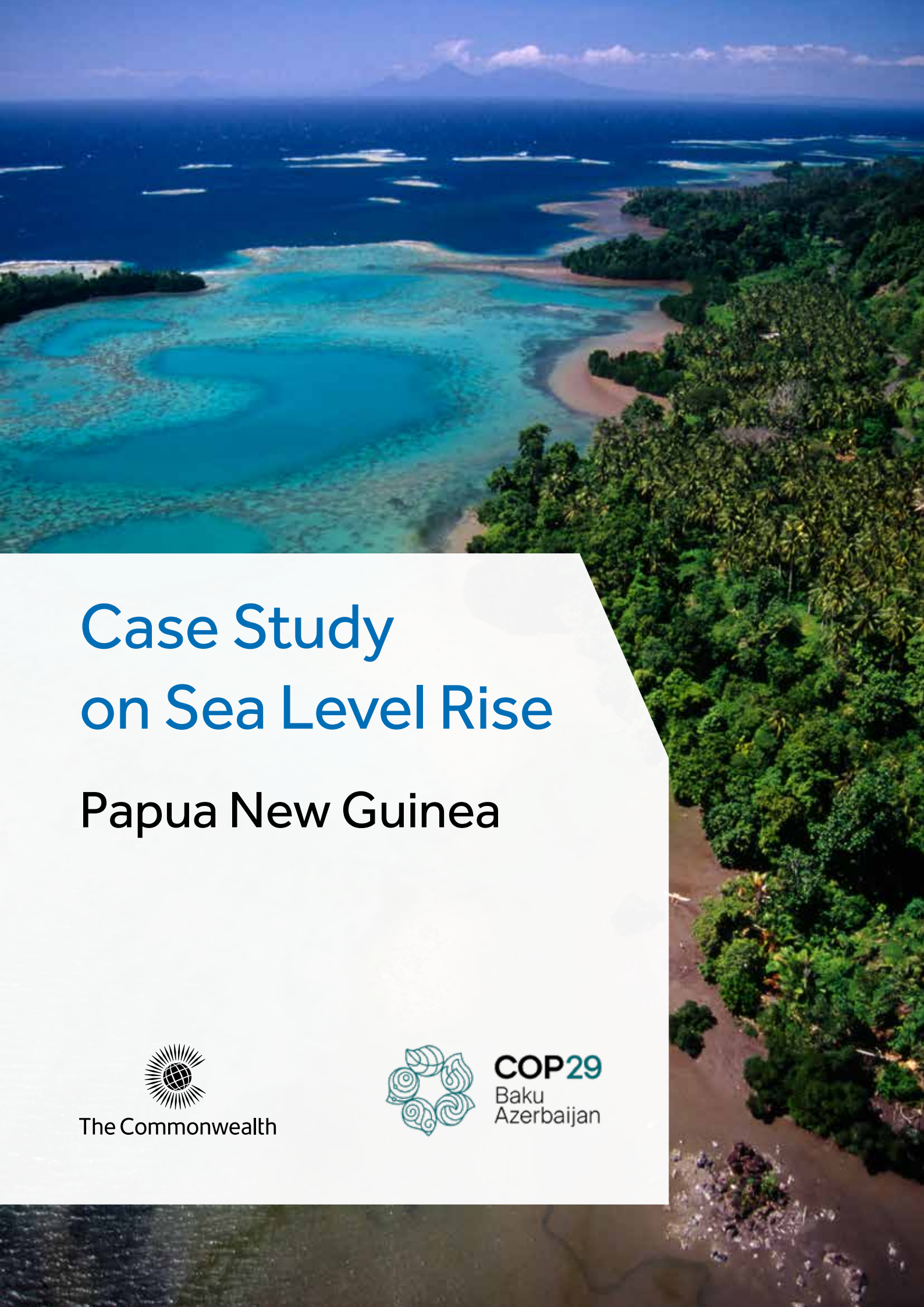




Case Study on Sea Level Rise

Papua New Guinea



The Commonwealth



COP29
Baku
Azerbaijan

Case Study on Sea Level Rise

Papua New Guinea

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Acronyms and Abbreviations

ADB	Asian Development Bank
CCDA	Climate Change and Development Authority
COSPPac	Climate and Oceans Support Program in the Pacific
EIA	environmental impact assessment
EEZ	exclusive economic zone
GCF	Green Climate Fund
GDP	gross domestic product
IOM	International Organization for Migration
LLG	local-level government
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NDCs	Nationally Determined Contributions
NGO	non-governmental organisation
PNG	Papua New Guinea
RAMSAR	Ramsar Convention on Wetlands
RCP	Representative Concentration Pathway
SDG	Sustainable Development Goal
SPREP	Secretariat of the Pacific Regional Environment Programme
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WASH	water, sanitation and hygiene

About the Commonwealth

The Commonwealth is a voluntary association of 56 independent and equal sovereign states and home to 2.7 billion people. The Commonwealth Secretariat is an independent organisation working with the 56 member countries and assists them together to promote prosperity, democracy and peace, amplify the voice of small states, and protect the environment.

The Commonwealth Secretariat's Climate Change and Oceans Directorate assists its member countries to sustainably manage their natural resources, in the ocean and on land, for the benefit of present and future generations. The Secretariat provides technical assistance and supports member countries in the development of policies, laws, and strengthening national institutions.

Executive Summary

Papua New Guinea (PNG), with a population of more than 10 million people and approximately 800 languages, faces significant and growing threats from sea level rise. The country's long coastline (approximately 17,110 km) extends along 15 maritime provinces, with 59 per cent of the national population situated in these maritime provinces. Many rural coastal villages are vulnerable to sea level rise, coastal flooding and related weather events. In the last 15 years, four catastrophic flood events along with coastal floods have affected some 8,000 people each year, causing US\$10–20 million in damage annually, displacing 500 people and killing five. A devastating landslide in Enga Province in May 2024, which claimed an estimated 670 lives and displaced approximately 7,850 people, underscored the country's acute vulnerability to climate-related and geological hazards.

The permanent or periodic inundation of deltaic flood plains, swamps and low-lying areas could affect up to 50 per cent of the Papuan coastline and 10 per cent of the northern shorelines under a 1m sea level rise scenario. Under this scenario, approximately 4,500km of the total 17,100km of shoreline could be moderately to severely inundated, potentially affecting up to 30 per cent of PNG's population. Some very low-lying islands, including the Carteret atolls, Mortlock, Tasman and Duke of York Islands, have already experienced submersion.

The Government of PNG has enacted key legislation, including the Climate Change (Management) Act (2015) and the United Nations Paris Agreement (Implementation) Act (2016), and has highlighted the need to mainstream climate change into long-term political visions, plans and strategies through its National Adaptation Plan (NAP) and Nationally Determined Contributions (NDCs). However, significant governance challenges persist. The Organic Law on Provincial and Local-level Governments Act (1995) ('the Organic Law'), which governs the decentralised system, contains legal gaps and inconsistencies that create uncertainties surrounding the rights and obligations of the three levels of government in exercising powers relating to climate change.

An assessment of adaptation effectiveness, drawing on the five criteria used by the UN Environment Programme (UNEP) in its Adaptation Gap Report - comprehensiveness, inclusiveness, implementability, integration, and monitoring and evaluation - reveals that PNG faces substantial challenges across all dimensions (UNEP 2021). Provincial governments lack climate change offices, trained personnel, early warning systems and climate adaptation plans. Scientific data gaps are pervasive, with no systematic vulnerability mapping or body of knowledge relating to adaptation. The enabling environment is also inadequate, with poor infrastructure, transport and service delivery in rural areas – where 87 per cent of the population lives.

