

Timor-Leste
**POST DISASTER
NEEDS ASSESSMENT**

Tropical Cyclone Seroja and Easter Flood April 2021

EXECUTIVE SUMMARY



October 2021



FOREWORD

The heavy rains across Timor-Leste from 29 March to 4 April 2021, brought by Tropical Cyclone Seroja, resulted in flash floods and landslides across all 13 municipalities in the country, with the capital Dili and surrounding low-lying areas the worst affected. Under the leadership of the Government of Timor-Leste, national and international humanitarian actors worked together to respond to the disaster and provide support to meet the humanitarian and early recovery needs of the 30,946 flood-affected households.

At the request of the Vice Prime Minister, H.E. Jose Maria dos Reis, the Post-Disaster Needs Assessment (PDNA) was undertaken to inform the Government's longer term post-floods recovery efforts across multiple sectors. PDNA was truly a joint effort, between the Government, United Nations, World Bank and – in the case of Education Sector – NGO (Plan International), bringing together our different comparative advantages and technical expertise.

In the past few years, we have witnessed the increasing frequency and intensity of extreme and unpredictable weather events across the globe resulting from climate change and their disproportionate impact on small island developing countries like Timor-Leste. The flash floods in April provided more evidence of climatic changes and the impact on vulnerable groups and infrastructure in Timor-Leste. All partners need to be better prepared, manage and reduce risks, and to build resilient infrastructure and communities.

The post-disaster recovery period provides an opportune moment for all stakeholders to reflect on issues related to disaster risk reduction and climate change adaptation. The damage and losses from the floods have been significant. We need to Build Back Better, by investing more and paying greater attention to design and preparation. For example, in rebuilding infrastructure, we must “do it right,” make them more resilient to hazards, as well as environmentally sustainable.

Recovery – particularly for those most vulnerable and thus worst affected – does not happen overnight. Vulnerable groups – including women, children and persons with disabilities - require longer-term and specific support to be able to fully recover. In continuing to support with the recovery of these groups as a matter of priority, we must also invest in building their resilience to future disasters.

There is an opportunity now for the Government with support from partners to make progress in Timor-Leste's DRR commitments under the Sendai Framework. Globally, the allocation for emergency response is approximately 20 times higher than for prevention and preparedness. Both domestic resources and international assistance need to invest much more in risk mitigation and emergency preparedness.

The Government of Timor-Leste and the UN are committed to continue to work together to Build Back Better and to build Timor-Leste's resilience to adapt to climate change and manage the risks of disasters.

H.E. Jose Maria dos Reis
Vice Prime Minister
Government of Timor-Leste

H.E. Hemansu-Roy Trivedy
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Post Disaster Needs Assessment

Tropical Cyclone Seroja and the Easter Flood

April 2021

Executive Summary

Background

The Democratic Republic of Timor-Leste, located in the Lesser Sunda Islands archipelago, is a young nation-state with about 1.3 million population. Timor-Leste, largely a mountainous land mass, has total geographic area of 14,954 sq.km. with 783 km. long coastline. Coastal and low-lying areas are home to approximately 66% of the country's population. Timor-Leste is a country of medium human development with 141 HDI ranking and Gross National Income per capita of US\$ 4440. A low to medium income economy, Timor-Leste is heavily dependent on oil and gas deposits. In the Global Gender Gap Index 2020, it ranks 117 out of 153 countries indicating high gender disparities in economic participation and opportunities, education, health and political empowerment.

Timor-Leste has globally significant ecosystems, including tropical rainforest, mangroves and marine ecosystems. Ecosystems are under increasing stress due to population growth, urbanisation, and the extraction of natural resources. Climate condition in Timor-Leste is strongly influenced by the Australian Monsoons, which characterizes the country's rainfall patterns. The peak of the rainy season usually occurs in January or February with around 250 mm/month in average, and the dry seasons lasts from July to October with the lowest rainfall average of around 25 mm/month.

The coastal areas are endangered by the slow-onset of global sea level rise due to climate change. The annual sea level rise in past 25 years is about 9mm as compared to global average of 2.8 to 3.6mm. Vulnerability due to sea level rise is not the only factor that affects communities, infrastructure development, and natural environment of the coastal area. As the country lies between two tectonic plates and is situated along the Pacific "Ring of Fire," it is also exposed to earthquakes and tsunami.¹ On average, eight tropical cyclones per decade pass within 400 kilometers of Dili, with most occurring between November and April. The most recent tropical cyclones experienced in the country were Frances (2017), Marcus (2018), Lili (2019), and Seroja (2021). So the country is prone to a wide range of natural hazard

¹ Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI), "Country Risk Profile: Timor-Leste" (PCRAFI, 2011), <http://pcrafi.spc.int/documents/247>.

risks, including tropical cyclones, rainstorms, droughts, and landslides, as well as infrequent hazards like earthquakes and tsunamis. Climate change is gradually eroding the coping capacity of communities and contributing to gender and social inequalities.

In Timor-Leste, most settlements are built either on low-lying, coastal region or on steep mountainous topography. More than 17% of Timor-Leste's population is in Dili, and the city is expected to continue growing rapidly to a projected population of 450,000 in 2030 – more than double the current population.² While the coastal zone is extremely important for its potential of urban and industrial development, it is also highly prone to multiple hazard risks such as floods, cyclones, earthquakes and tsunamis. This risk is especially pronounced in the north, where the most significant developments, such as urban housing, infrastructure, business and commerce are concentrated.

