

COMMUNITY EXPERIENCES OF CLIMATE CHANGE AND ITS IMPACTS IN TIMOR-LESTE



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PREFACE

While Timor-Leste's contribution to global carbon emissions is among the lowest, it is one of the countries most affected by the adverse impacts of climate change with the poor and most vulnerable communities facing disproportionate challenges in terms of extreme weather events, health effects, food, water livelihood security and biodiversity loss, among others.

Communities in Timor-Leste have already suffered from the negative impacts of climate change, despite not being a major contributor to global carbon emissions. Regular climatic events which include heavy and irregular rain, longer dry seasons and major storms such as 2021's Tropical Cyclone Seroja have already caused major losses and damages to thousands of households. Today, many households are not yet recovered fully from losses and damages inflicted by the 2021 cyclone Seroja. The poor and most vulnerable communities such as women, farmers, persons with disabilities, people living in risk-prone areas, people without secure land tenure are among those disproportionately impacted by climate change and climate-induced events.

Within this context, we hope that this research complements the already existing body of knowledge related to climate change, loss and damage, access to land and land rights in Timor-Leste.

It is our hope that findings from this study can stimulate dialogues on improving community resilience to climate change, minimize loss and damage and increase community mitigation and adaptive capacity while, at the same time, contribute to a robust policy framework that provides sufficient support and protection to communities including community access to land and land rights which are critical to resilience building.

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ABBREVIATIONS

FAO	Food and Agriculture Organization
CEDAW	The Convention on the Elimination of All Forms of Discrimination against Women
GoTL	Government of Timor-Leste
IFRC	International Federation of Red Cross and Red Crescent Societies
IPCC	Intergovernmental Panel on Climate Change
MAF	Ministry of Agriculture and Fisheries
NAP	National Adaptation Plan
NKSNP	Nino Konis Santana National Park (Parque Nacional Nino Konis Santana: [PNNKS])
SNC	National Cadastral System (Sistema Nacional Cadastral)
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organization



EXECUTIVE SUMMARY

Communities in Timor-Leste suffer from the negative impacts of climate change, despite not being major contributors to global carbon emissions. Regular climatic events include heavy and irregular rain, longer dry seasons and major storms such as 2021's Tropical Cyclone Seroja. The impacts of these climatic events include floods and landslides that damage community homes, farms, fields and livestock and biodiversity.

The impacts of climate change vary between Dili and rural areas as a result of their different social, cultural, economic and geographic contexts. In Dili, community land and houses sustained damage from mud and landslides and flooding rivers permanently washed away land. Climate change in rural areas has not led to the physical loss of land, but temporary loss of functionality, such as agricultural land damaged by flooded rivers, longer dry seasons or irregular rain. Longer dry seasons have had stark impacts on Nino Konis Santana National Park and other protected areas as native fauna struggled in seeking water with larger animals dying of thirst. When there is less water and food available for livestock, animals search for water and food in the old forest areas which results in destroyed springs and the loss of vegetation through overgrazing.

Extreme weather events most affect those who have limited economic means and often survive on subsistence agriculture. In Dili, vulnerable households live in risk-prone areas usually occupying the land illegally without permission from the state. The insecure housing means impoverished communities rarely invest in making their houses or land more resilient to climate change even if they had the necessary resources. The research found that households with secure land tenure have a lower risk of losses and damages and they recover more quickly from the impacts of climate change.



In the municipalities, especially Lautém, agrarian communities generally have secure access and rights to land. As these communities have more freedom to make decisions about their land and agricultural activities, they have a greater ability to increase their climate resilience. Investment to mitigate the impacts of climate change on agricultural production is critical, as this sector is extremely vulnerable to climate change. Land owning farmers are more likely to invest in sustainable improvements to production, though other factors also drive decision making such as the availability of human resources, financial capacity, and the plans of each community.

Climate change affects women and men differently: it exacerbates inequality. Women are significantly affected by damage to or loss of land, housing and livelihoods, as the implementation of land laws often discriminates against women, even though the law guarantees their equal rights. The dominance of traditional socio-cultural systems gives men the advantage in rights to land and access to resources and training for climate change resilience. People with disability are also more vulnerable to the impacts of climate change, as through higher rates of poverty and poorer education, their access to climate-related information and resources is often limited. People with disability also experience major difficulties during emergency evacuation. Communities recognize that disabled people have equal rights to access and own land.

GoTL and development partners have introduced various programs to support farmers to adapt to climate change. GoTL's mitigation plan for the agricultural sector includes climate-sensitive planning and management, promoting sustainable livestock practices, implementing diversified nature-based agriculture which is centralized in the community, and climate-resilient land management.

GoTL initiated emergency response to assist populations affected by climate disasters such as Cyclone Seroja. However, GoTL has had less success with longer-term policies and programs. Accessing the benefits has been challenging for communities as it largely depends on land ownership.

The strategies adopted by GoTL are insufficient to strengthen community resilience to extreme weather events such as intensive rainfall tropical cyclones. Households that have lost their land or live in risk-prone areas need solutions to protect them from risk. When GoTL moves them to a new location, they must be guaranteed the right to live securely on the new land, so that they can invest in their land and home. If poor communities cannot find alternative places to live, they will be forced to continue living in areas at risk from climate change, or remain in temporary shelter.

INTRODUCTION

The IPCC's Sixth Assessment Report proves that the world is experiencing losses and damages due to the climate crisis. Small islands and under-developed countries, like Timor-Leste, generally lack of financial and human resources and adequate infrastructure, leaving them the most vulnerable to climate-driven loss and damage (IPCC 2022).