Case studies of adaptation projects implemented by the UN Development Programme (UNDP) and the International Organization for Migration (IOM), in partnership with the PNG Government's Office of Climate Change and Development Authority, highlight both the difficulties and lessons learned. A UNDP flood adaptation project across five provinces was rated overall unsatisfactory, while an IOM study of the Carteret Islands displaced community underscored the urgent need for policy on climate-displaced people and integrated land-use planning. Recommendations focus on amending the Organic Law to allocate climate

adaptation responsibilities to provinces, strengthening data sharing between agencies, securing long-term climate financing and mainstreaming climate adaptation into development planning at all levels of government.

Country Profile

Geography, climate and natural hazard profile

Papua New Guinea (PNG) occupies the eastern part of the second largest island in the world. Located in the Pacific Ocean, south of the equator, it shares boundaries with Republic of Indonesia, Federated States of Micronesia, Solomon Islands and Australia. Its total land area is 462,840 km². The country has a long coastline, quite rugged, mountainous and diverse landscape, and is surrounded by fringed atolls and about 600 islands. The larger islands of New Ireland, New Britain, Manus and the Autonomous Region of Bougainville make up the key island Provinces.

The climate is tropical with wet and dry seasons year around, and is sometimes unpredictable, with occasional heavy rainfall and high humidity throughout the country. In the interior or hinterlands of the country, mild temperatures can be experienced. Given that the rugged terrain poses transport difficulties and limited road accessibility throughout the country, the four priority development goals of agriculture, health, transport and infrastructure are central to addressing PNG's development challenges. Most of the rural population is exposed to serious climatic conditions, such as extreme heat, frost and high rainfall, and is subject to volcanic eruptions. The Highlands of PNG are subject to weather extremes of heavy rainfall, drought and frost.

Inland flooding resulting from heavy rain and prolonged rainfall occurs when the water level in rivers and streams rises over the banks and inundates the surrounding land. In general, there are different types of flooding. First, flash floods, which occur within hours of torrential rains with little or no warning and dissipate rapidly. This is the most common form of flooding in most parts of PNG. Second, there are rapid-onset floods, which occur within several hours of heavy rainfall, can last for several days and are specific to medium river catchments. Finally, slow-onset floods develop gradually over a fairly long period and occur primarily in large river systems, such as the Sepik and Fly rivers.

Coastal flooding is a separate hazard which occurs when storm surges, waves and extremely high tidal levels inundate low-lying coastal areas. The *Framework for Resilient Development in the Pacific* notes that sea level rise in the Pacific by 2100 is likely to be similar to or slightly above the projected global rise of 0.26–0.55m under a low emissions scenario (Representative Concentration Pathway (RCP) 2.6) and 0.52–0.98m under a high emissions scenario (RCP8.5), relative to 1986–2005. Rising mean sea levels are also projected to increase the frequency with which extreme sea-level events occur towards the end of the 21st century (Pacific Community et al. 2016).

PNG has a complex geology given its rugged and mountainous landscape. Many of the aspects of geology and tectonic evolution of PNG remain poorly understood, with this partly a function of the extensive rainforest cover, rugged terrain and lack of infrastructure. Public domain data are lacking, so in some respects, uncertainty remains and some descriptions can be speculative. In terms of overall planning, this will always remain a challenge. From PNG's Nationally Determined Contributions, the government notes that scientific inputs, lack of capacity for scientific analysis and data gaps continue to be challenges.

Population and demographics

According to the 2024 National Population Census (National Statistics Office of PNG 2024), the national population of PNG is 10,185,363, representing a 40 per cent increase from the 2011 census figure of 7,275,324, with an average annual population growth rate of 2.6 per cent. Population is determined from a national census conducted every ten years. The costs of conducting the census can be quite high, given the physical difficulties accessing remote communities. The most recent census of 2024, the first since 2011, employed digital data collection methods (computer assisted personal interviews) for the first time.

PNG has produced a National Population Policy, a Food Security Policy and a Poverty Alleviation Policy, all core to a growing population. But what remains to be seen is the mainstream approach to

implementing these policies against the broader development goals of the country, as highlighted in its National Determined Contributions (NDCs).

PNG is ranked 154th out of 193 countries and territories in the 2023/2024 *Human Development Report*, with a Human Development Index (HDI) value of 0.568, placing it in the medium human development category (UNDP 2024). As inequalities increase, the loss in human development also increases, reflecting the extent to which inequality reduces the level of human development achieved. For PNG, while development remains relatively low, there has been some improvement in the last three decades. PNG has enjoyed small gains against a range of indicators. For example, life expectancy from birth has increased by eight years. However, the country continues to face significant challenges, among them, reducing maternal death rates, improving literacy levels and addressing among the worst gender disparities in the region. For instance, although women are represented in local and provincial government, they remain severely underrepresented in the National Parliament.

PNG's long coastline (approximately 17,110km in length) extends along 14 maritime provinces. Each of these provinces encompasses diverse coastal and marine environments, including lagoons, fringing reefs, barrier reefs, shallow banks, deltas, bays and estuaries (Government of PNG, 2017b). Coastal communities depend heavily on marine and

coastal resources and, in many areas, have limited access to land-based transport. The country is also predominantly rural, with a large proportion of the population dependent on subsistence or semi-subsistence agriculture (IFAD 2020). The Highlands region is home to a substantial proportion of PNG's population (AIITHM 2026).

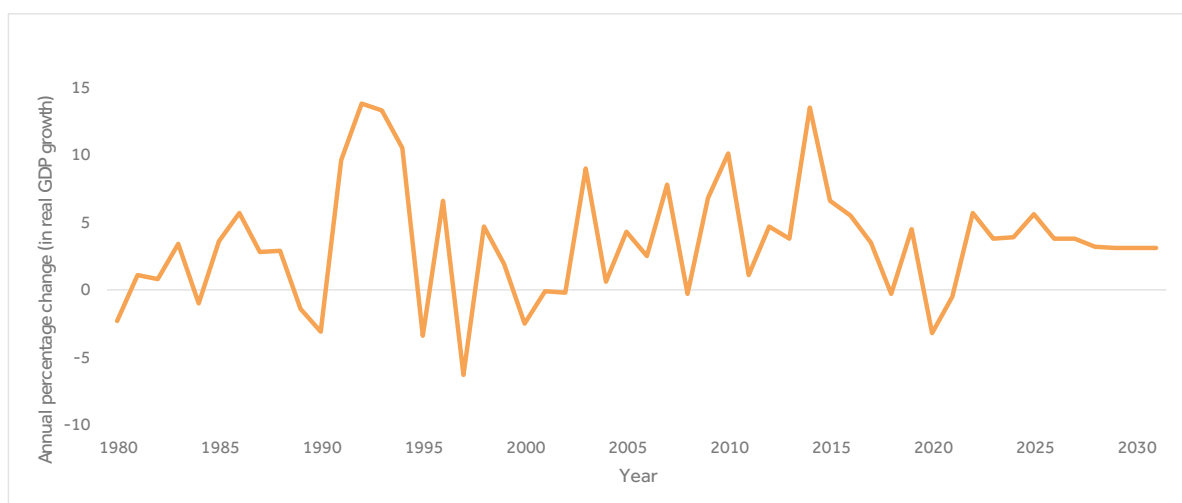
Economic context

There are two main sectors that contribute to the PNG economy. First, the agriculture, forestry and fisheries sector, which has a large informal labour force and accounted for 17.6 per cent of GDP in 2022. Second, the mineral and energy sector is the dominant source of export earnings, with major exports including oil, gas, liquefied natural gas, gold and copper (United Nations in PNG 2024).

