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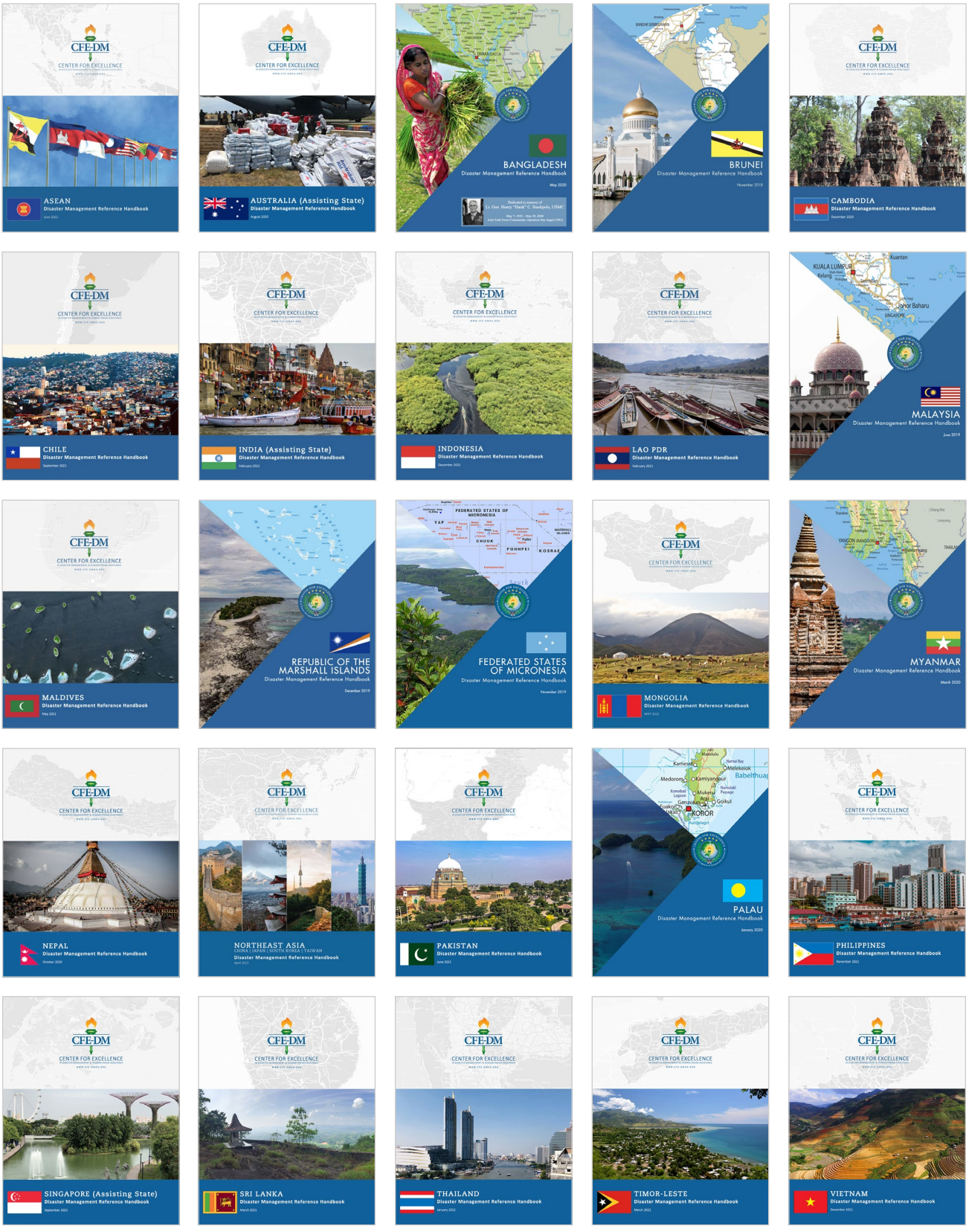
PAPUA NEW GUINEA

Disaster Management Reference Handbook

June 2022

Disaster Management Reference Handbook Series

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Front Cover

Eastern Highlands Province, Papua New Guinea, by Vika Chartier on Unsplash
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Disclaimer

This handbook has been prepared in good faith based on resources available at the time of publication. Information was gathered from the public domain, from local and government sources, as well as from subject matter experts. Where possible, a link to the original electronic source is provided in the endnote (reference) section at the end of the document. While making every attempt to ensure the information is relevant and accurate, the Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM) does not guarantee or warrant the accuracy, reliability, completeness, or currency of the information in this publication. Each handbook is a working document and will be updated periodically as new and significant information becomes available. We hope that you find these handbooks informative, relevant, reliable, and useful in understanding disaster management and response. We welcome and appreciate your feedback to improve this document and help fill any gaps to enhance its future utility. For feedback, comments, or to request a printed copy please email cfe.dmha.fct@pacom.mil. Please visit our website to download copies of this publication and other products (https://www.cfe-dmha.org). All parts of this publication may be reproduced, stored in retrieval systems, and transmitted by any means without the written permission of the publisher.

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Letter from the Director

Papua New Guinea (PNG) is a culturally and geographically diverse country. Its location in the Pacific Ring of Fire makes it prone to natural disasters such as earthquakes, volcanic eruptions, cyclones, flooding, landslides, and droughts.

PNG is particularly vulnerable to the effects of marine climate change.[1] The country faces annual sea level rise above the global average.[2] Several low-lying small islands of PNG are experiencing more frequent storm surges due to sea level rise, and parts of the country are subject to inundation.[3] In December 2021, king tides struck various areas of Manus, East Sepik, and the Autonomous Region of Bougainville. The United States Agency for International Development (USAID) partnered with the International Organization for Migration (IOM), United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), and Australian Department of Foreign Affairs and Trade (DFAT) to deliver assistance to affected households in PNG.[4]

The United States (U.S.) and PNG have enjoyed over four decades of diplomatic relations. PNG is important to peace and security in the Asia-Pacific region as the most populous Pacific island state. It is one of the priority countries for the implementation of the U.S. Global Fragility Initiative – an approach to conflict prevention and stabilization that integrates diplomacy, development, and defense – with legislative backing through the Global Fragility Act 2019.[5]

PNG and the U.S. have a long and effective defense relationship. In September 2021, the U.S. Army and the Papua New Guinea Defence Force (PNGDF) co-hosted the biennial Indo-Pacific Army Chiefs Conference in Hawaii. In 2020, the U.S. State of Wisconsin's National Guard and the PNGDF began a partnership under the U.S. National Guard State Partnership Program. Through the partnership, opportunities have been identified for collaboration on initiatives in COVID-19 response, medical services, and women's health in PNG.[6]

This Papua New Guinea Disaster Management Reference Handbook offers an operational understanding of the country's disaster management capability as well as information on demographics, hazards, climate change, organizational structure for disaster management, laws and policies, infrastructure, and other areas vital to a comprehensive disaster management knowledge base. It is hoped that individuals and organizations planning for or executing a disaster response operation in PNG will benefit from this information to support the country's responders and affected communities in their time of need.

Sincerely,

Joseph D. Martin, SES
Director

About the Center for Excellence in Disaster Management & Humanitarian Assistance

Overview

The Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM) is a United States (U.S.) Department of Defense (DoD) organization comprised of nearly 30 subject matter experts that provide academic research, civil-military coordination training, and operational insights to support decision making before, during, and after crises. The Center is designed to bridge understanding between humanitarians, civilian, and military responders. CFE-DM partners with a diverse group of governmental and nongovernmental actors, as well as academic institutions to increase collaborations and capabilities in humanitarian assistance and disaster response. While maintaining a global mandate, the Indo-Pacific region is our priority of effort and collaboration is the cornerstone of our operational practice. The Center is a direct reporting unit to U.S. Indo-Pacific Command (USINDOPACOM) and is located on Ford Island, Joint Base Pearl Harbor-Hickam, Hawaii.

Vision

The Joint Force, allies, and partners are fully prepared to conduct and support foreign humanitarian assistance.

Mission

CFE-DM builds crisis response capacity in U.S. and partner militaries, enhances coordination and collaboration with civilian and foreign partners, and strengthens those relationships to save lives and alleviate human suffering before, during, and after humanitarian crises.

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EXECUTIVE SUMMARY

Papua New Guinea (PNG) is the largest Pacific Island country in Oceania. The country of 9.3 million people (2022 est.) is made up of the eastern half of the island of New Guinea, alongside four additional islands, and over 600 islets and atolls. PNG is located in the so-called "Pacific Ring of Fire," a region where many volcanic eruptions and earthquakes occur.[7] PNG faces natural hazards including earthquakes, tsunamis, volcanic eruptions, cyclones, flooding, landslides, and droughts.