TC Seroja and the Easter flood

Weather disturbances surrounding the Sawu Sea from 29 March 2021, to early April 2021 resulted in the formation of Tropical Depression (TD) 99S on 2 April 2021, which strengthened on 5 April to Tropical Cyclone (TC) Seroja. The West Pacific Monsoon, the Madden Julian Oscillation, and the La Niña climate phenomenon were also present when TC Seroja's impacted Timor-Leste, contributing to the extreme increase in rainfall. TC Seroja first impacted Indonesia at a tropical storm level (with wind speeds up to 65 to 85 kilometres per hour) and attained peak intensity when it reached Australia (with wind speeds up to 120 to 130 kilometres per hour) on 10 April. While TC Seroja did not make landfall in Timor-Leste, it brought heavy torrential rains. Due to TC Seroja, the worst affected areas of Dili and some other areas experienced a precipitation rate of more than 400 percent their normal average rainfall.³ The 24-hour rainfall on 4 April 2021, was almost an order of magnitude higher than on any other day during the rainy season, with an average intensity of over 14 millimeters per hour and a peak intensity of over 70 millimeters per hour.⁴ The rain gauge at Dili's international airport recorded 341.8 millimeters of precipitation in just 24 hours. This caused significant damage through secondary hazards in the form of flash floods, landslides, and liquefaction, which were exacerbated by the country's natural topography.

2 General Directorate of Statistics (GDS) and United Nations Population Fund (UNFPA), *Timor-Leste Population and Housing Census 2015: Analytical Report on Population Projection, Volume 9* (Dili: GDS, 2018), https://timor-leste.unfpa.org/sites/default/files/pub-pdf/2015%20Population%20Projection%20Report_0.pdf.

3 NOAA estimate, reported in map dated April 6, 2021 by the Emergency Response Coordination Centre (ERCC), Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO) https://erccportal.jrc.ec.europa.eu/ercmaps/ECDM_20210406_TC-SEROJA.pdf

4 Duffy, Brendan, Oktoviano Vegas Tilman De Jesus, Mark Quigley, Lisa Palmer, Demetrio Amaral Carvalho, Josh Trindade, and Ian Rutherford, "Flooding And Landsliding In Timor-Leste: Linked Hazards In A Young Mountain Belt," *Geo Down Under*, April 12, 2021, <https://www.geo-down-under.org.au/timor-leste-flood-disaster>.

High-elevation catchment areas of the northern parts drain into the low-elevation coastal areas. Dili lies in the low-lying areas of Kaikoli coastal flood plains and hence prone to inundation. High groundwater table and fine sediments also don't allow water percolation easily. Increasing urbanization with built infrastructure and paved surfaces further reduces water percolation. Suffering from ground subsidence, Dili faces increasing flood hazard risk as the drainage into sea becomes more and more difficult. The heavy rains across Timor-Leste from 29 March to 4 April 2021 resulted in flash floods and landslides across all 13 municipalities in the country, affecting the capital Dili and surrounding low-lying areas the most. So far the hazard events had been rather localized and impacts were never so widespread. The damage due to TC Seroja was unprecedented.

Response and Relief

Recognizing the magnitude, on 8th April, the Government declared a state of calamity in Dili for a period of 30 days and called for international assistance. By mid-May, a total of 33,835 households were identified to be affected by the floods across all 13 municipalities. Of which, 81.6% – or 27,622 households – were in Dili municipality only. More than 15,000 persons were sheltered at evacuation centres immediately afterwards. Around two weeks after the disaster, more than 6,000 people were still displaced within 30 evacuation facilities across Dili.⁵ The majority of those who were temporarily displaced have returned to their houses.

The Government of Timor-Leste through the Secretariat of State for Civil Protection together with other ministries - led the humanitarian response. The authorities quickly ramped up search, rescue and evacuation operations and provided shelter, food and emergency supplies to the flood-affected people. They also immediately began clearing debris and restoring infrastructure to re-establish road transport and to resume electricity and water supplies.

The Government made an initial allocation of USD 1.5 million from the 2021 State Budget for the flood response to cover the Government response for a period of three months (April to June 2021). By 12 April, the Secretariat of State for Civil Protection developed a Flood Response Strategy, setting priorities for weeks 1 to 3 (4-24 April) of the emergency response. The Secretariat of State for Civil Protection has distributed: 317.5 MT of rice, 104 MT of other food items and over 18 MT worth of non-food items. It has reached 12,197 flood- affected households across all municipalities.

In support of Government efforts, the humanitarian partners have responded jointly to address the lifesaving needs of the affected people, in

⁵ UN RC's Office, "Timor-Leste: Floods – Situation Report No. 6 (As of 21 April 2021)" (Dili: UN Timor-Leste, 2021), <https://reliefweb.int/report/timor-leste/timor-leste-floods-situation-report-no-6-21-april-2021>.

particular the vulnerable groups including women, children and persons with disabilities (PwDs). As a part of the 2020-2021 joint UN-NGOs La Niña preparedness planning, UN agencies had pre-positioned relief supplies in the UN compound, which enabled rapid response. With the support of donors, humanitarian partners have repurposed existing resources and mobilized additional resources through corporate emergency response funds to kick-start multi-sectoral emergency relief efforts, primarily in Dili, to augment the Government response. Less than one week into the response, the Government and the humanitarian partners began to reach the flood-affected communities marooned in Tasi Tolu, a protected area 8 kilometres west of Dili, with life-saving assistance, including access to safe water and provision of food and non-food items. The humanitarian partners also started to support flood-affected households in municipalities outside of Dili.