Given its vast natural resource base, PNG capitalises on its land and sea resources. However, complex cultural dynamics, deeply rooted in tribal and customary systems of land ownership, underpin its land tenure system. Approximately 97 per cent of land is held under customary tenure, while the state owns the remaining land. This presents challenges for economic development.

PNG needs to increase its revenue sources and its employment in order to strengthen its institutional capacity, and human, capital and physical infrastructure such as electricity,

Figure 1. GDP Growth Rate, 2021 forecast



Source: International Monetary Fund. https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/PNG?zoom=PNG&highlight=PNG

Note: Data from after the year 2024 are estimates.

telecommunications, roads and other transport infrastructure – which remain critical to support private sector-led growth.

PNG's economy grew by 3.8 per cent in 2024, with gross domestic product (GDP) per capita of approximately US\$2,977 in 2024. PNG is a small lower middle-income country. It is classified by the Asian Development Bank (ADB 2024) as both a fragile and conflict-affected country and a small island developing state. The economy contracted by 3.2 per cent in 2020 due to impacts of the COVID-19 pandemic, but has since recovered (see Figure 1).

Many areas of service delivery such as health, education, transport, energy and water remain weak, particularly in rural areas. PNG was unable to meet any of its Millennium Development Goals. For growth to be inclusive and sustained, PNG needs a more conducive environment for the private sector to expand and create jobs.

Over the last decade, PNG has witnessed growth in the informal economy, mainly among people who are unable to access formal employment opportunities, including much of the rural population. The government enacted the *Informal Sector Development and Control Act 2004* and launched the *National Informal Economy Policy 2011–2015* to support the legislative framework and promote opportunities for growth among communities (Government of PNG 2011). In 2018, the government of PNG undertook a national audit of the informal economy, with the final report launched in September 2019. The audit found the informal economy made a substantial contribution to household incomes and livelihoods in PNG (Government of PNG 2019).

PNG established the Small and Medium Enterprises (SME) Corporation under the Small and Medium Enterprises Corporation Act 2014, and subsequently launched the National SME Policy in 2016, with the objective of supporting SME development, promoting employment and stimulating inclusive economic growth. At the time of the policy's development, there were approximately 49,500 SMEs in the country, which contributed around 6 per cent of GDP (Government of PNG, 2016).

Governance and institutional structure

PNG's political system draws its structure from its Constitution, which enables power sharing. Thus, power is shared between the legislative, executive and the judiciary. PNG is a member of the Commonwealth of Nations and recognises King Charles III as its Head of State. The King is represented by a Governor-General, who is elected by Parliament and serves for a term of six years. The Prime Minister is the head of the national government, which is vested with executive power.

Legislative power is vested in both the government and the House of Parliament as a single house. The Parliament consists of 111 members, and elections are held every five years. The government is structured at two levels: the national and provincial levels. There are 22 provincial governments, with each of these 22 provincial members elected from 22 electorates, and each provincial member representing their electorates. Each province in PNG has one or more districts. Each district has one or more local-level government areas (LLGs). The LLG areas are further subdivided into wards.

PNG's decentralised system of government was achieved through the enactment of the Organic Law on Provincial and Local Level Governments Act in the 1990s. There are 3 levels of government in PNG: a national government, 22 provincial governments and then the LLGs. There are 89 districts, 265 rural LLGs, 31 urban LLGs and 6,375 wards throughout PNG. Ongoing reforms are being planned to improve the provincial system of government given the poor delivery of services to the rural communities.

The creation of the provincial government system was intended to bring services to the marginalised people in rural PNG and allow the provinces to exercise greater autonomy and pursue economic development. The provinces exercise delegated powers from the national government pursuant to the Organic Law on Provincial and Local Government Act.

The judiciary is independent of the executive and legislature. The Supreme Court is both the final Court of Appeal and the Constitutional Court. The Constitution of PNG also adopted an informal court system, that is, the village courts. The Constitution also gives recognition to the application of customary laws: the laws that apply in the day-to-

day lives of the rural communities. The village courts exist in villages, in LLG areas, and primarily deal with everyday customary disputes that take place in those communities.

Sea Level Rise in PNG

Local sea level rise observations (tide gauge data, satellite altimetry)

Flooding and sea level rise continue to affect coastal regions in PNG. In the last 15 years, four catastrophic flood events along with coastal floods have affected some 8,000 people a year. On an annualised basis, floods caused US\$10–20 million in damage, displacing 500 people and killing 5. Rising sea levels have worsened the effect of coastal floods and necessitated the evacuation of people from the Carteret Atolls and Duke of York Islands. Salinisation and flooding are damaging fragile communities and cultures, making these areas uninhabitable.

About 60 per cent of PNG's population resides near the coast or near rivers suitable for water transportation, and many communities depend on this form of transport for access and livelihoods. Coastal flooding and sea level rise will continue to affect coastal communities, many of which are in remote locations, including low-lying atolls. The atoll communities of Carteret Islands in the Autonomous Region of Bougainville and Duke of York Islands in East New Britain Province are particularly exposed. These small, low-lying atoll communities are particularly vulnerable to sea-level rise because of their limited land area, freshwater resources and food-growing capacity, as well as their dependence on marine resources for food and livelihoods.

Projected local sea level rise

The Framework for Resilient Development in the Pacific (Pacific Community et al. 2016) notes that sea-level rise in the Pacific by 2100 is likely to be similar to or slightly above the projected global rise of 0.26 to 0.55 metres for low emissions (RCP2.6) and 0.52 to 0.98 metres for high emissions (RCP8.5), relative to 1986–2005. Increases in mean sea levels are also likely to increase the frequency of extreme sea-level events by the end of the twenty-first century and variations in sea-level rise are projected to occur regionally and sub-regionally.

The permanent or periodic inundation of deltaic flood plains, swamps and low-lying areas could affect up to 50 per cent of the Papuan coastline and 10 per cent of the northern shorelines under a 1-metre sea-level rise. Approximately 4,500 km of PNG's 17,100 km of shoreline were estimated to be moderately to severely inundated, potentially affecting up to 30 per cent of the population (Government of Papua New Guinea 2000). In addition, there is a danger that some very low-lying islands, including barrier islands, will be completely submerged. There is evidence that this is already occurring in the outer-lying atoll islands of Mortlock, Tasman and the Duke of York islands.

Contributing factors (subsidence, coastal erosion, land-use change)

Land and natural maritime features used to generate maritime zones in the Pacific islands often consist of low-elevation islands, sand cays, rocks and their associated reef systems. The permanence of these types of features and their ability to generate maritime zones are at risk due to climate change. The major hazards or change drivers are sea level rise, erosion of land, ocean acidification, extreme events, loss of habitat and decreasing biodiversity.

Sea level rise has caused coastal erosion, sinking islands, king tide damage, saltwater flooding of agricultural lands and saltwater contamination of drinking water across multiple provinces. In the Carteret Islands, land erosion has reduced cultivatable land, caused by sea level rise and saltwater inundation of the land. The quality of land on the Carteret atolls is not suitable for agricultural purposes. Population growth, along with rising sea levels causing salinisation of the soil, has resulted in little or no economic development.

Any efforts to address the impacts of climate change on coastal basepoints – the points used to establish coastal baselines from which maritime zones are measures – are likely to be difficult and costly. Assessing the vulnerability of individual basepoints to sea-level rise requires detailed information on coastal conditions and changes over time, which may require significant technical

Figure 2. Carteret atolls



Source: The Commonwealth Foundation

and financial resources. Particular attention would be required for basepoints located around the outer edges of reefs and on islands that generate their own territorial seas. These include areas in the northeast of the country, such as the Carteret Islands, where visible beach erosion and land loss have already occurred, including the loss of part of some smaller islands.