PNG is among a grouping of Small Island Developing States (SIDS) that are particularly vulnerable to the effects of marine climate change.[8] Sea level rise is a pronounced risk for PNG, which faces annual sea level rise above the global average. The experience of the people of PNG's Carteret Islands is the best-known example of climate change-induced displacement, with islanders having lost 50% of their land due to sea level rise since 1994.[9] More recently, king tides affected three provinces of PNG in late December 2021; they submerged schools, homes, gardens, water catchments, and cemeteries, and required a national emergency response.[10]

The impact of climate change in PNG will be significant given that over 85% of the population lives in rural areas and relies primarily on subsistence agriculture for survival. PNG's population also mostly live in rugged mountainous terrain with limited access to basic infrastructure such as roads and bridges, which has hindered access to health care, education, and broader economic opportunities.[11] These challenges will become more pronounced with climate change-induced natural disasters.

PNG's disaster management framework is set out in the Disaster Management Act (DM Act) 1984 (revised 1987). The DM Act is widely characterized as in need of reform and is currently under review. At the national level, the National Disaster Committee and its executive National Disaster Centre (NDC) is the lead government agency for disaster response pursuant to the DM Act.[12] However, in practice the Government of Papua New Guinea (GoPNG) appoints an Emergency Controller to lead disaster response efforts under the emergency powers provisions of the Constitution.[13] During a disaster, an emergency controller and the NDC may both be coordinating response efforts.

Additionally, PNG's Defence Force (PNGDF) plays a role in responding to civil disaster also pursuant to the Constitutional emergency powers provisions.[14] The NDC was transferred, along with the PNG Fire Service and the National Volunteer Service to the portfolio of the Minister of Defence in or around 2020.[15] The NDC is currently in the process of being elevated from an office to an independent authority[16], which will give it a greater role and resources under the defense portfolio.[17]

At the provincial level, each province has at least a provincial disaster coordinator or an established provincial disaster center (PDC). At the district and local-level government (LLG) levels, if there is a mechanism dedicated to Disaster Risk Management (DRM) and disaster response it is likely a single person who is also charged with other administrative responsibilities.[18]

Moreover, the United Nations (UN) Resident Coordinator in PNG and the NDC Director co-chair a Disaster Management Team (DMT). The DMT is a strategic body responsible for coordinating international humanitarian support to national disaster preparedness, response, and recovery. The DMT oversees the Inter-Cluster Coordination Group comprising cluster coordinators who work with the GoPNG, non-government organizations (NGO), and faith-based and private-sector partners to deliver specific assistance in support of the nationally-led response.[19]

Furthermore, the GoPNG has developed a whole-of-government approach to supporting disaster risk reduction (DRR) through the National Disaster Risk Reduction Framework (NDRRF) 2017-2030.[20]

COUNTRY OVERVIEW

PNG is an island country in the southwestern Pacific Ocean. It encompasses the eastern half of New Guinea, the world's second largest island (the western half is made up of the Indonesian provinces of Papua and West Papua); the Bismarck Archipelago (New Britain, New Ireland, the Admiralty Islands, and several others); Bougainville and Buka (part of the Solomon Islands chain); and small offshore islands and atolls.[21] Figure 1 shows the map of PNG.[22]



Figure 1: Map of PNG

The U.S. established diplomatic relations with PNG in 1975, following its independence from the Australian-administered UN trusteeship.[23] As the most populous Pacific Island state (9.3 million; 2022 est.), PNG is important to peace and security in the Indo-Pacific region. Over the past decade, PNG has generally experienced economic growth. The country has abundant energy, agricultural, and mineral resources, but it faces challenges including a boom-and-bust economy, weak governance, corruption, limited capacity and infrastructure to deliver basic services, the deterioration of its health system, and a concentrated Human Immunodeficiency Virus (HIV)/Acquired immunodeficiency syndrome (AIDS) epidemic among key populations and in the Highland provinces.[24]

U.S. bilateral and multilateral assistance funds public health programs in PNG including the President's Emergency Plan For AIDS Relief (PEPFAR), Tuberculosis (TB), and Malaria and Neglected Tropical Diseases. PNG is one of the priority countries for the implementation of the U.S. 2019 Global Fragility Initiative.

PNG participates in multilateral forums, as a member of the Asia-Pacific Economic Cooperation (APEC) and the Pacific Islands Forum (PIF), and as an observer to the Association of Southeast Asian Nations (ASEAN).[25] Moreover, PNG is a member of SIDS and aligns itself with the Alliance of the Small Island Developing States (AOSIS) in the context of tackling climate change.[26]

History

In 1884, Germany declared a protectorate - and eventually a colony - over the northern part of what would become PNG and named it "German New Guinea"; Britain followed suit on the southern part of the island and on nearby islands and called this colony "Papua."[27] Britain placed Papua under Australian administration formally in 1906. Australian forces displaced the German authorities on New Guinea early in World War I, and Australian rule continued after the war under a mandate from the League of Nations (predecessor to the UN). During World War II, Japan invaded New Guinea and Papua. Allied victories during the New Guinea campaign pushed out the Japanese, and after the end of the war, Australia combined the two territories into one administration, the Territory of Papua and New Guinea, which it administered from Canberra via Port Moresby.[28]

General elections for a Territorial House of

Assembly were held in 1964, 1968, and 1972; self-government was achieved on 1 December 1973 and full independence from Australia on 16 September 1975. At independence, the former chief minister under the Australian administration, Sir Michael Somare, became PNG's first prime minister. Under his leadership the country adopted a system of provincial administration based on the former administrative districts.[29]

From 1973, there were movements in both the southern region of Papua and in Bougainville that sought to secede from the new PNG state. The Papuan nationalist movement soon faded; but the Bougainville secessionist movement persisted, although it was generally mitigated from 1976 to 1988 by the national government's agreement to decentralize sub-national governance to provincial governments and devolve some national powers. In 1988, conflict was reignited on Bougainville driven by a number of factors including disputes over environmental damage caused by mining, perceptions of racism in the mining industry, the large numbers of mainlanders on the island, and the distribution of mineral revenues among landowners. Following national elections in 1992, the GoPNG took a hardline stance against Bougainville rebels, and the resulting civil war lead to up to 20,000 deaths. In 1997, the PNG government hired mercenaries to support its troops in Bougainville, a policy that sparked an army mutiny and forced the prime minister to resign.[30]

PNG and Bougainville signed a truce in 1997, through negotiations sponsored by New Zealand. A peace agreement signed in 2001 granted Bougainville autonomy. From 1998, a regional peacekeeping mission monitored the truce; the Peace Monitoring Group (PMG) was led by New Zealand and then Australia and comprised unarmed military and civilian members from Australia, Fiji, New Zealand, and Vanuatu. In June 2003, the PMG withdrew its monitoring mission and was replaced by a much smaller, entirely civilian Bougainville Transition Team (BTT). The BTT was also comprised of personnel from Australia, Fiji, New Zealand and Vanuatu. Regional peace monitors were withdrawn in 2003.[31]

In 2019, an independence referendum in Bougainville saw 97.7% of voters favor independence from PNG, but the referendum did not guarantee independence. Further steps, pursuant to the 2001 Bougainville Peace Agreement are required, but there is a lack of consensus between Port Moresby and Bougainville on the path forward.[32]

Culture and Demographics

PNG has a population of 9.3 million, according to United Nations Population Fund (UNFPA) estimates for 2022.[33] The last Census was conducted in 2011 and counted 7,275,324 people.[34] The average rate of population growth for 2020-2025 is estimated to be 1.9% annually, although 2.35% has also been forecast.[35] The 2011 Census reported that the Highlands and New Guinea Island regions have annual growth rates higher than the national average.[36] In 2022, life expectancy at birth is 64 years for males and 67 years for females.[37] The median age for both males and females is 24 years.[38]

The United Nations Development Programme's (UNDP) Human Development Index (HDI) value for PNG in 2019 was 0.555, a score that places the country in the "medium" human development category, positioning it at 155 out of 189 countries and territories (1 being most developed and 189 the least). Between 1990 and 2019, PNG's HDI value increased from 0.380 to 0.555, an increase of 46.1%. PNG's national development strategy, Vision 2050, sets the goal of moving PNG to among the top 50 countries on the HDI by 2050.[39]

Between 1990 and 2019, PNG's life expectancy at birth increased by 8 years; mean years of schooling increased by 2.3 years, and expected years of schooling increased by 5.5 years. PNG's Gross National Income (GNI) per capita increased by about 87.9% between 1990 and 2019.[40]

The majority of the population lives across the diverse rural landscape in villages or hamlets. Daily life usually centers on the extended family, whose primary responsibilities are producing food for subsistence and child rearing. Most people have rights to use portions of land for the growing of food and some cash crops as well as the rights to fish, hunt, and gather timber from local forests.[41]

