected by evapotranspiration and soil moisture deficits, and is commonly applied to non-irrigated agricultural land. The final category is socio-economic, which accounts for the human dimension. Other than meteorological, the other categories deal with water as a "supply and demand" problem (*ibid*).

In cases where people have the necessary resources, there are opportunities to plan for and respond to drought. Impacts tend to be of an economic nature, either through agricultural production losses, higher food costs, water restrictions and reduced recreational opportunities, etc. (American Meteorological Society, 2003). Evidence from less developed regions of the world indicates that the primary impacts were crop failures followed by food shortages and famine, clean drinking water shortages and eventual related health problems, energy shortages and political unrest (*ibid*). In the worst events, famine or mass displacement of people have taken place.

Drought and water variability lead to impacts on natural ecosystems, land capability and land-use systems. These changes lead to diminishing supplies of land, putting land use under greater pressure. In some cases, the land no longer sustains the occupants. The climate change impacts on agriculture are also affected by development and population pressures and political economy, making good quality agricultural land scarcer and increasing competition for land, further weakening the asset base of the poor. In the absence of tenure security, access to land can be lost (Quan and Dyer, 2008).

The links between drought, desertification and migration are complex, with climatic fluctuations and widespread mobility the defining features (Tacoli, 2009). One traditional adaptation approach to dealing with water shortage has been migration to less-affected areas for the drier months. However, land reform may threaten these traditional migratory patterns for pastoralists (Lengoiboni, 2011). Secure land tenure that allows flexibility of movement is needed to continue to support this traditional adaptation response. Secure land tenure rights also provide an incentive for landholders to invest in adaptation measures. These might include sustainable approaches to pasture use, the development of additional water sources and drought-resistant crops, or the construction of irrigation systems (Mitchell, 2011).

The impact of drought on urban areas is reflected by water shortages, increased incidence of water-related diseases and food insecurity from increased food prices and reduced supplies. An estimated 150 million urban dwellers have less than 100 litres of sustainable water supply per day (IPCC, 2014). In the context of reduced water shortages, rules that require formal land records for the provision of public water supply to houses increases the vulnerability of informal settlement households. Furthermore, it is worth noting that water shortage is not a problem restricted to the developing world, as highlighted by the drought that affected Melbourne in Australia in the 2000s (and led to the subsequent development of drought-response plans) and most recently the severe water shortage affecting Cape Town, South Africa, in 2017-2018.

### 2.3.3 Geophysical

Geophysical hazards such as earthquakes, which often occur with little warning, can have a devastating impact on lives and livelihoods. Earthquakes can also cause secondary hazards such as landslides, avalanches and tsunamis. Repeat events may not occur for years

or possibly decades, although some areas may be more hazard prone than others due to their geographical location. It is also much more difficult to predict where they may next occur. This presents unique challenges for disaster risk management and leaves people less likely to implement adaptation measures than for more episodic events such as cyclones or floods (Mitchell, 2011). As some of the world's most earthquake-prone areas also have high population densities, the challenge for earthquake response and recovery is considerable. Non-enforcement of building codes, knowledge gaps, urban poverty and poor governance and capacity compound the situation (Mitchell *et al*., 2017).

A tsunami is caused by underwater movements from earthquakes or landslides, or eruption of submarine volcanoes. The commonly applied return period of 500 years means it is difficult to design adaptation programmes, but the effect can be devastating, with large waves travelling far inland leading to significant loss of life, destruction of buildings and infrastructure, damage to livestock and crops, and erosion of the land. The damage may cause the land to become temporarily or permanently unusable, forcing people to relocate (Mitchell, 2011).

**An abandoned drought-stricken village in Mauritania. Photo ©United Nations/John Isaac**

CHAPTER 3

# CROSS-CUTTING DIMENSIONS TO LAND TENURE AND CLIMATE VULNERABILITY

# CROSS-CUTTING DIMENSIONS TO LAND TENURE AND CLIMATE VULNERABILITY

The previous sections of this report introduced some of the consequences of the impacts of climate on land and people. This section, based predominantly on the literature review, considers the most important of the cross-cutting issues, how land tenure security is affected, and why improved land governance is necessary. The main issues are set out under the headings of human mobility, gender inequality, food and water security, indigenous and tribal peoples, impacts on ecological integrity, and conflict over land and natural resources.

## 3.1. HUMAN MOBILITY

According to the latest scientific analysis (IPCC, 2018), a failure to curb emissions to keep global warming under 1.5 degrees from pre-industrial levels would represent "dangerous" climate change, and displacement in response to its impacts would become virtually unavoidable in some regions (De Sherbinin *et al*., 2011). Oliver-Smith (2009) suggests that the loss of ecosystem services and land, combined with increasing intensity and frequency of natural disasters, will cause population displacement at significant scales, particularly for populations in coastal zones.

In this report, the terminology in paragraph 14(f) of the *Cancun Climate Change Adaptation Framework* has been adopted. This refers to three forms of human mobility

(i) *migration* - primarily a voluntary movement of persons;
(ii) *displacement* - primarily a forced movement of persons; and
(iii) *planned relocation* - the planned settlement of persons to a new location.

Persons move or are assisted to move away from their homes or places of temporary residence, are settled in a new location, and are provided with the conditions for rebuilding their lives (UNFCCC, 2012).

Elsewhere, Brzoska and Fröhlich (2016) describe four types of human mobility patterns specifically related to climate change:

1. Ecological-economic migration: Population movements of some members of households, aiming to diversify livelihood options for those left behind. This kind of human mobility tends to be either short term (seasonal, circular) or long term (life cycle).
2. Climate-disaster displacement: People forced to move when living conditions have dropped below the bearable. Human mobility is generally to the nearest location supported by aid or to places where migrants have relatives or other social relations. Climate-disaster refugees generally tend to migrate back as soon as conditions allow it.
3. Permanent climate displacement: Where the physical environment is vanishing or becoming uninhabitable (e.g. due to sea-level rise or enduring desertification). The displacement and planned relocation are seen as a last resort.
4. Climate-affected displacement: Climate impacts on land and water, and therefore livelihoods, may cause rural landholders to change their migration patterns or even be forced to give up agriculture.

The impact of climate change on human mobility is extremely complex. Predicting how it will affect the mobility of a population is difficult due to uncertainty about the specific effects of climate change and a lack of comprehensive data on migration flows (Tacoli, 2009). Furthermore, rural land use and mobility is subject to economic, political, social and demographic drivers, and involves complex patterns of rural-urban and circular rural-rural migration. These patterns of migration and mobility can be exacerbated by a changing climate (IPCC, 2014). However, as Oliver-Smith (2009) says,

displacement and planned relocation are a second disaster for people affected by disasters and other environmental changes. Serious disasters inflict losses on people and communities, often breaking up families and displacing communities to new environments.

Long-term environmental change will likely result in significant agricultural income loss and temporary displacement in some cases or permanent migration in others. Environmentally induced population movements in the global South are usually internal and temporary. This is often the case for displacement caused by fast-onset events (such as floods, storms or fires) which lead to movements that are involuntary and short term (Brzoska and Fröhlich, 2016). However, in the case of longer-term stresses (such as droughts and land degradation) a decision to migrate may be voluntary and motivated by economic factors. Slow-onset hazards may allow people more time to strengthen social networks and financial assets resulting in more migration options (see Figure 3).

Urban land tenure rights can be very complex and after a disaster it can be difficult to resolve pre-disaster rights to land for those displaced. Where those displaced are residents of slums and informal settlements with no legal recognition, they may be unable to return to their former homes or rebuild. In some cases, governments

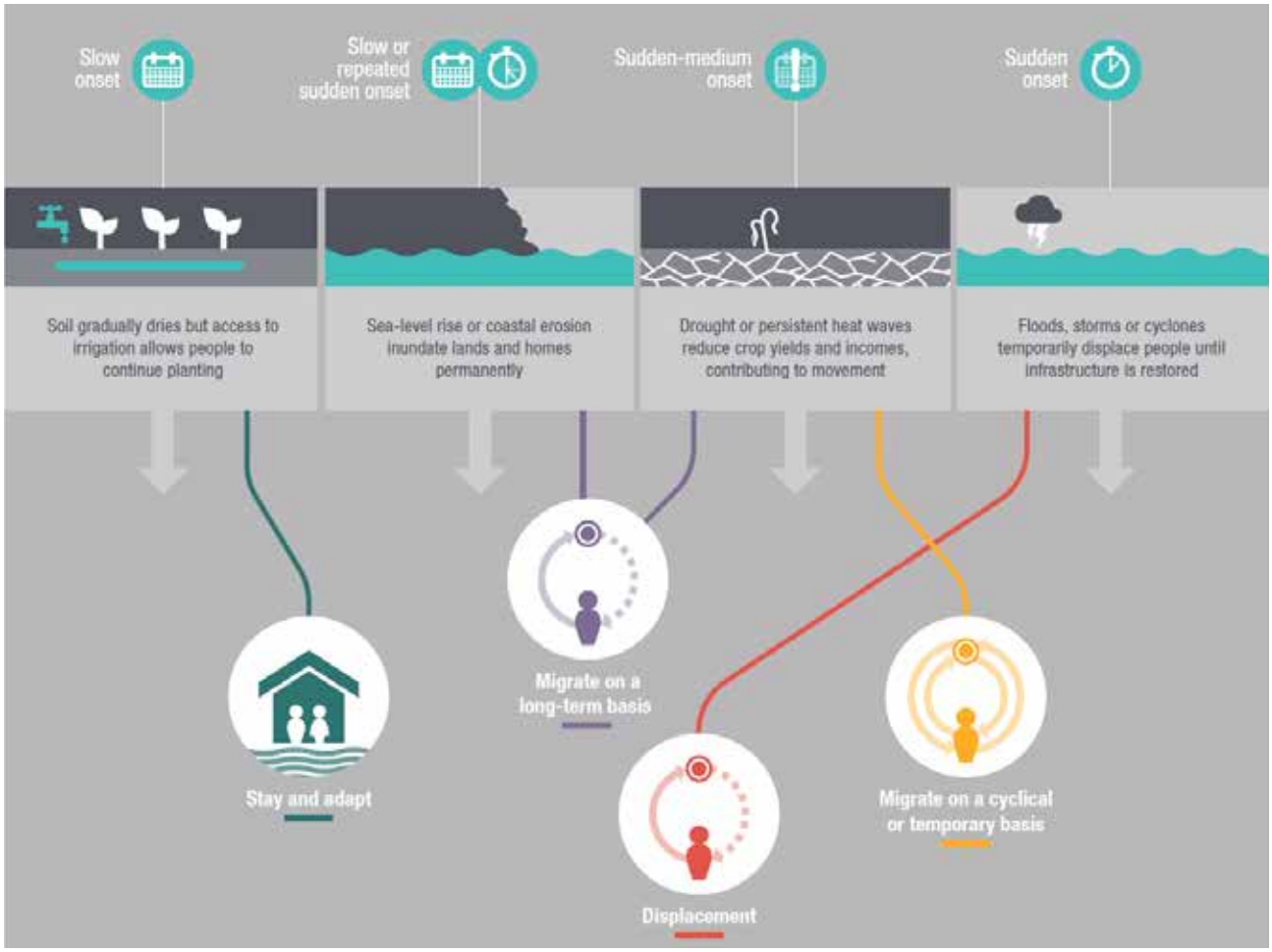


**Figure 3: Possible mobility responses to different climate hazards (ODI, 2017)**

do not want these residents to move back, and in other cases pressure from developers to develop these sites prevents their return (Mitchell, 2011; Dodman *et al.*, 2013). Where tenants rent land or housing, they are at very high risk after a disaster as their tenure is not formally recognized by the government (Dodman *et al.*, 2013).

Climate change is also likely to lead to planned relocation. There is a real risk that resettled people will end up with worse tenure security and loss of livelihood options after the planned relocation and there is a tendency to move back to the original lands. Experience shows that voluntary schemes can be more successful and that planned relocation over short distances works best (Correa *et al.*, 2011).

| Vulnerability issue | Land governance response |
|---|---|
| Climate change is likely to increase the migration as well as the temporary displacement of people. | Support migration decisions that provide new livelihoods and ensure secure land tenure and property rights. Implement culturally appropriate, planned relocation of affected people. |
| Increased migration to towns and cities from rural areas due to environmental impacts on rural livelihoods and greater competition for land. | Improve land-use planning, slum upgrading and land readjustment for planned relocation and to facilitate migration as an adaptation response. More effective coordination will be needed between land-use planning, flood risk management, drainage and coastal protection. |
| Disasters can damage arable land and make it temporarily unusable, causing affected landholders to find alternative sources of livelihood or to migrate. | Have better data and spatial maps of affected land and people to inform planned relocation plans. |

## 3.2. GENDER INEQUALITY

Vulnerability to climate change is non-discriminatory and affects everyone. Women and men, due to differing social roles, may experience the impacts of climate change differently, with women often disproportionately negatively affected. In a report by the European Capacity Building Initiative, it is stipulated that women, compared to men, often have limited access to resources, including land tenure rights, less access to justice, limited mobility, and limited voice in shaping decisions and influencing policy (ecbi, 2017). Of those exposed to climate related hazards, women are particularly sensitive in addition to having restricted capacity to respond (Denton, 2002). Women on average make up 43 per cent of the agricultural labour force in developing countries, and around 50 per cent in sub-Saharan Africa (IPCC ,2014; FAO, 2016). However, most women have weaker land tenure rights compared to their male counterparts. Women's land rights are human rights and need to be preserved and protected. Securing women's land rights further advances the global commitment in meeting moral and legal obligations under the UN and its conventions, including the United Nations Declaration on Human Rights and Convention on the Elimination of all Forms of Discrimination Against Women (ecbi 2017). However, in most countries, fewer female smallholders have access to credit, labour markets and non-farm work opportunities than men, while many adaptation practices require cash, time or labour and are more difficult for women to implement (FAO, 2016). Natural disasters have a disproportionate impact on women and girls. Where gender inequality in access to land and resources exists, it is likely to be exacerbated after a disaster due to women having limited access to land and property rights; also when combined with cultural discrimination, gender inequality can limit their access to emergency relief and planned relocation opportunities after a disaster (Quan and Dyer, 2008; Mitchell, 2011).

Gender discrimination in access to land tenure rights specifically reduces women's chances in undertaking long-term investment in their land and embracing land-use practices that reduce land degradation. As a result, women's ability to respond to disasters and adapt to

longer-term climate change effects is compromised. These patterns of discrimination and gender inequality are reflected in their adaptive capacity, shaping the distribution of risk and benefit in adaptation actions, with the more powerful securing land tenure rights at the expense of the weak (Ensor *et al*., 2015). This can be a consequence of legal and institutional discrimination, but it also occurs in customary tenure systems. In such instances, women may be unable to inherit property and are therefore dependent on male relatives for access to land. Lack of formal recognition of women's land and property rights also means that a female spouse does not have access to planned relocation or compensation for the loss of property (Quan and Dyer, 2008). Women and girls are particularly disadvantaged when the landholding is patriarchal and when they are widowed, separated or divorced. Often land tenure insecurity compounds hardship in such situations which are exacerbated by administration of customary and religious laws that and or inadequate legal frameworks that do not recognize or respect women's land rights. Women have a disproportionately high role in agricultural production and in developing countries comprise an average of 43 per cent of the agricultural labour force (IPCC ,2014; FAO, 2016).

Despite widespread evidence of women's resourcefulness and resilience, and their significant

**Women queueing to validate their land details in Chamuka Chiefdom, Zambia before the issuance of customary certificates of land occupancy. Photo ©People's Process on Housing and Poverty in Zambia**

roles in community responses to natural hazards, the contributions of women to disaster risk reduction (DRR) planning and adaptation actions are often unrecognized and under-used. According to Quan and Dyer (2008), it is also rare for women's needs to be considered by agencies and collectives dominated by men in decisions about migration and planned relocation. As such, it is argued that women can, and should, play a crucial role in adaptation to climate change (FAO, 2016). Building effective responses to climate change requires an understanding of how gender inequality affects multiple issues: access to, and control of, resources; institutional structures; social, cultural and formal networks; and decision-making processes (ecbi,2017).

Regardless of tenure type, securing land tenure rights for women is key for their social and economic wellbeing and in sustainable climate change mitigation and adaptation through reduced land degradation and improving overall resilience to natural disasters. Putting productive assets such as land tenure rights in the name of women will enhance their tenure security and allow more benefits to flow to their dependants (ANGOC, 2017). Women's formal rights can be withdrawn because of informal practices, such as delaying or controlling women's marriages, giving women cash compensation in place of land, or employing customary land laws to ensure that land cannot be divided and ensuring it remains in the family, (World Bank, 2012). To successfully profile gender issues affecting women and men's vulnerability to climate change effects, support planning and policy decision, sex disaggregated data is paramount. However, sex- and gender-disaggregated data and analysis related to land and climate change are often not available at local, sub-national and national level; a situation that makes it difficult to assess the level of tenure rights, vulnerability to impacts of climate change and related actions. Such data needs to be based on commonly understood concepts and definitions that adequately reflect their diversity of experiences by men and women; informed by comparable indicators for comparability.

## 3.3. IMPACTS ON FOOD AND WATER SECURITY

| Vulnerability issue | Land governance response |
|---|---|
| Women are key to household food security decisions. | Adopt fit-for-purpose policy to improve land tenure security for women. |
| Limited access to land and other productive resources means that women's vulnerability to disaster tends to be more pronounced. Natural disasters also tend to have a disproportionate impact on women. | Use Gender Evaluation Criteria tool to assess and address gender discrimination in access, ownership and control of land. Provide women with secure land tenure rights and access during planned relocation and for durable solutions. |
| Most women are very dependent on access to land and natural resources for their subsistence and these can be critical to survival during drought. | Secure land tenure rights, including access to, ownership and control of agriculture land, forests, grazing lands, fisheries and other areas of natural resources are important for sustainable livelihoods. |
| Inadequate engagement of women and girls in decision making, planning and delivery of adaptation programme | Ensure women are mobilized, capacity built and represented in key decision-making levels at all levels of programming including monitoring and evaluation. |
| Inadequate gender disaggregated land and climate adaptation data for planning and policy decisions. | Promote and support generation of sex disaggregated data based on specific indicators for measuring gender-land and climate change issues/ vulnerability. |

Climate stressors pose significant risks to the material aspects of livelihood security, including loss of access to land, food and water security and employment (Oliver-Smith, 2009; Hanjra & Qureshi, 2010; Turral, Burke & Faures, 2011; Wheeler & von Braun, 2013). Climate variability impacts the stability of agriculture and food security and can cause water stress and scarcity as well as the destruction of property. Nutrition, economic stability and threats to shelter and human health all represent significant challenges for adaptation (IPCC, 2014). The risks from drought and other extreme events tend to be higher in areas without irrigation and with lower levels of average annual rainfall. In

these areas, vegetation cover tends to be poorer with a higher frequency and severity of droughts. Therefore, in dryland (semi-arid and arid) areas, climate risks are one of the main factors contributing to food insecurity and impacting on livelihoods (Holden and Ghebru, 2016).

Agricultural societies adapt to the impacts of change in weather by adjusting farming practices and conservation measures. Water management, diversified farming activities and income sources outside agriculture reduce risk exposure. However, in the case of pastoralists for example, any loss of land and natural resources as a result of insecure land tenure will reduce their ability to adapt. Alternatively, secure land tenure rights are likely to increase the incentives for investment and people to invest in and take advantage of adaptation options (Quan and Dyer, 2008; Oliver-Smith, 2009; IPCC, 2014).

Forests and the biodiversity they provide are vulnerable to climate change. Adaptation can involve the management of forest fires, silvicultural practices and the conservation of forest genetic resources (FAO, 2011). Ecological restoration can enhance biodiversity and environmental services and promote economic livelihoods. Community-based management and payment for ecosystem services, while developed for carbon payments, has the potential for adaptation. Payments for environmental services (PES) can also contribute indirectly to adaptation through co-benefits and by creating institutional structures that support adaptive capacity (Barnes and Quail, 2009; IPCC, 2014).

Collective titling for indigenous groups and improved tenure security for existing forest dwellers are approaches that can help. Providing them with more secure land tenure and better systems for valuing forest resources to allow payments for environmental services is important (Quan and Dyer, 2008). Several authors have highlighted that REDD+ presents particular risks for the land tenure rights of indigenous peoples and forest dwellers. Land administration systems can help through the demarcation of boundaries, cadastral and participatory mapping of social tenures and with the recording of rights (Mitchell & Zevenbergen, 2011, Larson *et al.,* 2013).

| Vulnerability issue | Land governance response |
|---|---|
| Scarcity of arable land is an indicator of household welfare. In countries with high levels of climate risks this can be a source of vulnerability and conflict. | Secure land tenure rights and access to affordable fertile land are important determinants of household food security. |
| Urban growth can cause competition for land and impact land tenure rights in agricultural peri-urban areas. | Improved control of urban development through land-use planning. |
| Climate change may reduce groundwater resources and renewable surface water in dry subtropical regions. Urban growth will increase competition for water with agriculture and other competing uses. | Improving the capacity of institutions to facilitate access to water to more properties regardless of tenure type. Intermediate forms of land certificates can help in some cases. Tenure responsive land-use planning can help to restrict groundwater extraction. |
| Decreasing yields and disrupted food production will increase prices and market volatility. | Secure land tenure rights create incentives for households to invest in improving their land-use practices or conserving land. |

## 3.4. INDIGENOUS AND TRIBAL PEOPLES

Climate change will have a substantial impact on the livelihoods of indigenous and tribal people, or people living a traditional lifestyle, and the natural ecosystems they rely on. Exclusion of indigenous groups from land and natural resources on which they depend can be caused by government failures to recognize their land and territorial rights. Any restriction on access to land will be exacerbated by the impacts of climate change or variability on their surrounding ecosystems. Cultural expressions of risk, community coping mechanisms and adaptation needs can be widely different. In such contexts, participatory activity can inform vulnerability assessments and support a culturally

**Women and children in Jockah village in Lao PDR. Photo ©Village Focus International**

effective approach to adaptation (IPCC, 2014). This empowerment is important in dealing with climate-change challenges existing power relations, cultural practices, knowledge systems and adaptive strategies. The capacity of indigenous and tribal peoples to adapt to variable environmental conditions, has been impacted by globalization, urbanization and climate change, eroding customary and traditional culture and knowledge. These challenges are recognized in *Article 16 of Convention C169 - Indigenous and Tribal Peoples' Convention, 1989* (ILO, 169) which is binding on states, and *Article 10 of the 2007 United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP).