Impacts and Vulnerabilities

Coastal communities and human settlement

PNG's long coastline (approximately 17,110km in length) extends along 15 maritime provinces. Each of the maritime provinces has a wide and diverse ecological environment such as lagoons, fringing reefs, barrier reefs, shallow banks, deltas, bays and estuaries. Many of the coastal communities live near the coast. Some 59 per cent of the national population is situated in the maritime provinces and does not have access to land and air transportation, depending instead on maritime transportation. Many rural coastal villages are vulnerable to sea level rise and other weather-related events. Coastal flooding and sea level rise will continue to affect coastal regions in PNG.

Rising sea levels have worsened the effect of coastal floods and necessitated the evacuation of people from the Carteret atolls and Duke of York

Islands. Salinisation and flooding are damaging fragile communities and cultures, making these areas uninhabitable.

The remoteness of many communities and limited access to reliable transport links can make the provision of services during disasters particularly challenging. Reaching remote atolls can take many hours; for example, travel from Bougainville to the Carteret Islands can take up to ten hours by passenger ship or barge, while journeys from Rabaul can take a full day. More broadly, limited and unreliable transport connections to remote islands remain a significant challenge for disaster response and service delivery.

The *Carteret Islands Baseline Study*, undertaken by the International Organization for Migration (IOM 2014), recorded a population of approximately 1,300 people across the five islands of Han, Piul, Iangain, Iesila and Iolosa. Housing was predominantly constructed from traditional bush materials, with 93 per cent of households living

Figure 3. A typical house in the Carteret Islands



in traditional huts. The communities experience recurrent flooding and strong winds, which were identified among the most commonly experienced hazards. The study concluded that the relocation and resettlement of island communities on mainland Bougainville would be necessary (see Figure 3).

Across multiple provinces, communities located next to the sea have moved inland by up to 100m and undertaken land-filling activities, although these are often subsequently washed away. Public warnings to move to higher ground have also been issued. In Manus, communities have constructed houses on elevated ground, while others are moving to safer locations.

Agriculture and food security

Climate change impacts such as extreme heat, frost and high rainfall, as well as volcanic eruptions, present a substantial threat to food security, livelihoods and the well-being of the population. Most of the population (approximately 87 per cent) lives in rural areas where there is significant reliance on subsistence agriculture.

In the Carteret Islands, the area available for cultivation is very limited, with household gardens reportedly averaging approximately 3 m². Coastal erosion, sea-level rise and saltwater inundation have further reduced the availability of cultivable land, contributing to serious food security challenges. Malnutrition is also a significant concern, particularly among children, with inadequate food consumption associated with poor immunity and a high incidence of illness. Food supplies are limited, with communities relying heavily on locally available foods, including coconuts, for subsistence. There is also limited uptake of innovative agricultural practices. Saltwater inundation of agricultural land has been reported across several provinces, including Manus, New Ireland and East New Britain.

Rising sea level is causing some of PNG's islands to be gradually submerged. In addition, saltwater intrusion is causing a fall in levels of clean groundwater and loss of freshwater, particularly on islands and in coastal areas, which poses a challenge for innovative agricultural practices.

Many communities impacted by flooding were previously food-insecure communities. Support needs to be directed to infrastructure rehabilitation or disaster risk reduction to contribute

to sustainable increases in household- and community-level food security, supporting food deficit areas.

Fisheries and marine resources

The Government of PNG does not regulate customary fishing as this is left to communities themselves to manage for their livelihoods. There are no clear data on how much fishing is carried out by communities, nor how much is artisanal and how much is coastal fishing. Data in this area remain a challenge. The government regulates tuna fishing, which takes place in PNG's exclusive economic zone (EEZ). Nevertheless, while communities have the overall right to manage their customary fishing needs, the national government is responsible for ensuring the total allowable catch of the entire country under the Fisheries Act is not depleted by the actions of coastal communities.

A Roadmap Strategy for Coastal Fisheries and Marine Aquaculture for PNG 2017–2026 was introduced without a detailed government coastal policy or a coastal waters declaration for the entire country.

The land tenure system in villages is governed primarily by customary law. Access to fishing/reef grounds, mangroves, spawning areas, wetlands, deltas, estuaries and rivers depends on a consent regime applicable to a particular area. Customary rights to land are administered by clans and family groups for the use of resources, and are confined to customary uses. The Fisheries Management Act 1998 recognises customary fishing rights, allowing communities to exercise rights over specified fishing areas, including reefs, lagoons and coastal waters.

Coastal ecosystems (mangroves, coral reefs, wetlands)

PNG presently has 58 gazetted protected areas (PAs) in the country, primarily covering terrestrial areas. These protected areas cover about 1.9 million hectares, which amounts to less than 4 per cent of the total land mass. At the time of this case study, two wetlands from PNG had been officially listed on the RAMSAR (Ramsar Convention on Wetlands) website. Marine protected areas have yet to be declared under the Maritime Zones Act (2015).

The last *National Marine Conservation Assessment for PNG*, undertaken in 2015, focused on identifying areas of high conservation interest and did not constitute a comprehensive assessment of coastal vulnerability (Government of PNG 2015). Some aspects of that assessment were constrained by limited data collection at provincial and LLG levels, including in coastal communities and villages. At the time of the assessment, comprehensive national approaches to coastal zone management, including beach management and an overarching coastal-zone policy, remained limited.

Infrastructure and critical services

The physical landscape of the country presents a significant challenge to the delivery of climate adaptation measures. The road network and other forms of transport connecting remote communities are often inadequate, while infrastructure development in rural areas remains limited. These constraints can make it difficult to implement adaptation measures in remote communities. Basic services and infrastructure, including rural health facilities such as aid posts, reliable access to medicines, bridges, schools, housing, shops and wharves, are also inadequate or lacking in many remote areas and would need to be sufficiently developed to support effective climate adaptation and service delivery.

A detailed road network linking all parts of the country has yet to be achieved in the more than 50 years since political independence, with air travel being the most available mode of travel, despite being quite expensive for the ordinary person. The lack of transport and infrastructure development makes it complicated to achieve adaptation measures, consequently undermining desired outcomes for PNG.

The remoteness and lack of reliable or adequate transport links makes it difficult to provide services during a disaster. The cost of helicopter hire is expensive. This situation is challenging when coastal infrastructure and coastal transportation are also inadequate.

Although effective provision of basic services is essential for poverty reduction, service delivery has seriously declined in the rural areas where the most marginalised communities live. Reaching these groups is logistically difficult and responses must be

simultaneously top-down and bottom-up, requiring proactive changes in government policy and action to provide an enabling environment.

Economic costs and risks

PNG spent almost 10 million kina (K) on baseline work for the establishment of its existing maritime boundaries. Three GPS (Global Positioning System) field surveys were conducted between 2008 and 2011, involving tedious and difficult work, high fuel costs and covering a very large ocean space. This demonstrated how any efforts to address the impacts of climate change on coastal basepoints is likely to be difficult and costly.

A large percentage of provincial funding is put to the recurrent budget (92 per cent) while a small percentage goes to the development budget (8 per cent). To develop climate adaptation activities in the long term will be challenging. The intergovernmental finances of the Government of PNG are not conducive to encouraging economic growth in disadvantage provinces. Some provinces generate more revenue compared to others because they have large-scale projects taking place in their provinces.

Policy and Governance Framework

National policies and strategies (NAPs, NAPAs, NDCs)

Adaptation planning is a high priority for PNG as the country is vulnerable to various climate-related hazards that pose significant risks to local communities. The PNG Government is responsible for all climate change work and the Climate Change and Development Authority is the designated authority for UN Framework Convention on Climate Change (UNFCCC)-related actions.