Ethnic Makeup

PNG's ethnic makeup is diverse and complex, although most people are classified as Melanesian. Very small minorities of Micronesian and Polynesian societies can be found on some of the outlying islands and atolls. These minority communities have political structures headed by chiefs, a system seldom found among the Melanesian peoples of PNG.[42] The major ethnic groups are Melanesian, Papuan, Negrito, Micronesian, and Polynesian.[43] In addition, ethnic Chinese have been present in PNG since the nineteenth century, but Chinese migrant numbers have grown rapidly over the past decade and are estimated to be 0.3% of the population (2018 est).[44]

Key Population Centers

About 39% of the population lives in the Highlands region followed by the Momase region with 26%, while the Southern and New Guinea Island regions are home to 20% and 15% respectively. Of the 22 provinces, Morobe province has almost 9.3% of the country's total population, reporting 674,810 people in the 2011 Census. Eastern Highlands and the Southern Highlands are the other two most populated provinces with populations in excess of 500,000 people.[45] The capital, Port Moresby, has an estimated 400,000 residents.[46]

Language

After independence, Papua New Guinea adopted four official languages: English, Tok Pisin (an English-based Creole), sign language, and Hiri Motu (spoken around Port Moresby). Of the four official languages, Tok Pisin is the most frequently used language for business and government activities.[47] There are about 839 indigenous languages (about 12% of the world's total). Many languages have fewer than 1,000 speakers.[48]

Religion

In PNG, approximately 26% of the population is Roman Catholic; 18% Evangelical Lutheran; 13% Seventh-day Adventist; 10% Pentecostal; 10% United Church (an offshoot of the London Missionary Society, Australian Methodist Church, and the Presbyterian Church of New Zealand); 6% Evangelical Alliance; 3% Anglican; and 3% Baptist. Other Christian groups, which include The Church of Jesus Christ of Latterday Saints, Jehovah's Witnesses, Kwato Church, and the Salvation Army, together constitute 9%. There are approximately 60,500 members of the Baha'i Faith, constituting less than 1% of the population, and 2% hold indigenous or other beliefs.

Newer, self-identified fundamentalist Christian religious groups are increasing. Many citizens integrate Christian faith with indigenous beliefs and practices. The Jewish community in Port Moresby (locally referred to as the Messianic group) totals approximately 800 members, of whom almost 40% are local converts. The Muslim community numbers approximately 10,000, including local converts. Most Muslim expatriate workers live in Port Moresby, and Muslim converts live in Port Moresby or villages in the Highlands.[49]

Vulnerable Groups

The DM Act does not define vulnerability for the purpose of DRM. However, a "vulnerable group" is defined in the NDRRF 2017-2030 as "any collective or group of people that has the propensity or predisposition to be adversely affected such as a household, community, or country, and their situation that influences their capacity to anticipate, cope with, resist, and recover from an adverse pressure."[50] Examples of vulnerable groups identified in the NDRRF 2017-2030 include: children, elderly, pregnant and

lactating women, persons living with a disability, internally displaced people and migrants, and residents of small islands and atolls.

Children

Girls and boys in PNG experience some of the highest rates of violence in the Asia-Pacific region. About 75% of children report experiences of physical abuse and about 80% experience emotional abuse during their lifetime.[51] Pre-existing conditions of violence and abuse are compounded by disasters. Following the 2018 earthquake, the United Nations Children's Fund (UNICEF) in PNG called attention to the trauma suffered by children long after the disaster. Children who have suffered from trauma have an increased risk of delayed development, mental health disorders, depression, self-harm, and suicide.[52]

Elderly

The life expectancy of an average person in PNG is 64 years for males and 67 years for females.[53] PNG still has high rates of childhood stunting, a risk factor for non-communicable diseases in adulthood.[54] For older people in PNG, access to quality healthcare is a major challenge with a poor health system that is suffering from deteriorating infrastructure, poor governance, an ageing and inadequate healthcare workforce, and limited specialist services. In the aftermath of a disaster, access to healthcare is further disrupted or is non-existent, a circumstance that significantly impacts the elderly population.

Women

PNG has among the highest rates of gender-based violence in the world, and an estimated 66% of women are survivors of domestic violence, which was only criminalized in 2017 with the implementation of the Family Protection Act (passed in 2013).[55] Women in PNG are vulnerable to violence and other inequalities due to a lack of access to land, income, credit, and other resources. This lack of access impedes women's ability to cope with climate stresses and disasters.[56] Pregnant or lactating women are particularly vulnerable during a disaster due to disruption to healthcare or to their own childcare obligations.

Persons with Disabilities

The GoPNG has not collected comprehensive data on people with disabilities. For the purpose of policymaking, PNG relies on the World Health Organisation (WHO) global estimate that around 15% of any population have some form of disability. In 2022, at a population of 9.3 million, this suggests that around 1.4 million people may be living with a disability in PNG. The National Policy on Disability 2015-2025 defines disability as "an evolving concept... disability results from the interaction between persons with impairments and attitudinal and environmental barriers that [hinder] full and effective participation in society on an equal basis with others." To promote the mainstreaming of disability pursuant to the National Policy, the GoPNG will "work with disaster risk reduction policymakers to integrate Persons With Disabilities into disaster risk management and climate change policies and plans including evacuation plans."[57]

Internally Displaced People

Displacement within PNG is widespread and often occurs because of disasters related to various natural hazards, including earthquakes, volcanic activity, floods, landslides, frosts, cyclones, and droughts, as well as to communal conflict and man-made disasters. Displacement is exacerbated by tribal conflict – the Highlands region being particularly vulnerable as observed following the 7.5-magnitude earthquake that struck the region in February 2018. According to the UN International Organization for Migration (IOM) 2017 report, "Profiling Internally Displaced Persons in Papua New Guinea," the highest percentage of internally displaced persons (43%) in PNG are located in the Highlands region, and 72% are displaced by natural hazards and 28% by human-induced hazards such as tribal conflict and ethnic clashes.[58]

Small Island and Atoll Residents

Residents of PNG's small islands and atolls face considerable risks from sea level rise. In 2005, the people of the Carteret Islands in PNG attracted global attention when it was predicted that the island would be sumberged by 2015 and the entire population was in need of relocaton.[59] Although the islands are still there, they stand only 1.5 meters (m; 4.9 feet [ft]) at the highest point. Although some families have moved to Bougainville, around 1,770 people remain living on the seven small islets on a coral atoll that make up the ever-shrinking Carteret Islands.[60]

Economics

PNG is a lower-middle income country, a fragile and conflict-affected society, and a SIDS.[61] PNG has a dual economy, consisting of both the formal and informal sectors. The formal economy is made up of the large-scale extractive mining and petroleum sector and the primary industries sector comprised of forestry, fishing, and commercial agriculture. The formal economy employs only about 15% of the total workforce. The informal economy on the other hand employs 85% of the labor force, mostly in subsistence agriculture that is dominated by women.[62] Figure 2 shows the share of the largest contributing industries to the Gross National Product (GDP) of PNG.[63]

The GoPNG development strategy is set out in the PNG Vision 2050,[64] the Development Strategic Plan 2030,[65] and the Medium-Term Development Plan III (2018–2022).[66] The priority development sectors are agriculture, health, transport, and infrastructure.[67]

The coronavirus disease 2019 (COVID-19) pandemic has significantly affected PNG's economy, which had contracted by 3.3% in 2020, followed by a weak recovery at 1.3% growth in 2021.[68] PNG's GDP is projected to grow by 3.4% in 2022 and 4.3% in 2023.[69]

Government

PNG is a constitutional, federal, multiparty, parliamentary democracy.[70] PNG gained its independence on 16 September 1975 from an Australian-administered UN trusteeship.[71] As a constitutional monarchy, PNG's Head of State is the British Monarch (currently Queen ELIZABETH II; since 6 February 1952), represented by the Governor General Grand Chief who is nominated by Parliament for a term of six years (currently Sir Bob DADAE; since 28 February 2017). The Head of Government is the Prime Minister (currently James MARAPE; since 30 May 2019).[72] The next Parliamentary election is scheduled for July 2022.[73]