Climatic events can be divided into two main categories, according to timing and impacts: slow onset processes and rapid events. Slow onset processes include temperature increases, desertification, biodiversity loss, land and forest degradation, acidification, rising sea levels, and salinization, while rapid events are extreme weather such as cyclones or heavy rains. Such events have identifiable start and end points, occurring within a few days or hours across specific areas (Schäfer et al. 2021).

According to UNFCCC (2016), climate-induced losses and damages have economic and non-economic aspects. Economic losses and damages involve business activities, agricultural production, tourism, infrastructure and property. Non-economic losses and damage include loss of life, poor health, reduced movement, environmental degradation, and the weakening of culture and local wisdom.

TIMOR-LESTE AT A GLANCE

- Small island nation of 14,800 km² in the east of the Indonesian archipelago
- Population of 1.34 million
- In 2015, 41.8% of the population were below the poverty line, of which two-thirds lived rurally.
- In 2019, over two-thirds of households were involved in agricultural activities.
- State budget investment in agriculture declined by 47% from 2014 to 2019.
- Agriculture, forestry and fisheries contributed just 8.6% to GDP in 2021.
- In 2023, 22% of people has acute food insecurity.
- Timor-Leste is exposed to increasing temperatures, longer dry seasons, extreme rainfall events, and cyclones
- Timor-Leste's cumulative annual emissions equate to less than 0.003% of the global emissions.

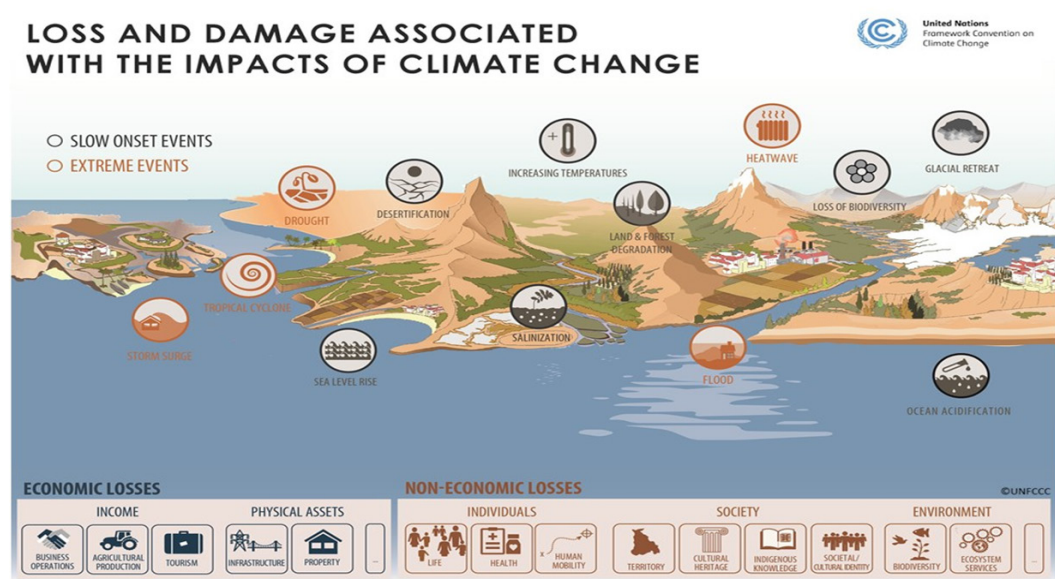


Figure 1. Loss and damage associated with climate change include economic and non-economic losses (Source: UNFCCC Loss and Damage Online Guide, 2016).

Climate change research emphasizes Timor-Leste's vulnerability to its impacts. Not only does a significant proportion of the population live in poverty (41.8%), but also the livelihoods of the majority are derived directly from agriculture (over two-thirds of households). The agricultural sector is particularly vulnerable to climate change. For instance, a single incidence of high-intensity rain damaged or destroyed homes and land - of which 2,163 ha was agricultural - affecting over 3,000 people (UN 2021). Populations living close to rivers lose more land and experience higher rates of damage as a result of flooding from extreme rain events.

Communities in insular and under-developed countries, such as Timor-Leste, are less resilient as they confront entrenched financial and human resource limitations, and basic infrastructure is not resistant to climate shocks. Most under-developed countries also have socio-economic problems such as unemployment, poverty, food insecurity and malnutrition, and therefore allocating limited resources to programs building climate resilience is often difficult. The result is that without substantial investment in climate-mitigation programs, many countries will continue to suffer the loss of lives, homes, land, culture, livelihoods and infrastructure.



Figure 2. Municipalities of Timor-Leste (Source: Timor Leste's National Adaptation Plan)

Timor-Leste has suffered various losses and damages from increasing extreme climatic events: some of which are rapid onset, such as cyclones, floods and landslides, while others - caused by altered climatic patterns, for example, a prolonged drought - have occurred over a several years. Over the past five years, rural communities, particularly those dependent on agriculture, have endured land degradation, and the loss of crops and biodiversity. The impact of Tropical Cyclone Seroja in April 2021 demonstrated that urban communities, especially those in Dili which bore the brunt of property damage and household displacement, are not immune to rapid onset events as many people live in areas prone to flooding. Over 40 people died and over 30,300 households - more than 80 percent of which were in Dili - sought shelter in evacuation centres, which is a clear example of how an extreme climatic event can effect communities in a capital city and damage was estimated at US\$100 million.

The climate crisis will continue to drive losses and damages as the frequency and extent of extreme weather events escalate (WMO 2021; IFRC 2021). Increases in extreme climatic events mean higher risks of inundation for people who live close to bodies of water and landslides for those near or on hill sides. The detrimental impact on the livelihoods of subsistence farmers and their ability to grow nutritious food will lead to a rise in Timor-Leste's already marked levels of food insecurity. Not only will communities across the country experience a fall in living standards and a rise in inequality, but also their access to clean drinking water will be further compromised. As the 2022 IPCC report stressed, it is crucial to see the climate emergency's impact on human society as indivisible from the significant damage it is already causing to ecosystems and biodiversity.