Impacts on adaptive capacity can be offset to some degree by the integration of local traditional knowledge and the latest developments in science. Much has been written about the importance of participatory approaches to indigenous mapping (Bryan, 2011) and the opportunities of counter-mapping approaches (Peluso, 1995). This integration of local traditional knowledge and science can also be applied to land tenure rights through household surveys and mapping to identify the complex people-to-land relationships in customary or other types of informal or social tenures. These can complement traditional (and often verbal) knowledge of the customary land tenure norms. However, it is recognized that a fundamental aspect of customary tenure systems is their flexibility - any attempt at codification has the unintended consequence of fixing the norms and standards in time. This can rob the ability of customary tenure to adapt to a rapidly changing environment.

Ensor *et al*. (2015) proposed a rights-based approach to development, arguing that human rights principles enable resilience practices to have a greater pro-poor emphasis by changing the balance of power in favour of the marginalized. Social, political, administrative and legal entry points can be mapped to rights-based actions that shape behaviour, learning and knowledge that enable adaptive actions. If this is applied to land tenure, property rights are secured, or rules are enforced by the different legal and land administrative provisions. This can include customary systems. Rights-based strategies could seek to have property rights recognized by formal

or informal land administration "regimes", through social and political arbitration or advocacy processes, or through appeal to legal or administrative systems. This recognition of institutional diversity offers different entry points for improving adaptive capacity. However, human rights-based approaches can be difficult to implement and enforce at the local level and may be prohibitively costly. They have also been criticized as having a western bias and are not deemed to be value-free when applied in traditional customary societies.

| Vulnerability issue | Land governance response |
|---|---|
| Indigenous people are vulnerable to climate change. Impacts are greater when traditional cultural norms and customary adaptation processes are not considered in adaptation. | Participation of indigenous communities in vulnerability assessments and at all stages of a project. |
| Impacts such as urbanization and globalization have eroded customary culture and knowledge and traditional adaptive capacity has been lost. | Household surveys/mapping and enabling participation of local people to identify people-to-land relationships in customary or other types of informal tenures. |
| Climate change and tenure insecurity exacerbates inequality, increasing the risk of political disruption and conflict. | Account for Convention C169 - Indigenous and Tribal Peoples Convention and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). |
| Local customary communities occupy more than half the world's land but have legal rights to only 10%. This places them at risk of evictions, land conflict, and land grabbing. | Secure land tenure rights improve the security of tenure within customary land tenure by recognition of such systems in law. |
| Climate change challenges power relations, cultural practices and knowledge systems. | Enhance participation in all levels of formal decision making over resources to enhance climate resilience. |

## 3.5. ENVIRONMENTAL DEGRADATION AND IMPACTS ON ECOLOGICAL INTEGRITY

According to Holden and Sietchiping (2010), the most serious environmental impacts are deforestation, loss of biodiversity, soil erosion, nutrient depletion, soil acidification, salinization, overgrazing, soil and water pollution, habitat destruction and desertification. Inappropriate land development can also act to exaggerate climate impacts.

Land degradation, land clearing and reduced rainfall result in changes to natural ecosystems, land capability and land-use systems, and the supply of quality arable land is put under greater pressure by increased human demands (Quan and Dyer, 2008). This presents multiple challenges for securing the land tenure rights. Abrupt or long-term changes in land use may lead to human mobility or affect agricultural production, changes in land or resource use may cause tenure systems to change (*ibid*).

Over-exploitation of forests, especially in open access regimes, can lead to deforestation and soil erosion. On public lands, the issuance of land leases and licences define the rights holders, uses, rights and obligations, and duration for the exercise of rights. However, without enforcement of these rights, they affectively become open-access forests. Smallholder farmers and those without tenure security face limited land-use options and might focus on immediate needs rather than long-term sustainability. Poverty and tenure insecurity make them reluctant to make long-term investments that could improve their resilience (Quizon *et al*., 2018).

| Vulnerability issue | Land governance response |
|---|---|
| The impact of climate change on agriculture, forestry and fishing will be significant, affecting livelihoods & incomes. | Ensuring that rural communities remain the custodians of the land will benefit local households and generate better environmental outcomes. |
| Unsustainable practices upstream can cause impacts further downstream. Watershed systems are affected by higher runoff and can lead to more dramatic flooding. This is compounded by a lack of land-use control, insecurity of tenure and overlapping land tenure regimes. | Promote and use the VGGTs and mandate for the protection of land tenure rights in the whole watershed catchment. Land policy and regulatory framework reform is also needed. Reforms can then be supported by adopting the tenure responsive land-use planning to more effectively control land use and protect tenure security of the poor and vulnerable. |

Improved land governance needs to be a key part of climate adaptation. Central to this is a "whole of landscape" approach aimed at preventing inappropriate land use and development in key catchment areas. Also important is addressing important political economy issues that include the complex social and political pressures and power relationships that shape land conflict.

## 3.6. CONFLICT OVER LAND AND NATURAL RESOURCES

Natural disasters and extreme weather events can lead to conflicts over land, impacting people's livelihoods and assets and placing stress on governance systems. Ongoing or recent armed conflict not only undermines the adaptive capacity of communities and households, but also decreases the capacity of governments to function effectively, which in turn impedes adaptation to climate change (IPCC, 2014).

In combination with urbanization and economic development pressures, climate change constrains access to natural resources and can also indirectly increase risks of violent conflict by amplifying existing inequalities (Hugo, 2013; IPCC, 2014). As such, climate change can be considered a "threat multiplier", potentially leading to the outbreak of conflict (Environmental Justice Foundation, 2017). The more vulnerable and marginalized groups are more likely to be affected and potentially lose access to land and have less ability to contest this loss of access.

According to the IPCC (2014), there is some agreement that changes to rainfall in resource-dependent economies such as pastoral societies enhances the risk of localized conflict. Where there is an extreme impact on water supply, pastoralists may abandon the land or take over land used by others, resulting in conflict. Changing rainfall and drought patterns are causing pastoralists to move away from their traditional migratory routes, with

**Artisanal gold mining site in South Kivu in the Democratic Republic of the Congo. Photo ©UN Environment/Hassan Partow**

potential for conflict over resources between nomadic pastoralists and sedentary farming communities. Seeking alternative livelihoods through changing traditional migratory routes is considered a valid response to changing climatic conditions (Tacoli, 2009).

Adaptation at odds with land tenure and property rights can aggravate existing grievances (IPCC, 2014). Maladaptation resulting from interventions that increase the risk of conflict are more likely where property rights and conflict-management institutions are ineffective or lack recognition.

The presence of institutions that can peacefully manage conflict is a critical factor in mediating the risks. But while addressing competing claims related to interventions is necessary for adaptation to gain acceptance, ultimately it is the nature of the conflict that matters. Effective conflict resolution can drive change and be useful in adaptation, but, equally, unresolved conflict over land and resources can seriously undermine adaptation efforts (Landac, 2017).

| Vulnerability issue | Land governance response |
|---|---|
| Global environmental change may lead to permanent displacement of people or alter seasonal migration patterns; increasing the risk of conflict in the receiving areas (particularly where mobility crosses borders). | Significant efforts will be needed to implement planned and culturally appropriate cross-border relocation and migration of affected people. Alternative conflict-resolution mechanisms will also be needed. |
| Climate change will constrain access to arable land, water, fisheries and forests. Changing rainfall patterns are causing pastoralists to move from traditional migratory routes, with potential for conflict between pastoralists and sedentary farmers. | Secure land tenure rights to support alternative livelihoods through changing traditional migratory routes. Alternative dispute-resolution mechanisms can help address tensions over land and disputes over diminishing resources because of climate impacts. |
| Adaptation actions can aggravate existing grievances over resources. Climate change can indirectly increase risks of violent conflict by amplifying existing inequalities that are found within and between communities. | The presence of institutions that can peacefully manage conflict are needed to mediate the risks. Map and identify competing claims related to interventions and employ alternative conflict resolution if necessary for adaptation to be effective. |
| Adaptation at odds with land tenure or property rights may increase the risk of conflict, particularly where institutions governing land are weak. Disaster-risk reduction and climate actions intended to increase resilience may also lead to eviction and land grabbing. | Assessment of adaptation interventions and their implications for land tenure security. Land-use planning that involves effective community participation can also reduce disputes. The Gender Evaluation Criteria tool can be used to assess for gender responsiveness. |
| Changes to soft responses such as land use during adaptation or disaster response programmes (e.g. zoning systems, building regulations, planned relocation to safer grounds, temporary shelters) can impact access to land and land tenure rights. | Tenure-responsive land-use planning can provide for a thorough assessment of existing land tenure security at the household and community levels (in communal systems). Effective dispute-resolution mechanisms may be needed. |
| Hard disaster risk reduction (DRR) and adaptation (e.g. new drainage systems and dikes, forest protection and coastal rehabilitation) can impact access to land and land tenure rights. | Decisions on planned relocation need to be based on a thorough assessment of existing household and community tenure security. This should identify the current land tenure status and existing land disputes. |
| Existing conflict over land can prevent DRR or adaptation response from being implemented. | Alternative dispute-resolution mechanisms may be needed as an alternative to the courts. |
| Decisions to resettle households to reduce their disaster risk or reduce vulnerability can lead to households losing connection to social networks and livelihood options and a reduction in their tenure security. In some cases, people with insecure tenure return to their hazard-prone land. | The identification of safe land that is not under dispute is important. The consultative processes involved in tenure-responsive land-use planning can help the community identify these sites. Providing secure enough tenure for the resettled households and the host communities is important. |
| Many post-disaster recovery programmes focus on households with documentation of prior land ownership but ignore claims of those without documentation. This often means that funding needed to rebuild after a disaster is not available. | Amending the regulatory framework to allow many forms of evidence of pre-disaster land tenure rights. Use FFP land administration principles to develop and issue intermediate forms of land records. |

Women in the Province of Equateur in the Democratic Republic of Congo collecting firewood from the forest. In many forest dependent communities, traditional knowledge and associated forest management practices can help promote forest rehabilitation, restore degraded forests and substantially increase afforestation and sustainable land management in the face of climate change. Photo ©UN Habitat/Christol Paluku

CHAPTER 4

# CASE STUDIES AND SUPPORTING LITERATURE

In this section we highlight the summary findings from each of the five case studies chosen to illustrate different landscape types, issues, human and natural drivers. The key themes include the context of Small Island Developing States (SIDS), slums and informal settlements, rural pastoralists and disasters. Each case study considers the impacts of climate at the local level and the implications for land tenure while making recommendations for land governance responses and suitable land tools. The case studies therefore illustrate at the local level why land governance must be a critical part of the climate response in addressing the global development goals.

## 4.1. SLUMS AND INFORMAL SETTLEMENTS IN DISASTER-PRONE AREAS

External stresses of rapid urban growth and increased climate risks are adversely impacting many cities in the global South, leading to greater vulnerability and potential failure of the complex systems that urban areas depend on (Friend *et al.*, 2014). Elements at risk in the built environment include infrastructure (e.g. water, sanitation and hygiene), housing, open spaces and people (McEvoy *et al.*, 2006). However, whilst climate change is creating new challenges for risk management in cities, the urban environment can also offer opportunities; for example, many of the world's fastest-growing cities have high levels of life expectancy and low levels of death from disasters (World Bank, 2012; UN-Habitat and ESCAP, 2015).

Low-lying coastal regions, deltaic areas and islands will be the areas most affected by sea-level rise. Many of the world's cities are in the coastal zone, exposing critical assets and people to flood risk (IPCC, 2014). Small Island nations, such as the Solomon Islands, are often a central focus of the sea-level rise narrative, however not all islands are equally exposed. That said, a rise in sea level will introduce other emergent threats, with heightened storm surge, increased coastal erosion and salinization of critical groundwater resources (CSIRO, BoM and SPREP, 2015). One further implication is migration from neighbouring islands leading to informal settlements and increased land disputes.

Many cities not only have large deficits in provision for water, sanitation and drainage but the institutions also lack the capacity to improve the situation. For example, it has been estimated that a billion people live in slums and informal settlements where water and sanitation providers are unwilling or unable to invest (Mitlin and Satterthwaite, 2013).

According to UN-Habitat (2015), an estimated one third of city-dwellers in developing countries live in slums, often on hazard-prone land, and these groups are most at risk from the impacts of climate change (Mearns and Norton, 2010). Insecure tenure in urban settlements reduces incentives for residents to invest in adaptation practices such as housing improvements or upgrading services (Satterthwaite, 2007; Mearns and Norton, 2010; World Bank, 2012) and the lack of provision of basic infrastructure and services (FIG, 2014). Many government agencies are also reluctant to provide infrastructure to settlements lacking formal property rights, especially on public land (World Bank, 2012).

Rapid urbanization challenges the basic human right of access to suitable land and shelter, which depends on secure land tenure rights. The impact is often a threat of eviction linked to speculative development and exclusion of the poor from formal land markets (Mitchell *et al.*, 2015). The most common justifications given for forced evictions include infrastructure projects, international mega-events and urban beautification (World Bank, 2012). The threat of eviction also contributes to increased vulnerability by preventing the purchase of more durable materials, and housing is therefore likely to be self-constructed and made from

low-quality materials (World Bank, 2012; Dodman *et al.*, 2013).

Post-disaster reconstruction of housing in slums and informal settlements is complex. Government and community organizations need to work together to ensure that the poor regain access to their pre-disaster land and housing after a disaster. They also need to ensure that new housing is more stable than the structures it replaces. However, this is not always possible for those in informal settlements as their lack of formal identity means they miss out on rehabilitation financial packages.

Many municipal governments are unable to cope with rapid urbanization processes and struggle to provide enough affordable land and housing. Areas of higher land value that are zoned for residential development tend to have lower hazard risk and come with formal tenure. In more high-risk areas, building controls and regulations may not be enforced, resulting in the spread of informal, poor-quality dwellings which are often not connected to basic infrastructure (Quan and Dyer, 2008).

It is important to note that informal tenure does not necessarily mean insecure tenure; informal tenure offers the potential to provide a level of flexibility of adaptation responses. For example, families moving from outer islands to Honiara may first move in with relatives and then build a small dwelling next to their relatives' house. Despite the lack of legal recognition, some informal settlers perceive their land tenure rights to be secure, with the strength of their community cohesion emphasizing the importance of social resilience in times of disaster.

**Haitian village devastated by Tropical storm Hanna. Photo ©United Nations/Marco Dormino**

**A Turkana boy scoops water from a dry riverbed near Kakuma town,Turkana. Photo ©UN-Habitat/Julius Mwelu.**

Typical adaptation approaches for urban slums and informal settlements are settlement upgrading programmes (e.g. addressing the quality of buildings through improvements to construction and building materials), improving land-use planning to prevent building in hazardous locations and, coupled to this, planned relocation of at-risk communities (IPCC, 2014). However, both options come with risks to tenure security, such as eviction and land grabbing (Dodman *et al*., 2013).

## 4.2. DROUGHT AND DRYLAND SEASONAL PASTORALISM

Most of the world's poor and food-insecure people are rural and dependent on agricultural production and income for their livelihoods. They are directly exposed to climate risks that affect agricultural production. However, the vulnerability of dryland pastoralists is expected to increase with the predicted decline in freshwater availability. The impacts on agriculture may be mediated by the level of adaptive capacity of the rural population, however we are already seeing an increased migration away from rural areas because of climate change (IPCC, 2014; Holden and Ghebru, 2016).

Seasonal mobility to seek better grazing is one of the strategies that pastoralists have developed for responding to climate variability (IPCC, 2014), however where land tenure rights are unclear, this mobility may be hotly contested. Introducing individual (non-communal) property rights and fencing can severely threaten food and livelihood security for pastoralists who rely on seasonal mobility. A better approach may be to strengthen the security of communal land tenure

rights and collective action (Holden and Ghebru, 2016).

Land tenure regimes that permit mobility may lead to lower overall agricultural production but result in a greater capacity to withstand climatic variability (Agrawal, 2007). Rangeland tenure systems in pastoral areas such as "common property" come with complex and flexible informal rights in different resources that are negotiated by communities. The allocation of usufruct (land-use rights) on cropped land by traditional authorities is very common. Arrangements (loans, cash rental and sharecropping) exist that allocate secondary rights in land, crucial for spreading risk (Anderson *et al.*, 2007; Mearns and Norton, 2010).

Land tenure agreements can also influence a farmer's decision on whether to adopt improved adaptation tools such as agricultural credit. A study of farmers and tenants in Pakistan (Ullah *et al.*, 2015) found that the adoption of these adaptation tools varied depending on whether the land was cultivated by the owner or tenant. The use of traditional adaptation tools was relatively higher among landless tenants, whereas the use of formal adaptation tools such as agricultural credit was higher among owner farmers who can access financial institutions to reduce their risk.

Land tenure can impact a farmer's risk management decisions through indirect effects on his or her risk perceptions, risk attitude and access to publicly provided services. Tenant farmers perceive the catastrophic risks as leading to significant productivity losses and farmers with higher perceptions of such risks tend to adopt more risk management tools. Land ownership status can also affect a farmer's attitude to risk; tenant farmers may avoid risky prospects. The opportunity for farmers to increase farm production and eventually to increase their income from farm enterprise largely depends on their access to the credit market and their ability to compete in it (*ibid*).

## 4.3. CASE STUDY: INFORMAL SETTLEMENTS, HONIARA, SOLOMON ISLANDS

### 4.3.1 Land governance & informality in Honiara

Honiara is the capital of the Solomon Islands and, based on 2009 census estimates, the number of households there was expected to rise from 11,500 in 2009 to 50,857 by 2050 (Ministry of Lands, Housing and Surveys, 2015). The boundaries of the city are disputed, with customary land-owners resisting attempts to demarcate the township boundary. One third of Honiara's residents are from the Island of Malaita and many born in Honiara continue to view themselves as being "from" their island of family origin. Land tenure was a key factor in the ethnic tensions, a period of armed conflict from 1998 to 2003 between the local Guale population and the predominantly Malaitan migrants that arrived in Honiara. The tensions resulted in an estimated 20,000 migrants returning to their home islands (20 per cent of the population). Several peri-urban settlers also migrated inward onto alienated land within the city boundary to avoid the conflict. Although many Malaitans returned following the intervention of the international peacekeeping force, the sensitivity of land tenure issues persists, with most of the subsequent urban growth occurring within the town boundary and in alienated areas to the city's east, close to the international airport.

More than a third of Honiara's inhabitants live in informal settlement zones (ISZs) but informal occupation also extends beyond these government-defined areas. Formal land tenure arrangements within the urban boundary are established through the granting of fixed-term estate (FTE) leases of government-held land for a 50-year period. In peri-urban areas, some alienated titles remain. However, much of the land directly to Honiara's south and west is held through customary ownership, with lease arrangements developed through

Aekafo-Feralado informal settlement. Photo ©Darryn McEvoy/RMIT University

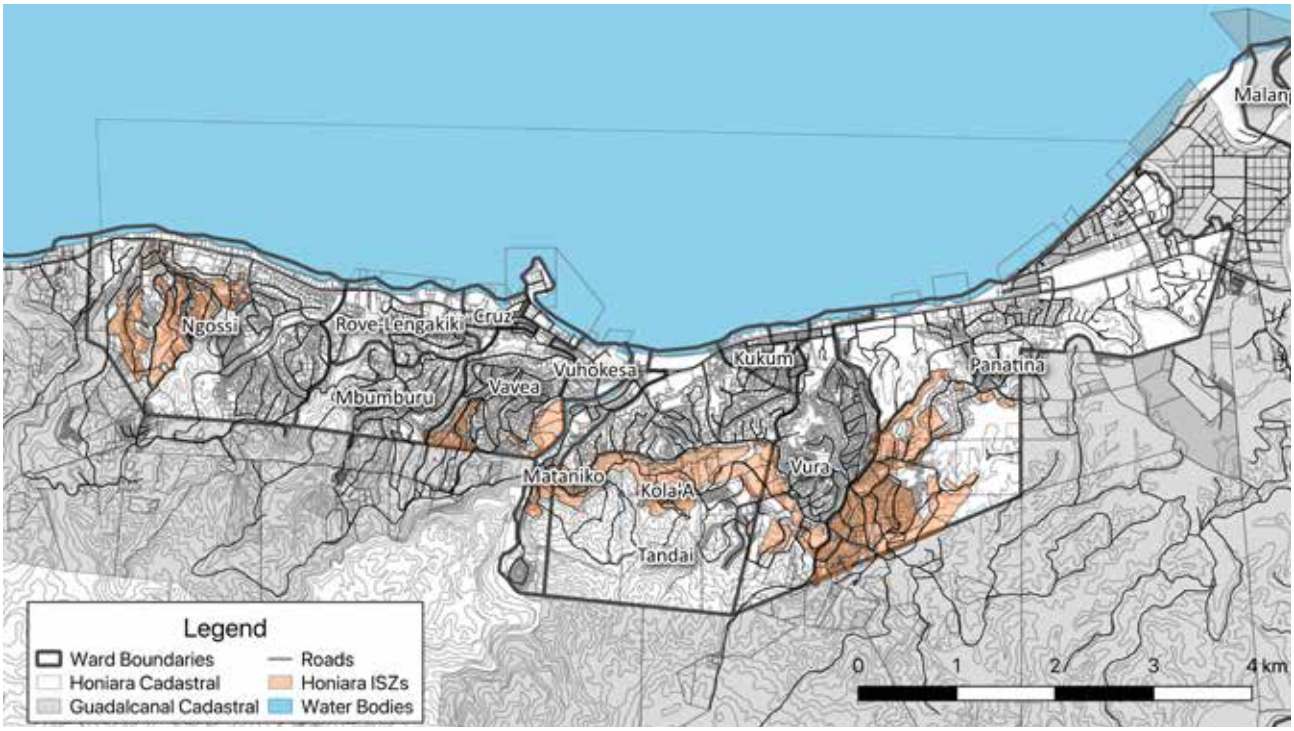


**Figure 4: The city of Honiara (data sourced from the Solomon Islands Government)**

both demarcated FTE provisions, informal agreements and customary arrangements such as *chupu* (which involves payment through feasting, the sacrifice of pigs and gifting of *kastom* materials).

Temporary occupation licences (TOLs) were an alternative form of government recognition of tenure rights introduced by the British administration in the 1970s. They were originally intended as a "stop-gap" response to manage unplanned urban migration in designated temporary housing areas but these areas continued to expand over time. The overwhelming majority of TOLs have lapsed to the point that all but 10 of a sample of 3,000 TOL households were found to have expired in a 2006 audit. More recent efforts to convert TOL areas to FTE through surveying and valuation are underway but lack the resources to keep pace with rapid informal urban growth.

### 4.3.2 Case study sites

Two informal settlement climate vulnerability hotspots, identified in the Honiara Urban Resilience and Climate Action Plan (HURCAP; Trundle & McEvoy, 2017), were selected for in-depth case study analysis. The areas are Kukum Fishing Village (HURCAP Hotspot 2) and the Aekafo-Feralado Informal Settlement Area (HURCAP Hotspot 3).

Each occupies a site highly exposed to a range of climate and natural hazards, with differing land tenure rights and contrasting relationships between land tenure and climate vulnerability (understood as a function of exposure, sensitivity and adaptive capacity).