PNG's enactment of Paris Agreement legislation at the domestic level signifies the importance of ensuring that commitments made under the agreement are implemented. Some aspects of the criteria have been incorporated into PNG's National Adaptation Plan (NAP), launched in April 2023 with support from international development partners.

The Government of PNG in its NAP and NDCs has highlighted the need to mainstream climate change into a long-term political vision, plans and strategies, such as Vision 2050, the National Strategic Plan 2010–2030 and the PNG Sustainable Development Goals Roadmap 2020–2030. But the challenge is to involve community participation in the development of multiple policies and legislations at all levels of government.

The PNG Government has put in place several other key policies, namely the PNG Strategy on Climate Change, PNG Climate-Compatible Development Strategy, the National Disaster Risk Reduction Framework 2017–2030, the Food Security Policy, the National Strategy for Responsible Sustainable Development for PNG (STARS), the Population Policy, the Roadmap for Coastal Fisheries and Marine Aquaculture for PNG 2017–2026, and PNG WASH: Water, Sanitation, and Hygiene Strategy of PNG.

The four key priority development areas of agriculture, health, transport and infrastructure have been identified as key cross-cutting elements to drive any sector implementation. In this regard, any coastal sea level rise adaptation

work must be considered within these four priority areas to strengthen the outcomes for vulnerable communities.

The PNG Sustainable Development Goal Roadmap is encouraging. It aligns PNG obligations under the Sustainable Development Goals and the Paris Agreement under the Climate Change Framework Convention. It sets down 30 actions to be completed by certain timelines and is an integrated framework of actions.

Legal and institutional framework

PNG has enacted the Climate Change (Management) Act 2015 and the United Nations Paris Agreement (Implementation) Act 2016 as key legislative instruments for addressing climate change. The latter gives domestic legal effect to PNG's obligations under the Paris Agreement and is in force. Together, these Acts provide an important legal framework for implementing PNG's climate commitments, including its Nationally Determined Contributions (NDCs).

The Climate Change (Management) Act 2015 provides the principal legislative framework for climate change governance and adaptation in PNG. Key provisions address adaptation planning (Sections 74–78), consultation with relevant sectors (Section 70), and climate finance (Sections 37–40). The Climate Change (Management) (Amendment) Act 2021, together with further amendments enacted in 2023, strengthened this framework and introduced provisions relating to climate change adaptation, including planned relocation of communities at risk from climate change impacts and regional displacement in the Pacific.

The Disaster Management Act 1984 established the framework for disaster response in PNG, including the National Disaster Committee and Provincial Disaster Committees. The latter work directly with affected provinces, with the framework providing for provincial disaster plans and guidelines and reporting to provincial governments.

PNG as a Party to the UN Convention on the Law of the Sea (UNCLOS) is required as part of its due publicity obligations, to deposit with the United Nations its basepoint co-ordinates as well as charts and information regarding its maritime zones. Although its Maritime Zones Act was passed (2015), PNG has yet to deposit the charts because of scheduling difficulties. Passing regulations will form the next set of legal and policy efforts.

The Environmental Impact Assessment (EIA) framework has been established under the *Environment Act 2000* and applies to prescribed activities, including major mining and gas exploration projects. However, the effectiveness of the EIA process has not been systematically evaluated, including whether environmental impacts are being adequately identified, assessed and managed.

Sub-national and local governance

Given PNG's decentralisation of political powers and responsibilities, the law-making powers of the three levels of government under the Organic Law on Provincial Government and Local Level Governments Act are important. The legislation lays down the power sharing between the national, provincial and local levels of government.

The principles of law-making powers are provided in Section 40 of the Organic Law. The three governments shall have specific powers. Where the powers are not specified, these shall be assumed by the national government. Where for any reason, a level of government cannot exercise any of its powers, it shall delegate to the other levels of government. Both provincial and LLG powers are subject to the national law only to the extent where the national interest applies.

Provincial governments can enact provincial laws regarding parks, reserves, gardens, scenic and scientific centres (Section 42(1)(y)). LLGs can enact laws regarding the local environment, hygiene and sanitation, domestic animals, flora and fauna, and protection of traditional sites (Section 44(1)(p)(s)(x) and (z)). However, the law is silent on disaster management, climate change or climate adaptation, and on coastal developments.

Under the Organic Law, there is no executive/ law-making function at the LLG level. A lot of LLG implementation is undertaken administratively at the committee level.

The term 'national interest' and 'provincial interests' are not defined by the Organic Law. This is the reason there is no coastal fisheries development in the country. Given this gap, access fees collected from fishing in PNG's exclusive economic zone are not shared directly with the provinces.

Precedent has been set in PNG by the laws of the Bialla LLG in the West New Britain Province to safeguard the interests of local communities to manage their local marine environments – for example, laws on protection of fishing grounds or reefs – as an environmental protection measure.

Adaptation Measures

Coastal protection (hard infrastructure)

In the Carteret Islands, building seawalls was identified as unsuitable given the shortage of coral rock available from the reefs. Adaptation measures have instead included the construction of gabion baskets – wire-mesh structures filled with stones – to provide coastal protection, although the stones would need to be imported from Bougainville.

In Bougainville, building of sea walls and mangrove planting have taken place to reduce the impact from rising sea levels. In East New Britain, land filling in Raluana village has been carried out – but this is often washed away. In the Carteret and Mortlock Islands, the provincial government has been implementing some coastal protection measures in collaboration with local non-governmental organisations (NGOs).

Ecosystem-based adaptation

Adaptation efforts to restore mangrove forests have been identified by PNG partners as an appropriate intervention for affected communities, with some initiatives designed to be managed by communities themselves. These initiatives are consistent with recommendations in the *Holdgate Report* (Commonwealth Secretariat 1989). However, pressures associated with human activities and increasing inundation from sea-level rise could affect PNG's extensive mangrove forests.

The Nature Conservancy and Ailan Awareness have assisted selected coastal communities in West New Britain and New Ireland provinces to manage their marine protected areas. The Wildlife Conservation Society has initiated ecosystem protection, livelihoods and sustainable natural resources management to help communities adapt to the impacts of climate change.

The UNDP project *Enhancing Adaptive Capacity of Communities to Climate Change-related Floods in the North Coast and Islands Region of Papua New Guinea* covered five provinces—East Sepik, Madang, Morobe, New Ireland and Northern—and supported communities to undertake adaptation activities, including mangrove rehabilitation and restoration.

Although the project made progress in areas such as climate-risk awareness, institutional capacity and mangrove restoration, its overall project goal was not achieved. The final evaluation identified weaknesses in project sustainability, coordination and community engagement, including the need for more inclusive and participatory approaches to the design, planning and implementation of community-based activities (UNDP, 2018).

In Manus, mangroves have been replanted on a small scale in two or three communities with the assistance of NGOs. In West New Britain, replanting of mangroves was envisioned as an adaptation measure as it had worked in other provinces to prevent erosion. In East New Britain, trees and mangroves are to be planted along coastal areas and reef systems for protection.

During the initial provincial inception workshops for the UNDP Adaptation Fund project, NGOs working on the ground highlighted the importance of effective communication, capacity building and awareness raising, together with local ownership and the use of local languages. They also emphasised the importance of project staff understanding mangrove rehabilitation, local village economic structures and land-tenure systems.

Accommodation and resilience building

In 2019, the Madang District Administration endorsed the *Engagement on Biodiversity Conservation and Climate Change Adaptation in Papua New Guinea: A Facilitator's Guide*, which had been developed through a partnership between the United States Agency for International Development (USAID), the Institute for Sustainable Futures at the University of Technology Sydney (ISF-UTS) and the New Guinea Binatang Research Centre (BRC) (Boronyak et al., 2018). Following government endorsement, the handbook was intended to be used as a planning tool for biodiversity conservation and climate change adaptation across all 49 wards of Madang District.