Timor-Leste's 2022-2030 Nationally Determined Contribution (NDC) to the UNFCCC said:

(The country's) status as a Least Developed Country and Small Island Developing State is indicative and correlated with various direct implications for national vulnerability and national exposure to climate change risks as well as lack of human capacity, financial resources, and the relevant technology required to implement robust mitigation and adaptation actions.¹

For communities in Timor-Leste to improve their climate resilience, minimize loss and damage, and increase their mitigation and adaptive capacity, there must be a robust framework to provide sufficient support. It requires a thorough understanding of the multiple cross-sectoral problems people in Timor-Leste currently face, which climate-driven impacts are exacerbating, to mitigate the loss and damage caused to land, livelihoods and biodiversity.

To this end, Oxfam, under the Climate Justice, Economic Justice and Gender Justice pillars of its Land and Climate Finance program, researched the impacts of the climate crisis on communities' access and rights to lands in three municipalities – Dili, Covalima and Lautém. The research focused on vulnerable areas protected by the government, including national parks, to investigate how climate change propels losses and damages in these areas. The Nino Konis Santana National Park is one of the 46 protected areas declared by the government of Timor-Leste in 2007 as a first national park in the country². This National Park area is covering 123,600 hectare, while this park boundary extends into the marine area which holds magnificent coral reefs characteristic of the "Coral Triangle". Moreover, in this park there was an immense important cultural values with numerous sacred places. The park was also a key stronghold for resistance fighters during Indonesian occupation periods.

OBJECTIVE

The research examined the impacts of climate change, namely the loss and damage to community lands, environment and biodiversity in national parks and other protected areas. The study responded to the following questions:

1. What are the impacts of climate change on communities' rights to land, livelihoods and biodiversity in national parks ?
2. How have communities' rights and access to land influenced their resilience to the effects of climate change?
3. How has climate change affected the rights and access of women and people with disability to land and other resources?
4. What are the Government of Timor-Leste's (GoTL) policies and plans for adapting to and mitigating the impacts of climate change/weather events which damage community lands and livelihoods?

1 https://unfccc.int/sites/default/files/NDC/2022-11/Timor_Leste%20Updated%20NDC%202022_2030.pdf

2 <http://timor-leste.gov.tl/?p=16906&lang=en&n=>

RESEARCH METHODOLOGY

This study gathered data through a literature review, and interviewed 83 people from government, civil society organizations and communities:

1. A desk review compiled information from publications about the impacts of climate change on community lands in Timor-Leste.
2. Researchers conducted key informant interviews with 50 respondents (17 women and 33 men), chosen in relation to their knowledge of the research objective: 10 government officials, 4 civil society staff, and 36 community members.
3. Focus group discussions collected data from communities living within the Nino Konis Santana National Park and protected areas in Covalima Municipality. Five discussion groups (32 participants - 11 women and 21 men) obtained the views of community members and ceremonial and traditional leaders.



Mangrove Destruction in Hera / Kate Bensen / Oxfam Australia

RESEARCH SCOPE AND LIMITATIONS

The research covered areas considered at high-risk from climate change, as well as national parks and other protected areas in Dili, Lautém and Covalima Municipalities. The research does not provide technical details of climate change in Timor-Leste. Instead it documents and analyzes community experiences and perceptions of climate change in the three municipalities. Given the similar social, cultural and economic environments in Timor-Leste, the results of this research can be used as a reference for understanding the impacts of climate change in other municipalities.



OVERVIEW OF THE LAND TENURE SYSTEM

Land is the most fundamental economic asset for many households in Timor-Leste: 87 per cent depend on land for food production.³ Land is crucial not only for food production but also for resources such as housing, firewood, grazing, medicine, and other plant products.

It is estimated that 97 per cent of rural land in Timor-Leste is managed according to local norms and customs.⁴ The country's complex land rights situation owes much to the legacies of 450 years of Portuguese colonialism, and 24 years of Indonesian occupation, with its considerable enforced population displacement. The result is many overlapping land titles.

In 2011 the National Parliament approved a Civil Code for the basic system of rights through which to govern land. The Expropriation Law (8/2017) provided protections and principles on how the state may take land from private citizens for public development. The Land Law (13/2017) established a process for deciding who owns land in Timor-Leste. However, both laws require a significant number of subsidiary laws and regulations to be fully functional and there is little understanding of either law in the community or even by government officials.

The protection of customary land (or *rai lisan* in Tetum) is a major concern. In principle, support for the protection of indigenous people's rights is strong; however, in practice the implementation of laws and policies often falls short of these ideals.⁵ The Land Law's two key concepts, central to the management of community property, are 'community protection zones' and 'community property'. Neither concept is well defined and both require further legislation. In late 2020, the Ministry of Justice drafted a Decree Law regulating community protection zones and community property and sent it to the Council of Ministers for preliminary approval. This law, which requires parliamentary approval, will be a central focus of advocacy in coming years.

Land registration across Timor-Leste from 2014 to 2020 has had a detrimental effect on land rights, particularly the rights of women. Research undertaken by Rede ba Rai and Oxfam in Timor-Leste found that the National Cadastral System systematically prevented the registration of customary land, did not provide transparent information about the legal ramifications of land registration for communities, did not monitor the impacts of land registration on women and vulnerable groups, and in many cases registration occurred in contravention of the Land Law (13/2017).⁶

3 General Directorate of Statistics 2015 Census Data

4 Nixon, R. 2009 'Contracts, Land Tenure and Rural Development in Timor-Leste' Justice for the Poor Briefing Note, Volume 3, Issue 3, November 2009. World Bank: Dili, page 3; Nixon, R. 2005 'Non-customary Primary Industry Land Survey: Landholdings and Management Considerations' USAID/ARD Inc.