Kukum Fishing Village spans roughly 200 metres of coastline in the east of Honiara, between the Kukum Highway and the Iron Bottom Sound to its immediate north. Settlers arrived in the 1960s and the village has grown to more than 60 households, with a total

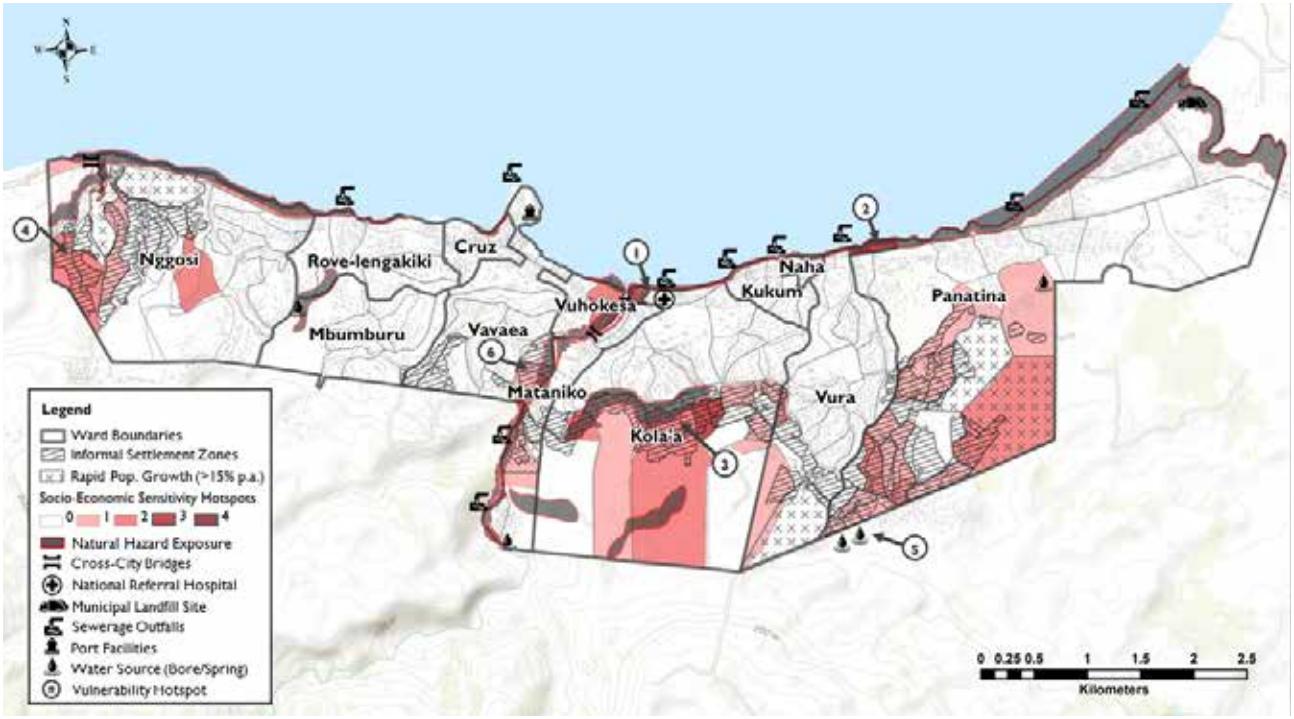


**Figure 5: Honiara Climate Vulnerability Assessment Map (Trundle & McEvoy, 2017)**

population of 463 in the most recent census in 2009. The village plays an important cultural and economic role in the city, supplying much of the adjacent fish market with produce. While much of the land along the Kukum Highway has been formally subdivided, many of these dwellings overlap demarcated land boundaries. Further land reclamation to the settlement's north has been done without official land tenure rights. The community is very exposed to storm surges as the settlement lacks coastal defences and was impacted by erosion after previous cyclone and storm events. The entire area is less than 5 metres above sea level and is therefore at high risk from increasing cyclone intensity, storm surges and sea-level rise.

**Figure 6: Kukum Fishing Village aerial photograph and subdivisions (MLHS, unpublished)**

Aekafo-Feraladoa is Honiara's largest informal settlement area and was established by Malaitan urban migrants in the late 1960s. It was one of the first "squatter settlements" recognized by the then British Protectorate (DoG, 1967), with temporary occupation licences (TOLs) being granted to many of its occupants in the 1970s (Sullivan & Larden, 2007). The settlement contained 822 households at the time of the 2009 National Census, with a total estimated population of 5,183, having increased at a rate of 15 per cent per year since a comprehensive survey by the Ministry of Lands, Housing and Surveys (MLHS) four years earlier (Trundle, 2018).

Steep valley slopes in Aekafo-Feraladoa leave many

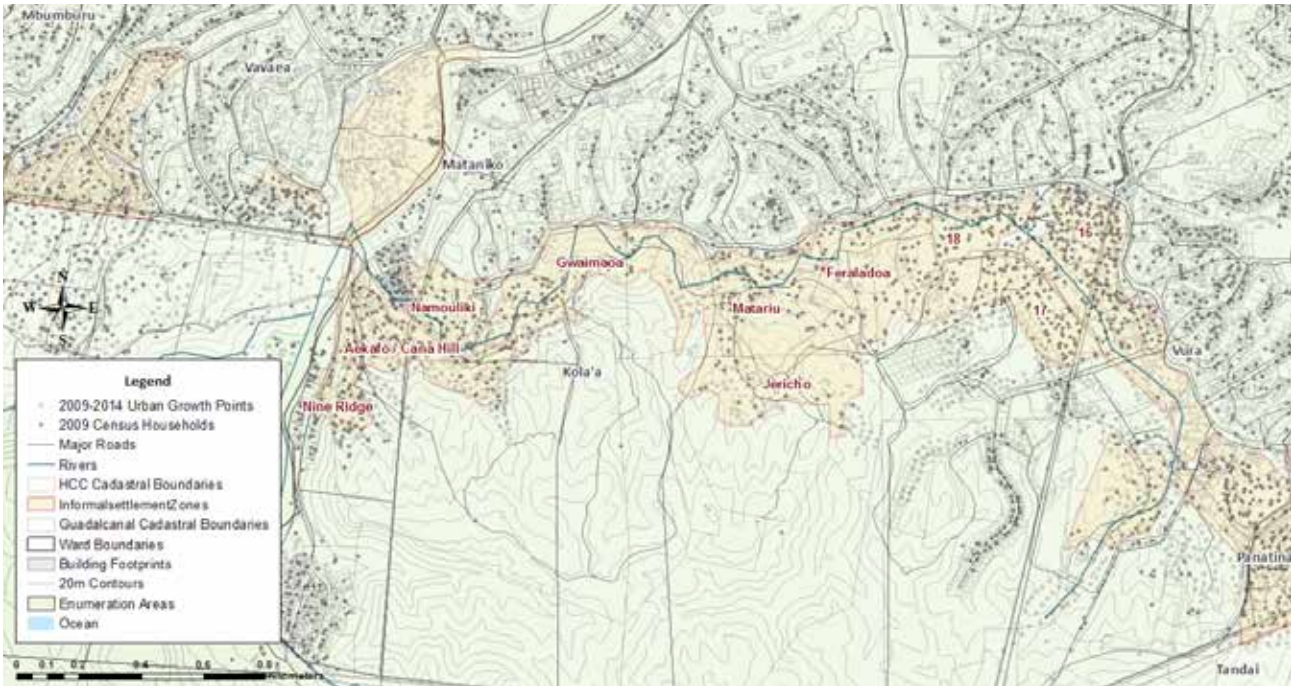


**Figure 7: Aekafo-Feraladoa informal settlement zones (Trundle, 2018)**

| PRIORITY ACTIONS | RELEVANT LAND TENURE RESPONSES AND TOOLS |
|---|---|
| **Exposure** | |
| Develop a city-wide map of hazard zones, with slum upgrading as well as municipal, utility and growth/ development plans. | Mainstream hazard risk mapping into land administration - Develop a city-wide map of hazard zones which informs about slum upgrading as well as municipal, utility and development plans and informal settlements upgrading strategies, plans and actions. Cadastral mapping and land tenure security assessment to also inform upgrading. |
| Mainstream climate data so that all upgrading is in areas outside of climate/natural hazard risk zones, as well as utility access, recreational and public-use zones. | Tenure-responsive land-use planning - ensure that all upgrading occurs outside of high hazard risk zones and utility, recreational and public use zones. Implement the continuum of land rights - ensure that those without TOL are also included in the informal settlements upgrading strategies and actions. Participatory and Inclusive Land Readjustment (PiLAR) to provide secure tenure for all affected by upgrading and planned relocation |
| **Sensitivity** | |
| Undertake community profiling and develop action plans | Cadastral mapping and land tenure security assessment to identify perceptions of tenure security, encroachment onto public and customary land, give information about TOL to FTE conversions and planning for lapsed TOLs, and identify potential land conflict issues associated with community actions. |
| Assess the coverage of emergency shelters and identify new shelter sites. | Tenure-responsive land-use planning - identify safe land without land dispute issues for (i) emergency shelters, and (ii) short-term disaster displacement camps. |
| **Adaptive capacity** | |
| Expand the informal settlement upgrading programme, prioritizing avoidance of hazard-exposed areas. | Mainstream hazard risk mapping into land administration - develop a city-wide map of hazard zones which informs about municipal, utility and development plans and informal settlements upgrading plans. Cadastral mapping and land tenure security assessment to identify encroachment onto public and customary land and provide information on upgrading and renewing TOL. Fit-for-purpose land administration to identify low-cost land administration processes to provide security of tenure for all residents and build capacity. |
| Develop a relocation policy/strategy for at-risk households based on intensive community and stakeholder consultations. | Implement the continuum of land rights - ensure that those without TOL are also included in planned relocation strategies, plans and actions. Cadastral mapping and land tenure security assessment to identify encroachment into customary land. Information on decisions of planned relocation. Participatory and Inclusive Land Readjustment (PiLAR) - to provide secure tenure for all affected by upgrading and planned relocation |
| Strengthen community engagement at sub-ward and ward levels in resilience planning. | Tenure-responsive land-use planning - effective community consultation and participation in the development of land-use plans. Alternative land conflict-resolution mechanisms - to help address land disputes that arise through planned relocation and upgrading processes. |
| Ensure the HCC Disaster Operation Plan includes all tenure types and provides land for emergency shelter. | Tenure-responsive land-use planning - identify safe land without land-dispute issues for<br>(i) emergency shelters, and<br>(ii) short-term disaster displacement camps.<br><br>Implement the continuum of land rights - ensure that those without TOL are also included in the HCC Disaster Operation Plan. |

dwellings exposed to landslides and mudslides, while inhabitants of the valley floor face the risk of flash flooding. The MLHS is formalizing much of the settlement and developing plans for infrastructure, road reserves and community facilities. However, it remains to be seen whether these efforts can keep pace with the ongoing southward expansion of the settlements as the city continues to grow.

### 4.3.3 Community workshop findings

Community workshops held in late 2017 built on the engagement processes conducted in the development of HURCAP. The first workshop was held in the Kola'a Ward's Aekafo-Feraladoa Informal Settlement Area. In this settlement there are no fixed-term estates and occupants are reliant on TOLs (many of which are lapsed). The key resilience actions identified for the HURCAP were:

1) sanitation and drainage;
2) waste management; and
3) provision of drinking water. Whilst some zones have 100 per cent access to piped water from Solomon Islands Water Authority (SIWA), others are reliant on springs or boreholes for their water supply.

For electricity, two zones are totally reliant on solar power for their power needs; one zone has 20 per cent connection to electricity, with the remaining 80 per cent made up from solar, while another has a 100 per cent connection rate. Water was considered the most important issue for families, with upgraded washing areas needed along the stream. Participants said that a land title was needed to access water and electricity services and to be eligible for bank loans. A further priority was to prohibit housing on steep slopes and river valley floors.

The second workshop was held in Kukum Fishing Village, with the top three priority actions being: 1) relocation; 2) improved drainage; and 3) building of a seawall. Participants identified 25 blocks that had formal rights through "fixed-term estates" (FTE), which were the only properties with formal connection to water and electricity and access to sanitation. Approximately 30 houses were on unauthorized land with their occupants reliant on those with FTEs for access to essential services (excessive use of water and electricity through these use arrangements was noted as an issue). The existing FTE land holdings are also densely populated, with as many as eight families living on one block. Most settlers use the sea for sanitation purposes. It was estimated that there are between three and five families living in each house (both formal and informal). Most unauthorized housing is on the marine side of the community, with the main road effectively restricting any new building inland.

## 4.4. CASE STUDY: TYPHOON SENDONG IN CAGAYAN DE ORO CITY, NORTHERN MINDANAO, PHILIPPINES.

### 4.4.1 Context

This section examines the linkages between climate change and land tenure through a case study of the effects of Typhoon Sendong, which hit Northern Mindanao, Philippines, in December 2011. Sendong was the third deadliest typhoon ever to hit the country; it led to 1,268 deaths, 181 missing and 6,071 injured, with more than 131,000 families displaced or homeless. Hardest hit was the city of Cagayan de Oro with 53 per cent of the fatalities and many of the displaced persons, most of whom were informal settlers living along the city's riverbanks.

Most of Mindanao lies below the typhoon belt and experiences less tropical cyclones than other parts of the Philippines. Between 1951 and 2000, Mindanao had only 30 climate-related events per decade. With a predomantly mild climate in the region, most Mindanaons have no experience in coping with disasters and this has led to high disaster-induced displacements. At present, 135,406 people are internally displaced and

**Typhoon Sendong caused heavy damage in Mindanao. Photo ©Southeast Asian Rural Social Leadership Institute/ Ryan Louie Madrid and Haiko Magtrayo**

**Fortunate survivors of Typhoon Sendong braving the thick mud to gather clothes and things they can still recover and use. Photo ©Southeast Asian Rural Social Leadership Institute/ Ryan Louie Madrid and Haiko Magtrayo**

more than 76,000 internally-displaced persons (IDPs) in Eastern Mindanao are still in temporary shelters and in need of long-term solutions.

Internal displacement was exacerbated by the long history of internal conflicts in the region that involved armed groups, clans, criminal gangs and political elites, and stemmed from the struggle of Muslim ethnic groups (*Moro*) for their nationalism and independence. The same families displaced by Sendong continue to bear the brunt of armed conflicts that caused the displacement of 231,603 individuals in 2015 alone. Indigenous and tribal peoples (IPs) who struggle to protect their rights from overlapping and conflicting land interests became more vulnerable to the impacts of these conflicts. In 2015, displacement of 3,198 IP families (estimated 17,035 people) was recorded.

Cagayan de Oro is the regional centre and business hub of Northern Mindanao and houses the regional offices of the national government. Classified as "highly urbanized", the city's average annual population growth rate was 2.23 per cent from 2010 to 2015. Rapid population and economic growth have been accompanied by unplanned urbanization and changes in land use, as upland forest and agricultural areas made way for residential and commercial uses.

### 4.4.2 Typhoon Sendong and the immediate aftermath

Tropical storm Sendong hit Mindanao on 15 December 2011. While Sendong was considered to be a "weak" storm, it was characterized by high precipitation levels which triggered widespread flooding. The Cagayan River water level increased from 2 to 10 metres and the

floodwater carried with it mud, timber and boulders from upland watersheds. The disaster led to the deaths of 1,268 individuals, with an estimated 430,900 people displaced by the storm. Most of the victims were informal settlers residing near the Cagayan River banks. Also damaged were infrastructure, roads, bridges, schools and health facilities, with extensive damage to crops, livestock, vegetables and fisheries. Despite the warnings, pre-emptive evacuations had not been carried out. Also, despite being mandated by law, a city disaster risk reduction and management council (DRRMC) had not yet been formed when Sendong struck. The local government was unprepared and unable to immediately respond to the disaster.

### 4.4.3 Relief and recovery efforts

After the typhoon struck, the Department of Environment and Natural Resources (DENR) declared "no-build zones" along riversides and coastlines of Cagayan de Oro that had been previously occupied by informal settlers. The establishment of no-build zones also signalled the need for new relocation sites. Residents were evacuated and prevented from rebuilding their homes in the sites considered unsafe. Yet implementation was hampered by the lack of an effective, transparent process for demarcating no-build zones and the lack of safe public land on which to build. Moreover, some of the affected residents in the no-build zones held legal titles over their lands.

Two months after Sendong, there were 47 evacuation centres in and around Cagayan de Oro, providing temporary shelter for 21,448 people; an additional 262,790 people were displaced and staying with friends or relatives. Many informal property owners refused to leave their damaged houses for fear of losing their land tenure rights and not being able to return, or because they had no alternative coping mechanism. Internally-displaced persons (IDPs) moved around and were difficult to locate if they were not in emergency shelters.

Very few people who lost their homes had proof of ownership or formally written tenancy agreements, even prior to the typhoon disaster. Thus, only an estimated 6 per cent were able to access a process whereby they could receive compensation or reclaim lost property or occupancy rights. Moreover, authorities were reluctant to help rebuild homes for those without land titles or formal contracts. Many displaced people also reported having lost important documentation (IDMC, 2013) which meant they may have lost out on their entitlements.

### 4.4.4 Drivers of the disaster

As well as natural causes of the disaster, *human behaviours* increased vulnerability and contributed to the impact of the flood. These included *physical behaviours*, i.e. living in dense settlements in flood-prone areas, building permanent structures and barriers along the riverbanks, having poor drainage facilities, and having an *attitude* of complacency. Other causes related to *governance*: a lack of an early warning system or preparedness by the local government, the absence of pre-emptive evacuation, and lack of community shelters. Although geohazard maps existed prior to Sendong, informal settlements were built in hazard zones, including the city's own *piso-piso* socialized housing. Moreover, the government failed to stem continued illegal land-use practices in the uplands, leading to water runoffs, erosion and siltation of rivers. All these risk factors contributed to the flood's impact.

A root driver of the Sendong disaster was a governance system based on political patronage. Political power used in a discretionary way had allowed for formal and informal settlements and socialized housing to be created in flood-prone areas, leading to no pre-emptive disaster management plan and no pre-evacuations, despite early warnings of a coming storm and available hazard information for days prior to the flood. This also allowed for illegal land use, such as illegal logging

and mining in the Cagayan River watershed. Another root driver was the degradation of the Cagayan River watershed. The Cagayan River Basin extends far beyond city limits and these watersheds extend across several political jurisdictions, making comprehensive management policies difficult to develop and enforce. Most of the watershed systems fall under public lands, which experience deforestation and degradation of the forest ecosystem. Compounding the problem were overlapping and unclear land tenure and use rights, and insecurity of tenure for the people dependent on these lands.

In the early 1900s, the Cagayan de Oro River Basin was nearly 100 per cent forested but this cover decreased significantly in the period from the 1960s to the 1990s, when the national government permitted large forestry operations in Bukidnon province. Forest cover decreased to 42 per cent in the 1970s and to 24 per cent by 1999 before the government began to restrict forestry operations (as cited in ODI, 2015). Government action came partly in response to widespread citizen protests in Cagayan de Oro between 1993 and 1998, when different sectors under *Task Force Macajalar* raised issues of illegal logging, and siltation and pollution of Macajalar Bay (CART, 1998). Policies to restrict forestry operations helped forest levels to rise slightly to about 27 per cent in 2010, though only 13 per cent of this was closed canopy; the rest was open forest, which is less dense and retains less water (ODI, 2015).

About 81 per cent of the Cagayan de Oro watershed lies in the uplands of Bukidnon province. The province was ranked among the 16 poorest provinces in the Philippines in 2012, with poverty incidence estimated at 43 per cent. Here, previously forested public lands were cleared by slash and burn practices and were later converted into banana and pineapple plantations. This left only a few stands of old-growth forests in mountain ridges and high elevation and inaccessible areas. In 2010, 24 per cent of the river basin consisted of shrub land, while an additional 12 per cent consisted of natural grasslands and 6 per cent of the basin consisted of perennial crops, mainly pineapple (ODI, 2015). Bukidnon is the centre of pineapple production in the Philippines, having some of the world's largest plantations.

Past efforts to reforest denuded areas had limited success. Reforestation activities were confined to selected sites that were accessible and close to populated areas, and where reforestation was implemented in remote areas, the saplings were cared for – but most of the surviving trees were poached for charcoal-making or were cleared away for crop cultivation (DENR, 2014). The remaining old-growth trees were illegally harvested.

### 4.4.5 Planned relocation, housing and reconstruction

By December 2017, approximately 6,500 families had been relocated and given housing. These families were informal settlers whose homes were destroyed during Typhoon Sendong and who had no alternative housing. To date, over 2,000 priority families are still awaiting permanent, planned relocation. Over 32,000 families were made homeless by Sendong and were considered a "second priority" since they had alternative places to stay after their homes were destroyed. The new housing communities have been built in 23 relocation sites, with all of them located between 5 and 15 kms from existing social networks and livelihoods. This has put a strain on their livelihoods and income.

By 2017, there were 34,898 families still in need of shelter assistance. These are all informal settlers, occupying areas identified as no-build or danger zones, living along rivers, creeks, landslide-prone areas, those affected by government infrastructure projects and those covered by court orders for demolition or eviction. If their housing needs are not addressed, many of these

| PRIORITY ACTIONS | RELEVANT LAND TENURE RESPONSES AND TOOLS |
|---|---|
| **Exposure** | |
| A driver of the impact of the Sendong disaster was a governance system based on political patronage. Power used in a discretionary way allowed formal and informal settlements in flood-prone areas, promoted its occupation through socialized housing, lacked a disaster management plan and failed to act on early warnings. | Use the VGGTs as a guiding framework and mandate to protect tenure rights in the context of climate change and disasters. Land policy and regulatory framework reform is also needed to link tenure rights to climate change and disasters. |
| Most of the watershed systems are on public lands, which experience deforestation and degradation of the forest ecosystem. Compounding the problem has been the lack of clear land-use rights, insecurity of tenure for the people who are dependent on these lands, and overlapping land tenure regimes. | VGGTs to protect tenure rights and address impacts of patronage. Land policy and regulatory reform in catchment areas to protect indigenous land tenure rights and promote sustainable land management. These reforms can be supported by tenure responsive land-use planning. |
| While "no-build zones" were designated along affected riversides and coastlines (within 3 m in urban areas, 20 m in agricultural areas, and 40 m in forest areas) , these areas had been occupied by informal settlers. | Land use planning informed by hazard and vulnerability mapping, the principles of VGGTs and the tenure responsive land-use planning tool. Effective enforcement of "no build" zones. |
| The establishment of no-build zones signalled the need for new relocation sites. Affected families deemed ineligible for relocation and free housing were lessees, tenants and boarders, those whose houses were partially destroyed, and informal settlers outside the no-build zones. Permanent, planned relocation for affected families was hampered by tenure-related problems and finding suitable land for relocation was challenging. | Implement the continuum of land rights - ensure that those without TOL are also included in planned relocation. Cadastral mapping and land tenure security assessment to inform planned relocation decisions. Tenure responsive land-use planning can help process for identifying suitable planned relocation sites. FFP land administration and pro-poor land recordation can support the provision of secure enough tenure. Participatory and Inclusive Land Readjustment (PiLAR). |
| **Sensitivity** | |
| Since 2012, 60 per cent of the total population has been internally displaced. UNHCR reports that the same families displaced by natural disasters are also affected by armed conflicts. Many internally-displaced persons (IDPs) were evacuated to public buildings and houses designated as evacuation centres, while other displaced families sought shelter with friends and relatives. IDPs were mobile and difficult to locate. | Implementation of the VGGTs can support the management of those displaced, with principles embedded into land and disaster policies. This could be complemented with alternative conflict-resolution mechanisms. A new land tool is needed to map the movement / settlement of people, potentially adapted from the approach to resolving conflict in Honduras (GLTN, 2018a). |
| A high number affected were single-headed households (11%, mostly women-headed), with pregnant women present in 13% of households. | Apply the Gender Evaluation Criteria and Youth and Land Responsiveness Criteria to land governance in both pre- and post-disaster contexts. |
| Many victims of Typhoon Sendong were informal settlers and few had proof of ownership or formally written tenancy agreements. Only an estimated 6 per cent received compensation or reclaimed lost property. Authorities were reluctant to help rebuild homes for those lacking land titles or formal contracts. | Improved data on the number of houses and people in informal settlements, their vulnerability to hazards, and tenure security. Community profiling and participatory enumeration using tools such as STDM can provide the household data and link to community cadastral and hazard-mapping imagery. |

families could fall into cycles of vulnerability and are likely to:

(i) fall deeper into poverty with unrestored livelihoods;
(ii) move back into their former areas of displacement or relocate to unsafe land; or
(iii) form residual caseloads of landless groups without access to land and permanent housing (Oxfam, 2014).