The Secretariat of State for Civil Protection and the Ministry of State Administration - supported by humanitarian partners – conducted a rapid needs assessment immediately following the disaster. The Humanitarian Partners Group – composed of UN agencies, international and national NGOs, Red Cross and Red Crescent Movement and donor representatives – also supported respective line ministries with sector-specific assessments such as in health, nutrition, and education sectors in the first weeks of disaster onset. A joint UN team also conducted rapid site assessment (Displacement Tracking Matrix (DTM)) on 5 and 6 April to identify priority needs in evacuation centers in Dili. The Secretariat of State for Civil Protection further launched three needs assessments on 13 April, supported by UN agencies and NGOs, to assess (1) needs in evacuation facilities to prepare for the return process, (2) multi-sectoral damage and needs at the village level, and (3) damage and needs at the household level.

On 23 April, the National Parliament approved the amendment to the 2021 General State Budget to respond to the impact of COVID-19 and the flooding, which was subsequently promulgated by the President on 4 May. The allocation to the COVID-19 Fund increased from USD 31 million to USD 287.6 million, while the Contingency Fund allocation increased from USD 23.8 million to USD 65.2 million. The allocation from the Contingency Fund will be utilized for infrastructure recovery in flood-affected communities. During the Emergency Development Partners' Meeting called by the Government on 13 April, the Government and the humanitarian partners agreed on the need for a strongly coordinated floods response, under the leadership of the Government.

The 2021 Timor-Leste Flood Response Plan, therefore, facilitated a continued coordinated flood response by the Government and the humanitarian partners (incl. donors), focusing on the coming 7 months (end May – end

December) to address the residual humanitarian and early recovery needs of the most vulnerable, affected people.

Disaster Effects

The flash floods and landslides affected 31,337 households, or approximately 178,621 people (including 13,099 households living below the national poverty line), across all 13 municipalities of Timor-Leste, causing 44 reported fatalities.⁶ Dili, Viqueque, and Covalima were the most affected areas.⁷ The floods caused severe damage to critical infrastructure such as roads, bridges, water supply infrastructure, schools, and health facilities (including COVID-19 quarantine and isolation centers).⁸ Access to water, electricity, and internet was also impacted. There were damages to houses, business establishments, and agricultural land also.

Total damage and loss due to the Easter flood are estimated to be approx. US\$307.7 million. Of this total amount, 90% is for the damage and 10% for the losses. The maximum damage and loss has been in the infrastructure sectors (58%), followed by social sectors (27%), productive sectors (9%) and cross-cutting sectors (5%). The transport (infrastructure) and housing (social) have been the most affected sectors.

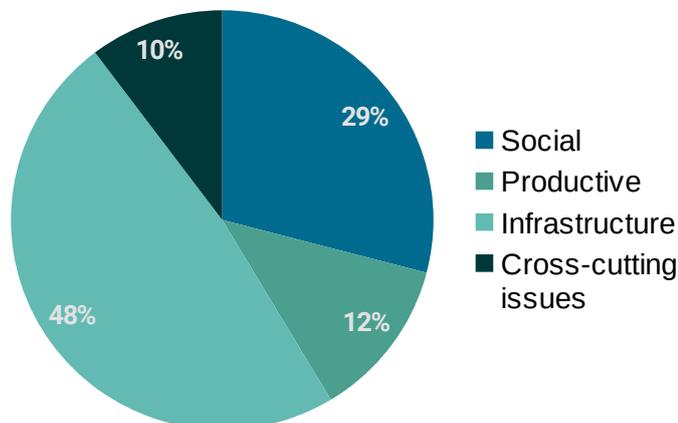


Figure 1: Proportion of Damage & Loss by sectors

6 Government of Timor-Leste and United Nations Resident and Humanitarian Coordinator for Timor-Leste, "Government of Timor-Leste and partners appeal for US\$32 million to assist flood victims and early recovery," joint news release, June 1, 2021, <https://reliefweb.int/report/timor-leste/government-timor-leste-and-partners-appeal-us32-million-assist-flood-victims-and>.

7 Data on households affected from the Timor-Leste Secretariat of State for Civil Protection, 15 June 2021.

8 UN Resident Coordinator's Office (RCO), "Timor-Leste: Floods – Situation Report No. 9 (As of 21 May 2021)" (Dili: UN Timor-Leste, 2021), <https://reliefweb.int/report/timor-leste/timor-leste-floods-situation-report-no-9-21-may-2021>.

The following table presents total damage and loss by the sectors due to the Easter floods.

Sector	Sub-sectors	Damage, US\$	Losses, US\$	Total, US\$
Social	Housing	61,744,250	7,731,153	69,475,403
	Health	6,230,000	3,800,000	10,030,000
	Education	1,140,304	1,866,400	3,006,704
	Nutrition	--	606,790	606,790
	Sub-total	69,114,554	14,004,343	83,118,897
Productive	Agriculture & Food Security	20,722,625	529,000	21,251,625
	Business & Commerce	5,613,000	538,000	6,151,000
	Sub-total	26,335,625	1,067,000	27,402,625
Infrastructure	Transport	170,407,000	--	170,407,000
	WASH	6,740,237	1,596,924	8,337,161
	Sub-total	177,147,237	1,596,924	178,744,161
Cross-Cutting issues	Environment	3,021,087	5,025,110	8,046,197
	Gender and Social Inclusion	--	--	--
	Employment, livelihoods and social protection	--	8,345,000	8,345,000
	Disaster Risk Reduction	--	2,000,000	2,000,000
	Sub-total	3,021,087	15,370,110	18,391,197
Total	Grand Total	275,618,503	32,038,377	307,656,880

Social Sectors

Housing: The Government's preliminary assessment findings indicate that more than 30,000 houses were damaged to various extent due to high cyclonic winds, floods, landslides and fire. 26,067 houses suffered minor damage and 4,231 houses were severely damaged or collapsed completely. While all 13 municipalities were affected, the housing damage was predominantly in Dili. 81% of total houses damaged are in Dili. Total damage and loss in housing sector is estimated to be approximately **US\$69.5 million**.