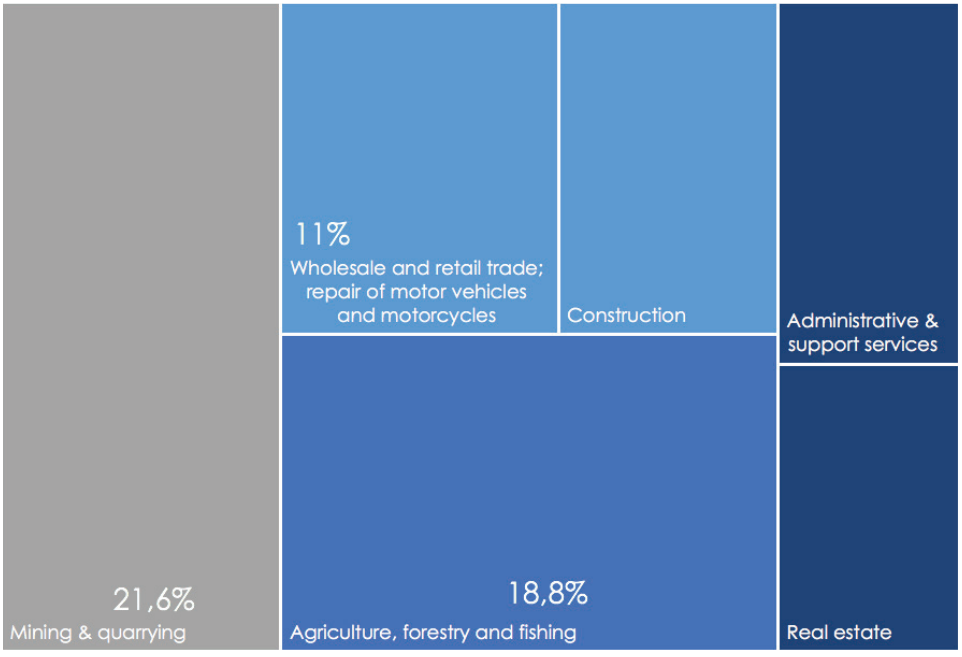


Figure 2: Major Economic Sectors in PNG (by % of GDP)

Administratively, the country is divided into four regions (Highlands, New Guinea Islands, Momase, and Southern) and 22 provincial-level divisions including 20 integrated provinces, an autonomous region (Bougainville), and the National Capital District. The ordinary provinces are: Central, Chimbu, Eastern Highlands, East New Britain, East Sepik, Enga, Gulf, Hela, Jiwaka, Madang, Manus, Milne Bay, Morobe, New Ireland, Northern, Southern Highlands, Western, Western Highlands, West New Britain, and West Sepik. Below the provincial level are 96 districts (seven new districts were added in March 2022[74]), 326 local-level governments (LLG), and 6,118 wards.[75] Significant political authority resides with the Council of Elders, an official local governing authority in PNG.[76]

The future of Bougainville is an issue of national priority. Although a clear majority of Bougainville's population voted in favor of independence in the 2019 referendum, the referendum was nonbinding and subject to ratification by the PNG Parliament. The governments of PNG and the Autonomous Region of Bougainville have since agreed to a timeline for full independence by 2027, although negotiations are proceeding intermittently. Bougainville's future independence has raised the specter of more secessionist movements and further breakup of the country, although some experts assess this fracturing as unlikely.[77]

Environment

PNG is home to a diverse range of ecosystems, including humid tropical rainforests, swampy wetlands, and coral reefs. In addition to harboring abundant natural resources such as gold, copper, oil, and natural gas, PNG represents 13% of the world's tropical rainforests and 6-7% of its biodiversity.[78]

Notably, 97% of PNG's land area is under legally recognized customary tenure and is inalienable. Both colonial and post-independence governments have adopted approaches to work with these systems, including the establishment of a legal process permitting customary groups to register titles to their land in their own name. Customary groups may also grant agricultural and business leases to the government for portions of their land. In some cases, the government has entered into agreements to acquire land rights from customary owners, compensated the owners, and then transferred the rights to private companies for mining or logging concessions.[79]

Geography

PNG is an island country in the southwestern Pacific Ocean with a total land area of 462,840 square kilometers (sq km; 178,703 square miles [sq mi]). The country encompasses the eastern half of New Guinea, the world's second largest island (the western half is made up of the Indonesian provinces of Papua and West Papua); the Bismarck Archipelago (New Britain, New Ireland, the Admiralty Islands, and several others); Bougainville and Buka (part of the Solomon Islands chain); and small offshore islands and atolls.[80] PNG has the geographical coordinates: 6 00 S, 147 00 E.

Borders

PNG shares a land border of 824 km (512 mi) with Indonesia and has 5,152 km (3,201 mi) of coastline. PNG has maritime claims to 12 nautical miles (nm).

Climate

PNG's climate is one of hot tropical humidity year-round with slight seasonal temperature variation. The country experiences two distinctive seasons: wet (December to March) and dry (June to September). PNG's average monthly rainfall ranges 250–350 millimeters (mm; 9.8–13.7 inches [in]), with average temperatures ranging 26–28 degrees Celsius (78.8-82.4 degrees Fahrenheit). Humidity is relatively high in PNG, ranging between 70% and 90%.[81]

DISASTER OVERVIEW

PNG is disaster-prone due to its geophysical conditions and limited coping capacity. PNG is ranked as a high-risk country for natural disasters according to the INFORM Risk Index due to a moderate exposure to natural hazards and a pronounced lack of coping capacity (the INFORM Risk Index methodology is discussed further below).[82] PNG is located in the so-called "Pacific Ring of Fire," a region where many volcanic eruptions and earthquakes occur.[83] The country experiences an annual average of two to three disasters that require the activation of the national emergency response system alongside numerous smaller events that require local responses.[84]

PNG faces natural hazards including earthquakes, tsunamis, volcanic activity, cyclones, flooding, landslides, and droughts. PNG is ranked sixth in the Asia-Pacific region for the highest percentage of the population exposed to earthquakes and is ranked after the Philippines, Indonesia, and Vanuatu in having the highest population exposed to severe risk of volcanic eruption.[85]

External drivers such as climate change and internal pressures such as rapid population growth, unregulated and destructive land use practices, and infrastructure development are exacerbating natural hazard risks.[86] Additionally, the impact of hydrometeorological hazards is projected to grow more severe as a result of climate change. Several low-lying small islands of PNG are experiencing more frequent storm surges due to sea level rise, and about one-fifth of the land in PNG is subject to inundation.[87]

The GoPNG has developed a whole-of-government approach to supporting DRR through the NDRRF 2017-2030. This framework builds on the National Risks Reduction and Disaster Risk Management Framework for Action 2005-2015 and aligns with the Sendai Framework for Disaster Risk Reduction 2015-2030.[88]

Climate Change

PNG is among a grouping of SIDS that are particularly vulnerable to the effects of marine climate change due their proximity to the ocean and reliance on it for resources and transportation. Climate-related hazards faced by small island countries include temperature changes, tropical cyclone and storm surges, ocean acidification, sea level rise, and extreme sea level inundation and erosion.[89]

In PNG, climate change is intensifying natural hazards such as flash floods, landslides, and coastal flooding. Extreme heat events are likely to increase as temperatures move closer to unsafe levels even under lower projected emission pathways. Minimum and maximum temperatures are expected to rise considerably faster than average temperatures, increasing the risks to human health and ecosystems. Moreover, the population in PNG affected by river flooding and its economic impact is projected to double by 2030.[90]

Sea level rise is a pronounced climate change-induced risk for PNG, which faces more than double the global average annual sea level rise. Since 1994, the islanders of the seven atolls of the Carteret Islands have lost 50% of their land. The disappearance of traditional food sources has regularly placed the islanders in situations of near famine. The community additionally faces severe water shortages due to prolonged droughts and sea level rises that affect freshwater supply.

Climate Future

The World Bank's multi-model predictive analysis for PNG's climate future projects a trend of consistent warming that will be more pronounced in the inland regions as compared to coastal areas. PNG's projected rates of warming are typically 20–30% lower than the global average. However, the World Bank analysis advises extreme caution in treatment

of this prediction as maximum and minimum temperatures are projected to rise notably faster than average temperatures, suggesting a climate future that is less stable and more frequently heat stressed.[91] The World Bank's analysis of future precipitation has yielded uncertain results. The analysis did suggest the intensity of sub-daily extreme rainfall events might increase with temperature, consistent with evidence from other parts of the Asia-Pacific region. Table 1 is a summary of climate projections for PNG from the GoPNG's 2020 Nationally Determined Contribution (NDC) submission under the Paris Agreement.[92]

The impact of climate change in PNG will be significant given that over 85% of the population lives in rural areas and relies primarily on subsistence agriculture for survival.[93] Women are particularly vulnerable to the impact of climate change due to a lack of access to land, income, credit, and other resources, which impedes their ability to cope with climate stresses and disasters. PNG's population also lives in rugged mountainous terrain with limited access to basic infrastructure such as roads and bridges, which has hindered access to health care, education, and broader opportunities.[94] These challenges will become more pronounced with climate change-induced natural disasters.