## 4.5. CASE STUDY: THE 2013 FLASH-FLOODS IN SAINT VINCENT AND THE GRENADINES

### 4.5.1 Context

Development across the region has been hindered by the effects of climate change, including adverse weather conditions, Atlantic hurricanes, landslides, storm surges and severe flash floods. In the south-western and north-eastern sections of the island of Saint Vincent the quality of housing tends to improve for households whose

**This bridge in May Pen Jamaica was damaged by flooding. Photo ©United Nations/M.Grant.**

tenure arrangements have been regularized. There is also a very noticeable improvement in the quality of the infrastructure on properties with freehold tenure arrangements. These developments have translated into the increased resilience of residents, even against the backdrop of major economic challenges and the ever-present threat of climate change. Saint Vincent and the Grenadines has seen the establishment of several peri-urban communities with a diversity of land uses and land tenure arrangements. Following the 1902 and 1979 eruptions of the La Soufriere Volcano, households from affected communities in the north of the island of Saint Vincent, migrated to the capital city of Kingstown and surrounding areas in the south of the island. Later, people have migrated to these areas to be closer to employment opportunities within the country's capital.

Vermont and Buccament Bay have largely agricultural and fishing communities respectively. During the colonial/ post-emancipation era, the island of St. Vincent was divided into several large plantations which have since been dissolved, with the lands redistributed by consecutive governments over several decades. All communities highlighted in this study were once a part of one of those former plantations on the south-west side of the island. While the community of Vermont has flourished due to the area's fertile agricultural lands, Buccament Bay is on the coastline and is today a popular fishing village, with many residents earning their livelihood through the sale of seafood. Individuals migrate to these peri-urban communities typically without formal documentation of their tenure arrangements. Categorized as "squatters" with insecure tenure, they are also exposed to sea-level rise,

hurricanes, storm surges, flash floods and the potential of earthquakes and landslides. Recent hurricanes have revealed that people living informally on lands in affected areas are typically unable to direct their own recovery and reconstruction, primarily due to their lack of resources. Some people are forced into shelters for significant periods and experience great difficulty if resettled. In some cases, landslides have resulted in long-term displacement and planned relocation. This puts a tremendous strain on the state when residents are unable to finance their own relocation, which typically are households with informal tenure arrangements.

### 4.5.2 The December 2013 flash-floods in south-western Saint Vincent

On 24 December 2013, bad weather over the island of Saint Vincent led to extensive flash flooding in several communities, including those highlighted in this study: Buccament Bay, Cane Grove, Pembroke and Vermont. We surveyed households in these areas to better understand how various forms of tenure (freehold, rental, family land and informal occupancy of government and private lands) are associated with vulnerability and adaptive capacity. The findings of the initial field investigations of January 2013 – undertaken in the north-eastern communities of New Sandy Bay Village, Langley Park and Colonaire, affected by Hurricane Tomas in 2010 – suggest that where land tenure rights are recorded and recognized, there is a greater likelihood that households would invest in recovery and reconstruction, and adopt the prescribed development standards, National Building Codes and Guidelines. The exercise also highlighted that while the Deeds Registration System adequately facilitates the recordation and recognition of legally enforceable land tenure arrangements – such as freehold, leasehold, and rent – it has not been legally configured to capture the various legitimate forms of informal occupancy that exist locally, primarily among local farmers and in family land arrangements.

**Figure 8: Enumerated areas in Vermont (enclosed red), south-western Saint Vincent**

#### STUDY AREA 1: THE VERMONT VALLEY

Most Vermont properties in south-western St. Vincent are within 50 metres of the Vermont River. During the December 2013 flood, a large proportion of residential properties were impacted by flood waters with the properties on the banks of the Vermont River the most significantly affected. Most of these properties had informal tenure, categorized as insecure tenure in the local context. When asked about their intended means of recovery, many people had approached the state and other residents for assistance. Small businesses had less uncertainty about their means of recovery and reconstruction as insurance claims and personal savings were used to rehabilitate their properties, while the state quickly responded to rehabilitate damaged public infrastructure and install adaptation measures.

#### STUDY AREA 2: CANE GROVE AND PEMBROKE

Built on both sides of the Buccament River, the communities of Cane Grove and Pembroke are modern real estate developments housing working class professionals, business owners, senior business executives and retired expatriates. This study was undertaken three months after the December 2013 flash floods, which caused three deaths, and extensive housing and infrastructural damage. Most properties in the area had installed some form of adaptation against future floods and, at the time of this investigation, fences and damaged walls had already been

**Figure 9: Enumerated areas in Cane Grove and Pembroke (enclosed red), St. Vincent**

**Figure 10: Enumerated household in Buccament Bay (dotted red) in south-western St. Vincent**

reconstructed, gardens replanted, homes repainted, and new river defences installed for properties near the river's banks. Most respondents indicated their properties were held in freehold, while a small number of respondents indicated they were renting. In each instance, homeowners indicated that they facilitated their own recovery and reconstruction works funded by insurance cover or through their personal savings.

#### STUDY AREA 3: BUCCAMENT BAY

Buccament Bay community sits on the floodplains of the Buccament River, close to the river's shallow banks. Sedimentation within the river's lower course contributed to the extensive flooding of the community. The land uses include agriculture farms, residential developments, recreational facilities, a major resort development and several public facilities. Buccament Bay had the lowest income earners in this study, with high unemployment and low incomes. Most residents originally settled in the area informally. While some property owners have since seen their tenure status regularized, several households have still to have their tenure recorded by the state. While very exposed, many householders chose to live there in the hope the state would regularize their land tenure status and therefore assist them in reconciling their losses in the event of a flood. However, at the time of this study, the most affected houses were still to reconcile their losses and were heavily dependent on the support of the state, local NGOs and civil society organizations.

### 4.5.3 Discussion of findings

This study found that vulnerability varied with different land tenure arrangements. Properties that are formally registered, under the Deeds and Title Registration System are associated with lower levels of vulnerability, whereas informal settlements are typically associated with higher levels of vulnerability. It was found that there were strong linkages between tenure status and the other four indicators selected for the final investigation. Therefore, tenure status can be considered as a major vulnerability indicator in this case study. A total of 56 respondents (55.4 per cent) were employed. The main forms of employment were small- and medium-enterprise operations, teaching, farming, domestic work, minibus operations and security services. Unemployment in St. Vincent and the Grenadines was 21.5 per cent as of 2012. It was found that adequate financial resources were closely linked to land tenure arrangements, representing a household's capacity to invest in adaptation measures.

#### ANALYSIS OF THE VARIOUS LAND TENURE CATEGORIES

Seventy-eight respondents own their property, with 72 having a deed; 76 households had freehold tenure; 6 a rental arrangement; 7 were squatting on private land;

7 on family land; and 5 squatting on government/ state lands. Vulnerability was aggregated into two categories:

(1) freehold (signified by the possession of a deed); and
(2 the remaining four informal tenure categories. This approach was used as the legal context of land registration in St. Vincent recognizes the deed as the solitary indication of secure tenure.

While on freehold tenure, there was a commitment to undertaking recovery and reconstruction works; households identified as being under family land arrangements were more reluctant to implement adaptation. Households under rental arrangements considered adaptation to be the responsibility of their landlords, however, renters saw themselves as being somewhat at the mercy of their landlords.

The squatters were on government lands, and 'tenants at sufferance' had been granted permission to occupy privately owned lands for unspecified timeframes and without legal documentation. In both instances, the structures were precariously constructed and located, with no evidence of adaptation. The squatters on government lands had a stronger sense of security of tenure than 'tenants at sufferance', possibly due to the state's relaxed approach to the informal occupation of state-owned lands. While squatters on state land acknowledged the extent of the impact of the flash floods on their properties, they considered there was a measure of assurance from the state. They were, however, concerned as to how long it would take for this assistance to eventually get to them. All 'tenants at sufferance' indicated their interest in eventually owning real property, but that the owners of the land were not obligated to assist them. For those on private land, there was a strong sense of uncertainty as to how reconstruction would be undertaken. They saw themselves as being at the mercy of others.

The final question concerned respondents' plans of action for facilitating their recovery. Sixty-five (65) respondents indicated their intention to use personal funds; 3 respondents specifically anticipated the assistance of relatives; 30 respondents were totally dependent on the assistance of government or the National Emergency Management Organization (NEMO); while 3 respondents had no known sources of support for their recovery and reconstruction efforts. More than 90 per cent of the 65 respondents who indicated their intention of using personal funds to facilitate their recovery were noted to be in possession of documentary evidence of their ownership of their land.

### TOOLS & APPROACHES FOR VULNERABILITY REDUCTION & BUILDING ADAPTIVE CAPACITY

This study has revealed a linkage between tenure security and adaptation measures. A "threshold tenure" was identified as a means of informing adaptation and disaster risk reduction measures about which forms of tenure need improved security. In this study, the threshold is at the point between those formal and informal tenures; here, freehold tenure is above the threshold and relatively secure, with the other tenures below the threshold and needing improvement. Households that were able to readily recover from the initial impact of a disaster were overwhelmingly categorized as having freehold tenure. Ease of recovery was found to be typically associated with the availability of resources. Whereas some households may be better positioned financially than others to facilitate their own recovery and reconstruction works, others often find themselves in a less economically stable position and therefore may not be able to recover without external assistance.

Land responses and land tools that can help address the tenure-related impacts on vulnerability and support improved adaptive capacity include pro-poor land recordation; mapping of informal tenures

and settlements; fit-for-purpose land administration; Gender Evaluation Criteria; and the Social Tenure Domain Model (STDM). Perhaps the most practical question that will need to be answered by local land administration authorities in addressing the issue of insecure tenure is "cost against the speed of delivery and quality". The Fit-for-Purpose Land Administration approach helps address this question and should consider how the land is used and the vulnerability of individual households. The fit-for-purpose approach helps the land administration meet the needs of society at scale and support a more sustainable use of land and natural resources.

This study has highlighted the linkage between officially documented tenure and increased adaptive capacity. Pro-poor land recordation will significantly augment the national land information management system, will facilitate official documentation for households and businesses with legitimate land tenure rights, and offer property owners an incentive to bear the cost and other responsibilities associated with protecting their land and property. The Social Tenure Domain Model (STDM) serves as a bridge between officially-documented land tenure rights and those rights that are not yet documented (FIG, 2013). It has the capacity to represent social tenure relationships and is useful for tracking the

| PRIORITY ACTIONS | RELEVANT LAND TENURE RESPONSES AND TOOLS |
|---|---|
| **Exposure** | |
| Address the vulnerability challenges of houses in informal areas. Previous post-volcanic eruption planned relocation and urban migration led to areas of informal settlement and more dependence on state support during recovery and reconstruction. | Implement the continuum of land rights in land administration and DRR programming so that households with informal land tenure rights are included in DRR programming and adaptation projects. The Fit-for-Purpose Land Administration approach can help the land administration system improve tenure security of properties highly exposed to disaster, help address unsustainable use of land and natural resources upstream that exacerbate the impacts of floods, and support land-use planning to control the spread of informal settlements in hazard-prone areas. |
| Address the existing settlements in highly exposed areas. In the Vermont Valley and Buccament Bay areas, informal housing has been built within 50 metres of the Vermont River, and on the floodplains of the Buccament River within metres of the river. These houses were highly exposed to the 2013 floods and suffered greater impact. | Mainstreaming climate change into land administration is needed to identify those households with unacceptable levels of hazard risk. If planned relocation is needed, then this process should provide for tenure security of those resettled and potentially of host communities. Fit-For-Purpose Land Administration can help improve efficiency of the recording of land tenure rights. Tenure-responsive land-use planning can support enforcement of zoning and prevent future houses being built too close to these rivers. |
| **Sensitivity** | |
| Improve the tenure security of residents granted permission to occupy privately owned lands for unspecified timeframes, and without legal documentation ('tenants at sufferance'). These residents were reliant on the relationship with the private landowners and had poor capacity to implement adaptation measures or respond to the 2013 flood. | For poor residents, recognizing their land tenure rights as part of the continuum of land rights is important. This should feed through to land administration and DRR programming so that these households with informal tenures are provided with post-disaster support. Fit-For-Purpose Land Administration can help improve efficiency of the recording of their land tenure rights. The Social Tenure Domain Model (STDM) serves as a bridge between officially-documented land rights and those that are not yet documented. Importantly, it has the capacity to represent any social tenure relation, to track the advancement along the continuum of land tenure rights and improve tenure security. |
| **Adaptive Capacity** | |
| Improve tenure security for informal settlers. Most residents settled in the area informally. While some property owners have since seen their tenure security improved, several households are yet to have their tenure statuses upgraded by the state. After the floods these residents were reluctant to leave their land hoping for recognition of their rights and improved tenure security during the recovery process. | Fit-For-Purpose Land Administration and tenure-responsive land-use planning need to work together to identify those households that need to be resettled, to manage this process in a way that provides them with tenure security, and to improve the tenure security of those not resettled in a timely manner. |

advancement of a household along the continuum of land tenure rights, until that household reaches some nationally-determined "tenure threshold" where official documentation on such rights can be issued.

## 4.6. CASE STUDY: THE 2007-2012 DROUGHT IN NORTH-EASTERN SYRIA

### 4.6.1 Context

In Syria, 75.7 per cent of the land area is used for agriculture - predominantly in the north-east of the country - and these regions have faced several consecutive and severe droughts in the past ten years, but the effects of this have been exacerbated by water scarcity and increasing land tenure insecurity. A decades-long process of land privatization, informal and unequal redistribution has led to insecure land tenure. Land tenure rights have also been weakened by informal and customary laws.

The north-eastern region of Syria covers three provinces, located above the Euphrates River (Fig. 11). Featuring the most fertile lands of the country, those governates account for more than 60 per cent of the effective, cultivated land and approximately 58 per cent of Syria's poor live there. They are the most agriculture-dependent pastoralist families and are very exposed to drought. Agriculture relies on water and approximately 80 per cent of the renewable water resources in Syria originates from outside of its borders.

In March 2011, a civilian uprising developed into an ongoing Syrian civil war that has led to the death of hundreds of thousands of Syrians and the exodus of millions of people.

**A view of the Zaatari Refugee Camp in Jordan, where nearly 80,000 Syrian refugees are living. Photo ©United Nations / Sahem Rababah**

### 4.6.2 Displacement, drought and water scarcity

A result of this displacement is that urban areas in the peripheries of Syria have grown rapidly. The IDMC estimates that approximately 330,000 internally displaced people (IDPs) are living in camps and informal settlements in northern Syria, along the Turkish border (IDMC, 2018). Less than 70 per cent of the 2011 rural population still lived in rural areas in 2016 (with 2 million IDPs), while the urban population increased slightly in the same period (FAO, 2017). North-east Syria is mainly composed of arid and semi-arid zones, with 68 per cent of its territory susceptible to desertification. Extreme drought between 2007 and 2012 in the fertile lands around the Euphrates, Tigris and Nile rivers, caused the worst crop failures in living memory.

Food security in this region relies on groundwater withdrawals and agriculture infrastructure and those provinces are the most irrigated lands the country. However, the groundwater resources are decreasing due to unsustainable, water-intensive agriculture. The government's agricultural incentives to intensify and extend cultivation resulted in the conversion of arid land into arable land through irrigation networks and led to the excessive subsidization of cotton and wheat fields (Weinthal, 2015). The total annual extraction of Syria's water, as a percentage of internal renewable water resources, reached 160 per cent and is almost entirely dedicated to agricultural purposes. In 2009, it was estimated that 300,000 people left north-eastern Syria due to the drought.

### 4.6.3 Vulnerability and land tenure

Compounding the drought was water mismanagement, over-grazing of land, a growing population, and the government's attempts to liberalize the economy by restricting fuel and food subsidies. Long-term policies promoted water-intensive agriculture and privatization of state agricultural lands, and unsustainable water extraction contributed to the drying up of the al-Khabur River.

State land is 67 per cent of the total territory and includes original state properties, natural resources and utilities for collective use, and "land reform areas" (those rented or allocated to individuals). Tenure security in the north-eastern regions was particularly affected by the droughts. Reduced yields led to a collapse of the farming system, with sharp declines in production and the need for significant imports. At the household level, some pastoralists lost their access to land after the drought.

While endangering farmers' property rights, private investments have also had environmental and social consequences. The total internal renewable water resources per capita have decreased since 2002 as a result of diminishing water resources and the growing population. Half of all irrigation comes from those groundwater systems pumped at a rate exceeding recharge, resulting in rising production costs and water scarcity. In 2012, only 20 per cent of the irrigated areas in the al-Hasakah province were using modern and sustainable irrigation techniques such as sprinklers and drips. Since 2000, a lack of control and poor water management have resulted in irreversibly damaged mining aquifers, now unusable due to salination.

Women are only 4 per cent of total landowners in Syria and their vulnerability increases as climate change becomes more significant. More than 65 per cent of women working in agriculture are unpaid and rural women also have less access to and control over lands. Moreover, the illiteracy rate for rural women is estimated to be as high as 63 per cent. Women have less opportunity to adapt to climate change and less capacity to improve and diversify their livelihoods. A factor in their vulnerability is the lack of awareness among rural women about their rights as well as the

cultural belief that land is owned by men. According to the national law, women get their share of land when they inherit property or land from their father and Islamic law considers women to be independent legal persons entitled to own land and property in their own names. Such protection disappears when customary discrimination weakens women's land tenure rights. Women's adaptive capacity is substantially undermined when their right to ownership is denied. The challenges for women with a lack of land ownership include

(i) a difficulty in obtaining credit and loans — therefore reducing their ability to improve agriculture productivity,
(ii) insecure access to water, also increases women's vulnerability, and limitations in women participating in formal groups, becoming members of rural organizations, and acting independently (Verner et al, 2012).

The privatization of agricultural lands has eroded customary laws over boundary rights, enabling herders to overgraze other lands, and a lack or limited access to scarce natural resources is often a primary source of conflict. The current land market in Syria only concerns fully owned private holdings and land-reform areas are regulated by customs and parallel markets. Consequently, beneficiaries are deprived of their rights because of illegal sales. Fragmentation and redistribution of lands has exposed farmers to increased risks, including landlessness. Illegal occupation is a widespread phenomenon in the al-Hasakah governorate, concerning mainly sharecroppers whose contracts have expired and who have requested access rights, but are still waiting for the government to approve these. Customary land systems, composed of representatives from the Ministry of Social Affairs and labour and farmers' organizations, have an important role to play in conflict resolution at the local level as they complement the legitimacy of the official arbitration committees and courts that exist at national and governorate levels. Successful mediation is made particularly difficult by the lack of clarity and insufficient social controls over the implementation of contracts. Resolutions are complicated because agreements are usually unwritten and unregistered — only 20 per cent of state land was recorded before the Syrian uprising — leaving the labour force unprotected (NRC, 2017). While 87 per cent of urban residents claimed to have a court decision that documents ownership, land tenure rights for rural inhabitants are unclear — a problem of particular importance for women (NRC, 2017).

### 4.6.4 Adaptive capacity

The adaptive capacity of more than one million people was directly affected by the droughts and resulting desertification; they lost their entire livelihoods, leaving them malnourished and extremely vulnerable. Smallholder farmers, herders and pastoralists lost almost 85 per cent of their livestock, as they could no longer be sustained, and 75 per cent of agriculture-dependent households suffered total or near total crop failure. As 58.1 per cent of Syria's most vulnerable, agriculture-dependent families are concentrated in the north-eastern region, the number of people driven into extreme poverty was unprecedented, affecting 2 to 3 million in Syria (FAO, 2014).