Health: About 56 percent of the health facilities in the affected areas were damaged resulting in partial or full disruption of the regular health services. Cold-chain refrigerators and other essential equipments, and furniture were under the water. In addition, vital medical supplies of consumables, and

medicines were affected. This affected direct provision of health services, disease surveillance in the affected areas, public health information campaigns, emergency health measures, transporting of referral patients, and particularly prevention and control of COVID-19 spread in the affected areas. Total damage and loss in the health sector is estimated to be approximately **US\$ 10.0 million**.

Education: The large-scale flooding and landslides affected 35 schools in Dili, Baucau, Lautem, Liquisa and Manufahi. Sixteen of these schools were severely damaged and needed urgent renovation and/or complete reconstruction. In the capital Dili, which was the worst hit, at least 26 schools were affected to varying extent. Seven of these schools were severely damaged. Total estimated damage in the education sector is approximately **US\$ 3.0 million**.

Nutrition: Many flood-affected women and children suffered from reduced food intake, dietary diversity and the trauma caused by the floods, along with the disruptions caused in their lives due to loss of properties, clothes and household items. Rapid assessment conducted in end of May 2021 by the Secretariat of State for Civil Protection found 371 children under five, 315 pregnant women, 1,004 lactating mothers, 194 women, and 262 men with disabilities, 113 women and 131 men with chronic illnesses. These vulnerable persons along with other economically distressed households face higher risk of nutrition deficiency due to additional factors of food insecurity, lack of access to water, sanitation and hygiene or potential disease outbreaks. Damage costs due to acute malnutrition are estimated to be approximately **US\$ 0.6 million**.

Productive Sectors

Agriculture and Food Security: A total of 4,230 hectares of agriculture land was affected resulting in damage to 9,134 MT of crops. Some irrigation systems were extensively damaged. More than 65000 animals and 46000 poultry chickens died due to the floods. This could negatively impact food security of at least 50,000 persons during the next lean season (November 2021 to February 2022). Total damage and loss in agriculture and food security sector is estimated to be approximately **US\$ 21.25 million**.

Business and Commerce: Out of 7,781 businesses located in the flood areas, 1,388 or 17.8% of firms had been affected. Many businesses already under stress due to the COVID-19 pandemic, suffered damage to their premises, inventories, tools and equipments. The flood also impacted their supply chains and access to basic services. The informal sector is the most significant source of income for people in Timor-Leste, employing approximately 60% of the population, mostly women. Almost 50 percent of impacted formal and informal businesses were still recovering and had not resumed their operation as of August 2021. Total damage in the business and commerce sector is estimated to be approximately **US\$ 6.15 million**.

Infrastructure Sectors

Transport: Due to the Easter flood, 420 kilometers of national roads were damaged. Large volumes of surface water and debris flows running down the slopes damaged road foundations, pavements, bridges, embankments, and retaining walls. In addition to the national roads, 42 municipal roads were heavily damaged, including 23 bridges and many other structures such as retaining walls, culverts, and sidewalks. The damage in transport sector caused many challenges particularly for the poor and vulnerable as they faced a hard time getting critical medical care or access to essential relief services. The damage to the transport sector is estimated to be approximately **US\$ 170.4 million**.

Water, Sanitation and Hygiene (WASH): Forty-eight water supply systems in Dili and other municipalities were affected with damage to the boreholes, the electrical and mechanical equipment, pipelines, standposts and water storage tanks. Nearly 10,000 newly installed household water meters in Dili had been damaged. Sanitation infrastructure, particularly the public latrines, septic tanks and soakage pits were damaged due to the flood. Access to water and sanitation in Timor-Leste was already far from desirable, further decline due to damage has raised serious concerns about the negative impacts on women's dignity, privacy, and safety. The estimated damage and loss in the WASH sector is approximately **US\$ 8.3 million**

Cross-cutting Issues

Environment: The floods caused devastating environmental impacts, particularly along the coast. Similarly landslides and slope failures due to excessive water flows caused damaged in the hilly regions. Environmental resources such as forests, mangroves, and water resources, critical for peoples' livelihoods, housing, hygiene, health, gender equality and for overall quality of life, were badly affected. While the Easter floods cannot be conclusively attributed to climate change impact, the predictions do indeed forecast increase in rainfall intensity and hydro-meteorological disasters. The estimated damage and loss in the environment sector is approximately **US\$ 8.0 million**.

Gender Equality and Social Inclusion: The disaster exacerbated existing vulnerabilities of children, women, the elderly, people with disabilities (PwDs), and LGBTIQ community leading to protection concerns, including child protection and sexual and gender-based violence. The Easter flood washed away the backyard economy with kitchen gardens, poultry, and small livestock such as goats and cows and severely impacted women and children's food security aggravating malnourishment. Responsibilities of family care and domestic chores were primarily and unfairly on women

even in the normal times. The lockdown due to COVID-19 and subsequently the Easter flood resulted in increased women and girls' unpaid household and care work. They are now further burdened due to poor housing, difficult access to services, and unreliable incomes in post flood conditions.