Infrastructure, fisheries, forestry, and agriculture sectors are predicated to be the economic sectors most affected by climate change. PNG's unique biodiversity is also at risk with forest and reef losses. Moreover, the prevalence of vector-borne diseases, including malaria and dengue fever, will increase in hot and humid conditions, which allow mosquitos to thrive and breed for longer periods of time.[95]

Climate Response

PNG has ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1993.[96] In 2016, PNG ratified the Paris Agreement.[97] PNG is also a member of the SIDS grouping and aligns itself with the AOSIS in the context of the UNFCCC.[98] PNG submitted its NDC to the UNFCCC in 2016 and 2020 and its first Biennial Update Report (BUR) to the UNFCCC in 2019. These submissions outline PNG's climate change action towards meeting nationally determined emissions targets including mitigation and adaptation. The submissions also highlight how PNG perceives its key climate change risks and adaptation priorities.

In 2015, PNG enacted the Climate Change Management Act (CCMA) and established the Climate Change and Development Authority (CCDA). The CCDA is the coordinating entity for all climate change-related policies and actions in the country. Additionally, it is the designated national authority under the UNFCCC.[99] The GoPNG has further mainstreamed addressing climate change into its development priorities, as captured in the national long-term political vision, plans, and strategies of PNG Vision 2050, the National Development Strategic Plan 2010-2030, and the Medium-Term Development

Climate Variable	Projection	Confidence Level
Surface air temperature	Projected to increase	Very high confidence
Sea surface temperature	Projected to increase	Very high confidence
Annual mean rainfall	Projected to increase	High confidence
Seasonal mean rainfall	Projected to increase	High confidence
Intensity and frequency of days of extreme heat	Projected to increase	Very high confidence
Intensity and frequency of days of extreme rainfall	Projected to increase	High confidence
Incidence of drought	Projected to decrease	Moderate confidence
Frequency of tropical cyclones	Projected to decrease	Moderate confidence
Ocean acidification	Projected to continue	Very high confidence
Mean sea level rise	Projected to increase	Very high confidence

Table 1: Climate Projections for PNG

Plan III. Most recently, the CCDA supported the government to develop PNG's Sustainable Development Goal (SDG) 13 Climate Action Roadmap and the National Reducing Emissions from Deforestation and Forest Degradation (REDD)+ Strategy (NRS).[100] PNG pushed for greater commitments to protect rainforests at the 2021 UN Climate Change Conference of Parties (COP26) held in Glasgow.

PNG's commitment to adaptation for 2020-2030 will focus on the four priority development sectors of agriculture, health, transport, and infrastructure. The NDC 2020 identifies nine priority adaption areas: 1) coastal flooding and sea level rise, 2) inland flooding, 3) food insecurity, 4) cities and climate change, 5) climate-induced migration, 6) damage to coral reef, 7) malaria and vector-borne disease, 8) water and sanitation, and 9) landslides. A National Adaptation Plan is in development with the support of UNDP and its partner, Climate Law & Policy, an independent advisory organization.[101]

However, national-level policy, financing, and governance mechanisms for DRR and climate change in PNG are not integrated. The Humanitarian Advisory Group published a case study of PNG in March 2022, which identified a lack of coordination between the CCDA as the lead on climate change and the NDC as the lead on DRR. The study found "that policies, frameworks and plans continue to remain separate and implementing agencies must work through separate coordination mechanisms, funding streams and government regulations."[102]

Hazards

PNG is exposed to geological, meteorological, and hydrological hazards as well as man-made hazards. The country experiences earthquakes, tsunami, volcanic eruptions, cyclones, river and coastal flooding, landslides, and droughts. In addition, king tides, hail, and frosts have occurred more frequently in recent years. At the same time, communal conflicts have caused widespread displacement, and man-made disasters related to mining activities have caused severe environmental damage.[103] Figure 3 depicts a PNG hazard map, produced by the National Disaster Centre.[104]

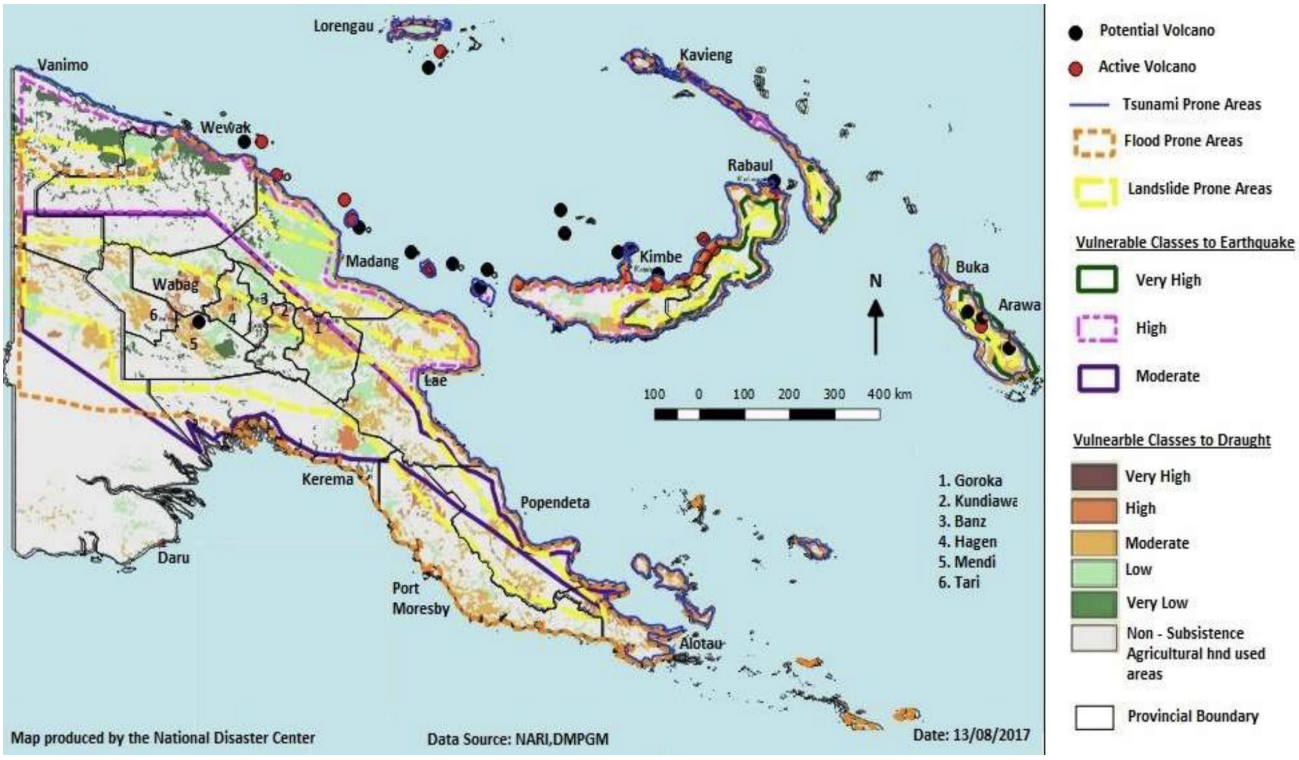


Figure 3: PNG Hazard Map

Earthquakes

PNG is among the top six countries in the Asia-Pacific region exposed to earthquake. PNG experiences frequent earthquakes due to its location on the complex fault systems of the "Pacific Ring of Fire." The exceptions to this generalized high risk are the National Capital District, Central Highlands, and the Western Province, all of which are classified as stable as they are located on the Australian Craton.[105] The last major seismic event occurred in 2018, when a 7.5-magnitude earthquake devastated remote communities in the Southern Highlands. Over half a million people were affected with almost 20,000 displaced. Many roads, bridges, homes, schools, and hospitals were destroyed. Entire villages were cut off and therefore did not receive humanitarian aid for days and weeks. Ongoing fighting between clans compounded the isolation. The conflicts resulted in the further displacement of people, loss of service resources, a decline in productivity and economic activity, and heightened tensions in the Highlands.[106]

Floods

PNG experiences coastal, river (fluvial), and surface (pluvial) flooding. PNG has one of the wettest climates in the world with rainfall in many areas of the country exceeding 2,500 mm (98 in), with the heaviest events occurring in the highlands. PNG experiences two monsoon seasons: the northwest monsoon (December to March) and the southwest monsoon (May to October). Although July to September are considered the drier months, precipitation takes places year-round in the range of 200-400 mm (7.8-15 in)/month. A 2018 UNDP study suggests that 18% of PNG's landmass is either permanently or regularly inundated.[107]