PNG is part of the COSPPac (Climate and Oceans Support Program in the Pacific) project, which aims to help 14 Pacific national meteorological services

make seasonal forecasts and use climate science to make information accessible and useful to their governments and communities. It also looks to support planning in sectors including agriculture, water security and health.

Many efforts of civil society and NGOs continue in PNG. NGOs such as the Wildlife Conservation Society, Ailan Awareness, The Nature Conservancy, the World Wildlife Fund (WWF) and World Vision continue to assist local communities in the country. Relief and immediate responses to natural disasters in PNG have not been handled by the government alone given its capacity constraints. Over the years, the Government of PNG has also been supported by several partners (UNDP, IOM, the Australian Agency for International Development (AusAID), USAID) in addition to the various NGOs.

In Manus, awareness on climate change is increasing. In East New Britain, awareness raising has been carried out on the issue. Across provinces, the need for increased awareness and resources from the government and donors has been identified as a priority.

In the Carteret Islands, current needs include innovative farming and gardening methods, family planning and access to better health services, an educated young population to build resilience and climate adaptive programmes, and a better early warning system.

Planned relocation and retreat

The Carteret Islands case study features the most significant example of planned relocation in PNG. The atolls are located approximately 86km north-east of Bougainville and consist of six islands (Han, Huene, Iangain, Iesila, Iolasa and Piul). Five of these islands are inhabited. Population growth and sea level rise causing salinisation of the soil have resulted in little or no economic development. Consequently, this has enabled the resettlement of families by both government and community-led programmes to get the people relocated to the large island of Bougainville.

The IOM baseline survey was conducted in 2014 to analyse the current situation on the Carteret Islands before activities under the IOM's Atolls Project 'Building capacity of the Papua New Guinean Government to respond to climate change and engage grassroots structures in development planning for the Atolls' was implemented (IOM

2014). The project was targeted at assisting the Government of PNG through the Autonomous Bougainville Government (ABG) to increase its capacity to find lasting solutions to mitigate and adapt to environmentally induced migration.

Issues raised by the IOM report included that customary land and land tenure make resettlement challenging. It can cause hostility or other social problems between host communities and the settlers. PNG had no policy on people displaced by environmental conditions so the report called to integrate climate and land-use planning for displaced people. In the final analysis, it said, there were gaps in policy for displaced people (ibid.).

In Bougainville, the provincial government has been relocating the Carteret islanders to mainland Bougainville in collaboration with Tulelei Peisa, a local NGO. Some sentiments expressed that living on someone's land was not home. It meant getting used to the environment. For some members, cultural and family linkages made it easier.

The Climate Change (Management) (Amendment) Act 2021, with further amendments passed in 2023, includes newer features such as climate change adaptation planned relocation guidelines, relocation of at-risk communities and regional displacement in the Pacific.

Climate finance and funding mechanisms

The *Climate Change (Management) Act* provides for climate change financing mechanisms, but several provisions relating to the introduction of levies have yet to be implemented. The Climate Change and Development Authority has generally focused on responding to climate-related disasters as they occur or after they have occurred. Introducing levies as a source of climate finance could provide an additional mechanism for supporting adaptation, potentially through a phased approach.

The development of the National Adaptation Plan is supported by a US\$1.26 million Green Climate Fund (GCF) readiness grant, which was championed by the Climate Change and Development Authority and UNDP and approved in October 2019.

Under the Organic Law on Provincial Government and Local level Government Act, there is reference to revenue sharing from resource exploitation in provinces. An Act of the Parliament shall make

further provision for revenues to be shared from development in provinces (Section 99) and a sharing arrangement between the national government and provincial governments and LLGs. As far as can be ascertained, no Act of Parliament currently exists for sharing of revenue from such developments. It might be recommended to utilise this option to cater for extra climate adaptation funding and align it to the provisions of climate funding under the climate legislation.

A large proportion of provincial funding is allocated to recurrent expenditure (92 per cent), leaving only a small proportion for development expenditure (8 per cent). This limited allocation for development spending presents a significant challenge to sustaining climate adaptation activities over the long term. Provincial and LLG revenues are also constrained by the limited scope for generating own-source revenue under the Organic Law and the functions they are responsible for regulating. Districts likewise face limitations in the level of financial support available to them.

The intergovernmental finances of the Government of PNG are not conducive to encouraging economic growth in disadvantage provinces. Provinces that are host to large-scale development projects like mining and petroleum would benefit more from the royalties and levies paid. Provinces that are disadvantaged in this respect may find it challenging to undertake climate adaptation activities in the long term.

Assessment of Adaptation Effectiveness

Comprehensiveness and inclusiveness

The 2020 United Nations *Adaptation Gap Report* (UNEP 2020) has identified five criteria – comprehensiveness, inclusiveness, implementability, integration, and monitoring and evaluation – which can be used by countries to prioritise sectors for adaptation action. They can develop a comprehensive plan by identifying adaptation options that align with these priorities and respond to the risks, hazards and vulnerabilities they face.

Comprehensiveness. This involves identifying climate risks and hazards and assessing vulnerabilities to existing and future climate hazards and impacts of the adaptation planning process. Countries can use this information to prioritise sectors for adaptation and develop a comprehensive plan by identifying adaptation options that align with these priorities and the risks, hazards and vulnerabilities they face. Progress on identifying climate risks and hazards has been fragmented in PNG.

While there have been piecemeal efforts, it is yet to be ascertained if PNG has been able to comprehensively identify or undertake mapping of its vulnerable provinces, districts or LLG areas prone to coastal flooding due to sea level rise or inland flooding. Many efforts directed at vulnerable communities have been based on responsive arrangements, whenever disaster strikes.

Inclusiveness. This involves the ability for adaptation planning to adequately reflect forthcoming risks and vulnerabilities and to effectively enhance ownership for eventual implementation by all relevant stakeholders, including local communities and the private sector, as well as gender considerations. In many impacted communities, the involvement of women is crucial for food collection and preparation, yet women attended workshops but had no leadership roles. In the Carteret Islands, women have a great role in

peacebuilding and in fishing and seaweed farming, yet limited opportunities affect their ability to provide for the family.

Although updated and reliable data are needed to assess trends in women's representation at lower levels of government, this trend raises questions about the representation of gender issues at the national level and, consequently, how these issues are reflected in national policies, including those relating to climate change. At the time of writing, there were no women in the National Parliament, although women were represented in local-level and provincial governments.

Implementability and integration

Implementability. Planning can be assumed to be effective if it leads to actual implementation by the public and private sectors. Therefore, planning can benefit from putting in place a central administration body officially in charge of adaptation policy-making, dedicated resources, particularly finance, and a variety of policy instruments, including incentives or regulations, to lead to the desired outcomes.

Adaptation work in PNG is centrally coordinated at the national level by the Climate Change and Development Authority. The Climate Change (Management) Act 2015 provides a legislative basis for climate change financing. However, several of the financing mechanisms provided for under the Act have yet to be fully implemented.

The UNDP flood adaptation project across five provinces did not achieve the expected outcomes and was overall unsatisfactory. Provinces lacked a clear strategy and budget enough to assist. Provincial planning was inadequate. There were no trained personnel on the project sites, hence no skills were available to integrate data into the planning processes for key economic sectors to generate provincial plans to cope with coastal or inland flooding.

Integration. Integrating or mainstreaming adaptation planning and action horizontally (across sectors) and vertically (across levels of administration) is increasingly recognised as an important component of effective adaptation planning. Such efforts help ensure that adaptation is comprehensive, avoids duplication of efforts or maladaptation, and enhances synergies.