Many people tried to resist the effects of the drought by adopting harmful coping strategies and in 2010, around 300,000 people were forced to migrate as a long-term strategy. Since the beginning of the drought, an estimated 1.5 million people have mostly headed to Syrian suburbs and abroad; women have settled in camps around Damascus and Aleppo and men headed to Lebanon and Jordan. Local communities have embraced migration as their best climate-change adaptation response, but the Norwegian Refugee Council (2017) estimated that 48 per cent of personal land documents were lost or taken away during migration.

| PRIORITY ACTIONS | RELEVANT LAND TENURE RESPONSES AND TOOLS |
|---|---|
| **Exposure** | |
| The effect of the drought was amplified by water scarcity and tenure insecurity, making it difficult for the tenants to pay their rent. This increased their vulnerability to price fluctuation, production and increased landlessness and poverty. | A **new land tool** is needed to address uneven land distribution. Lessons may be drawn from the approach taken by Landesa and the Colombian Commission of Jurists, where victims of forced land dispossession can collectively apply for restitution. The process is quicker, more effective, with better community empowerment and peace-building. |
| Food and water insecurity became a widespread phenomenon. There is an urgent need to implement drought-tolerant or shorter-cycle crops, and to restore fertility through integrated soil<br>conservation techniques, manuring and crop rotations. | **Tenure-responsive land-use planning** provides opportunities for tenure security improvements in issues relating to water, and for the classification of land use types and crop and water requirements. It can be supported by other tools, such as the **Gender Evaluation Criteria** and **pro-poor land recordation.** |
| **Sensitivity** | |
| Protect the more vulnerable farmers from forced eviction. The redistribution of parcels to private and powerful companies — land acquisition — led to the forceful eviction of many farmers. Those beneficiaries were mainly part of the elite that had private interests and confidential agreements with the government. | Implement the **VGGTs** to address the inequity of land distribution, insecure land tenure and illegal occupation. A **pro-poor land policy** will need to be developed providing affordable access to land and land services. **FFP land administration** will be critical in recording land tenure rights at the scale needed. A **new land tool** to protect displaced people against evictions, perhaps based on the approach used by the Norwegian Refugee Council in Somalia. |
| Lack of or limited access to scarce natural resources is often a primary source of conflicts between claimants and occupants over ownership. In addition, the ongoing war in Syria is greatly hindering any progress. | **Alternative conflict mediation and resolution**: to resolve conflicts related to land grazing and illegal occupation. Customary systems have an important role to play in conflict resolution. A **new land tool** is needed to document forcibly abandoned housing and land. |
| Syria has an enormous number of displaced people, many of them migrating to urban areas, which has resulted in a lack of governance and the proliferation of rebel groups taking control over some abandoned regions. | A **pro-poor land policy framework** to address landlessness among the rural poor and support for tenure security for agriculture suited to non-irrigated areas. A **new land tool** to record and administer the land tenure right, in line with the **continuum of land rights**. The **valuation of unregistered land** tool is very important here. |
| Tenure security is affected by the plurality between formal and informal and customary laws. Following land reforms, parallel land markets exist regulating those lands which have become market commodities. | The **continuum of land rights** supports the recognition of customary tenure systems. These play an important role in alternative dispute resolution**. Tenure-responsive land-use planning** could be supported **by cadastral and participatory mapping**, using **STDM** software. |
| **Adaptive Capacity** | |
| Address women's insecure land tenure rights, such as women's right to inherit or to buy land. | The **Gender Evaluation Criteria** can help assess women's' status in rural areas, their ability to access property as landowners, and how they can diminish their vulnerability. The publication Women and Land in the Muslim World (GLTN 2018d) can help guide appropriate land responses for women in the Syrian context. |
| Develop a process for addressing the loss of land records and supporting restitution for displaced people. | **Fit-for-purpose land administration** at the national or sub-national level, supported by recording of land tenure rights at the community level using STDM. |

## 4.7. CASE STUDY: LAND TENURE AND CLIMATE VULNERABILITY IN KARAMOJA, UGANDA

### 4.7.1 Context

Historically, grazing associated with communal settlements has been prevalent in Karamoja, where pastoralists are known to have grazed freely but in a controlled manner as access to grazing areas and to land was mainly controlled communally, although freehold applied in a few areas. Between 1972 and 1979, insecurity increased due to cattle raiding, which became characteristic of the region. Coupled with the raids, the grazers took advantage of the wars in the larger trans-boundary area to arm themselves. With the enforcement of strict conservation, vast land was occupied by wild animals as grazing was restricted to

**Aerial view of Loyoro villages in Kaabong district. Photo ©Karamoja Development Forum**

relatively small chunks because of reduced livestock numbers in the region.

In recent decades, the region has seen a rapidly changing climate. Once there was a drought on average every 10 years but now there is one every six years, and the ability to recover has become increasingly difficult. Climate change has compounded issues of insecurity, infrastructure deficit and a growing number of livestock due to restocking and the diversification of livelihood strategies. Karamoja is a region historically dominated by pastoralism and wildlife but the area has also recently attracted mining interests.

### 4.7.2 Tenure security frameworks

In the pre-colonial period, land tenure rights were defined according to the customary, traditional systems which correlated to the ethnic regions including Buganda, Bunyoro, Acholi and Karamoja. Among tribes with centralized administration systems, land was held by the king in trust for the citizens. In other parts of Uganda, including Karamoja, land was owned customarily and vested in chiefs/traditional leaders based on clan systems (Rugadya *et al.*, 2010). Individuals had a communal right to use the land if they were members of the clan or group. The rights were usufructuary, which were allocated by the chiefs and political agents. An important land issue is the complexity and overlap of land tenure rights in Uganda. Article 237 of the Constitution of Uganda vested the land in the citizens of Uganda owned in accordance with four main forms of bundled rights - customary, freehold, *mailo* and leasehold. The Land Act 1998 protects individuals who had settled on land for a long period and introduced the concept of bona fide occupation and the introduction of certificates of customary ownership. This created

problems as the law implied that land held communally could also be claimed by individuals since they would be defined as bona fide. This was intended to improve security of individuals' rights over land occupied for a long time.

### 4.7.3 Management of customary tenure in Karamoja

Customary tenure in Karamoja, as in other parts of the country, is governed under a legal dualism whereby the statutory legal system is superimposed on the customary system of land tenure. This means multiple sets of rules and laws co-exist and create overlapping and conflicting rights. Both the customary system and the country's legal system have institutions and enforcement mechanisms to control how people access, control and transfer land. The elders plan grazing but also decide matters of inheritance and arbitrate any other issues, especially those related to divorce or the return of daughters who have married elsewhere. In dispute resolution over land, the elders still have the central role. Conservation activities of the National Forest Authority (NFA) and the Uganda Wildlife Authority (UWA) are perceived by the communities as a source of tenure insecurity (IG, 2017). It is difficult to identify who has the rights to manage land considering that almost all land is protected.

### 4.7.4 A changing climate and increasing risk

The observed changes in Karamoja are linked to broader changes in the African sub-region of the Greater Horn. Although pastoralist communities are traditionally migratory, recent migration patterns are indicative of a coupling of changes in water and pasture availability with land tenure rights. One key

**A young herder taking a bath in Nabokor valley tank. Photo ©Karamoja Development Forum**

aspect of this migration is that it has been affected by alienation of land and individualization of land tenure. Some migratory routes have been blocked by fenced land or because of appropriation from companies that have concessions to extract minerals in the region. Historically, there was vacant land with open routes and migrations across the broader region, but the changes have led to conflicts with agro-communities within and beyond the Karamoja region (IG, 2017).

Land tenure was closely linked to the experiences and responses to drought. Conflict is seen as a significant covariate shock that affects the Karamojong in times of drought and occurs when Turkana and Pokot herders cross the border from Kenya in search of pasture and water for their herds. Existing coping mechanisms include selling animals when times are difficult, trading with neighbours, strong social networks and alternative livelihood activities. In more recent times, there have been major shifts in the nature and number of people migrating. Migrations triggered by escape from raids greatly reduced after the disarmament exercise. There is generally reduced migration overall and in cross-district migration specifically due to changes to land tenure and property rights. These include: shifting from livestock to agriculture, construction of water dams in each sub-county of the district, the practice of zero grazing, mining concessions, the strict enforcement of conservation boundaries, and government programmes for the Karamajong to change to a sedentary lifestyle. These make pastoralists limit their grazing to their resident sub-counties.

### 4.7.5 Adaptation planning, actions and tenure security

There is an increase in the amount of land devoted to agriculture at the expense of grazing lands associated with the historical gazetting of 36 per cent of the total Karamoja land area for the conservation of wildlife. There is a policy gap in understanding pastoralism as an unviable economic activity; herding large numbers of livestock is considered outdated and not economically viable (IG, 2017). Production will depend on many factors but securing land tenure rights to enable the product (livestock, meat and others) to thrive is critical. Thus, the importance of land tenure security in enabling adaptive capacity for the pastoralists is clear, however, improving and making livestock value chains adaptable to climate change requires a willingness to pursue these adaptation measures.

### 4.7.6 Land administration among communal land ownership regimes

Policies which promote settled agriculture represent a failure to understand the rationale for nomadic pastoralism. In line with the arguments that pastoralism represents the most viable livelihood option in the region, various papers have called on the government to strengthen systems for the protection and management of livestock, but this will require securing land tenure rights for the pastoralists. Government policies aim to improve land services and strengthen land tenure and emphasize privatization and sedentary development.

Women's insecure access to land under the system of customary tenure is affected by the management of these rights by more powerful people, almost always men. Uganda's National Land Policy of 2013 aims to redress historical injustices to protect the land tenure rights of groups and communities marginalized by history or injustices based on gender, religion, ethnicity and other forms of vulnerability to achieve balanced growth and social equity. Recognizing that the existing system of customary tenure has been weakened, the land policy aims to ensure recognition, strengthening and education on rights of women, children and other vulnerable groups in all land tenure regimes. For women to have successful access to land through safeguarding recognized land tenure rights, effective local leadership is necessary, especially from traditional authorities.

### 4.7.7 Conclusion

To support production and private sector investment, there is a need to protect tenure over grazing lands as inputs to the value chain and to enhance communal ownership with rules of temporary migration. This will require learning from traditional mechanisms of kraal and elders' consultations on migration routes (Carabine *et al*, 2017). Privatization of land should be limited to municipalities and certain areas of mining and conservation concessions. The government should harness the Land Act, which recognizes communal ownership to protect grazing lands. Investment is needed to facilitate the re-opening of grazing lands through a consultative and transparent land-use planning process. Securing communal land tenure to allow pastoralists access to pasture and water through the year and for all seasons is the critical cornerstone of the public policy intervention. The securing of land tenure can be coupled with providing timely and useful weather information on a short-term and also on a seasonal basis to enable herding decisions for product development and sustenance.

| PRIORITY ACTIONS | RELEVANT LAND TENURE RESPONSES AND TOOLS |
|---|---|
| **Exposure** | |
| There is a need to protect grazing lands as inputs to the value chain and to enhance communal ownership with rules of temporary migration, learning from traditional mechanisms of kraal and elders' consultation on migration routes and destinations (within the Aromar system). | Develop effective **communal land associations** to protect grazing lands and support the management of communal and that can be registered under the Land Act 1998. **STDM** to map and record the people-land relationships. |
| Reduce over-grazing of protected lands while providing for livelihoods and tenure security for farmers. | **Tenure-responsive land-use planning** principles can help to limit the grazing of protected areas while providing tenure security for farmers. Will need **detailed spatial information** on land use and tenure. |
| **Sensitivity** | |
| There is a need to better understand the rationale for nomadic pastoralism and to encourage it as a viable economic activity and adaptation option. Secure land tenure rights are critical to support this. | **Participatory and pro-poor land policy support** for communal tenure, and **capacity building of the district land office,** is needed to support seasonal migration. **Fit-for-purpose land administration** can help develop the legal framework to support low-cost survey and registration procedures. |
| Addressing conflict related to migration in times of drought when herders cross the border from Kenya in search of pasture and water. These groups habitually followed similar routes whenever they migrated, often punctuated by agreements between the groups through the elders' council, however some migratory routes have been blocked by fenced land or appropriation from companies that have concessions to extract minerals in the region. | A **new land tool** is needed and could draw on lessons from South Sudan. Each year, large numbers of nomadic pastoralists migrate across the border into South Sudan in search of pasture and water for their animals resulting in intercommunal violence between nomadic pastoralists and host communities. In response, the United Nations Mission for South Sudan has developed migration dialogues to manage these conflicts. |
| **Adaptive Capacity** | |
| Support the Karamoja Integrated Disarmament and Development Programme to enhance security and create conditions for development. | **Alternative land-dispute resolution** can help support the disputes between pastoralists and other land users. |
| Improve women's land tenure security under customary tenure so they are less vulnerable to abuse. Most women are not accessing land for production because it is either being sold off or other relatives are fighting them over it. Ensure recognition, strengthening and education on rights of women, children and other vulnerable groups in all existing and emerging land tenure regimes. | **Gender Evaluation Criteria** to support the National Land Policy of 2013 to redress historical injustices to protect the land tenure rights of marginalized groups and communities to achieve balanced growth and social equity. Improved implementation and enforcement of the Land Act 1998 will help to protect divorcees, widows and children, and help reduce the vulnerability of women. |
| The IGAD Drought Disaster Resilience Sustainability Initiative provides an opportunity to support coordination, policy and planning at national levels, and promote better integration between line ministries involved in drought risk management. | **Participatory land policy** development can help support this process. |

Women from Lokithile in Moroto District carry meat from the kraal to the village. Photo ©Karamoja Development Forum

# CHAPTER 5

# SUMMARY FINDINGS

This section distils the evidence from the literature review and each of the case studies to provide answers to the five research questions that framed the analysis:

1. How do current and future climate impacts affect, or potentially affect, tenure security in different landscape contexts (e.g. urban, agriculture, forest, pastoral, etc.)?
2. How does security of land tenure influence local exposure and sensitivity to climate change?
3. How does security of land tenure influence adaptive capacity and the implementation of actions to increase climate resilience?
4. How do climate adaptation actions (building sea walls, relocation of communities, upgrading water supply, etc.) impact on tenure security (in either a positive or negative way)?
5. What are the critical land tenure security and land governance issues that need to be addressed to enable successful and equitable adaptation?

## 5.1. Q1: HOW DO CLIMATE IMPACTS AFFECT LAND TENURE?

Above, we discussed the impacts of various aspects of climate and natural hazards and the important linkages to tenure security. In the worst cases, sea-level rise may lead to coastal areas (or small atoll islands) become uninhabitable, causing permanent displacement, social disruption and increasing the risk of conflict in the receiving areas. Hydrometeorological disasters lead to loss of life, extensive damage to buildings, infrastructure, livestock and crops. Geophysical disasters, such as earthquakes, have a devastating impact on lives and

**Women picking palm oil seeds in Kalangala district, Central Uganda. Photo ©Brenda Achungo**

livelihoods, and can also cause secondary hazards such as landslides, avalanches and tsunamis. Extreme droughts have the greatest impact on food and water security through loss of crops and livestock.

Exposure, sensitivity and tenure insecurity of households are key factors in their vulnerability. In areas with shortages of affordable, safe land, people settle on marginal land that is very exposed to natural hazards. Traditional adaptation measures (e.g. movement to higher land during the wetter months) are also affected by reduced availability of land, limited livelihood opportunities or land reform. Landholders in very drought-prone areas may have fewer livelihood alternatives than their ancestors or they need to look further afield for these. The major impacts of climate on land tenure security and land governance can be summarized as:

1. *Damage to land, buildings and livelihoods*. Hydrometeorological disasters cause erosion and sedimentation and can make arable land unusable, requiring planned relocation and alternative livelihoods. Extreme drought impacts food and water security in terms of lost crops and livestock. The major impact of earthquakes is on urban buildings and infrastructure, and a detailed assessment of the damage to buildings is needed.
2. *Displacement*. Climate variations and drought can lead to human mobility. Natural disasters also cause the displacement of large numbers of people, with resettlement camps established away from the affected parcels until the waters subside and clean-up operations are completed. People without land records, or who seek shelter in self-settled camps or with friends and relatives, may not gain access to response and recovery funds and support. Relocation of displaced persons to permanent, planned relocation camps without secure tenure may lead to land disputes with host communities or others.
3. *Challenges for adjudication or restitution*. Fair restitution requires that all legitimate pre-disaster land tenure rights are recognized in a post-disaster adjudication process and are protected. Post-disaster operations need to respond quickly to protect tenure security so that land is not seized and fraudulent claims to land are not honoured. Adjudication is also needed prior to construction to determine eligibility for assistance for rebuilding or reconstruction. Loss of personal records and government land records complicates the adjudication process. Adjudication needs to recognize insecure tenure and partial rights (e.g. for squatters, sharecroppers or renters) that existed prior to the disaster to determine eligibility for assistance, however there are more difficult to adjudicate.
4. *Providing secure tenure for planned relocation*. Households that are relocated due to high levels of vulnerability, that are not provided with tenure security or adequate access to livelihoods, or that are relocated to land that is also hazard-prone are more likely to return to their pre-disaster lands. Land disputes can also occur with the host community.
5. *An increase in land disputes*. Unresolved land tenure issues that impact settlement and land use come to the fore after a disaster, when existing tensions over land are exacerbated and opportunities for elite capture are created. The recovery and reconstruction phase is an opportunity to assess these. Where collective ownership arrangements have broken down, other approaches for resolving disputes may be needed.
6. *Adverse impacts for the vulnerable and marginalized*. Women are disproportionally affected by the impacts of climate and yet are much less likely to have their rights to land recognized. Vulnerable groups include indigenous peoples and ethnic minorities, who are at risk of being displaced from their lands without alternative livelihoods or secure access to land.
7. *Limited capacity in the land sector to respond*. Poor

institutional capacity in the land sector limits the ability to rapidly adjudicate large numbers of claims to land and secure existing land tenure rights.

In the context of climate change, many of the stresses and deprivations associated with the lack of secure access to land are exacerbated and this is a key message of this report.

## 5.2. Q2: HOW DOES SECURITY OF TENURE INFLUENCE PEOPLE'S EXPOSURE AND SENSITIVITY TO CLIMATE IMPACTS

In understanding how tenure insecurity is related to exposure and sensitivity, a question arises: are people vulnerable because of poor tenure security or do people live in insecure areas because they are poor? A primary driver in the choice of location for settlement (i.e. exposure) is the level of poverty. The St. Vincent and the Grenadines case study found that the unemployment rate of exposed settlements was high by national standards, and households with formal land records had stronger financial resources and greater capacity to invest in adaptation measures, as well as to facilitate recovery and reconstruction. The very poor cannot afford safer land options and are more likely to move to an informal settlement if displaced. In many cases, they are also less likely to be able afford good quality building materials.

As illustrated in Figure 1, land tenure insecurity and poor land governance can affect *exposure* in the following ways:

- *Land use that increases degradation and deforestation*. Insecure land tenure can reduce incentives to undertake good land management, causing environmental degradation. The watershed sys-

**A sandstorm on the western shore of Lake Baringo, Kenya. Photo ©United Nations/Ray Witlin**

tems in the Philippines case study on public lands experience deforestation and degradation. Insecure tenure for people dependent on these lands and overlapping land tenure regimes compound the problem. In Uganda, over-grazing of protected lands impacted livelihoods and tenure security of farmers. Lack of clear land tenure rights can reduce the incentive to implement long-term adaptation. For example, tenant farmers with short-term leases may not use soil protection measures, plant trees or improve pastures.

- *The spread of informal housing into hazard-risk zones, as well as utility access and public use zones*. A driver of the impact of the Philippines Sendong disaster was political patronage that allowed formal and informal settlements to be built in flood-prone, "no-build zones" along affected riversides and coastlines. In St. Vincent and the Grenadines, informal housing was built along flood-prone rivers and was highly exposed to the 2013 floods.
- *Climate impacts on food and water security*. In northern Syria, the effect of the drought was amplified by water scarcity and tenure insecurity. Tenants had difficulty paying rent, which increased their vulnerability to price fluctuation, landlessness and poverty.
- *Impacts on traditional pastoral adaption through seasonal migration*. Climate variability in Karamoja, Uganda, and the temporal availability of forage and water caused pastoralists to migrate more frequently and for longer periods. Migration onto lands claimed by others, and land policies which promoted settled (individual) agriculture caused conflict.

So, what is unique about exposed households in terms of tenure security? A key difference occurs when decisions are made about relocation due to the level of exposure. In these areas it is common for "no build" zones to be introduced, but they are often not enforced. Where the zones are not enforced, and government does not undertake resettlement of households in these zones, tenure security may not be a priority, and may also increase vulnerability. In the absence of disaster risk reduction works (e.g. flood levee banks) and slum upgrading activities, providing greater tenure security may create an incentive for households to stay in these highly exposed areas. Where the "no build" zones are enforced, and decisions are made to relocate households, informal settlers may not be included in compensation or disaster-recovery funding. In these areas, houses with land records are more likely to be recognized in financial support packages related to resettlement programmes or post-disaster recovery.

Also, land tenure insecurity and poor land governance can affect *sensitivity* as follows:

- *Lack of access to public infrastructure and services*. In Honiara, a lack of formal land title restricts access to water and electricity, although some families informally share access to services with extended family. Inadequate sanitation facilities services were also a direct consequence of not holding a formal land title.
- *Poor housing quality on informal sites*. Also, in Honiara, houses without a formal title are often built using poor-quality materials and are therefore highly sensitive to extreme events.
- *Impacts on access to land and resources*. Eviction, land grabbing, land disputes, human mobility related to increased demand for land all affect access to land. In Uganda, plural land tenure systems created overlapping rights to land and land disputes, which affected migration.
- *Tenure insecurity affects post-disaster financial support*. People without formal land records are more likely to miss out on post-disaster recovery and reconstruction grants to households. In St. Vincent

and the Grenadines, most residents settled in the area informally. After the floods, tenants were reliant on the support of property owners in the recovery process.

- *Women are more likely to have insecure tenure*. In Syria, more than 65 per cent of women working in agriculture are unpaid and represent only 4 per cent of total landowners. Rural women also have less access to and control over lands. Although they are the largest group of direct water users, women do not have the same power to control the use or distribution of water.

## 5.3. Q3: HOW DOES SECURITY OF LAND TENURE INFLUENCE ADAPTIVE CAPACITY?

Ways that insecure land tenure and weak land governance impact adaptive capacity include:

- *Effective and tenure-responsive land-use planning and control* helps address settlement on hazard-prone land. Adaptation to a changing climate and improvements to land governance require zoning regulations that restrict development in high-risk areas. The quality of housing is also likely to improve with secure land tenure, improving adaptive capacity.
- *Secure land tenure rights protect against threats to land from others.* In the Syrian case study, the redistribution of parcels to private interests and land acquisition led to the forced eviction of some farmers, with many migrating to urban areas. Secure land tenure rights are critical to support nomadic pastoralism and to encourage it as a viable economic activity and adaptation option.
- *Bringing informal settlers inside formal governance structures*. Without government support for disaster recovery or adaptation, informal settlers lack the financial resources to prepare for, and respond to, climate-related events such as flooding and storms. In St. Vincent and the Grenadines, planned relocation following volcanic eruption led to areas of informal settlement, with more dependence on state support during recovery and reconstruction. The ability of informal settlers to adapt is related to tenure insecurity.
- *Less land disputes.* Improving tenure security requires that land disputes be addressed. During the ongoing drought in Uganda, herders crossed the border from Kenya in search of pasture and water, however some migratory routes have been blocked by fences or the land has been appropriated for companies with concessions to extract minerals in the region. Resolving disputes over land will require that agreement is reached on land tenure rights and that they are protected.

Improving tenure security and land governance can contribute to improved adaptive capacity through addressing the critical land tenure issues summarized in this section. As illustrated in Figure 12, this can be achieved through securing and safeguarding land


**Figure 11: Elements of responsible land governance (Mitchell *et al*., 2015)**

tenure rights, making land-use planning and control more effective, improving community consultation and implementing alternative dispute-resolution mechanisms.

The key aim of responsible land governance is to provide security of land tenure rights, with a focus on the vulnerable and marginalized. The process involves understanding and recording land tenure arrangements, as many of the vulnerable also live in slums and informal settlements, and other informal tenures where there are long-established and complex social relationships that are socially accepted (Mitchell *et al*., 2015).