Epidemic

PNG has a history of domestic disease outbreaks, including the 2018 polio outbreak, the 2014 measles outbreak, the 2012-2013 chikungunya (a mosquito-borne virus) outbreak, and the 2009-2011 cholera outbreak.[108] PNG has been impacted by COVID-19 like much of the world, with 43,839 recorded cases as of 2 May 2022, and 348,938 people vaccinated, based on the PNG government's reporting.[109] Gross deficiencies in testing and reporting, including for severe acute respiratory infection (SARI) and influenza-like illness (ILI), point to significant undercounting of infections and deaths related to COVID-19 in PNG. Vaccination uptake is also among the lowest globally.[110]

Landslides

PNG is highly exposed to landslide risks due to its steep mountain ranges, high seismicity, and high annual rainfall.[111] Landslides and slope failures in PNG are associated with heavy precipitation and earthquakes, and they regularly occur in the Highlands and mountainous regions.[112]

Volcanic Eruptions

PNG ranks highest in the world in terms of population exposed to severe volcanic risk. There are 16 active volcanos in PNG, six of which are classified as high risk, and 56 volcanoes in total.[113] Five volcanoes in PNG erupted in 2021 and two others within the last decade.[114] Currently, the most active volcanoes include Bagana, Kadovar, Langila, Manam, and Ulawun. More than 1 million people —17% of the country's population—live within 30 km (18.6 mi) of an active volcano.[115] The most recent eruption was the Manam volcano in Madang province, on the northeast coast of mainland PNG. The most significant eruption of Manam was in March 2022. According to the Madang Provincial District Center's assessment, a total of 8,723 people (5,469 households) were affected. While no casualties or shelter damages were reported (just one household reported shelter damages), ash fall of about 3 centimeters (cm; 1 in) thick across the island affected the home gardens, cash crops (coconut, fruits), and water sources of all of the communities, as well as the sources of livelihoods of many on the island.[116]

Tropical Cyclones

Although tropical cyclones are not a frequent hazard risk for PNG, their impacts are intensifying with climate change. According to the World Bank, "modelling of climate change impacts on cyclone intensity and frequency conducted across the globe points to a general trend of reduced cyclone frequency but increased intensity and frequency of the most extreme events."[117] This analysis is supported for PNG by modeling conducted by the Australian government's aid program. The Australian Aid-funded study found that PNG had the largest exposure to average annual loss compared to other countries modeled (e.g., Fiji and Vanuatu) but due to its proximity to the equator, its tropical cyclone risk is reduced.[118] Bougainville has the highest exposure to the severe impacts of storms. The proximity of the northern parts of PNG to the equator reduces the risk of tropical cyclones. However, even cyclones passing a long way from PNG's land mass can have a significant impact, causing flooding and inundation of low-lying islands as a result of elevated water levels. The Australian Aid study covered 14 countries in the South Pacific and found that increases in losses are more pronounced for buildings than for infrastructure and crops. Wind is the main contributor to building loss, and flood is the main contributor to infrastructure loss.[119]

Tsunami

Given PNG's high exposure to earthquakes, tsunamis are a major hazard risk for the country, although only three major tsunamis have occurred in recent history with the last in 1998. On 17 July 1998, a magnitude 7 earthquake preceded a catastrophic tsunami, sweeping 14 km (8.7 mi) of coast with waves between 10 and 15 meters (3-4.5 feet [ft]). Two populous villages were destroyed, and two nearby villages were damaged. In all, 1,636 people lost their lives, and 10,500 people were displaced. The tsunami was probably caused by a submarine slump or landslide, explaining how an earthquake of moderate magnitude could generate a major tsunami. Prior to the event, the last major tsunami in PNG probably occurred in 1931.[120] The remains of probably the oldest-known tsunami victim in the world, the Aitape skull, was discovered in PNG in 1929, a discovery that speaks to the island's history of exposure to tsunamis.[121]

Droughts

Droughts occur frequently in PNG, often correlating with the El Niño Southern Oscillation (ENSO). In 2015-2016, ENSO-related drought affected about 40% of the population, with almost half a million people impacted by food shortages. With over 80% of the population reliant on subsistence farming, droughts have the potential to cause catastrophic damage by disrupting food security and reducing access to water. PNG is affected by two types of drought – meteorological (associated with a precipitation deficit) and hydrological (associated with a deficit in surface and subsurface water flow potentially originating in the region's wider river basins).[122]

Communal Violence

Broader access to modern weapons and increased urban migration have escalated and intensified low-scale inter-communal violence that has occurred for centuries. Rates of violence against women are among the highest in the world with sorcery accusation-related violence targeting women and girls significant in the Highlands and Momase regions.[123] Disputes over land and resource rights, and a culture of retribution are sources of conflict and communal violence.[124]

Mining-Related Disasters

PNG has a history of mining-related disasters. The most catastrophic occurred at the Ok Tedi Mining Ltd. (OTML), a subsidiary of BHP, an Australian-British publicly traded, multinational mining, metals, and petroleum company. From the mid-1980s to 2013 (when the GoPNG took ownership of the mine), it was estimated that the Ok Tedi mine dumped around 30 million tons of mine tailings (a fine sand of crushed

rock and metals) into the Ok Tedi tributary of the Fly River every year. This resulted in an ecological disaster. By the early 1990s, fish were dying, turtles disappearing, and canoes running aground midstream as sedimentation raised riverbeds. The overflow destroyed food gardens in downstream indigenous communities and killed thousands of trees.[125]

More recently, a Chinese nickel mine operator accidentally spilled an estimated 200,000 liters (52,834 gallons) of toxic slurry into Basamuk Bay in Madang province in August 2019. The plant operator is Ramu Nickel, which is owned by the Metallurgical Corporation of China (MCC). The Madang provincial government and 13 landowners have sought legal action against the plant operator.[126]

History of Natural Disasters

The following is a list of some of the major natural disasters that have occurred in PNG in recent years.

Manam Volcano Eruption – April 2022

Between 16 and 18 April, the Manam volcano, located on Manam Island, approximately 13 km (8 mi) off the northern coast of mainland PNG, erupted. The ash plumes reached an estimated height of 13.7 km (8.5 mi). No casualties were reported; however, the three communities of Baliau, Kuluguma, and Yassa (Manam Island) were covered by smoke, ash, and volcanic products, affecting a number of houses, food gardens, coconut palms, wells, and water catchment facilities. According to the Australia-based Darwin Volcanic Ash Advisory Centre (VAAC), a red aviation color code – signifying an imminent or on-going eruption with significant emission of ash into the air – was issued on 18 April.[127]

King Tides – December 2021

In early December 2021, parts of PNG experienced a surge in king tides that flooded communities and displaced approximately 53,000 people. King tides are the highest predicted tides of the year. In PNG, king tides are becoming higher and reaching farther inland as climate change causes sea levels to rise. Flooding caused by king tides in coastal and island communities in Bougainville, Manus Island, East Sepik, and the New Ireland provinces submerged schools, homes, gardens, water catchments, and cemeteries. Some homes were completely washed away.[128]

Landslide – March 2020

A landslide triggered by heavy rainfall occurred in Tambul-Nebilyer district (Western Highlands Province) on 21 March 2020; it caused fatalities and damage. According to media reports on 23 March, 10 people died, and two people were missing. At least 1,000 people were affected as houses and crops were destroyed.[129]

Ulawun Volcano Eruption – June 2019

On 26 June, the Ulawun volcano in East New Britain Province erupted and began emitting ash plumes up to 20,000 m (65,617 ft). About 12,000 people in West New Britain and 4,000 people in East New Britain provinces were affected by the eruption. About 6,800 people were evacuated to two care centers in West New Britain.[130]

Manam Volcano Eruption – December 2018

Manam volcano erupted on 8 December, ejecting an ash plume up to 13.7 km (8.5 mi) above sea level and forcing authorities to raise the red aviation color code. The eruption started at 13:00 (local time) and lasted until approximately 10:00 on 9 December. The eruption affected north-eastern part of Manam Island, with lava flow affecting Bokure (Bokuri) and Kolang (in north-east Manam).[131]

Earthquake - October 2018

A 7-magnitude earthquake struck the island of New Britain in PNG on 10 October 2018 at 7:00 (local time). It was followed by two aftershocks above magnitude 5 that triggered a preliminary tsunami warning that was subsequently cancelled. There were no reports of damage.[132]