Employment, Livelihoods and Social Protection: In the already difficult situation due to Covid-19, employment further suffered due to the floods. Unemployment increased by more than 10% after the Easter flood. Approximately 3200 persons are estimated to have lost their employment. While 43% were affected only temporarily for about 2-3 months due to closure of their businesses and other livelihood activities, other 57% lost their employment permanently and would require other options. The loss of employment is estimated at approximately **US\$ 8.3 million**

Disaster Risk Reduction: Under the Ministry of the Interior, Directorate of National Disaster Risk Management (DNGRD) and Secretariat of State for Civil Protection are they key institutions responsible for risk management and response in addition to the police and the fire fighters. However, a comprehensive legislation is lacking that can underpin the national disaster risk management policy or other subsequent plan of actions. The emergency response to the Easter flood was limited by the absence of a national guideline and standard operating procedures pertaining to rapid disaster assessment, the lack of a national (and sub-national) disaster response framework, and the absence of a technically sufficient national (and sub-national) emergency operations centre. The estimated damage and loss in the disaster risk reduction sector is approximately **US\$ 2.0 million**.

Human Development Impact

The 2021 floods further exacerbated the already difficult conditions of the poor and marginalised groups like women, migrant and informal workers, landless, elderly, children and infants, people with disabilities and their families, people with long term illnesses, LGBTIQ and other socially excluded groups due to pre-existing vulnerabilities. As these groups were also suffering from multiple impacts of COVID-19 and other factors, it has been quite difficult to determine the extent to which the human development impact can be specifically attributed to the Easter flood. Nevertheless, the Easter flood clearly worsened the conditions for many of the already affected groups and created more risks and vulnerabilities.

Since 2007, there has been significant progress in reducing poverty, with the proportion of Timorese living in poverty declining from 50% to an estimated 42% in 2014. Despite this, Timor-Leste has the highest multidimensional poverty rate among South-East Asian countries. The Human Development Report 2018 indicates 45.8% of the population are multidimensionally poor,

while an additional 26.1% are classified as vulnerable to multidimensional poverty. The impact of the Easter flood can exacerbate these conditions further if the recovery of the poor and vulnerable is not facilitated. Recovery from the floods therefore must prioritize the needs of these groups to further prevent a fall back into extreme poverty.

The Timorese people, particularly the poor and vulnerable, are likely to face a decline in access to food. The damage to agricultural crops has further propelled the Government of Timor-Leste to import more rice, however, many poor households appear to be unable to afford to purchase rice and are resorting to coping strategies of reducing household consumption. This in turn affects women and girls especially, who are generally first to reduce consumption within households. At the same time, malnutrition and stunting of growth are significantly high among children.

COVID-19 had already put stress on the livelihoods particularly those of the poor and the vulnerable who have limited access to social safety net. Initial assessments after the Easter flood have indicated loss of employment for more than 3000 persons. Nearly 50% of them have lost the employment permanently and would be forced to find alternative jobs. The loss of employment and livelihoods have affected women who are mostly employed in the informal sector and have limited access to social protection. The combined impacts of the pandemic and the floods on women and girls has been particularly severe. While there is absence of post disaster sex disaggregated data, analysis of trends has shown that there has been a rise in the burden of unpaid care work for women, informal sector workers which are mostly women have lost their means of livelihoods and girls are more likely than boys not to return to school. Gender based violence within households appears also to have increased.

Many affected people also face psycho-social trauma, shock, distress and insecurity due to damage and loss of home, assets, possessions, and belongings. In addition, the vulnerable groups like women headed households, the elderly, persons with disabilities (PWDs), terminally or seriously ill, migrant workers, LGBTIQ community also face social discrimination and lack protection.

Macro-Economic Impact

The Easter flood impacted a fragile economy that already faced contraction as a result of the global economic slowdown caused by COVID-19 in 2020, The change in preliminary non-oil GDP in 2020 was negative 8.5% in constant terms, compared with positive 1.8% in 2019. Key factors contributing to GDP contraction include a major fall in public investment in 2020, along with the progressive reduction in oil revenues, as well as disruption of markets and the contraction of remittances.

In terms of fiscal policy, 2020 was marked by a decline in public expenditure of 9%, and a corresponding reduction in the public deficit. This was largely

due to the decrease in public investment and a fall in expenditure execution rates (especially in goods and services and transfers), along with the decline in oil revenue, which accounts for 80% of total fiscal revenue.

Domestic inflationary pressures remained low and controlled throughout 2019 and 2020, with annual inflation rates trending downwards from 2% to 1%. Consumer price inflation eased to 0.5%, despite higher international food prices. Assuming that the dollar remains stable against most Asian currencies and that there is moderate inflation in the economies of Timor-Leste's trading partners during the same period, the low and stable inflation scenario may be expected in 2021 and 2022

The trade balance improved slightly in 2020. Imports declined by 19% and exports by nearly 50% due to the COVID-19 restrictions, disruption of global markets and the economic downturn. However, Timor-Leste's current financial situation weakened in 2020 as a result of lower levels of primary incomes. This deficit amounted to 19% of GDP in 2020.

The Easter flood compounds an already weak macroeconomic outlook. Domestic revenue may continue to suffer from lower domestic economic activity, while capital spending should increase as a result of public transfers and mitigation efforts. The fiscal deficit may increase from 26% in 2020 to around 31% of GDP in 2021, as the Government engages in recovery spending in various sectors. Under current policies, fiscal and external sustainability are at risk in the long term. With the drying up of oil revenues and current fiscal plans, the Petroleum Fund could be fully depleted in two decades, placing the external sector in a weak position.

Recovery Needs

Recovery needs across social, productive, infrastructure and crosscutting sectors are assessed based on damage and loss as well as the key principles of 'build back better' and enhanced disaster resilience. **Total recovery needs are estimated to be approximately US\$ 530 million.** The most recovery needs are for infrastructure (49%) and social (29%) sectors. Transport (infrastructure) and housing (social) need the most financial resources.