## 5.4. Q4: HOW COULD CLIMATE-CHANGE ADAPTATION IMPACT ON LAND TENURE SECURITY?

The relationship between disaster risk reduction or climate-change adaptation actions and land tenure can go both ways. While insecure land tenure can lead to heightened vulnerability, actions intended to increase resilience to disasters and longer-term changes to the climate can also have an adverse impact on people's security of land tenure if the actions are not planned and implemented carefully. Some adaptation or DRR responses may have unintended consequences (mal-adaptation), with potential impacts on tenure security and land governance. In some cases, actions may

**A vehicle passes by a broken bridge in Kalobeyei town in Turkana, Kenya. Photo ©UN-Habitat/Julius Mwelu.**

entrench existing vulnerabilities and enforce inequalities (IPCC, 2014) or even lead to land disputes, eviction and land grabbing, which particularly affects the residents of slums and informal settlements (Dodman et al., 2013).

Examples include:

- *Upstream river basin management and watershed protection*. Following the Sendong disaster, the *Integrated River Basin Management and Development Master Plan for the Cagayan De Oro River Basin* was developed. The river basin spans two cities and three municipalities in two provinces, which creates challenges for implementation of the plan. Further, there are numerous land tenure conflicts and socio-cultural issues, as much of the upper reaches of the basin is home to settlers and indigenous communities.
- *Large-scale DRR or adaptation infrastructure projects* can lead to the displacement of people, with the risk of landlessness and loss of livelihoods.
- *Creation of "no-build" zones in areas of high hazard-risk*. The creation of "no-build" zones in Cagayan de Oro three days after the Sendong floods signalled the need for the permanent relocation of the thousands of families living within this zone. Many affected families were found to be highly vulnerable households, including single-parent households and those with family members who were physically or mentally impaired. While residents were initially relocated and prevented from rebuilding their homes in the danger zone, these areas were later reoccupied despite the restriction.
- *Relocation to safer land*. Ten months after Typhoon Sendong, the city provided new housing in 23 relocation sites for the large numbers living in temporary shelters. City and relief organizations purchased vacant land and the national government identified suitable public lands. However, some of the proposed relocation sites were in landslide zones and were between 5 and 15 kilometres from previous social networks and livelihoods. Very few families displaced by the typhoon had land documents or formally written tenancy agreements. Experience with planned relocation or planned relocation programmes over many years indicates that there is a large risk of significant negative economic, health, psycho-social and cultural impacts for those resettled (Connell and Connell, 2014). Issues include loss of access to land, tenure insecurity and other breaches of individual human rights.
- *Building sea walls, flood levy banks, new drainage systems and dikes*. In the Solomon Islands, proposals to build seawalls may require the relocation of substantial informal houses, however without consideration of climate exposure, new development areas may worsen the future climate vulnerability of any relocated inhabitants. In such instances, relocation options that are not only acceptable to local community members but are also feasible from a climate-resilient urban planning perspective will need to be provided to ensure equitable solutions.

## 5.5. Q5: WHAT ARE THE CRITICAL LAND TENURE SECURITY AND LAND GOVERNANCE ISSUES TO BE ADDRESSED TO ENABLE SUCCESSFUL AND EQUITABLE ADAPTATION?

In the context of adaptation, critical challenges that land governance must address include:

### EXPOSURE

- Insecure tenure encourages land use that increases degradation and deforestation.
- The spread of informal housing into hazard risk zones, utility access and public use zones.
- Climate impacts on food and water security.
- Impacts on traditional pastoral adaption through seasonal migration.

- ❑ Those with poor tenure security are more likely to lose access to their land after a disaster.
- ❑ Increasing levels of displacement of people due to a changing climate will impact tenure insecurity, land conflict and growth of informal settlements.
- ❑ There is likely to be greater demand for land and resources in the future as a consequence of climate variability, land degradation and population growth, thereby exaggerating the challenges for resolving land disputes.

### SENSITIVITY

- ❑ Tenure insecurity reduces access to land and resources.
- ❑ Climate variability impacts household food and water security, and people with poor tenure security are the most affected.
- ❑ Women are more likely to have insecure tenure or lack access to land.
- ❑ Those with insecurity of land tenure commonly live in poor-quality housing and lack basic public services and infrastructure, hence are highly sensitive to extreme events.
- ❑ Tenure insecurity affects post-disaster financial support.

### ADAPTIVE CAPACITY

- ❑ Those with insecure tenure are more likely to be at risk of land disputes, which affect adaptive capacity.
- ❑ Those with poor tenure security lack the resources to implement resilience actions.
- ❑ Women's adaptive capacity is substantially undermined when they lack land tenure rights to land.
- ❑ Some adaptation responses may have unintended consequences (maladaptation), with potential impacts on tenure security and land governance.
- ❑ Informal settlers are often outside formal governance structures.
- ❑ Some groups are much more vulnerable to climate impacts and should be prioritized in land governance interventions. These include women, the elderly, youth, indigenous and tribal peoples, displaced persons and ethnic minorities.

Distribution site in Mozambique post Tropical Cyclone Idai in March 2019. The affected provinces; Zambézia and Tete had already experienced recurrent droughts and floods over the last three years. Photo ©FAO/Mozambique

CHAPTER 6

# TOWARDS CLIMATE-RESILIENT LAND GOVERNANCE

The people-to-land relationship has long been recognized as important for human well-being. However, this relationship is being undermined by new stressors in modern times, including the impacts of a changing climate. This report has showcased various examples of the land-people-climate challenges and argues that the complex interactions and feedbacks between land tenure and climate vulnerability need to be better understood. This knowledge then needs to inform more holistic responses - involving different communities of practice - to support processes that increase the resilience and well-being of marginalized households in developing countries.

In the previous sections of this report, evidence of the complex links between land tenure and climate vulnerability (sourced from the literature, case studies and expert knowledge) has been set out. Based on this, findings from the review indicate that a more integrated approach, *climate-resilient land governance,* will not only help improve tenure security but, at the same time, will also reduce household vulnerability to climate and natural hazards. In the remaining sections of this report, the discussion turns to the question of how a more integrated approach might be achieved.

## 6.1. RESPONDING TO THE UNIQUE CHALLENGES POSED BY CLIMATE CHANGE

The considerable challenges posed by climate change and the interactions between land tenure and climate vulnerability (as illustrated by each of the case

**Communities vulnerable to flooding can be protected from disaster risks through sustainable and community-based approaches, including construction of gabions. Photo ©UN Environment/Afghanistan.**

studies) necessitate a reframing of how issues of land governance are addressed. Increasing levels of climate vulnerability introduce different dimensions to the goal of "providing secure land tenure rights for all" and it is therefore recommended that approaches to land governance take more explicit account of the impacts of climate change and increased vulnerability of marginalized communities.

In the field of climate change adaptation, it is recommended that land tenure be a central consideration in vulnerability / risk assessments and adaptation-planning processes undertaken in developing countries. Furthermore, participatory approaches are needed to ensure that local stakeholders not only take part in the assessment of local climate vulnerabilities but also have the opportunity to be involved in the co-design of resilience actions. This process of engagement will also

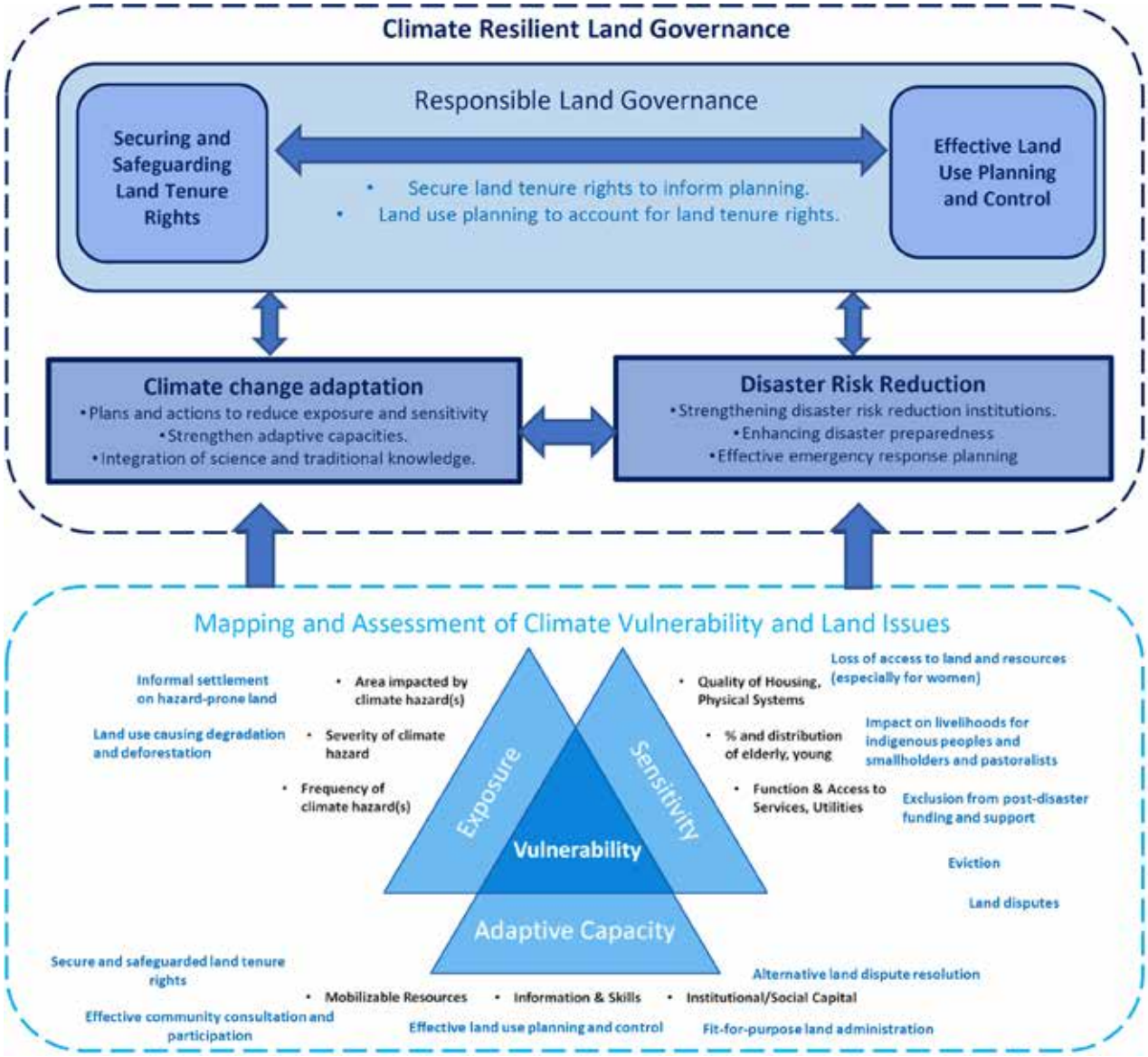


**Figure 12: Components of Climate-Resilient Land Governance**

**Climate variability in Karamoja, Uganda, and the temporal availability of forage and water causes pastoralists to migrate more frequently and for longer periods. Photo ©Karamoja Development Forum**

help to promote more equitable "pro-poor" actions, avoid potential situations of maladaptation and ensure that adaptation strategies account for critical local land tenure arrangements (an important factor in the successful implementation of climate actions). One approach to recording local tenure arrangements would be to use fit-for-purpose land administration methods during initial community profiling as well as integrating cadastral and hazard mapping to provide a more comprehensive understanding of local context and vulnerabilities (e.g. Honiara settlement upgrading activity is being informed by a combination of community surveys and spatial mapping data such as LIDAR).

From a climate resilient land governance perspective, hazard risk assessment along with tenure security mapping based on the concept of the continuum of land rights would be a valuable starting point. This provides the necessary baseline data to make climate change adaptation and disaster risk reduction more land tenure responsive. When this is aligned with responsible land governance (securing and safeguarding land tenure rights, and effective land-use planning and control) the result is more climate resilient land governance (See Figure 13). Climate resilient land governance supports adaptive capacity through adopting tenure-responsive land-use planning, and land administration approaches that are fit-for-purpose, pro-poor and gender responsive. As illustrated in Figure 13, land governance policy and practice should explicitly factor in the climate vulnerability of households in decision making as well as

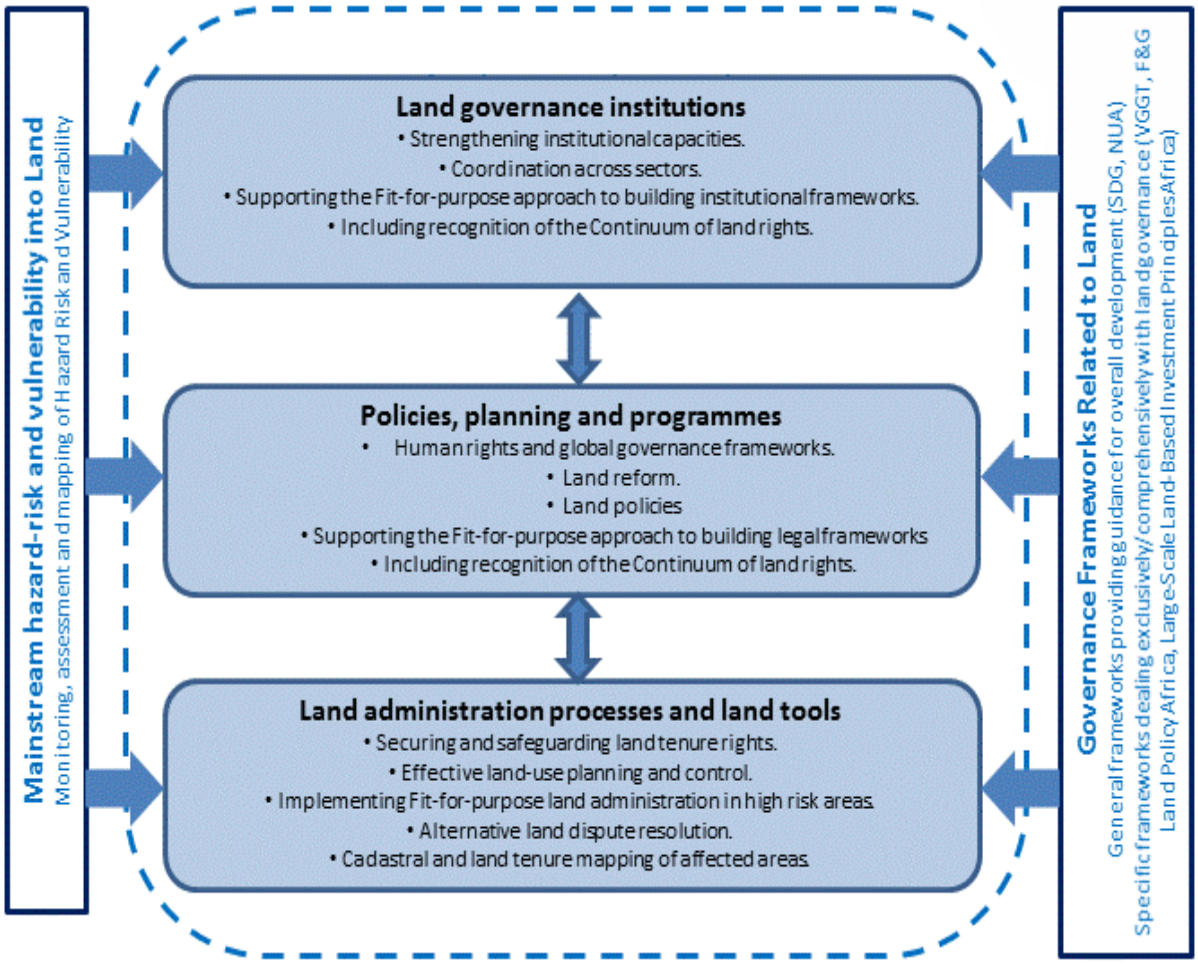


**Figure 13: Entry points for Climate-Resilient Land Governance**

aligning more closely with climate-change adaptation and disaster risk reduction communities of practice.

Climate vulnerabilities at multiple scales (household, ward and city-wide) need to be cross-referenced with local land tenure arrangements. This establishes the necessary baseline data for a comprehensive understanding of local vulnerabilities that can then be used to inform appropriate multi-level and multi-actor climate-adaptation strategies, taking into account local land tenure and land governance.

## 6.2. ENTRY POINTS FOR CLIMATE-RESILIENT LAND GOVERNANCE

As highlighted earlier, responsible land governance is about the policy frameworks, processes and institutions by which land, property and natural resources are managed. Responsible land governance needs to be at the core of activities to improve tenure security and requires a legal regulatory framework and operational processes to implement policies consistently within a jurisdiction or country.

However, the implications of climate change on people-land relationships requires a reframing of

land governance frameworks to make them fit-for-purpose in the context of a changing climate and other resilience challenges. Climate-resilient land governance ultimately requires a more holistic and integrated approach, one that involves new ways of working between different communities of practice, enhanced mutual understanding and closer alignment between respective institutions, policies, processes and tools. The key entry points for closer integration and moving towards climate-resilient land governance are categorized as:

1) institutional framework;
2) policies, planning and programmes; and
3) land administration processes and tools (see Figure 14).

These inter-linked components of land governance provide an operational framework for addressing land issues in the context of increasing climate risks and ensuring that land tenure is explicitly considered in climate adaptation planning.

CHAPTER 7

# INSTITUTIONAL FRAMEWORK

Given the inter-connected nature of many of these climate resilience challenges – which are particularly acute in the developing world – there is obvious value in putting greater emphasis on collaboration and improved integration between issues / agendas and adopting new approaches that build on respective institutional strengths. Climate-resilient land governance is one attempt to promote this integration. It advocates for fit-for-purpose land administration institutional frameworks - working in tandem with climate change adaptation, disaster management and development agencies - to improve the tenure security of marginalized communities and, at the same time, to reduce their vulnerability to climate change and extreme events.

There are several ways to address the impact of climate on land tenure security, through adopting climate-resilient approaches to land governance. These include:

1. *Climate-adaptation planning*.
2. *Post-disaster recovery and reconstruction*.
3. Improving performance against the *SDG goals and indicators*.
4. Improving performance against the *Sendai Framework Monitoring Process*.

In the following sections, relevant global frameworks are considered through a land governance lens. In the first instance, the contribution that good land governance could make to other agendas is explored. This is then followed by a more detailed discussion of the most relevant global frameworks – international human rights conventions and covenants, Sustainable Development Goals (SDGs), Paris Agreement, Sendai Framework and the New Urban Agenda (NUA), and the role of local institutions.

## 7.1. HOW DOES RESPONSIBLE LAND GOVERNANCE CONTRIBUTE TO GLOBAL FRAMEWORKS?

Investment in responsible land governance will not only improve the performance of institutional frameworks against the SDG land goals and indicators but will also improve the SDG and Sendai goals related to food

**Table 1: Land governance responses to support the global framework goals (adapted from UN-Habitat and GLTN 2017)**

| How does land governance support international development? | Corresponding Global Framework | Key land governance responses |
|---|---|---|
| **Climate-change adaptation.** Principles of good land governance will help to reduce climate vulnerability and also act as an enabler of adaptation. | SDG Goal 6, SDG Goal 13 – Climate action: take urgent action to combat climate change impacts. | Climate change considerations to be mainstreamed into land-use planning and zoning to reduce exposure and sensitivity. |
| **Disaster response, disaster risk reduction, adaptation.** Identify high risk areas and manage by zoning. If already settled, introduce emergency plans for evacuation. Also, identification of land for planned relocation. | SDG Goal 1 target 1.5; SDG 11, target 11.5; NUA (77, 110); Sendai Framework (6, 27d, 30f, 33k). | 1. Mainstream DRR into land policies.<br>2. Recognition of the continuum of land rights framework.<br>3. Fit-for-purpose land administration.<br>4. Participatory cadastral and disaster risk mapping.<br>5. Participatory tenure-responsive land-use planning. |
| **Post-disaster redevelopment and reconstruction.** How land is accessed, used and controlled is a key element of sustainable social and economic development and is key for post-disaster/conflict redevelopment and reconstruction. | SDG Goal 1 target 1.5; SDG 11, target 11.5; Sendai Framework (33j); Pinheiro Principles. | 1. Recognition of the continuum of land rights framework.<br>2. Fit-for-purpose land administration<br>3. Restitution and compensation for displaced persons.<br>4. Community land inventory and boundary mapping.<br>5. Participatory land-use planning.<br>6. Land governance assessment. |

**Table 1: Land governance responses to support the global framework goals (adapted from UN-Habitat and GLTN 2017)**

| How does land governance support international development? | Corresponding Global Framework | Key land governance responses |
|---|---|---|
| **Social stability, peace and security.** Equal access to land is important to gender equality and is an important factor for social stability and peace. Many violent conflicts are about land or resources. | SDG Goal 16 – Peace and justice: promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels. | 1. Recognition of the continuum of land rights framework.<br>2. Fit-for-purpose land administration.<br>3. Participatory land policy development.<br>4. Land reform.<br>5. Participatory tenure-responsive land-use planning. |
| **Protection of biodiversity, the natural environment and natural heritage.** The natural environment can only be protected when access and use are regulated. | SDG Goal 15 – Protect and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt land degradation and biodiversity loss. | 1. As above, plus:<br>2. Local agreements on access to, control over and use of land (e.g. for communal forests).<br>3. Develop a public land inventory. |

and water security, livelihood options, human security, environmental degradation, poverty and peace (see Table 1). Furthermore, improving tenure security should be a priority action for addressing vulnerability to climate change and variability.

The global frameworks should be seen not only as guidance to enhancing institutional climate resilience but should act as a call for action for countries to take their commitments to these frameworks seriously. In doing so, their responses can have multiplier effects in also addressing other framework commitments. In cases in the developing world, it is recognized that support and finance may be needed to help countries reach their goals.

### 7.1.1 Human rights

Human Rights Council Resolution 7/23 on *Human Rights and Climate Change* states that climate change "poses an immediate and far-reaching threat to people and

| Climate Impact | Land Governance Issue | Human Rights Implicated |
|---|---|---|
| **Sea-Level Rise** | Loss of land | Self-determination [ICCPR; ICESCR, 1] |
| Flooding | Impact on drinking water | Water [CEDAW, 14, ICRC 24] |
| Storm surges | Damage to coastal infrastructure and buildings | Adequate housing [ICESCR, 12] |
| Erosion | Loss of arable land | Property [UDHR, 17] |
| Salination of land/water | | |
| **Temperature increase** | Food and water insecurity | Life [ICCPR, 6] |
| Drought | Impact on agriculture, forestry and fisheries. | Means of subsistence [ICESCR, 1] |
| Reduced water supply | Depletion of agricultural soils | Adequate standard of living [ICESCR, 12] |
| **Extreme weather events** | Displacement | Life [ICCPR, 6] |
| Cyclones, floods, | Contaminated water | Water [CEDAW, 14, ICRC 24] |
| Storm surges | Damage to infrastructure | Means of subsistence [ICESCR, 1] |
| Landslides | Damage to arable lands | Adequate standard of living [ICESCR, 12] |
| | Property damage | Property [UDHR, 17] |

**Figure 14: Climate impact, land governance impact, and human rights implicated (adapted from Limon, 2009)**

communities around the world and has implications for the full enjoyment of human rights" (OHCHR Human Rights Council, 2008). Also, the 1972 Declaration of the United Nations Conference on the Human Environment (the Stockholm Declaration) recognized the interdependence between human rights and the environment, as well as the link between the environment and realization of a range of human rights (Limon, 2009).