5 Timor-Leste supported the adoption of the Declaration on the Rights of Indigenous Peoples in the United Nations General Assembly in 2007 and the Constitution recognizes Timor-Leste's customs, traditional values and cultural heritage (Article 2.4, RDTL). However, the language of indigeneity and 'indigenous peoples' is rarely used in the country and seen by some as divisive. Check against the SNC study.

6 Oxfam Timor-Leste is a member of Rede ba Rai, and provides financial, technical and organizational development support. The land registration research is available in Tetum, Portuguese and English from Rede ba Rai's website.

IMPACTS OF CLIMATE CHANGE ON COMMUNITY LIVES AND LIVELIHOODS

In Timor-Leste's current NDC, the Secretary of State for the Environment declared that:

Timor-Leste is one of the lowest contributors to global climate change but we are the victims of this phenomenon and the impacts are getting more serious, especially for communities in rural areas.⁷

To date the comparative data on climatic events in Timor-Leste are insufficient to analyze and learn from the impacts of climate change on communities. Existing climate data are spread across various international agency portals, but there is no information about the effects of climatic events on specific communities, or the effectiveness of adaptation and mitigation measures. Data gathered for this research from 2018 to 2022 about community experiences illustrate that climatic events have seriously affected lives with major social and economic implications.

The climatic impacts on community land and property involve loss of and damage to land. In 2021, the extreme rainfall brought by Cyclone Seroja caused rivers to overflow rapidly, which washed away land and houses along the riverbank, resulting in permanent loss of land. Permanent displacement occurred when GoTL prohibited some communities from returning to their flooded homes, as the surrounding areas were declared high risk for human habitation. Temporary damage also occurred in Dili, when floodwaters entered houses, forcing people into evacuation centres or other temporary accommodation. Outside Dili flooding left communities unable to use their land for agricultural production.

Representatives from communities in the municipalities of Dili, Lautém and Covalima described major climatic events between 2018 and 2022. Their communities endured longer dry seasons, the later onset of the rainy season, irregular rain, heavy rain, and cyclones. Although they did not give specific details, they said the events predated 2018.⁸ These community experiences align with the World Bank's climate change Country Risk Profile, which stated that Timor-Leste is at serious risk of longer dry seasons, higher temperatures, extreme rainfall and tropical cyclones (World Bank Group 2021).

In 2019 and 2020, heavy rains caused major flooding in Dili, while in 2021 Cyclone Seroja became the most serious climatic disaster to occur in Timor-Leste since the restoration of independence in 2002. The cyclone damaged 4,212 homes and affected 30,322 households across the whole country (UN 2021). Extreme rains caused rivers to overflow and carried stones and sand into nearby fields and farms. Farmers could not use the land even though the water had receded because of the accumulated debris. Landslides damaged farms, fields and irrigation systems, which in turn, disrupted rice and corn production in various municipalities. The United Nations recorded flood damage to 2,163 ha of agricultural land while FAO (2021) estimated that up to 2,800 ha of land for rice cultivation may have been lost in an area which can produce up to 8,000 tons. The situation continues to have a direct impact on food security and nutrition for already vulnerable communities.

The largest population affected by Cyclone Seroja was from Dili – 82 percent or 24,816 households. Flooding, heavy rains and high winds damaged many houses in Dili with most people forced to clean up land covered in mud and garbage. Some riverbank land and homes were lost entirely.

7 https://unfccc.int/sites/default/files/NDC/2022-11/Timor_Leste%20Updated%20NDC%202022_2030.pdf

8 Focus group discussion: Loiquero hamlet, Mehara village, 10 December 2022; Uiluru hamlet, Muapitine village, 12 December 2022 (check spelling)

THE STORY OF FELISMINA DA COSTA HORNAI

Felismina da Costa Hornai shared her household's experience of losing their land and house during Cyclone Seroja.

"... the water took everything. It washed away our house, our motorbike, and all of our belongings. It even washed away the land that the houses stood on. All we managed to save were a few documents and the clothes on our backs. I feel so vulnerable: our house was a safe space where we felt peaceful. We no longer have a place to feel secure. I feel terrible for my mother who is old - it is very difficult for her. Because we had nowhere to live, we moved to one of the evacuation centres with other families affected by the flooding.

We didn't just lose our home but also our livelihood as all the equipment we used to sell grilled satay was lost. It was difficult to make a living in the evacuation centre... We didn't always have access to water for cooking and drinking and needed to carry water every day. We had to travel further for my daughter to get to school. Every morning and every afternoon I had to get two buses to take my daughter to school."

In 2019 and 2022, longer dry seasons and extreme wind affected communities in Lautém and Covalima. In the Nino Konis Santana National Park (NKSNP), springs dried up and heavy rain caused landslides and rivers to rise, all of which damaged lands, property, livestock and native vegetation. Long dry seasons in NKSNP led to protected animals, such as deer, dying from dehydration on Jaco island. Drought is suspected to have caused a bushfire in a Covalima protected area. Also in Covalima, long periods of heavy rain saw rivers overflow and cover farmland with sand and rocks, damaging houses. People from affected communities were forced to seek emergency accommodation. Many crops and animals died, including those in protected areas, and the disruption to farming led to a drop in incomes. Agricultural production has also been negatively affected by a shift in the timing of seasonal change - for example, between dry and rainy seasons.