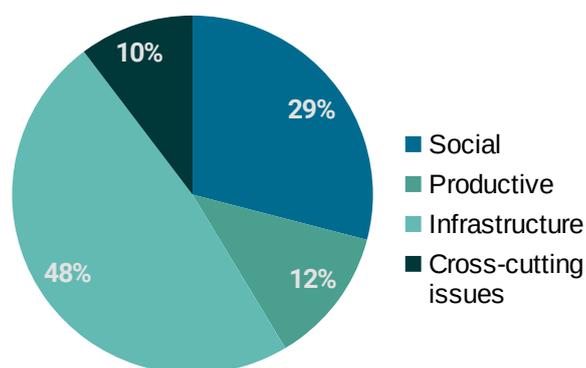


Figure 2: Proportion of Recovery Needs by sectors

The following table shows the recovery needs by various sectors.

Sector	Sub-sectors	Recovery Needs, US\$
Social	Housing	138,361,068
	Health	7,000,000
	Education	3,732,704
	Nutrition	6,133,160
	Sub-total	155,226,932
Productive	Agriculture & Food Security	50,511,753
	Business and Commerce	14,620,000
	Sub-total	65,131,753
Infrastructure	Transport	245,722,000
	WASH	9,609,147
	Sub-total	255,331,147
Cross-Cutting issues	Environment	11,350,000
	Gender and Social Inclusion (GESI)	2,000,000
	Sub-total	54,350,000
Total	Grand Total	530,039,832

Social Sectors

Housing: Housing recovery needs include reconstruction, repairs and retrofitting through an ‘owner driven reconstruction’ approach. To ensure that reconstruction and repairs are done in a way that houses are resilient against future disasters, the government should provide financial and technical assistance to the affected house owners. While the house owners should undertake the primary role of undertaking repairs, retrofitting and reconstruction of their own houses, the Government will need to undertake socio-technical facilitation through community mobilization, technical guidance, design and engineering support, skill training for safer construction, quality assurance and specific attention to the poor and vulnerable while ensuring equitable access to all women and men. A special purpose task force or authority should coordinate with all respective government ministries and offices related to planning, building

construction, land management, etc. drawing upon their strengths and expertise to ensure delivery of required assistance to people as well as monitor and manage the recovery program. To enhance hazard resilience in future, urban planning with appropriate land use and settlement planning should also be undertaken to inform and guide reconstruction of houses. It is estimated that **US\$ 138.4 million** will be required for safer housing reconstruction.

Health: Priorities for the recovery needs in health sector include reconstruction and restoration of health services in the affected areas, medical and laboratory supplies and equipment, disease outbreak surveillance, mental health support, and provision of essential maternal health and dignity kits, and immunization/ vaccination support including Covid-19. Health infrastructure and facilities in the affected areas as well as capacities of health professionals need to be strengthened such that they can continue to provide services effectively in case of any future disaster. It is estimated approximately **US\$ 7.0 million** will be required for the health sector recovery.

Education: Recovery needs include reconstruction, repairs and retrofitting of school buildings and infrastructure. To enable opening of schools, temporary classrooms too may be required until safe buildings are ensured. There is also need to replace furniture, educational equipment, teaching/ learning materials and textbooks damaged due to the flood. Along with this, it is also necessary to put in place a comprehensive school safety program including safety drills and capacity building to ensure safety of school children. It is estimated approximately **US\$ 3.7 million** are required for the recovery in education sector.

Nutrition: Considering the distress situation due to combined effects the floods and pandemic for households living in poverty, there is need to ensure that acute malnutrition is avoided. Nutrition support is extremely necessary for such vulnerable persons particularly children, adolescents, pregnant and lactating women. While the affected families recover from the impacts of the flood, it is also needed that lactating women have safe areas to breastfeed, rest, eat and receive counselling from skilled personnel and targeted advice about breastfeeding, complementary and maternal feeding practices and nutrition. Continuous monitoring and tracking of nutritional status is also important during the recovery period. It is estimated approximately **US\$ 6.1 million** will be required for nutrition sector.

Productive Sectors

Agriculture and the Food Security: The recovery needs in this sector include support for agricultural inputs, restocking of livestock along with fodder and veterinary support. Also the repairs, reconstruction and

maintenance of the damaged irrigation infrastructure is a priority need. It is necessary that recovery includes promotion of climate smart agriculture, and other sustainable practices like rain water harvesting. It may also be necessary to import additional food grain for the food security of the affected communities in short-term. However, for the long term, strategic work on the National Strategic Grain Reserve will be required. It is estimated that recovery needs in agriculture and food security sector will be approximately **US\$ 50 million**.

Business and Commerce: The recovery needs include assistance with reconstruction of resilient business premises, replacement of stocks, tools and equipment and restoration of disrupted supply chains in short-term and comprehensive sustainable policies and programs addressing the needs of all affected businesses to reduce future disaster risks and vulnerabilities, including financial vulnerability and transfer of risks. The recovery plan should include informal sector and extend technical (skill development, technology, etc.) and financial (grant, loans, insurance, etc.) support to the poor and vulnerable particularly women, PWDs, the elderly and other marginalized community members. During recovery, it is essential to enhance the value-chain in the productive sectors, and mainstream Disaster Risk Reduction. It is estimated approximately **US\$ 14.6 million** will be required for recovery in the business and commerce sector.

Infrastructure Sectors

Transport: Transport infrastructure that requires reconstruction includes roads, embankments, retaining walls, culverts, and bridges. There may be need of additional and larger cross-drainage structures, including bridges on piled foundations to replace causeways and road embankments, where high water flows have been observed. Other required recovery actions include slope protection and stabilization of landslide areas. Reconstruction and repairs of transport infrastructure should be done with climate-resilient interventions based on hydraulic and geo-technical designs so they may better withstand potential future hazards. Construction/repair of direct access roads to schools and health facilities should be prioritized. The transport sector recovery needs are estimated approximately **US\$ 245.7 million**.