Good land governance should apply human rights principles in terms of access to, use of and control over land. Regarding certain human rights, such as gender equity and non-discrimination, the realization of human rights in the context of land tenure can have an impact much beyond the land question and contribute to a much better general acceptance and application of these specific human rights (Wehrmann, 2018). Figure 17 draws on the work of Limon (2009) who maps out the links between climate and human impacts, and the human rights implicated. Here, it is adapted to illustrate land governance impacts.

### 7.1.2 Sustainable Development Goals

While the Sustainable Development Goals are not legally binding, signatory states are expected to establish national frameworks for the achievement of the 17 goals. In particular, climate-responsive land governance will support all 17 SDGs to some extent, with greatest relevance to the following goals.

- *Goal 1: No Poverty.* Target 4: ensure that all men and women (in particular, the poor and the vulnerable) have access to, ownership and control over land and other forms of property. *Also, having a clear understanding of which areas are at risk and which have insecure tenure, supports improved decision making about land use and settlement.*
- *Goal 2: Zero Hunger.* Ending poverty is an ambitious goal and requires addressing climate impacts such as food and water insecurity, landlessness and displacement. Secure tenure provides security for livelihoods and shelter. *Target 3: double the agricultural productivity and incomes of small-scale food producers, including through secure and equal access to land.*
- *Goal 5: Gender Equality.* Undertake reforms to give women access to appropriate forms of land holding, with secure tenure and equitable control over land use and other property.
- *Goal 6: Clean water and sanitation.* At present, many residents of slums and informal settlements are not connected to formal water, sanitation and hygiene (WASH) or electricity systems due to the informality of the settlement. Providing secure tenure facilitates connection to essential services, which improves the adaptive capacity of the households and the community as a whole.
- *Goal 11: Sustainable cities and communities.* Requires mainstreaming climate change adaptation into land governance, reducing disaster risk and improving adaptive capacity to address tenure insecurity, hazard risk and informality of settlements. *An important target of Goal 11 is to ensure access for all to adequate, safe and affordable housing, with access to basic services, including through slum upgrading*.
- *Goal 13: Climate action.* As this report has highlighted, action to combat the impacts of climate change can be hindered by land disputes, and poorly conceived actions can leave people landless or reduce their tenure security, making them more vulnerable. *More effective land-use control and good land governance are needed to reduce vulnerability.*
- *Goal 15: Life on land.* As climate variability leads to greater demand for land and resources, effective land-use control and improved tenure security are needed to sustainably manage land and natural resources (forests, pasture land, fresh water, fisheries, agricultural lands etc.), combat desertification, halt

and reverse land degradation, and halt biodiversity loss.

- ❑ *Goal 16: Peace, justice and strong institutions.* The promotion of peaceful and inclusive societies for sustainable development can be undermined by conflict. Land is often the subject of broader conflicts, but even conflicts over other issues (such as ethnic conflicts) generally affect the ability of people to retain their tenure over land. Effective mechanisms for the resolution of land-related disputes are necessary (United Nations General Assembly, 2015) along with any conflicts that may cause displacement of people.

### 7.1.3 Paris Agreement and the Sendai Framework

Due to the strong interlinkages between land tenure and climate vulnerability, responses to improve tenure security will not only address the goals of the (United Nations Framework Convention on Climate Change) Paris Agreement dealing with the impacts of climate change, but also the Sendai Disaster Risk Reduction Framework 2015-2030 which aims to reduce vulnerability to extreme events. This report has provided examples of how climate-resilient land governance can prevent new and reduce existing disaster risks.

Climate-resilient land governance has greatest relevance to the following guiding principles:

(i) protecting persons and their property, livelihoods and productive assets, while promoting and protecting human rights *19(c);*

(ii) a multi-hazard approach and inclusive, risk-informed decision-making based on risk information, complemented by traditional knowledge. Customary and indigenous tenure systems have a strong role here *19(g)* and in addressing underlying disaster risk factors such as land tenure insecurity and land disputes *19(j)*.

Climate-resilient land governance can also contribute to the following Sendai "Priorities for Action":

- ❑ *Priority 1: Understanding disaster risk.*
- ❑ *Priority 2: Strengthening disaster risk governance to manage disaster risk.*
- ❑ *Priority 3: Investing in disaster risk reduction for resilience.*
- ❑ *Priority 4: Enhancing disaster preparedness for effective response and in recovery, rehabilitation and reconstruction.*

### 7.1.4 New Urban Agenda

The New Urban Agenda (NUA) envisages cities that fulfil the "full realization of the right to adequate housing" (United Nations, 2016; p.13). The NUA is also guided by the sustainable development principles of (a) leaving no one behind; (b) ensuring sustainable and inclusive urban economies (including promoting secure land tenure); and (c) ensuring environmental sustainability (*ibid*). The direct benefit of climate-resilient land governance is to support the improvement of item 35: "We commit ourselves to promoting, at the appropriate level of government, including subnational and local government, increased security of tenure for all, recognizing the plurality of tenure types, and to developing fit-for-purpose and age-, gender- and environment-responsive solutions within the continuum of land tenure rights, with particular attention to security of land tenure for women as key to their empowerment, including through effective administrative systems" (United Nations, 2016; p.21).

Climate-resilient land governance will also support improvement against many of the other objectives of the NUA. Actions to improve land tenure security will be of direct relevance to the principle of "leave no one behind" by providing residents of slums and informal settlements with improved tenure security as well as a formal identity. Formal recognition often

allows connection to "basic services for all citizens, strengthening urban resilience and striving for equity in cities" (Item 14a). Reducing land disputes will support "peaceful, inclusive and participatory societies" (Item 37). The provision of affordable, safe land with secure tenure will also contribute to Item 57 – "promoting livelihood opportunities in cities and other human settlements".

## 7.2. LOCAL INSTITUTIONS

Institutional capacity in many developing countries is a key challenge for addressing land issues in relation to climate impacts, mainstreaming vulnerability and hazard information into land administration, and mainstreaming land governance principles into climate change adaptation and emergency-response strategies.

Capacity building and support is critical in implementing climate-resilient land governance principles. Enhanced institutional capacity will facilitate:

- An increase in the supply of affordable land for housing and the provision of infrastructure and services. The humanitarian sector can support local government to explore options of intermediate land records, land pooling and re-allocation of land.
- Enhanced ability of government to capture increases in land values., For example, local government can buy land at lower values before a city's expansion to help fund infrastructure and service provision associated with that expansion.
- Enhanced disaster risk reduction and climate-change adaptation. Local government can work

**Stakeholder consultation meeting in Phulappa ward, Nepal. Photo ©UN-Habitat/Shristee Singh**

with the residents of slums and informal settlements to identify appropriate land tenure and housing pathways forward (Dodman *et al*., 2013; Satterthwaite *et al*., 2018).

The integration and alignment of responsible land governance and climate resilience can be promoted by:

- ❑ Adopting responsible land governance principles (such as VGGT, see section 9), including support services, crop insurance, expansion of socialized credit windows, establishment of market links for farmers' produce and social preparation for potential agrarian reform beneficiaries.
- ❑ Providing secure land tenure rights so that local communities and households can sustain livelihood options and development pathways.
- ❑ Building a local institutional framework to implement fit-for-purpose land administration.
- ❑ Identify the institutions that can peacefully manage conflict. This includes land and conflict-resolution institutions (land agencies) and NGOs.
- ❑ Supporting customary institutions in appropriate approaches to resolving land disputes and promoting women's empowerment by giving them a legal role.
- ❑ Enhancing the ability of institutions to facilitate access to land and water.
- ❑ Reducing the institutional constraints that reduce access to formal credit for farmers who do not own land and enable them to adopt more sophisticated risk management tools.

**Updating community maps in Freedom Square, Gobabis municipality, Namibia. Photo ©Namibia Housing Action Group**

CHAPTER 8

# POLICY, PLANS AND PROGRAMMES

At a general level, policies and regulatory frameworks should:

- ❑ Protect the more vulnerable rural and urban households from forced eviction.
- ❑ Support customary approaches to the management of land and resources, including the seasonal migration of pastoralists. Provide secure, legally recognized land tenure rights for people who depend on community lands for their livelihoods and food production.
- ❑ Support tenure arrangements for agriculture suited to low water use and customary approaches to agriculture.
- ❑ Improve the resolution of conflicts over land and natural resources through allowing and promoting alternative conflict resolution mechanisms.
- ❑ Provide equal access to land tenure rights and secure land tenure for women, the vulnerable and marginalized, reducing their vulnerability. This will require improved participation by women and vulnerable groups in the development and implementation of land policies.
- ❑ Improve the participation of indigenous and tribal peoples in policy and decision making. These people have traditionally had a strong capacity to adapt to variable environmental conditions, and interventions should seek to enhance this capacity and avoid unintended consequences of interventions. Where relocation is considered necessary, then prior and informed consent is needed.
- ❑ Provide mechanisms to actively address land use that leads to land degradation and over-exploitation of land and water resources. Recognition in policy of the need to provide security of tenure for all land tenure rights should help to reduce negative environmental impacts.
- ❑ Support greater enforcement of land-use planning zones that prevent building on land with high levels of hazard-risk, and provide viable alternatives so that people are not forced to live in unsafe conditions.
- ❑ Recognizing and, where relevant, recording land tenure rights for those living in informal settlements to improve their access to infrastructure, services and the formal economy.
- ❑ Protect the vulnerable from inadequate compensation for relocation and land acquisition.
- ❑ Provide recognition of land tenure rights across the continuum of land rights, and their recording, in a fit-for-purpose land administration system. Develop approaches to increase the percentage of land tenure rights that are recognized and recorded.
- ❑ Provide for informal social institutions to undertake sustainable management of access to land and resources, possibly using traditional resource management structures and processes. Recognize the existence of these institutions in formal law.
- ❑ Monitor human mobility, address landlessness among the rural poor. In the Syrian case, for example, this could support a mechanism for managing and supporting the very large numbers of displaced people.
- ❑ Support planned relocation through improving land-use planning of areas identified for the planned relocation. The development of an inventory of land occupation and hazard risk in both the planned relocation area and area at risk would support these decisions.
- ❑ Address land tenure rights that compensate for the negative power structures in a society, especially where the powerful elite hold more than their fair share of land tenure rights. Mapping and identifying the political economy and power relationships that can shape how climate risk is framed and which adaptation actions are prioritized.

## 8.1. MAINSTREAMING CLIMATE CONSIDERATIONS INTO LAND GOVERNANCE PROCESSES

Responsible approaches to land governance should actively seek to mainstream climate considerations into land administration and land-use planning. Jhaveri (2018) argues for "secure enough" tenure, where rights to land are not arbitrarily contested and do not require formalization of tenure.

Addressing tenure challenges in climate adaptation requires that we understand where landlessness, tenure insecurity and conflict occurs.

Mainstreaming climate considerations will support and improve:

- ❑ The development of land and adaptation policies informed by assessments of land tenure status and hazard-risk mapping.
- ❑ Post-disaster reconstruction, informed by the way land is accessed, used and controlled.
- ❑ Address the vulnerability of people living in informal settlements through upgrading (land administration systems informed by mapping of hazard risk and rights and tenure security).
- ❑ The development of an inventory of tenure and hazard risk in planned relocation areas.
- ❑ Identification of the vulnerabilities of women, indigenous peoples etc.
- ❑ The undertaking of household and community surveys and mapping to identify the complex "people-to-land" relationships, and how these relate to climate vulnerability.
- ❑ Improve land governance by undertaking a "political economy analysis". This involves mapping and identifying the political economy and power relationships that shape climate risks and adaptation actions.
- ❑ Modelling of the likely land-use impacts at a regional level through mapping vulnerability, hazard risk, existing land occupation and use, and land tenure security.
- ❑ Manage human mobility by mapping the number of people displaced by disasters.
- ❑ Address conflict resolution in climate-affected areas (mapping and identification of competing claims related to interventions, and alternative conflict resolutions).

## 8.2. VOLUNTARY GUIDELINES ON THE RESPONSIBLE GOVERNANCE OF TENURE

The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT) provide internationally accepted principles and standards for the responsible governance of tenure.

In urban and peri-urban areas promoting and adopting the principles of the VGGTs can help to:

- ❑ Reduce the vulnerability of people living in slums and informal settlements through recognizing, respecting and recording legitimate land tenure rights, supported by key principles from the tenure-responsive land-use planning tool, and FFP approaches to land administration.
- ❑ Develop a process for managing and supporting displaced people.
- ❑ Support the land-use planning system to enforce "no-build zones" in areas of high risk.

## 8.3. TENURE-RESPONSIVE LAND-USE PLANNING

Allowing people to settle on hazard-prone land, water catchments or other unsuitable areas creates new stresses that are difficult to address later and may

eventually require the relocation of communities, which can be a very challenging process (preventing settlement on hazard-prone land is recognized in Priority 2 of the Sendai Framework). If tenure security is provided at alternative locations, the people resettled are less likely to return to their original hazard-prone area.

An important element of climate sensitivity is the quality of housing construction. If effectively enforced, tenure-responsive land-use planning would prevent houses being constructed on hazard-prone land, whilst building codes can improve the quality of building materials.

Land acquisition or planned relocation processes are often interpreted as efforts to reallocate land to more powerful interests and climate-resilient land governance will need to address any political influences (Caron *et al*., 2014). This may require a comprehensive "political economy analysis" that investigates the complex social and political pressures and power relationships.

Providing "secure enough" land tenure rights for properties located outside hazard-prone, "no-build" zones can help facilitate tenure-responsive land-use planning and allow those with informal tenures to participate in decisions about use of resources and any plans for new settlements, including the design of innovative tenure arrangements (Jhaveri, 2018).

Tenure responsive land-use planning can help address:

- *Human mobility:* More effective coordination will be needed between land-use planning, flood risk management, drainage and coastal protection agencies.
- *Food and water insecurity:* Improved enforcement of land-use planning and recognition of land tenure rights prior to a disaster can help to reduce the loss of access to land after a disaster and support restitution processes.
- *Environmental degradation:* Ensuring that rural communities remain the custodians of the land benefits local households and generates better environmental outcomes. Land-use planning can also support the livelihoods of those without formal land tenure rights.
- *Informal settlements:* Climate change is an opportunity to argue for policies that provide affordable and safe land to reduce climate vulnerability and the problems that natural disasters create. Land readjustment responses should also be part of this process, with post-disaster reconstruction of housing in informal settlements aiming to "build back better".
- *The impact on vulnerable groups such as women and indigenous people:* Vulnerable groups should be involved in the design of adaptation actions and DRR planning to produce more sustainable outcomes and increased adaptive capacity at the local scale.

Where the land-use planning system is unable to control the spread of informal settlements and slums onto hazard-prone land, land readjustment and slum upgrading processes provide options for addressing the vulnerability of these exposed settlements.

## 8.4. FIT-FOR-PURPOSE LAND ADMINISTRATION IN CLIMATE-AFFECTED AREAS

Implementing climate-resilient land policies at scale will require an effective and fit-for-purpose (FFP) land administration system. One challenge is to improve the tenure security in a way that is inclusive, cost-effective and rapid. Another is to protect existing land records from damage caused by disasters and conflict. Protecting land records and creating multiple back-up files and record storage locations makes the administrative system more resilient and able to support recovery (Caron *et al*., 2014).

Improving tenure security will require approaches to land administration that increase the percentage of land tenure rights that are recognized and safeguarded. However, the implementation of FFP principles will often require amending the spatial, legal or institutional frameworks to introduce low-cost and more efficient processes (as has occurred in Rwanda and Nepal recently).

In urban and peri-urban areas, a FFP approach to land administration can support:

- Land administration systems to recognize and record the land tenure rights of all properties exposed to hazards, help address unsustainable use of land and resources upstream that exacerbate the impacts of floods, and support planning to control the spread of informal settlements.
- Informal settlement upgrading and readjustment through identifying low-cost ways of improving the efficiency of land administration processes that provide security of tenure for all residents, as well as building local capacity to respond to land issues.
- Decisions and the management of planned relocation of high-risk communities. FFP land administration and pro-poor land recordation can support the provision of "secure enough" tenure at the destination and at the scale needed (this may relate to the ability to defend their land tenure rights against others).
- More effective enforcement of "no-build" zones requires tenure-responsive land-use planning supported by FFP land administration systems.

In rural areas, fit-for-purpose land administration can help address the over-exploitation of natural resources through recording rights across the continuum at the scale needed. Secure land tenure rights make land disputes easier to resolve and leads to greater government control of inappropriate land use that leads to degradation.

FFP land administration, in conjunction with documenting land tenure rights at the community level, could also support a process for addressing restitution for displaced people.

## 8.5. VALUATION OF LAND TO SUPPORT LAND GOVERNANCE RESPONSES

Many of the land governance responses discussed require a fair valuation of land, including registered (formal) and unregistered (informal) land. Many development projects require land acquisition. Planned relocation due to large-scale agricultural investments for food and biofuels, or due to sea-level rise, also require fair valuation of land. Fair valuation is needed to support compensation packages related to eviction and planned relocation (GLTN, 2018c). Examples are:

1. Valuation of rural public land for public sector purposes will be needed before land acquisition, land consolidation, development projects, slum upgrading, planned relocation and determination of compensation.
2. Valuation of rural state/public land for private purposes will be needed before land acquisition for natural resource extraction, large-scale land-based investments, to settle disputes where financial outcomes are one part of the agreement, and eviction.
3. Valuation of urban and peri-urban state / public / customary land for public sector purposes will be needed for slum upgrading, land readjustment, land pooling, before land acquisition for urban development, planned relocation of people after disaster and conflict, and eviction.
4. Valuation of urban and peri-urban state / public / customary land for private purposes will be needed to settle disputes where financial outcomes are one part of the agreement.

While much has been written on how to equitably value registered land, this has been estimated to comprise only 70 per cent of occupied land. The GLTN tool *Valuation of Unregistered Land* (GLTN, 2018c) provides policy-level guidance on how to value unregistered land.

#### LAND ADMINISTRATION PROCESSES AND TOOLS

The cross-cutting land issues that result from climate impacts identified earlier highlight the urgency for improved land governance processes in support of climate resilience. A selection of tools, principles and criteria are also presented here to showcase possible options for improved decision support. However, it is recognized that each may need to be refined to meet local requirements.

## 8.6. LAND ADMINISTRATION PROCESSES

### 8.6.1 A continuum of land rights rather than just individual ownership

The relationships between climate vulnerability and insecure tenure highlighted in this report reinforce the need to scale up the delivery of secure land tenure for all. This will require acceptance of the idea of a continuum of land rights, as well as fit-for-purpose and pro-poor approaches to land administration (Zevenbergen, 2011). The land policy and regulatory frameworks will often need to be amended to adopt the continuum of land rights. This is important in addressing issues related to human mobility, food and water security, environmental impact, informal settlements, gender inequality, indigenous people and conflict.

There are various mechanisms for improving tenure security across the continuum of land rights. Issuing land documents is only one way of improving tenure security. In a study in the Philippines of informal settlements in two rural *baranguys*, it was found that local government was aware that some informal settlements had been there for over 40 years and this demonstrates a level of recognition of their rights (Usamah *et al*., 2014). Those households who perceive their tenure to be insecure need to be prioritized, as even small changes to tenure security can make a difference.

Resilience can be strengthened by recognizing all landholdings across the continuum of land rights, the land rights that existed in practice prior to a disaster, as well as improving tenure security of the groups with the most insecure arrangements, including women, dependants, youth, migrants and the poor (Caron *et al*., 2014). For example, the *Country Level Implementation Strategy for Nepal*, developed in response to the 2015 earthquakes, adopts a fit-for-purpose approach that recognizes a continuum of land rights rather than individual ownership (Government of Nepal, 2018).

### 8.6.2 Land readjustment

One of the most important actions to reduce household vulnerability is to improve housing conditions and access to infrastructure and services. In the 1960s and 1970s, scholars such as Mangin (1967), Turner (1968) and Ward (1976) declared that squatting should be considered a solution to the housing problem rather than a problem itself. More recently, Satterthwaite *et al*. (2018) argued that governments should recognize the many positive aspects of informal settlements and work with the inhabitants and community organizations to provide the necessary infrastructure, services and improved housing quality. The arguments for upgrading are weaker when the slum or informal settlement also has high levels of exposure to climate impacts. In these cases, strengthening tenure security without other adaptation or mitigation measures may only increase their vulnerability by increasing their incentive to stay in exposed areas. As recognized in the Sendai Framework, in some cases, planned relocation or land readjustment may be needed, provided this process includes adequate compensation and provision of secure land tenure rights.

Participatory slum / settlement upgrading has been underway for over 40 years. Initiatives include those by federations of slum or shack dwellers which have been supported by Slum Dwellers International (SDI) and the Asian Coalition for Housing Rights (ACHR). Improving housing quality and providing good quality community and household infrastructure has a big impact on reducing vulnerability and enhancing adaptive capacity. Providing more secure land tenure rights is a key element of this process (Quan and Dyer, 2008; Satterthwaite *et al*., 2018).

Land readjustment and slum upgrading result from the mobility of people, a shortage of affordable land, occupation of hazardous and unsafe land, and the need for managed retreat. One of the aims of land readjustment is to incorporate people living in informal settlements into the "formal" city.

The land tool Participatory and Inclusive Land Readjustment (PILaR) involves a process where land units with different claimants are combined into a single area and redeveloped through a participatory and inclusive process that includes unified planning, re-parcelling and development. The strength of PILaR is that it allows local authorities and citizens to articulate their interests, exercise their land tenure rights and mediate their differences. In the Philippines and Honiara case studies, PILaR could help provide secure tenure for all houses affected by upgrading and planned relocation. This includes developing a tenure-responsive relocation strategy for at-risk households, addressing tenure-related problems and finding suitable land for relocation near livelihoods.

PILaR can help improve tenure security and the adaptive capacity of informal settlers through:

- Accepting a continuum of land rights rather than simply individual ownership rights, while enhancing tenure security. Incorporating knowledge of hazard risk in land readjustment and planned relocation.
- Identifying land tenure and vulnerability safeguards needed in upgrading processes.
- Focusing on households with insecure or informal tenures so that they can be connected to WASH services and be included in programmes to improve infrastructure / buildings.