Findings from research with communities in Dili, Lautém and Covalima suggest that Timor-Leste has entered the era of climate-induced loss and damage to land and other resources. In Dili, damage to housing sustained during floods and landslides forced numerous households into emergency accommodation where it was difficult for people to carry out their livelihood activities. Dilva Correia lost her house during Seroja Cyclone and tells her story below.



Flood-affected Community in Dili / Oxfam in Timor-Leste

THE STORY OF DILVA CORREIA

"My name is Dilva Correia. I live in Hera, close to the Timorese Naval base. I have lived on that land since I was a young girl. In 1991 the Indonesian Department of Fisheries moved 200 families to this place to work as fisherfolk. My father was a fisherman in Bidau-Mota-Klaran, and he was one of the relocated fishermen. I grew up there and eventually when I married my husband, he moved onto the land with us. We now have five children. Our houses are surrounded by the sea on one side and large fish ponds on the other. During the rainy season, we are often flooded, but usually the waters rise a little and then recede quickly. The floods that happened on 4 April 2021 were completely different.

Not long after the floods, the government put up signs saying that we could no longer live there because it was classified as a risk area. We have lived there for 30 years and are very worried about our rights to the land. When the government registered this land, they did not write down our names or give us any documents, so we are worried that maybe they did not register the land in our names. We have asked for information, but the government has not explained our rights to us. We have heard that the government will relocate us to a new area in Dili or to a rural area but have not explained the real benefits and risks of these options to us.

The government moved us to temporary accommodation on 15 November 2021 but we don't know how long we are allowed to live here. We have lost not only our homes but also our income from agriculture. We don't know how we will be supported to re-establish our livelihoods as farmers and fisherfolk or what will happen to our land. We should be given clear information on these options and the government should consult us on what needs to happen. Civil Protection staff promised that we could stay here for six months, but in reality it is January 2023 and we are still here. After we moved here, the government did not come to talk with us again about how long we will stay here and about the new village for us. If the government cannot build the new village, we recommend that the government rebuild the dam where we used to live and then we can go home.

Because there is a Parliamentary election this year, maybe the government will forget about us and arranging the alternative place for us. We are staying in this temporary accommodation and facing many problems -the majority of us are farmers and now we have no alternative agricultural land. Even though we are renting some community land for agricultural activities, it is not as big as our previous land before Cyclone Seroja happened. This has affected our income: it is much lower because we need to pay the land rent and for the loan we had from a private bank - we cannot afford to pay the debt. We are tired of trying to solve this situation.

In Covalima community land was unproductive due to severe water-damage. Similarly, in Lautém long dry seasons and irregular rains reduced agricultural productivity and precipitated the loss of livestock. Furthermore, many domestic animals entered old forest areas inside NKSNP to search for water and food, which resulted in damage to springs and native vegetation.

Extreme weather events have impacted farmers the most, destroying their crops, affecting their livestock, limiting access to water, degrading their lands and damaging their homes. Longer dry seasons have forced women and children to walk further from home to fetch water for the household, placing them in precarious situations. Populations which are the least prepared have suffered the most from the impacts of climate change, especially communities living near the edges of rivers or in other risk areas, those in poor housing, and those with limited resources to be able to recover from loss and damage. These communities contribute the least to the climate crisis, but it disproportionately affects people who live under the poverty line and other vulnerable groups.

Table 1. Climatic events during 2018-2022 affecting communities in Dili, Lautém and Covalima Municipalities

CLIMATIC EVENT	IMPACT	IMPACT ON COMMUNITY LAND, LIVELIHOODS AND BIODIVERSITY	MUNICIPALITY
Longer dry season	Loss of vegetations	Overgrazing led to the loss of certain plant species and exposed land to topsoil erosion. Livestock died from lack of food and water.	Lautém
	Loss of livestock fodder	Cows searching for food in the old forest damaged springs and plants.	Lautém
	Springs/ wells dried up.	Protected animals, such as deer, in the NKSNP and Jaco area died from lack of water	Lautém
		Women and children were forced to walk further to collect water.	Lautém, Covalima
	Soil degradation/ erosion	It resulted in the land being uncultivable. Drought caused a reduction in soil fertility as topsoil was lost to wind and was washed away once it rained.	Lautém, Covalima
		Community incomes from crops and livestock fell.	Lautém, Covalima
Irregular rain	Planting times changed.	Farmers could not reliably produce food.	Lautém, Covalima
		Agricultural production failed from either a lack of rain or excess rain.	Lautém, Covalima
Extreme rain	Floods	Floodwaters disrupted agricultural production.	Lautém, Covalima
		River sediment, mud and other debris damaged productive land.	Lautém, Covalima, Dili

		Damage to homes and property	Covalima, Dili
		Damage to public infrastructure such as roads, bridges and irrigation systems	Lautém, Covalima, Dili
		Communities forced to leave their land and homes	Dili, Covalima
Cyclone Seroja	Floods/ high winds	Damage to homes and property	Dili, Covalima
		Damage to productive land	Lautém, Covalima, Dili
	Swollen rivers/ landslides	Loss of and damage to public infrastructure (roads and bridges)	Dili
		Land washed away	Dili
		Homes and property washed away	Dili
		Communities forced to leave their land and homes	Dili

CLIMATE CHANGE AND COMMUNITY RESILIENCE

The climatic events that most often affected communities were strong wind, heavy or irregular rain and longer dry seasons. Communities described heavy rain as often accompanied by strong wind but were not sure if the rain was related to tropical cyclones. Longer dry seasons (with reduced rain) occurred for two or three years in a row. Community observations align with Timor-Leste's climate-change data, which show that the quantity of rain can vary by up to 50 percent year-on-year, with increased heavy rain events, higher temperatures and more frequent longer dry seasons (World Bank Group 2021). Communities described Cyclone Seroja as unprecedented because of its scale and impact. However, due to its location in the Southeast Pacific region, Timor-Leste will experience regular tropical cyclones similar to Cyclone Seroja (WMO 2022).