Water and Sanitation and Hygiene: Water supply and sanitation systems in Dili and other affected municipalities need to be repaired and restored. In the transitional period during recovery alternative arrangements will also be needed. Water supply systems include replacement of damage pipelines, repairs of water storage tanks, repair and replacement of electrical and mechanical equipment. In addition, resources are needed for renovating public sanitation facilities. Moreover, there are needs to provide temporary water and sanitation services for at least 6 months till the permanent

renovations are done. It is estimated approximately **US\$ 9.6 million** will be required for the recovery in WASH sector.

Cross cutting Sectors

Environment: Recovery needs for the environment sector include immediate interventions such as debris clearance from the beaches and coastal areas, improvements in waste collection particularly landfill areas, restoration of public parks and green areas, land stabilization in landslide hazard risk areas, and afforestation. In medium and long term, it is necessary the institutional capacities are strengthened to implement integrated coastal zone management and integrated water management approaches complemented by better information, data and mapping. All the sectors need to integrate environmental concerns and adopt recovery processes that are sustainable and environment friendly through use of appropriate technologies. The environment sector recovery needs are estimated approximately **US\$ 11.35 million**.

Gender Equality and Social Inclusion (GESI): As a crosscutting sector, GESI issues need to be integrated in all the sectors. It is also important to strengthen the mechanism for inter-sector coordination and policy coherence across line ministries on GESI issues for recovery and preparedness. Mechanisms should be instituted for ensuring that the women and other marginalized groups are not excluded or left behind but prioritized in the various sectoral recovery plans and processes. Monitoring and tracking mechanisms should ensure sex, age, disability wise disaggregated data (SADDD) is used to inform the recovery processes. Equal participation of women in decision making of recovery plans and processes should be ensured. Recovery should be an opportunity for up-skilling women and workers from the poorest and marginalized households to enable their participation in climate-resilient agricultural work, business activities and housing reconstruction. Repairs and reconstruction support for the housing and other assets should be conditional to joint ownership titles. Social protection mechanisms particularly against gender based violence, acute malnutrition, discrimination against LGBTIQ community or other disadvantaged groups like migrants due to economic distress should be supported and not left behind. It is estimated that approximately **US\$ 2.0 million** should be provisioned to address GESI issues in recovery process.

Employment, Livelihoods and Social Protection: The General Social Security Scheme, approved in 2016 and operationalised in 2018, needs to be further strengthened and enhanced with strategic vision inclusive of DRR. Veteran payments, disability benefits, Bolsade mae benefits, and other schemes for supporting the vulnerable need to widen the social safety net to ensure that

all eligible affected persons, even those who had been previously left out in the normal times, can access the support for effective recovery. Recovery in various sectors needs to be undertaken in a way that new opportunities are created for the persons who lost livelihoods temporarily or permanently due to the flood. It is estimated approximately **US\$ 30.0 million** will be required for the employment, livelihoods and social protection.

Disaster Risk Reduction: The Easter flood highlighted need to improve institutional DRM capacities, risk knowledge and awareness, stakeholder coordination, and community preparedness among other areas. There are number of DRM mechanisms backed by the National Disaster Risk Management Policy of 2008. However, legislative provisions underpinning the or comprehensive DRM planning and policy, early-warning services, national and local level preparedness and response capacities, and post-disaster recovery coordination need to be strengthened in light of the learning from the Easter flood. Risk information management is critical for DRR and there is a need to strengthen remote sensing, spatial data analysis and management capacities.

While all the sectors need to incorporate DRR perspectives in their recovery plans, in line with the Sendai Framework for Disaster Risk Reduction, there is need to ensure that local strategies for the DRR are formulated. Municipal/Suco disaster management teams and Community Based Disaster Risk Management (CBDRM) teams are established and strengthened with equal membership of women and men including at leadership and decision-making positions at all levels. There is also need to strengthen the DRR financing. It is estimated approx. **US\$ 11.0 million** will be required to strengthen and mainstream disaster risk reduction.

Recovery Strategy

The recovery strategy for Timor-Leste must address and prioritize the needs of affected people to enable inclusive recovery and equitable development. This requires a concerted, coordinated and integrated approach to recovery backed by effective policies, institutions, implementation arrangements, financing and monitoring of the recovery efforts. The strategy should be based on the findings in this assessment and aim towards building a resilient Timor-Leste. Recovery is an opportunity to reset and bring the processes back on track to achieve global and national development goals. The Government of Timor-Leste has the political will to move in this direction and the recovery strategy provides the pathway to do so.

The common and collective vision for Timor-Leste's recovery is to **'Build back better an inclusive, equitable and green recovery for all Timorese people with a special focus on improving the well being of the most vulnerable and marginalised.'**

The **guiding principles** for the recovery vision are:

- Recovery should follow a **people-centred approach** which enables communities to undertake their own recovery, utilization of social networks, and reliance on local skills and knowledge;
- Recovery should be a **multi-sector, multi-stakeholder and multi-level effort** that is led and coordinated by the Government at all levels and supported by international agencies, non-government organizations, technical agencies, local organizations and the private sector;
- Recovery should **prioritise the needs of the most vulnerable and marginalised** communities so that no one is left behind;
- Recovery should ensure **equal participation and leadership of women** in all the activities of the recovery plan;
- Recovery should be carried out in a **non-discriminatory, transparent and accountable** manner;
- Recovery should be **culturally sensitive and environmentally friendly**;
- Recovery should include considerations of **disaster risk reduction and build back better**;
- Recovery should **utilize local resources and expertise** but at the same time draw upon **learning and good practices of other countries**;
- Recovery should **empower the affected communities with new skills and livelihood** opportunities;
- Recovery should be an opportunity to **promote change and innovation**;
- Recovery should aim to build resilience by **linking the recovery efforts to future development policies and programs**.