Settlement upgrading requires city governments to work directly with informal settlers. Consultation will be needed with occupants before they agree to move from hazardous sites, with their involvement in decisions about where to move and how this is done (Satterthwaite, 2006). The implementation of PILaR will need to be complemented by other land tools to estimate the cost of building the necessary capacity and the Valuation of Unregistered Lands tool may also be needed.

### 8.6.3 Assessment and mapping of tenure security

Information on tenure security and existing land disputes is necessary where climate responses are planned. At the macro level, country level tenure assessments are important in identifying the types of land tenure that might need urgent attention, areas where land issues might exist, and where conflict is occurring. This is useful for national planning and priority setting.

Assessment and mapping of tenure security is also critical for city level planning, providing evidence of existing rights to land, the number of displaced and landless, claims by indigenous peoples, the impact on women's rights, and existing informal agreements. This can involve building a comprehensive and accessible database of tenure, agreements and use on both private and public lands. Where land agencies undertake an inventory of land tenure mapping and recording prior to disasters, they lay the foundation for

sound DRR. Such an inventory can also identify lands at risk of hazards, lands that can be used for evacuation, potential sites for emergency shelter and post-disaster planned relocation (Caron *et al*., 2014). Quan and Dyer (2008) recommended that vulnerability assessment combines climate-risk modelling with an assessment of the available information about land occupation, use and tenure conditions, and the capacity of land institutions.

### 8.6.4 Pro-poor land recordation

While formal land administration systems will play a major role in providing tenure security, other community-based options such as pro-poor land recordation provide interim options for identifying and recording rights. This is consistent with FFP land administration. The use of community-based systems for recording land tenure rights is emerging in response to the need to adopt low-cost methods to record land tenure rights at scale, a desire for greater community participation, and new mobile and internet-based technologies that allow new approaches for data collection and storage.

### 8.6.5 Involving youth in land tenure decision-making

Youth (aged between 15 to 24 years as defined by the United Nations) are a significant proportion of the world's population and their vulnerability characteristics are unique. They are more likely to be become mobile when affected by climate variability, as they seek other livelihood opportunities. In our case study in Syria, youth represented a highly disproportionate number of the displaced people, therefore their needs should be explicitly considered.

Youth can also be effective change-agents. According to the *Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda*, youth have demonstrated that they can actively contribute to social and economic development policy through challenging social norms and values (United Nations, 2013). However, while youth are deeply affected by land issues, they are rarely involved in decisions about land, but there is a particular role for youth to innovate around strengthening land tenure security in a way that supports their increasingly flexible lifestyles. Increasing youth mobility, migration and unemployment rates lead them to more flexible informal land tenure arrangements that allow youth to access land (GLTN/UN-Habitat 2015).

## 8.7. TOOLS AND GUIDELINES TO SUPPORT LAND GOVERNANCE DECISION-MAKING

### 8.7.1 Participatory enumeration

The Social Tenure Domain Model (STDM) is one example of pro-poor land administration tools (FIG, 2013). While these tools were not developed for use in climate resilience, using STDM to conduct participatory enumeration is particularly suited to the climate vulnerability and disaster context. Community driven participatory enumeration exercises document land tenure relations, such as social or customary tenures that might not be understood by outsiders, including local approaches that community members consider providing "secure enough" tenure. These enumeration exercises create the foundation for strengthening adaptive capacity by using local and customary knowledge to clarify kinship ties for inheritance purposes, increase community buy-in over the way land tenure rights are documented, and promote place-based networks (FIG, 2013; Caron *et al*., 2014; Enemark *et al*., 2017).

STDM also allows the recording of complex people-land relationships as well as a range of other data about the household and the land. It can be used with handheld devices and supported by recoding point location using handheld global navigation satellite systems (GNSS) for relating to cadastral mapping or imagery. The strength

of STDM is that it is very suited to rapid approaches to recording social tenures. Rolling out STDM at scale in affected areas to all people who have been displaced or affected by the disaster or climate variability would provide very useful data. It provides much needed evidence of land tenure rights, land disputes, perceptions of the threat of eviction and hazard risk. The information gathered by STDM using participatory enumeration methods could also be particularly useful in the processes of planned relocation or land readjustment.

### 8.7.2 The role of spatial information

Complete, reliable and up-to-date spatial information is fundamental to effective land governance, and land administration systems require a large-scale spatial framework in order to operate (Enemark, 2015). Mapping at the parcel level informs the land administration functions of recording land tenure rights, enhancing tenure security and land-use planning and control, as well as the protection of natural resources. Mainstreaming land issues into adaptation plans requires cadastral mapping. The importance of spatial data and information is also recognized in the Sendai Framework (United Nations, 2015) with specific mention of the role of geospatial data and technology, GIS, space data and technology, and risk mapping.

Zevenbergen *et al*. (2014) provide an excellent summary of the importance of spatial information in all stages of disaster risk management:

**Community mapping in Boshimpa Nepal to aid in relocation from vulnerable sites. Photo ©UN-Habitat/Shristee Singh**

*"Spatial information plays an increasingly important role in the various stages of disaster risk management (DRM), especially for the poorer sections of the community, those who are disproportionately affected by disasters. During emergency responses, access to pre-existing and near-real time information is crucial and can be facilitated by dedicated international interventions. During recovery and reconstruction, an important spatial information component relates to land tenure issues, and land administration plays an important role. Finally, during disaster risk reduction, undertaken before the occurrence of a disaster, hazard modelling and vulnerability mapping are used to compile risk maps to be included in spatial planning and land management. When a disaster has recently occurred, it should constitute part of the reconstruction effort to ensure reduced risks in the event of another disaster."*

Spatial information has become even more useful due to advances in technology, such as the increased use of drones, new opportunities from Light Detection and Ranging (LiDAR) systems that capture digital images with heights and the use of methods such as machine learning to identify slums and informal settlements and other features from imagery. For example, drones can capture the location and movement of displaced people, providing useful information for an emergency response. Volunteered geographic information (VGI) also has the potential to support the development of a socio-economic database on the people who are displaced.

In areas threatened by climate variability, spatial information can support discussions with community groups on which areas may no longer be safe for habitation and whether planned relocation is necessary (Caron *et al.*, 2014). In the Philippines, mapping under the Integrated River Basin Management and Development Master Plan for Cagayan de Oro River Basin identified that 11,481 hectares were awarded to indigenous cultural communities through Certificate of Ancestral Domain titles (CADTs). This could be useful in identifying potential land conflict hot spots. In the case of Honiara, cadastral mapping and land tenure security assessment can help identify levels of tenure security, encroachment onto public and customary land, inform tenure upgrading, identify potential land conflict issues associated with community actions, and support decisions about planned relocation. A city-wide map of hazard zones can also inform land administration priorities, the development of master plans and slum/informal settlement upgrading plans.

**Land rights registry teams in Mukono, Uganda learning how to use and apply various land tools in mapping and recording land rights. Photo ©UCOBAC**

### 8.7.3 Tools to support land-dispute resolution

A strong theme is this report has been the impact of conflict over land. Conflict may occur wherever there is change in land use or tenure, where climate impacts affect land tenure or land use, where natural disasters cause displacement, or where there is human mobility. For example, in Honiara, the boundaries of the city are in dispute, with customary landowners resisting recent attempts to demarcate the township land boundary despite the encroachment of informal settlements onto

**Land mediation discussions in Kabale Uganda. Photo ©IIRR Uganda/Rose Mugabe.**

customary land. Planned relocation and upgrading processes are at risk of making these existing land disputes worse and management of these areas will require effective dispute resolution.

Clearly, a key driver of both displacement and civil unrest in Syria has been land tenure security issues. Effective resolution of disputes over land are just one part of the conflict challenge facing Syria and land disputes are much harder to resolve in this context. In Uganda, the elders still play the central role in land-dispute resolution and so these customary processes are key to the resolution of disputes between pastoralists and other land users.

Alternative dispute-resolution mechanisms are often needed to resolve disputes caused by increased competition over land and resources. One example is the FAO/ILC publication *Land Tenure Alternative Conflict Management* (Garrabay and Passano, 2006), which provides guidance on how to review the history of the conflict, undertake conflict analysis and mapping, and identify options for conflict resolution. Land conflicts are often influenced by strongly held cultural and social beliefs, and so there is a need to use local social capital in conflict-resolution processes. This may involve customary, indigenous or religious approaches to conflict resolution that are locally appropriate.

### 8.7.4 Resilience assessment and profiling

City-wide assessments require identifying the existing informal settlements and verifying details with community groups. A profile of the settlement includes who lives there, the nature of their tenure, the

buildings and infrastructure and services, and questions about the impact of extreme weather and other risks can also be included. The boundaries of the settlement are agreed on and positioned using GPS/GNSS. An aim of the process is to gather a detailed, disaggregated, database that can be aggregated into a citywide map of the boundaries of all informal settlements with a link to each settlement profile. Mapping and information of this type is very useful for government authorities and can help support applications for funding for upgrading. The data can also provide the basis for agreement between government and the residents on what needs to be done (World Bank, 2012).

Cadastral mapping and tenure security assessment can be integrated into the UN-Habitat City Resilience Profiling Tool (CRPT). The CRPT is a city-level self-assessment to support key stakeholders in ensuring the safety, maintenance and security of all aspects and functions of an urban area, including critical infrastructure and services, health facilities, transport and telecommunications networks, and WASH services. One way that this can be achieved is by including tenure security questions in household vulnerability assessment surveys.

The UN-Habitat Planning for Climate Change framework is a strategic, values-based approach for urban planners (Ingram and Hamilton, 2014). It provides a suite of 42 tools and involves a climate vulnerability assessment that includes spatial analysis of natural hazard exposure data with community and expert observations. This assessment provides a basis for the participatory development of adaptation action plans that focus on those areas that are most in need. In the Solomon Islands case study presented here, a climate vulnerability assessment of the capital city, Honiara, was completed in 2014. This fed into a comprehensive Honiara Urban Resilience and Climate Action Plan (HURCAP), which was developed and discussed in community workshops before being endorsed by national and local government in 2017. Land tenure issues were assessed and included in community level action plans. Implementation of the HURCAP action plans for each community is currently underway (Trundle and McEvoy, 2017).

Another resilience assessment tool for development practitioners is the Assessing Resilience in Social-Ecological Systems: Workbook for Practitioners (Resilience Alliance, 2010). It uses strategic questions and activities to construct a conceptual model of a social-ecological system, which guides the identification of what is contributing to, or eroding, system resilience.

### 8.7.5 Gender Evaluation Criteria

While women bear the brunt of the impacts of climate and natural disasters, addressing inequalities can have a big impact on household adaptive capacity. An important way to address gender inequality is through using the Gender Evaluation Criteria tool to assess the gender-responsiveness of policies, laws and processes related to land and climate. In fact, gender evaluation should be undertaken at each of the entry points. The Gender Evaluation Criteria can support climate-resilient land governance through:

- Adopting a rights-based strategy using community empowerment processes that challenge gender norms that would formerly discourage the participation of women in decision-making (either formal or customary land tenure contexts).
- Providing women with formal recognition of property rights can mean that a female spouse and her dependants have access to relocation options or compensation for property loss.
- Improving access to land, forests and other natural resources is important for women and their dependants, who are often more severely impacted by exclusion from such areas.
- A gender assessment of climate change adaptation

interventions combined with other development instruments can help to address risks for women and their dependants.

- ❑ Involving women in adaptation design, planning and implementation.
- ❑ In rural areas, the criteria can help assess women' status in rural areas, their ability to access to property as landholders, and how to increase their adaptive capacity.

One of the lessons from Typhoon Sendong in the Philippines was that land administration responses needed to be informed by the impact of the disaster on the poor and vulnerable. As women are disproportionally impacted, the Gender Evaluation Criteria should be applied to land governance in both pre- and post-disaster contexts. Given that rural Syria is managed by Islamic laws, the publication Women's Access to Land in the Muslim World (GLTN 2018d) can help to develop appropriate land responses. In Uganda, the Gender Evaluation Criteria could help to assess the security of women's land tenure rights under customary tenure, so women are less vulnerable to abuse.

### 8.7.6 Potential new land tools

The review findings also indicate a need for potential new land tools. These include the rapid assessment of land tenure, climate vulnerability and conflict; support for those displaced by climate impacts; and tenure-responsive relocation.

**Gender equality starts from inclusive participation and project implementation by women themselves. Cagayan de Oro City, Philippines. Photo ©Xavier Science Foundation**

**A RAPID ASSESSMENT OF TENURE SECURITY, CLIMATE IMPACTS AND CONFLICT**

The demand for post-disaster rapid responses tests the capacity of all stakeholders to respond. While there are many rapid assessment tools that include questions on tenure, specific guidance is needed on tenure information requirements, including: land tenure types and associated tenure security in that context, land governance structures, understanding the land development and planning law and challenges linked to it (site sizes, link between rights and basic services), challenges for rapid relocation and availability of land for shelter and settlement, and options for rapid development of key infrastructure.

The VGGTs provide some guidance: "States should address tenure in disaster prevention and preparedness programmes. Information on legitimate tenure rights should be collected for areas that could be affected through a process consistent with the principles of consultation and participation of these guidelines. Systems for recording legitimate tenure rights should be resilient to natural disasters, including off-site storage of records, to allow right holders to prove their rights and relocate their parcels and other spatial units" (CFS and FAO, 2012; 24.3, p.36).

**MAPPING AND RECORDING NUMBERS OF PEOPLE DISPLACED BY CLIMATE IMPACTS**

The importance of addressing displacement in disaster preparedness is recognized in the Sendai Framework, including the need for support systems for displaced persons. As was made evident in the Syria case study, climate or conflict-induced displacement creates enormous challenges for emergency response agencies. A central land governance challenge is to effect restitution for those people displaced. The Pinheiro Principles provide guidance, calling on states to "demonstrably prioritize the right to restitution as the preferred remedy to displacement and as a key element of restorative justice." According to Pinheiro Principle 2:

- All refugees and displaced persons have the right to have their land and housing restored to them of which they were arbitrarily or unlawfully deprived, or to be compensated where it is factually impossible to restore their land and housing.
- States shall prioritize the right to restitution as the preferred remedy to displacement (United Nations Sub-Commission on the Promotion and Protection of Human Rights, 2005).

At the local level, the restitution response is essentially a land administration issue. Assisted relocation will involve compensation or incentives that allow climate-affected households to migrate from affected areas and choose their destination. Guidance on protecting the rights of people displaced by climate hazards can be found in the Guiding Principles on Internal Displacement, the 2011 Nansen Principles and United Nations High Commissioner for Refugees' deliberations on climate change and displacement, including the rights of internally displaced peoples and refugees (de Sherbinin *et al*., 2011). A central challenge for all agencies involved in emergency response is to track the movement of people displaced and understand where they came from, what land they have left behind, and details of the people involved. All of this requires states and other stakeholders to develop systems to track the movement of displaced people and know the numbers of displaced persons in settlement camps.

In areas that are subject to ongoing conflict this is difficult, however the GLTN publication *Land and Conflict: Lessons from The Field on Conflict Sensitive Land Governance and Peacebuilding* (GLTN, 2018a) documents some good examples. There have also been good examples of post-disaster responses involving mapping and recording the numbers of people in displacement camps and resettlement sites (Mitchell, 2011). However, much of the information on displaced people tends to be project-based and ad-hoc.

**Community members in Boshimpa learning how to map their settlement and discussing relocation options from the vulnerable village to a new safe site in Panipokhari, Nepal. Photo ©UN-Habitat/Shristee Singh**

The Social Tenure Domain Model could be adapted to record the pre-displacement people-to-land relationships. It could be also be used post-disaster to record these relationships for people in displacement camps, for example.

**TENURE-RESPONSIVE PLANNED RELOCATION OF HIGH-RISK COMMUNITIES**

For planned relocation planning to be effective in reducing disaster risk without creating further human settlements in at-risk areas, it must consider the following (Correa *et al*., 2011):

- ❑ Assessment and mapping of vulnerability of the most vulnerable, including women and indigenous peoples. Article 10 of the 2007 UNDRIP states: "No relocation shall take place without the free, prior and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation and, where possible, with the option of return."
- ❑ Detailed tenure-responsive land-use plans for the new settlement housing that ensures safe occupation and connection to infrastructure, services, livelihoods and community.
- ❑ Capacity building of the institutions in charge of formulating and implementing land-use plans.
- ❑ A supply of affordable housing on safe sites.
- ❑ Effective land-use control that prevents land use that degrades the natural environment and exacerbates natural hazards, human settlement in unsuitable areas, or on sites with existing land disputes.

- Provision for alternative conflict resolution mechanisms will also be needed.

Although the World Bank/GFDRR publication *Populations At Risk of Disaster: A resettlement guide* (Correa *et al*., 2011) provides details of risks and some guidance on addressing potential land tenure issues, there is less recognition that planned relocation often leaves people displaced from livelihoods and community and without land tenure security. A new tool is needed that focuses on protecting existing land tenure rights of the host community and providing secure tenure for those resettled. A focus on land tenure security would include consultation with resettled and host communities and agreement on the land to be acquired, suitable housing types, the spatial planning design of the new settlement, and what form of tenure would be secure enough. In particular, the land acquisition stage has many land tenure risks.

There has been much literature on development-forced displacement and relocation (DFDR) relevant to decisions about future climate displacement, given the similarity of issues. In fact, climate change is likely to mean the scale of displacement will increase. Planned relocation decisions should therefore draw on lessons from past relocation and how they apply to climate-related planned relocation (de Sherbinin *et al*., 2011). One lesson is that planned relocation is inherently complex, is expensive, with high level of risk to tenure security and livelihoods, and difficulties in identifying suitable land for planned relocation.

Relocation of some urban settlements which are in highly vulnerable areas may be required. However, better results occur when decisions on planned relocation are made on a voluntary basis (Correa *et al*., 2011). In some areas, there will be limited availability of planned relocation land due to high population densities and choosing a suitable planned relocation site is a challenge. Also, relocation to the edge of cities should be avoided due to the potential for loss of livelihoods and impacts on social networks. Connell and Connell (2014) argue that planned relocation planning must recognize the diverse, migration-dependent nature of livelihoods. It is important to provide people with options and flexibility so that they can maximize the planned relocation opportunities (Dodman *et al*., 2013; Connell and Connell, 2014).

Planned relocation planning should also provide for formal recognition of the tenure security of both resettled households and host communities to reduce the potential for future land disputes. Land policy frameworks can support planned relocation planning through improving land-use planning of areas considered for planned relocation. However, more needs to be understood on when planned relocation is the best option. The development of an inventory of land occupation and hazard risk in both potential planned relocation areas and areas at risk of loss would support these decisions (Quan and Dyer, 2008; Dodman *et al*., 2013).

# CHAPTER 9

# CONCLUSION

# CONCLUSION

This report, aimed at development, climate-change adaptation, disaster risk reduction, emergency management and land sector communities of practice examines the inter-relationships between land tenure and climate vulnerability. It highlights some of the complex and inter-linked challenges facing marginalized communities and, based on the evidence, signposts possible pathways to positive change.

As discussed, while responsible land governance and secure land tenure are fundamental to sustainable and equitable development, a significant proportion of urban and rural communities are still without adequate access to land and the multiple benefits that derive from having secure land tenure. A changing climate – in combination with other contemporary stressors such as population growth, migration, land reform and increasing urbanization – will act to amplify existing societal stresses. Consequently, the principles of responsible land governance have never been more important as governments strive to address the complex resilience challenges that we face today and into the future.

It has been argued in this document that improved tenure security should be an important enabler of climate-change adaptation. Explicitly considering land tenure issues in the development of adaptation strategies and actions will help to increase the resilience of poor and vulnerable communities, improve the acceptance of the need for adaptation, and reduce adverse impacts on existing land tenure arrangements and potential conflict between adaptation "winners" and "losers". Strategies that improve tenure security will simultaneously contribute to improved food and water security, more sustainable livelihoods, reduced forced and unplanned human mobility that leads to landlessness, reduced environmental degradation, less urban and rural poverty, reduced conflict over land and resources, etc.

Climate-resilient land governance is a critical component in improving tenure security and enhancing community resilience to a variety of natural and human-induced shocks and stresses. It should also be a central consideration in all global frameworks that target human wellbeing. We discuss opportunities for alternative pathways towards more integrated approaches for climate-resilient land governance with entry points that include:

1. *Institutional framework*. Given the importance of secure land tenure for reducing vulnerability to multiple shocks and stresses, investments in responsible land governance will not only enhance climate resilience but will also improve policy performance when measured against a range of global frameworks.
2. *Policies plans and programmes*. Land tenure explicitly considered during climate vulnerability assessments and adaptation-planning processes to inform more equitable "gender-responsive" and "pro-poor" actions, as well as avoiding situations of maladaptation. Adopting the VGGTs, fit-for-purpose approaches to land administration and tenure-responsive land-use planning principles.
3. *Land administration processes and tools*. Informed by climate and hazard risk assessment and based on the continuum of land rights and pro-poor and gender-responsive principles, this report outlined some key land administration processes and tools that (used together) can contribute to climate-resilient land governance.

Beyond this discussion, further research is warranted. Firstly, we have proposed that new land tools be developed:

(i) rapid assessment of tenure security, climate impacts and conflict;
(ii) map the movement / settlement of displaced

people to identify abandoned land and housing and help assist restitution; and

(iii) tenure-responsive planned relocation of high-risk communities.

Given the central role that women play in adaptation and food security, better understanding from women's perspective of the complex people-climate-land linkages is needed, as well as strategies for better inclusion in adaptation design and implementation. Indigenous and tribal peoples and forest dwellers are disproportionally affected by climate impacts and more research is needed on how to protect their land tenure rights to reduce vulnerability and support adaptation.

Human mobility has been a key theme of this report. A huge challenge involves developing land policies that support mobility and approaches to land administration that support restitution for the large number of displaced persons globally.

Finally, while there has been much research and literature on "whole of landscape" approaches to adaptation, these would benefit from investigation into the complex ways that land use and land tenure influence deforestation, degradation and impacts on water quantity and quality.

Field bunding in a village of Nawarangpur District, Odisha - India. Field bunding on sloping lands reduces water runoff and controls soil erosion through ridges which seize soil washed from the fields lying above. Photo ©IFAD Asia

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## ABOUT THIS PUBLICATION

This publication examines the inter-relationships between land tenure and climate vulnerability. The analysis has been framed according to peoples' exposure to climate-related hazards, the sensitivity of different elements at risk in both urban and rural contexts and understanding how insecure land tenure influences the adaptive capacity of communities and individuals. Potential feedback loops from climate adaptation measures that may act to undermine peoples' security of tenure have also been considered.

The publication has been written with a broad audience in mind, including development, climate change adaptation, disaster risk reduction, emergency management and land sector communities of practice. The aim is to highlight some of the complex and inter-linked challenges facing marginalized communities and, based on this evidence, signpost possible pathways to positive change. The content herein draws from an extensive literature review and evidence from five international case studies contributed by regional experts. The case studies were selected to enable consideration of differing land tenure and climate vulnerability contexts in different parts of the developing world.

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