Climatic impacts vary for communities, especially where the social, economic and geographic contexts differ. These differences shape both the vulnerability and resilience of different communities to climate change. Diversified agricultural practices, such as mixing crops or systems which integrate plants and livestock, can strengthen communities' resilience. While longer dry seasons create challenges for agriculture, communities cope better if they have crops which are resilient to droughts. The community in Lospalos said they do not go hungry because they have other sources of food, such as tubers, and perennial plants like bananas and coconuts. These crops are sources of food and income when corn or rice production fails or livestock die.

In Dili, communities depend more on informal sector activities, such as selling goods, or paid employment in the public or private sectors. Communities in the capital Dili are affected by heavy rain, flooding and cyclones as, in addition to damaging land, homes and property, they limit economic activity. Such events have a particular impact on informal sector workers who cannot sell their goods on roadsides, and mobile vendors and drivers of transport cannot operate. Table 2 below shows the climatic events of 2018–2022, how communities responded and their impacts.

The community members' experiences show that the destruction of land and homes

IN BRIEF A HISTORY OF LANDTITLE

During Portuguese colonization and the Indonesian occupation, which involved forced displacement of many people from their lands, the majority of Timorese did not have land titles. After Timor-Leste regained independence in 2002, many people from rural communities migrated to the capital Dili in search of jobs, better public services, higher education and healthcare. As most could not afford to buy land in Dili, they built houses in areas that were highly vulnerable - close to rivers, lakes, and beaches. In 2021, these communities were the worst affected by the flooding brought by Cyclone Seroja. Some people returned to land in their home villages as the government granted land owners subsidies for building material. However, others have not received assistance or compensation for the loss of their lands and their rights to land are not protected under the Land Law.



The view of YEFF rearing field in Hera, Dili / Keith Parsons, Oxfam Australia

disproportionately affects people with insecure or inadequate land rights. In Timor-Leste, no study has assessed how the impacts of climate change differ for people with secure land titles compared with those without. However, research indicates that there is a strong relationship between land ownership and climate change (Murken and Gornott 2022). Those with secure land title tend to be less affected by climate change because they live further from risk areas and can invest in making their land and homes more resilient to extreme weather events (IPCC 2022). The IPCC study identified a strong relationship between secure land titles and actions to adapt to and mitigate climate change. Community observations from this research also demonstrate that the people who suffer greater impacts from extreme weather events live in risk-prone areas, including land on which communities are not legally allowed to live or own. People are unlikely to invest in making their houses more climate resilient because they do not have the right to own the land: the Government can move them at any time and they may not receive compensation.

In the municipalities, especially Lautém, communities generally have secure access and rights to land. Most land is used for crop production and raising livestock. Land ownership provides greater resilience against the effects of climate change, as these communities are freer to make decisions about their land and agricultural activities. Investing to build resilience into agricultural activities is critical, as the sector is extremely vulnerable to climate change. Farmers are more likely to make these investments if they have land title, although tenant farmers also invest when the landowner permits them.

This study sought to understand initiatives or local wisdom related to managing and reducing the impacts of climate change. While communities recognize changes in the weather and want to reduce the impacts, they lack knowledge. During interviews and discussions, communities suggested the following initiatives as important for reducing the negative impacts of climate change:

- ❖ Increase community knowledge about climate change and resilience.
- ❖ Plant crops that require less water and which can withstand longer dry seasons.
- ❖ Diversify crops and livestock.
- ❖ Conserve water on hills/slopes by building dams, terraces and plant plants to preserve water and prevent soil erosion.
- ❖ Access alternative water and food resources in old forests.
- ❖ Lead animals to water and food in other areas.
- ❖ Communities must assist each other during natural disasters.
- ❖ Communities should work together to improve damaged infrastructure.
- ❖ Provide water for native animals lacking water in protected areas such as NKSNP.
- ❖ Implement tara bandu rules to prevent people from burning land.
- ❖ Move to live in safer areas.
- ❖ Build barriers on riverbanks to prevent floods and erosion.
- ❖ Secure access to imported products in case local production fails.
- ❖ GoTL and development agencies need to provide materials to repair damaged homes.
- ❖ Provide financial support to families to recover from loss and damage.

Table 2. Climatic events during 2018–2022 and community responses

CLIMATIC EVENT	IMPACT ON COMMUNITY LAND, LIVELIHOODS AND BIODIVERSITY	COMMUNITY RESPONSE
The Longer dry season	Many livestock animals died.	Communities reported the deaths to the Ministry of Agriculture and Fisheries at the municipal level but did not receive an adequate response.
	Cows sought food in the old forest, damaging springs and plants.	Farmers left animals in pastures near Lake Ira Lalaru and the animals went to the old forest, but the risk that animals could drown or be taken or eaten by crocodiles.
	Many protected animals died, such as deer located in NKSNP	Community groups took water from Tutuala to Jaco Island.
	Community members, particularly women, walked further to collect water.	Some families dug new wells close to their homes.
	Communities could not plant crops.	Communities relied on income from selling animals, but it was limited by the high livestock death rate from longer dry seasons and various diseases.
	Communities' income from crops and livestock fell	Farmers planted more crops with lower water needs, such as coconuts and other food crops, which can withstand longer dry periods.
Irregular rain	Farmers' regular productive activities were disrupted.	Communities sometimes planted a single crop twice or three times within a season to make a living.
	Agricultural production failed from lack of/ excess rain.	Communities instead sold animals, but it was limited by the high livestock death rate.
Heavy/extreme rain	Failure of agricultural production from too much rain	Communities sold a limited number of animals.
	Damage to productive lands	Communities depended on GoTL to help them recover their fields.
	Damage to homes and property	Stayed in temporary GoTL accommodation