The Government of PNG's goal is to mainstream climate change into its long-term political vision, plans and strategies, particularly Vision 2050, the National Strategic Plan 2010–2030 and the Sustainable Development Goal Roadmap. Many of these policies and strategies have not been evaluated to show what has and has not worked and what must be done to improve.

At the moment, government efforts are directed more towards the national level, with inadequate efforts directed at lower levels of government. The preparation of adaptation plans focusing on communities has not progressed well. Yet such preparation is vital when 85 per cent of PNG's population live in rural areas and the plight of coastal communities has been neglected for a long time.

There is no information sharing between agencies to integrate the impacts of climate risks and adaptation measures for biological or ecological areas, land use, heritage sites, marine protected areas, taboo sites or cultural sites, nor for all aspects of environmental targets to make important decisions. Steps should be taken to strengthen the flow of data between different government agencies with provincial governments and local NGOs.

Monitoring and evaluation

To allow for planning to remain adequate and effective, it needs to be monitored, reviewed, evaluated and revised periodically.

The Climate Change Development Authority does not have an existing monitoring and evaluation system in place. But it is noted that the government has indicated in its NAP and NDCs that monitoring and evaluation will be considered in efforts to implement the Paris Agreement in PNG.

The last government's Millennium Development Goal (MDG) Report 2015 was produced to establish what went wrong with PNG in the implementation of the UN MDGs. The overall report summary

was descriptive in nature and there was no implementation report of the constraints or impediments that prevented PNG from achieving its goals. The report pointed out the lessons learnt and way forward without explaining what needed to be done in terms of actual reforms.

Existing institutional capacities are inadequate, including in terms of feedback from project activities. The government has not focused on an evaluation of what has worked and what has not.

To undertake adaptation planning, many of the constraints identified by various reports need to be acted on. Lack of scientific or baseline data keeps coming up in these reports. Some of the data held by NGOs and civil society organisations working closely with communities in adaptation work have not been accessed by government. The government should address this gap and ensure its partnerships include sharing data and acting on recommendations.

Lessons Learned and Exemplars of Good Practice

Case studies of adaptation projects in PNG revealed several important lessons, as follows.

- Lessons from the UNDP project in five provinces (Madang, Morobe, Northern, New Ireland and East Sepik). The project did not achieve its development objectives. There was no project vision. The project design was complex and activities were executed without co-ordination. Locations were inaccessible and travel was difficult. The provinces lacked any clear strategy or sufficient budget to assist. Provincial planning was inadequate. There were no trained personnel at the project sites and hence no skills to integrate data into the planning process of key economic sectors to generate provincial plans to cope with coastal or inland flooding. There was no clear shared vision about what the project was trying to accomplish.
- Recommendations from NGOs working on the ground during the initial inception of the UNDP project. Good communication, capacity building and awareness raising, together with local ownership and the use of local languages, were identified as essential. It was also considered important for project workers to understand mangrove rehabilitation, as well as village economic structures and local land-tenure systems. Community-driven priorities, ongoing partnerships and funding, and capacity building were also identified as important considerations, alongside the need to adjust institutional arrangements before implementation commenced.
- From the IOM Carteret Islands study. It was found that customary land and land tenure made resettlement challenging. There was no policy to address people displaced by environmental conditions. As a result of the study, there was a call to integrate climate and land-use planning for displaced people.
- As an environmental protection measure, a precedent has been set by Bialla LLG laws in West New Britain Province to safeguard the interests of local communities to manage their local marine environments.
- Adaptation projects need to focus on what communities want and align efforts with the needs of communities in mind. Only then can climate adaptation measures be effective and sustained over a longer period. Projects must be designed to take into account local community context. Many communities are food insecure, so support should be directed in infrastructure rehabilitation or disaster risk reduction to contribute to sustainable increases in household- and community-level food security.

Recommendations

Based on the assessment of governance effectiveness, the following recommendations emerge from the source document.

- Amend the Organic Law on Provincial Government and Local Level Government Act to allocate powers for disaster management, climate change and coastal adaptation to provincial and LLGs, and integrate climate adaptation into existing provincial and LLG development plans.
- Increase institutional capacity for the provinces, LLGs, districts and wards, along with better training of personnel. Some of the training and awareness-raising should be in local languages commonly spoken.
- Strengthen data sharing among national, provincial and LLG agencies. Evaluate and apply existing resources, such as the *PNG Rural Development Handbook* (Hanson et al. 2001), to inform climate adaptation planning.
- Secure long-term climate financing by exploring revenue-sharing provisions under Section 99 of the Organic Law and aligning funding mechanisms with the Climate Change Management Act.
- Mainstream climate change adaptation into other laws, including disaster risk management. Amend or align critical legislation such as land-use planning legislation with the Planning Act. Set up climate change offices in the provinces and provide budget support to their activities.
- Address customary land and data collection issues during integration planning. Land disputes are an impediment to long-term planning for climate adaptation work LLG areas. Any initiative for mangrove planting must involve social mapping and identification of families and clans.
- Establish an overarching government coastal development policy and declare coastal waters for each maritime province as required by the Maritime Zones Act 2015.
- Undertake a comprehensive legislative review across environment, fisheries and climate change legislation, including all 22 provincial environmental laws, to close regulatory gaps.
- Develop a monitoring and evaluation system within the Climate Change Development Authority and ensure partnerships include sharing of data and acting on recommendations.

Conclusions

Some communities have raised concerns about inadequate resources and capacity, limited facilities, and weaknesses in provincial-level disaster preparedness, forecasting and planning. Others have highlighted policies and strategies that require further attention from the Government of PNG. Provincial and Local-Level Governments (LLGs) need to strengthen dialogue with the national government on the impacts of climate change and the challenges facing rural populations. The *National Marine Conservation Assessment for Papua New Guinea* (Government of PNG 2015) highlighted the importance of Provincial Government policies and Provincial Development Plans in providing a basis for finer-scale planning, as well as the need for community and stakeholder consultation to inform planning and strengthen data and analysis. These concerns highlight the need to strengthen the enabling environment for climate adaptation through a more integrated and coordinated approach.

Overall, the Government of PNG has made progress in establishing legislation and policies to support climate change action at the national level, but significant gaps remain in their implementation and integration across levels of government. Mainstreaming climate change adaptation will therefore remain challenging, particularly given weaknesses in governance, institutional capacity and coordination. A key priority is to strengthen the Organic Law on Provincial and LLGs to provide a clearer basis for integrating climate change adaptation into provincial and local planning and decision-making. Strengthening governance structures and the wider enabling environment to address the impacts of sea-level rise will take time. These challenges have implications for PNG's four key development priorities - agriculture, health, transport and infrastructure - which are likely to be central to the country's ability to build long-term resilience to sea-level rise.