Polio Outbreak – June 2018

In June 2018, PNG reported its first polio outbreak in 18 years in Morobe province. On 29 June the government declared the outbreak a National Public Health Emergency. The virus was first detected in a child in April 2018, and a vaccine-derived poliovirus type 1 (VDPV1) was isolated as the cause of paralysis. According to the WHO, the version of the virus that circulated is a "vaccine-derived poliovirus," meaning it is a mutated version of the weakened polio virus used in vaccinations. Vaccine-derived polioviruses are rare and tend to occur in populations with very low vaccination rates. They develop when children who have not been vaccinated come into contact with the excrement of vaccinated children and are exposed to the weakened virus. PNG launched an outbreak response campaign in July 2018 in Morobe and Eastern Highland provinces, and intensified surveillance measures were implemented in six provinces and the National Capital District (NCD).[133]

Earthquake - February 2018

On 26 February 2018, a 7.5-magnitude earthquake struck the Southern Highlands of PNG; it was followed by hundreds of aftershocks including a 6.7-magnitude earthquake that affected over 544,000 people in Hela, Southern and Western Highlands, and Enga provinces. An estimated 54,000 homes were damaged and 18,200 people were forced to seek shelter in informal care centers or with host families. The GoPNG declared a state of emergency on 1 March and welcomed international aid in the areas of Education, Food Security, Health, Nutrition, Protection, Logistics Coordination, Shelter, and Life-Supporting and Early Recovery efforts estimated at US$62 million.[134]

Many organizations came together to assist. The United States Agency for International Development (USAID) Bureau for Humanitarian Assistance (BHA) provided US$100,000 in relief supplies and water, sanitation, and hygiene (WASH) assistance.[135] Additionally, the UN established an information line alerting lifesaving messages over mobile phones to the community. To reduce the risk of disease and outbreak following the event, the UN initiated a mass vaccination campaign, which distributed vaccines of different antigens, new-born care survival kids, health kits, solar disk drive refrigerators, and reproductive health kits to the affected provinces' health care facilities and safe spaces for women and children. The UN also established Safe Temporary Learning Spaces (STLS) for children to continue their learning since the earthquakes damaged schools and infrastructure. Paraphernalia was provided including tents and "school in a box" and recreation kits.[136]

Volcano Eruption – January 2018

The entire population (591 people) of Kandovar Island, comprised of five community groups including the villages of Manot, Taragauo, Dong Sarakbano, Niukatnam, and Rumgio, with a total of 145 families were evacuated and relocated to Brup Brup Island when the Kadovar Island volcano became active. The mild volcanic activity on the southeast side of the island covered 50-60% of the island in lava. The Prime Minister's Office provided initial provisions of food and water for the evacuees who were later resettled to the mainland for up to three years. The NDC developed a 4 million Papua New Guinea kina (PGK; US$1.21 million) response plan to meet the assessed needs of the Kadovar islanders at Dandan Care Centre for up to six months.[137]

Landslide – November 2016

A massive landslide completely covered two villages in the Southern Highlands of PNG while people slept; it killed at least 40 people. Out of all the villagers, reportedly only three or four people were able to escape due to the remote location of the landslide and lack of aid available to perform rescue. Heavy rain to the area as well as a possible blast at a nearby quarry are thought to have contributed to the landslide.[138]

Country Risks Profile

Risk calculation takes into account exposure to hazards, vulnerability, and institutional coping capacity, all of which are important factors in DRM. The Index for Risk Management (INFORM) Risk Index measures the risk of humanitarian crisis and disasters in 191 countries. The Index supports a proactive crisis management framework. It is helpful for establishing an objective allocation of resources for disaster management as well as for coordinating actions focused on anticipating, mitigating, and preparing for humanitarian emergencies.

The INFORM Risk Index model is based on risk concepts published in scientific literature with three dimensions of risk: Hazards and Exposure, Vulnerability, and Lack of Coping Capacity. The first dimension measures the natural and human hazards that pose the risk. The second and third dimensions cover population factors that can mitigate against or exacerbate the risk. The vulnerability dimension considers the strength of individuals and households relative to a crisis while the lack of coping capacity dimension considers factors of institutional strength.[139]

The INFORM Risk Index model is split into different levels to provide a quick overview of the underlying factors leading to humanitarian risk. INFORM gives each country a risk score of 1-10 (1 being the lowest risk and 10 the highest risk) for each of the dimensions, categories, and components of risk, as well as an overall risk score.[140] The higher the score the more at risk a country is to disasters.

In the 2022 INFORM Risk Index, PNG had an overall risk of 5.9/10, which INFORM categorizes as "high" risk, ranking PNG 22nd most at-risk out of 191 countries. The Hazards and Exposure dimension score takes into account a combination of both natural and human hazards, and PNG rated 5.2/10. The Vulnerability dimension score was 5.3/10, and the Lack of Coping Capacity dimension score was 7.4/10. Physical exposure to earthquakes, 9.7/10, was the highest risk in the Hazards and Exposure dimension, with development and deprivation measuring at 8.1/10 for the vulnerability dimension. Physical infrastructure was rated 9.8/10 in the Lack of Coping Capacity dimension.[141] Figure 4 shows the breakdown of the INFORM Risk Index scores for PNG.



Figure 4: 2022 INFORM Risk Profile for PNG

ORGANIZATIONAL STRUCTURE FOR DISASTER MANAGEMENT

PNG's disaster management framework is set out in the Disaster Management Act (DM Act) 1984 (revised 1987).[142] The DM Act establishes the key institutional bodies for DRM including the National Disaster Committee, Provincial Disaster Committees, and the National Disaster Centre (NDC). The NDC is the lead agency responsible for DRM and disaster response in PNG. According to the DM Act, in the event of a disaster, the NDC as the executive of the National Disaster Committee is responsible for advising the National Executive Council (NEC), i.e., the Cabinet,[143] on declarations of emergency and international relief requirements.[144] However, in practice the GoPNG has utilized a separate mechanism during disasters, appointing an Emergency Controller to lead a disaster response pursuant to the emergency powers provisions of the Constitution.[145] In recent years, an Emergency Controller was appointed to lead the 2018 Highlands earthquake response and a Controller was appointed to lead the country's response to COVID-19.[146]

At the time of its creation, the NDC was under the Prime Minister's Office. In 1987, the DM Act was amended to add the Minister of Inter-Government Relations to the National Disaster Committee and to place the NDC under the Department of Inter-Governmental Relations.[147] In August 2020, the GoPNG announced the transfer of the NDC to the portfolio of the Minister of Defence, alongside the PNG Fire Service (PNGFS) and National Volunteer Service (NVS).[148] The NDC is currently in the process of being elevated from an office to an independent authority, giving it a greater role and more resources within the defense portfolio. The Director of the NDC will become an executive position and the NDC's staffing level will expand from 10 to about 60 personnel. The organizational transformation of the NDC will be through an administrative act of the Department of National Planning and Monitoring, with approval from the NEC. The transformation will likely be reflected in future amendments to the DM Act.[149]

The PNGDF provides assistance to civil disasters pursuant to the Constitution.[150] The NEC may require the PNGDF or a part of the PNGDF to assist as Emergency Controller during a National Emergency.[151] In the past, the PNGDF provided additional staffing when required by the NDC.[152] During the December 2021 response to king tides which affected the provinces of East New Britain, Manus, and New Ireland, the PNGDF provided patrol boats to enable humanitarian assistance to reach communities. The PNGDF also provides security support, enabling humanitarian responders, including UN agencies, to operate in insecure environments in PNG.[153]

Additionally, the UN Resident Coordinator and the NDC Director co-chair the DMT. The DMT is a strategic body responsible for coordinating international humanitarian support to national disaster preparedness, response, and recovery. The team includes representatives from the UN (cluster lead agencies), NGOs and faith-based organizations, and the PNG Red Cross. The team's overall goal is to ensure that inter-agency humanitarian action alleviates human suffering and protects the lives, livelihoods, and dignity of people in need.[154]

The DMT Secretariat is leading a review of the DM Act. Regional consultations completed so far have identified gaps to be addressed in a future amendment including codifying the NDC as a national disaster authority, clarifying reporting lines between the NDC and other disaster-relevant entities, outlining a process for the engagement of the PNGDF in disaster relief, as well as a process for coordinating international assistance. A revised draft amendment is planned for the end of 2022.[155]

Lead Government Agencies in Disaster Response

At the national level, the National Disaster Committee and its executive the NDC are the lead government agencies in disaster response pursuant to the DM Act. Nevertheless, the GoPNG has in past disasters appointed an Emergency Controller to oversee an Emergency Operation Center (EOC) and to lead disaster response efforts pursuant to the emergency powers provisions of the Constitution.[156] The Emergency Controller and EOC mechanisms are separate to the NDC and have in some cases worked in parallel from the NDC. For example, in or around January 2020, an Emergency Controller was appointed to lead the COVID-19 response. Since the GoPNG viewed the disease as both a health crisis and security crisis, the Commissioner of the Police was appointed as the Controller and the Secretary of Health as Deputy Controller. The mechanism left out the NDC, which has a mandate to respond to pandemics under the DM Act.[157]