	Damage to public infrastructure such as roads, bridges and irrigation systems	Depended on the GoTL to repair and rebuild
	Communities forced to leave their land and homes	Stayed in temporary GoTL accommodation
Cyclone Seroja	Damage to homes and property	Stayed in temporary GoTL accommodation
	Damage to productive lands	Communities depended on GoTL to help them recover their fields.
	Damage to public infrastructure (roads and bridges)	Depending on GoTL to repair and rebuild
	Rivers washed away land	Stayed in temporary GoTL accommodation
	Rivers washed away chomes	Stayed in temporary GoTL accommodation
	Communities forced to leave their land and homes	Stayed in temporary GoTL accommodation



Drought in Lautem / Pxfam in Timor-Leste



IMPACTS OF CLIMATE CHANGE ON EQUAL ACCESS TO LAND AND OTHER RESOURCES

Timor-Leste's Land Law – or Special Regime for Determining the Ownership of Immovable Property – guarantees that women and men have the same right to own land. Article 4 of the Land Law states that “Property rights are assured equally to males and females, and any form of discrimination, including with respect to ownership, acquisition, management, administration, enjoyment and disposition of property, is prohibited” (Ministry of Justice 2017). However, climate change disproportionately affects women as they are more vulnerable to the impacts of lost or damaged land and housing. The implementation of the Land Law continues to discriminate against women, even though the law guarantees them equal rights (CEDAW 2022). Traditional systems in Timor-Leste also advantage men's land rights and they have much more influence on decisions related to land and resource use.

According to UN Women, women are highly susceptible to climate change as they are more reliant on natural resources, more vulnerable to violence, and women and children are at far greater risk of injury and death during natural disasters through the reduced access to health services (IFRC 2021; UN Women 2022). Women's increased vulnerability is also because of unequal access to capital resources – particularly as their lower skill level results in limited workforce participation – discriminatory treatment from formal institutions, and their limited participation in decision-making processes (World Bank Group 2022). Timor-Leste's National Adaptation Plan (NAP) recognizes that climate change has had unequal impacts on women and men and highlights the importance of clearly defining these differences (GoTL 2020). Oxfam's submission to CEDAW on women's land rights demanded that Timor-Leste adopt a policy which involves women in finding solutions for the impacts of climate change and natural disasters.

The study shows that the right to access and own land is important for strengthening community resilience to climate change. Cyclone Seroja badly affected communities living on riverbanks, hillsides and next to lakes: their impoverished circumstances prevented them from buying land in areas less prone to the

impacts of climate change. This is captured in the following statement by Felismina da Costa Hornai, who lost everything in the aftermath of Cyclone Seroja:

In 2010 we began looking for new land to buy. It was difficult to find anywhere in Dili that we could afford. Even small pieces of land cost between US\$5,000 and \$10,000, and we could not afford to pay that much. Eventually, we bought land in an area called Kuluhun, close to the river. We knew it was a risk, but we didn't have enough money to buy land in other areas. (Oxfam 2022).

Domingas da Silva and family, also badly affected by Cyclone Seroja, moved to live at the mouth of the Comoro River in 2020 as the cost of land in other areas is too high. Domingas knew the area was not safe, but she did not expect a disaster of such a large scale.

I knew the house was right beside the river. I was a little worried about the risk of flooding, but I never imagined what was about to happen. We were there only one month when disaster struck (Oxfam 2022).

Several other women lost their land in extreme climatic events, and their economic circumstances restricted their ability to buy more land in secure areas. As their ability to raise credit is so limited, they are likely to return to risk-prone areas. Government intervention, particularly for female-headed households, needs to enable their movement to safer habitation.

In the municipalities there were no reports of women permanently losing land to climatic events. During interviews and discussions in Lautém, communities said climate change did not limit their access to land, but it made productive farming difficult. The community also reported that land registration has caused conflict when more than one person had registered a claim to a specific parcel of land.⁹ These communities continue traditional practices which dictate that only men have the right to inherit land.

People with disability are also marginalized and vulnerable. Like women, they endure more of the socio-economic aspects of the climate crisis as its impact exacerbates existing inequality. They experience higher levels of poverty and poorer education, thus reducing their access to information on and resources to respond to climate change. People with disability encounter significant difficulties during natural disaster evacuations (IFRC 2021; UNFCCC 2016; UNEP n.d.). For instance, 6.7 percent of people impacted by Cyclone Seroja had a disability. Within hours of the disaster, Oxfam partner RHTO (Raes Hadomi Timor Oan), a disabled people's organization, was actively assisting evacuations, needs assessments, and distributing food and other items to people with disability. During Cyclone Seroja in Dili and strong winds in Covalima, people with disability received support from their neighbours in communities when they had to evacuate. Communities recognize that people with disability should have the same access and rights to land as those without disability, and have the right to life-sustaining resources to enable their continued well-being.