Strategic Policy Recommendations

While each sector chapter has specific policy recommendations, the overall policy recommendations emerging from the findings and assessment are highlighted below.

- 1. Establish appropriate institutional mechanisms to implement inclusive and resilient recovery.** Given the scale of recovery, the Government of Timor-Leste will need to set up a Special Purpose Authority or Task Force with appropriate institutional and administrative powers to oversee reconstruction and to coordinate with various government departments for a comprehensive recovery. Such an Authority should be set up at the beginning of the recovery programme with dedicated financial and human

resource capacities to coordinate and monitor the recovery process over the 3-4 year period. A special programme unit through PNDS at municipality level will facilitate the Owner Driven Reconstruction (ODR) process in coordination with the Authority/ Task Force.

- 2. Promote a people-centred inclusive approach in multi-sectoral recovery that engages and empowers communities to rebuild their own lives.** Reconstruction is an opportunity to engage and empower affected households, including women, in their own self-recovery. Experiences from post disaster housing reconstruction in many other countries have shown that owner-driven reconstruction (ODR) is the preferred modality with multiple co-benefits. The main advantage of this approach is that affected households take responsibility to rebuild their own homes, take decisions about design, materials and technology, gain interim employment and learn to build disaster resilient structures. There will also be need to ensure gender sensitivity when implementing such programmes to avoid worsening conditions for women and girls. The Government should provide households with financial assistance and set up facilitation centres to ensure affordable material supply, technical advice and guidance, and develop artisanal skills. Relocation is advised only as a last resort when the land is in high-hazard zones putting human life at risk. In such a scenario, the critical aspects of people's willingness, their social relationships, neighbourhoods and livelihoods must be taken into account and resolved.
- 3. Implement recovery program maximising employment opportunities using local resource based approach.** In order to achieve a sustainable improvement in livelihood, particularly of the low-income families, in the flood affected areas, the recovery activities should be seen as employment generating investment. The government should focus on recovery through public investments, infrastructure development, environmental protection and improvement, and job creation using local resource based approach. This approach prioritises the use of locally available resources, as opposed to importing from outside the affected areas. It applies a cost-effective utilisation of local skills, labour, materials, and knowledge, in various emergency employment initiatives through infrastructure repair and rehabilitation, disaster preparedness, livelihood recovery, and environmental protection.
- 4. Prioritize the needs of the multi-dimensional poor and most vulnerable including women, children, PWDs who are disproportionately affected by the disaster and implement an integrated multi-sectoral recovery plan or programme that enhances their resilience.** These groups are doubly disadvantaged as they were already the worst hit by the pandemic when the floods hit. Globally the pandemic exposed the underlying risks and vulnerabilities and the need for social protection and social assistance

programmes that can prevent the poorest and most vulnerable from falling deeper into poverty and indebtedness. In Timor-Leste, the main cash transfer programmes have limited outreach and so a key recommendation is to define a national social protection framework and a roadmap for developing safety nets to reach the poorest effectively. Investing in a programme that targets the poorest households can also help to implement a more effective anti-poverty policy. In line with the recovery vision, the outcomes of the recovery programme are to expand access to basic services, re-skill and rejuvenate livelihoods, expand market linkages, mainstream risk reduction measures into key sectors and increase household incomes and savings.

5. Rebuild infrastructure with multi-hazard resilient techniques and technologies using local resources to maximum possible extent for a green and environment-friendly recovery. There is a wide range of solutions that should be applied to build back better and to make the built environment and ecosystems more resilient. These would include but not limited to implementing land use planning, managing watersheds effectively, undertaking risk mapping, finding nature-based solutions, using climate smart technologies, developing and adhering to building codes, scaling up locally available resources, etc.

6. Strengthen laws, policies and strategies at the national and sectoral levels that improve disaster response and recovery. At the national level, the Disaster Risk Management Regulatory Framework that is being developed should be reviewed and strengthened to be more proactive in response and recovery preparedness. The National Disaster Risk Management Policy should also be reviewed and strengthened to include provisions for disaster recovery. Several sectors particularly the Health and Education sectors have also identified the need to strengthen their strategies, guidelines and procedures for emergency response, preparedness and contingency planning to mitigate the impacts of disasters.

7. Establish institutional and coordination arrangements to strengthen disaster response, recovery and preparedness at all levels of governance. Analysis of the immediate response of the Government Ministries at national, sub-national and sectoral levels has shown the need to strengthen emergency response. Similarly, disaster recovery can be more effective if recovery preparedness is done ex-ante. For instance, training and capacity building of government officials on the post disaster needs assessment methodology, establishment of multi-agency task teams for recovery planning (at national and local levels), pre-existing arrangements or MOUs with service providers, availability of sectoral baseline data and risk assessments etc. are ways to strengthen recovery preparedness for a faster and more effective recovery.

International and technical partners can help the Government of Timor-Leste access and benefit from knowledge and innovations from global/regional good practices and adapt them to the Timorese context.

Timeframe

It is estimated that full recovery will take 3 to 4 years. While some sectors may recover faster, the infrastructure and housing are likely to take up to four years. Environmental restoration can actually take even longer. However this assessment recommends priority actions for recovery during four years. Several recommendations are also meant to trigger change in the longer-term ongoing development process. Lessons from recovery must inform future development goals processes in Timor-Leste so as to ensure inclusive economic growth and disaster resilient communities.