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Annexes

Annex A. Country dashboard

COMMONWEALTH SEA LEVEL RISE CASE STUDY	MODEL
PAPUA NEW GUINEA	DASHBOARD

Country snapshot

Coastline ~17,110km	Coastal population ~59% in maritime provinces	Coastal elevation Low-lying atolls to rugged highlands
GDP from coastal sectors >50%	Coastal zone 15 maritime provinces	Major flood impact (2005) >70,000 households

Sea level rise indicators

Observed local SLR [TBC – limited local data] vs. global ~3.5mm/yr	Projected rise by 2100 0.26–0.98 metres by 2100 above 2000 levels	Land subsidence [TBC] groundwater extraction
Asset exposure US\$10–20 million/yr flood damage population + GDP at risk	Adaptation cost needed >US\$1 billion ~17% of 2020 GDP	Tide gauge record [Limited] Limited local data

Adaptation at a glance

Type	Key measures	Status
Coastal protection	Sea walls (limited), gabion baskets (Carteret Islands), land filling	Limited; materials shortage
Ecosystem-based	Mangrove replanting (5 provinces), marine protected areas	Active; project outcomes mixed
Accommodation	Awareness programmes, biodiversity handbook, COSPPac	Infrastructure inadequate
Planned retreat	Carteret Islanders relocation to Bougainville mainland	Active; no displacement policy
Climate finance	GCF readiness grant (US\$1.26 million); Climate Change (Management) Act levy provisions	Levy not yet introduced

Key milestones

1989	2012-18	2015	2016	2020	2021-23	2024
<i>Holdgate Report</i>	UNDP Adaptation Fund project	Climate Change (Management) Act	Paris Agreement (Implementation) Act	Updated NDC	Climate legislation amended	National Adaptation Plan

Commonwealth Apia Ocean Declaration relevance

How does sea level rise in this country intersect with the **priorities set out in the Commonwealth Apia Ocean Declaration?**

	Ocean-Climate Nexus Sea-level rise, coastal flooding and changing rainfall patterns pose interconnected risks to PNG's coastal and island communities, requiring integrated climate adaptation and coastal management. Coastal and island communities are highly exposed to sea-level rise and flooding		Marine Pollution Coastal flooding can mobilise waste and pollutants into rivers and coastal waters, while limited waste-management infrastructure can increase marine pollution risks EIA framework established, but evaluation of major assessments remains limited
	Sustainable Fisheries Sustainable Fisheries Coastal fisheries support livelihoods and food security, but are vulnerable to sea-level rise, coastal flooding, mangrove loss and changing marine conditions Fisheries data: significant gaps		Blue Economy Fisheries, marine resources and coastal ecosystems are important to PNG's economy and livelihoods, while offshore resource development increases the importance of resilient coastal infrastructure Coastal communities and infrastructure: highly exposed
	Marine Protection and Restoration PNG's extensive coral reef systems and the world's third largest area of mangrove forests face cumulative stress from sedimentation, destructive fishing and climate-induced bleaching. Community-based mangrove replanting has been undertaken across multiple provinces under UNDP and NGO partnerships. The Nature Conservancy and Ailan Awareness support marine protected areas in West New Britain and New Ireland. The Bialla LLG marine protection laws demonstrate local commitment to marine conservation.		

Annex B. Legislative and policy framework summary

Category	Instrument / Framework	Year	Description	Relevance to SLR
International agreements	UNFCCC	Ratified	Party to UN Framework Convention on Climate Change; CCDA is designated authority.	Foundation for national adaptation obligations.
International agreements	Paris Agreement	Ratified	Enacted into domestic law via UN Paris Agreement Act.	Legal basis for NAP and NDCs' implementation.
International agreements	UNCLOS	State Party	Required to deposit basepoint co-ordinates and maritime zone charts (not yet deposited).	Relevant to maritime boundary preservation under SLR.

Category	Instrument / Framework	Year	Description	Relevance to SLR
International agreements	RAMSAR Convention	Party	Two wetlands listed	Protects wetland ecosystems vulnerable to SLR
National strategy	Vision 2050	–	Long-term national political vision	Climate change to be mainstreamed into this vision.
National strategy	National Strategic Plan 2010–2030	2010	Long-term development plan.	Climate adaptation to be integrated across four priority sectors.
National strategy	PNG Strategy on Climate Change	–	National climate change strategy.	Guides overall climate change response.
National strategy	PNG Climate-Compatible Development Strategy	–	Aligns development with climate objectives.	Integrates low-carbon and climate-resilient development.
National strategy	National Disaster Risk Reduction Framework	2017–2030	Framework for disaster risk reduction.	Addresses disaster preparedness, including coastal flooding.
National strategy	PNG SDG Roadmap 2020–2030	2020	Aligns SDG and Paris Agreement obligations; 30 actions with timelines.	Integrated framework linking sustainable development and climate adaptation.
National strategy	STaRS (National Strategy for Responsible Sustainable Development)	–	Responsible sustainable development strategy.	Broader development framework incorporating climate considerations.
National strategy	Roadmap for Coastal Fisheries and Marine Aquaculture	2017–2026	Strategy for coastal fisheries development.	Introduced without overarching coastal development policy.
National policy	National Adaptation Plan (NAP)	2023	Launched April 2023 with international partner support; supported by US\$1.26 million GCF readiness grant.	Primary adaptation planning instrument; addresses SLR among multiple hazards.
National policy	Nationally Determined Contribution (NDC)	Submitted	Highlights need to mainstream climate change into plans and strategies.	Identifies scientific data gaps and capacity challenges.
National policy	Food Security Policy	–	Addresses food security for growing population.	Relevant to SLR impacts on coastal agriculture.
National policy	National Population Policy	–	Population management strategy.	Relevant given 59% of population in maritime provinces.
National policy	PNG WASH Strategy	–	Water, sanitation, and hygiene strategy.	Addresses water security in communities vulnerable to SLR.
Legislation	Climate Change Management Act	Enacted	Regulates all adaptation work; includes adaptation planning (Sections 74–78), consultation (Section 70) and climate funding (Sections 37–40).	Primary climate legislation; levy provisions not yet introduced.
Legislation	Climate Change (Management) (Amendment) Act	2021 (amended 2023)	Adds planned relocation guidelines, relocation of at-risk communities and regional displacement provisions.	Directly addresses displacement of communities by SLR.

Category	Instrument / Framework	Year	Description	Relevance to SLR
Legislation	United Nations Paris Agreement Act	Enacted (pending commencement)	Gives force of law to the Paris Agreement in PNG domestic law.	Legal basis for implementing Paris commitments on adaptation.
Legislation	National Disaster Management Act	Enacted	Creates National Disaster Coordination Committee and Provincial Disaster Committees.	Governs disaster response, including coastal flooding.
Legislation	Organic Law on Provincial and Local-level Governments	1990s	Establishes three-tier government system and power sharing.	Silent on disaster management, climate change or coastal development; critical gap.
Legislation	Environment Act	Enacted	Requires EIAs for major projects.	EIA process not properly evaluated for effectiveness.
Legislation	Maritime Zones Act	Enacted	Establishes PNG's maritime zones.	Charts not yet deposited with UN; regulations pending.
Legislation	Informal Sector Development and Control Act	2004	Supports informal economy legislative framework.	Relevant to livelihoods of coastal communities in informal economy.
Legislation	Recognition of Customary Rights Act	Enacted	Allows communities to claim rights over reefs, lagoons and coastal areas.	Important for community-based coastal resource management.
Legislation	Fisheries Act	Enacted	Regulates total allowable catch; governs tuna fishing in EEZ.	Relevant to marine resource management under SLR conditions.
Institutional	Climate Change and Development Authority (CCDA)	–	Designated authority for UNFCCC; leads all climate change work nationally.	Central agency; lacks monitoring and evaluation system; generally reactive rather than proactive.
Institutional	Provincial governments (22)	–	Exercise delegated powers from national government under Organic Law.	Lack climate change offices, trained personnel and adaptation plans.
Gap	Organic Law climate provisions	Absent	No powers allocated to provinces for disaster management, climate change or coastal development.	Critical legislative gap impeding provincial-level SLR adaptation.
Gap	Coastal development policy	Absent	No overarching government coastal policy.	Roadmap for Coastal Fisheries introduced without this foundational policy.
Gap	Policy on climate-displaced people	Absent	No policy addressing displacement because of environmental conditions.	Urgent need highlighted by Carteret Islands relocation experience.
Gap	Climate funding levy	Not yet introduced	Climate Change (Management) Act has levy provisions but none have been implemented.	Limits domestic climate adaptation financing.

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