⁹ Focus group discussion: Loiquero hamlet, Mehara village, 10 December 2022; Uiluru hamlet, Muapitine village, 12 December 2022 (check spelling)



Reforestation in Ermera / Kate Bensen / Oxfam Australia

GOTL'S CLIMATE CHANGE ADAPTATION AND MITIGATION POLICIES

Timor-Leste has adopted a NAP to serve as “the national policy instrument for coordinating and driving actions of all actors and stakeholders in pursuit of adaptation goals and outcomes” (GoTL 2020). The State Secretariat for the Environment is leading the government’s implementation of NAP as part of its mid-to-long-term multisectoral climate mitigation and adaptation plan. A key GoTL priority is building adaptive capacity and climate resilience into the agricultural sector, which includes incorporating climate-focused planning and management for example, improving livestock practices to prevent overgrazing and implementing community-centred, climate-sensitive, diversified and sustainable agriculture, and nature-based land management practices (GoTL 2020).

The Ministry of Agriculture and Fisheries (MAF) is yet to provide any sustainable interventions, such as protecting the nutrient cycle and preserving water, to assist farmers in adapting to climate change to protect production. While MAF has allocated agriculture extension staff to each village to support farmers, including with climate-related concerns, many community members said they were not satisfied with how they worked. However, the reasons for dissatisfaction could be during 2016-2021 period when these communities were significantly affected by climate change, the existing mechanisms not worked with proper solutions. Moreover, the communities were not actively engaged with the relevant ministry representatives in municipality. For example communities in Mehara and Muapitine vilages said that they did not have adequate support from the local municipal extension staff. In fact the government distributed hand tractors for local farmers and unfortunately it did not meet actual community needs in the field. The



dire need of the community was access to water where women and girls had to walk from their villages to fetch water across mountains on rocky ground.

As livestock has damaged springs and uncontrolled grazing has reduced native plant biodiversity in NKSNP, GoTL plans to strengthen protection measures by the enforcement of rules related to resource access. GoTL will define the rights and responsibilities of communities in specific areas of NKSNP and has posted forest and coast guards to oversee protected areas. The Municipal Forestry Directorate and local authorities have been engaging with communities on matters ranging from new disaster-preparedness alert systems to how people can obtain a license to cut down trees for private use. These among other measures need to limit deforestation and forest degradation by encouraging communities to protect natural habitats.

GoTL declared a state of emergency after Cyclone Seroja and government agencies, civil society organizations, and development partners responded to the urgent needs of affected people and supported the recovery of disrupted livelihoods (GoTL 2021). The humanitarian response rescued people from affected areas, moved at-risk communities to emergency shelters, and distributed food and items for their basic needs. There was also assistance for repairing damaged property. GoTL applied measures to prevent Dili communities from returning to their homes in risk-prone areas. The initial response was to provide temporary accommodation for displaced households. There has also been an unrealized proposal to build a new village on government land to house people moved from unsafe areas. Without appropriate consultation on the location for access and children's schooling, and the limited consideration of community livelihoods, there has been little progress on the plan.

After Cyclone Seroja, GoTL approved Decree Law No. 7/2021 for the State to provide assistance to victims of serious accidents or disasters. The law enabled those who were landowners to leave Dili to rebuild their lives with government assistance. Affected Dili households that returned to their home villages received subsidies of US\$1,000 for house construction materials and labour costs.

However, for people without land, there are few viable solutions as land ownership is key to receiving government assistance. Too many households returned to rebuild in unsafe areas where they face the threat of eviction as the land is government owned. Others remained in temporary accommodation where they had limited access to clean water. As their main activity was farming, they experienced income disruption, exacerbated by the high cost of renting agricultural land, and they could not afford to buy land in Dili.

CONCLUSION

Communities in Timor-Leste have suffered significant loss and damage caused by the accelerating climate crisis. The impacts on land have been marked, limiting people's use of land or its loss altogether. The people most affected are those living in areas prone to flooding or landslides. Not only is it impossible to have rights to these lands as they are state owned, but GoTL has also prohibited people from living in these areas. Many live in high-risk areas in precarious conditions as they are unable to rent or buy land in safer places.

Communities reported falls in crop production in rural and hilly areas because of longer dry seasons, irregular rain and changes in the timing of seasonal events, all of which worsen an already concerning level of food security. In NKSNP and other protected areas, longer dry seasons, flooding and landslides continue to threaten biodiversity, destroying vegetation and protected animals.

In 2019 and 2021, widespread heavy rain caused rivers to flood. In such situations, women and people with disability suffer higher risks and increased susceptibility to the effects of natural disasters. Marginalization reduces educational and employment opportunities, leaving them vulnerable to the lack of access to information, training and resources which are important for promoting resilience. Moreover, many rural communities continue to practise traditional land rights systems, which deny women equal rights to inherit land, despite their high participation in agriculture.

The majority of people in rural communities are farmers, and many have adopted various practices, such as diversified agriculture, to strengthen adaptation to climate change. Communities in municipalities have better access and more secure rights to land, which enable them to invest in their homes and lands to increase their climate resilience. The situation is in contrast to vulnerable households in Dili and other urban areas that do not have land title.

While the government's humanitarian response during extreme weather events supported most of the affected population, it has demonstrated a limited ability to introduce climate-adaptive measures. Many households living in risk-prone areas returned to their villages, however, the GoTL construction assistance to encourage their relocation is dependent on whether people own land in their home municipality. There is no viable solution for landless communities, so they either remained in temporary shelters or returned to urban areas that will flood again in the future. As communities suffer repeated loss and damage, it reduces their ability to recover from the aftermath of natural disasters and rebuild their lives. It also exacerbates existing inequalities. People's ability to cope and recover largely depends on how the government can increase their climate resilience. Understanding the climate-related challenges rural communities experience will help the government strengthen resilience in the agricultural sector. Further studies on how the impacts of climate change differ for people with secure land titles compared with those without will assist government with targeted support to those most vulnerable to and affected by the adverse impacts of climate change.

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