At the provincial level, each province has at least a provincial disaster coordinator or an established provincial disaster center (PDC). For example, Madang province has an active PDC, which is responsive to the many hazards faced in the province including earthquake, tsunami, volcanic eruptions, and floods hazards.[158] At the district and local-level government (LLG) levels, if there is a mechanism dedicated to DRM and disaster response it is likely a single person who is also charged with other administrative responsibilities. The NDC has no administrative authority over or connection with sub-national (provincial, district, LLG) disaster management committees or disaster offices. Up to 2018, the NDC held annual conferences to bring sub-national disaster coordinators together for networking, but have not done so since that time. The UNDP Humanitarian Advisory Team (HAT), a project wholly funded by Australia's DFAT, is hoping to reinstate the annual events.[159] Figure 5 demonstrates an ideal national disaster management structure for PNG.[160]

National Executive Council

The NEC makes final decisions for any disaster policy matters. The NEC is guided

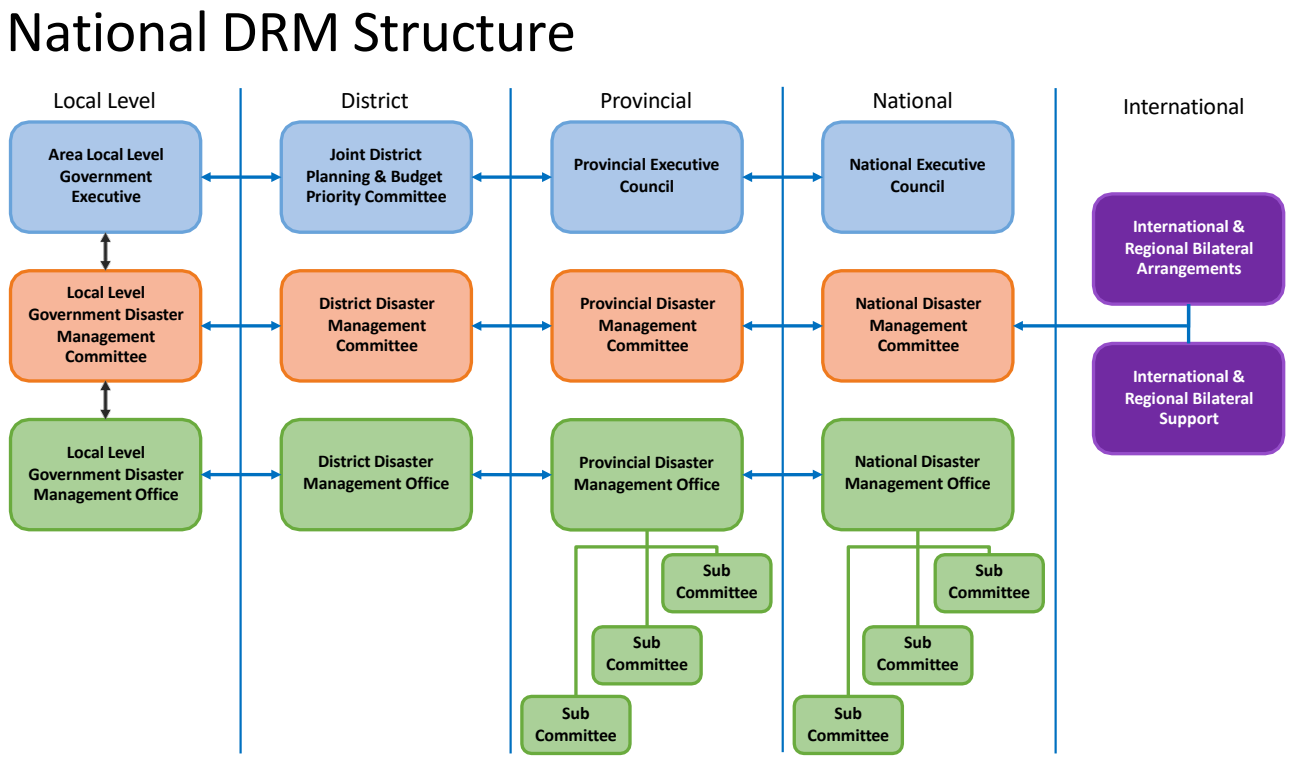


Figure 5: PNG National Disaster Management Structure

by the National Disaster Committee, which is comprised of heads of key national government agencies who are vested with additional responsibility for disaster management pursuant to the DM Act.[161]

National Disaster Committee

The National Disaster Committee is comprised of the Secretary to the Department of the Prime Minister and NEC, Commander of the Defence Force, Commissioner of Police, and heads of various government departments including Defence, Police, Finance, Works, Health, Foreign Affairs, and Provincial and Local Governments. The Committee is obligated to meet twice annually.[162] The Secretary of Defence has chaired the Committee since it was transferred to the defense portfolio in late 2020.

The DM Act enables the Committee to co-opt additional members as needed and anyone or any organization can be a co-opted member. There are no standard or established co-opted members; and individuals or organizations may be co-opted based on the needs of a particular disaster.

The Committee's responsibilities as stipulated in the DM Act are to:

- Supervise the national state of preparedness for emergencies and disasters and report on it to the NEC;
- Maintain the National Emergency Plan;
- Assign responsibilities for disaster-related activities to departments and other bodies;
- Advise the NEC if assistance is required;
- Lay down guidelines for the preparation and format of provincial disaster plans;
- Approve grants;
- Foster public awareness of the effects of natural hazards and measures which can be taken to reduce disaster effects;
- Supervise establishment of stockpiles of relief supplies; and
- Advise the NEC of all the circumstances and on the advisability of declaring a National Emergency.[163]

National Disaster Centre

The NDC is the executive body of the National Disaster Committee and is responsible for carrying out its day-to-day activities. There are two divisions at the NDC – Risk Management (RM) and Community Government Liaison (CGL). The RM Division deals with proactive matters through research, analysis, awareness raising, education, and training, and the CGL Division handles rapid response and operations. Currently two Assistant Directors head the respective divisions and report to the Director. The NEC appoints the Director.[164] The NDC has about ten staff at its highest level.

The NDC has the following mandate:

- To supervise the national state of preparedness for emergencies and disasters and to report on it to the NEC;
- To maintain the National Disaster Management Plan of the NEC;
- To assign responsibilities for disaster-related activities to departments and other bodies;
- To coordinate departmental relief actions and collate national relief requirements;
- To advise the NEC if appeal for international assistance is required;
- To lay down guidelines for the preparation and format of provincial disaster plans;
- To examine and, where necessary, approve all grants from national funds for emergency relief;
- To foster public awareness of the effects of natural hazards and measures which can be taken to reduce disaster effects;
- To supervise the establishment of stockpiles of relief supplies; and
- In the case of disaster, to advise the NEC of all the circumstances and on the advisability of declaring a National Emergency.[165]

In late 2020, the NDC was transferred to the portfolio of the Minister of Defence, alongside the PNGFS and NVS. The NDC retained both its Assistant Directors in the transition, but experienced staffing changes below the senior management level. The NDC is in the process of becoming a full government department via

an administrative action by the Department of Planning and Monitoring, with approval from the NEC. The transformation of the NDC into a full government department will give the NDC more resources and staffing (from 10 to 60 personnel) to fulfill its mandate.[166]

Provincial Disaster Coordinators/Committees

The DM Act provides for the creation of Provincial Disaster Committees and their executive Provincial Disaster Centers (PDC). Most provinces have at least a disaster coordinator and others have established PDCs.

The membership of the Provincial Disaster Committees mirrors that of the National Disaster Committee and includes the Head of the Provincial Administration (Governor) as Chairman, the Provincial Police Commander, the Provincial Works Manager (or City Engineer), the Provincial Health Officer, the Officer-In-Charge of Provincial Affairs, the Officer-In-Charge of Delegated Functions, and the provincial Disaster Coordinator.[167]

The roles and functions of the Provincial Disaster Committees include:

- To provide and render advice to the Provincial Executive Council (PEC) through the Governor to ensure that development plans for the province take into account hazards to which the province is prone;
- To make assessments on particular hazards common in the province;
- To prepare contingency plans for respective hazards and supervise the state of preparedness for emergencies in the province;
- To foster public awareness on natural phenomena and mitigation measures; and
- To organize training of relief workers in the province.[168]

Figure 6 is a map of PNG with provinces numbered to illustrate where provincial disaster coordinators or PDCs are located.[169]

District and Local Disaster Centres

Most districts and almost all LLGs have not established disaster centers or formally designated someone as a disaster coordinator. Where they do exist, the person designated usually has other designated duties.[170]

PNG Fire Service

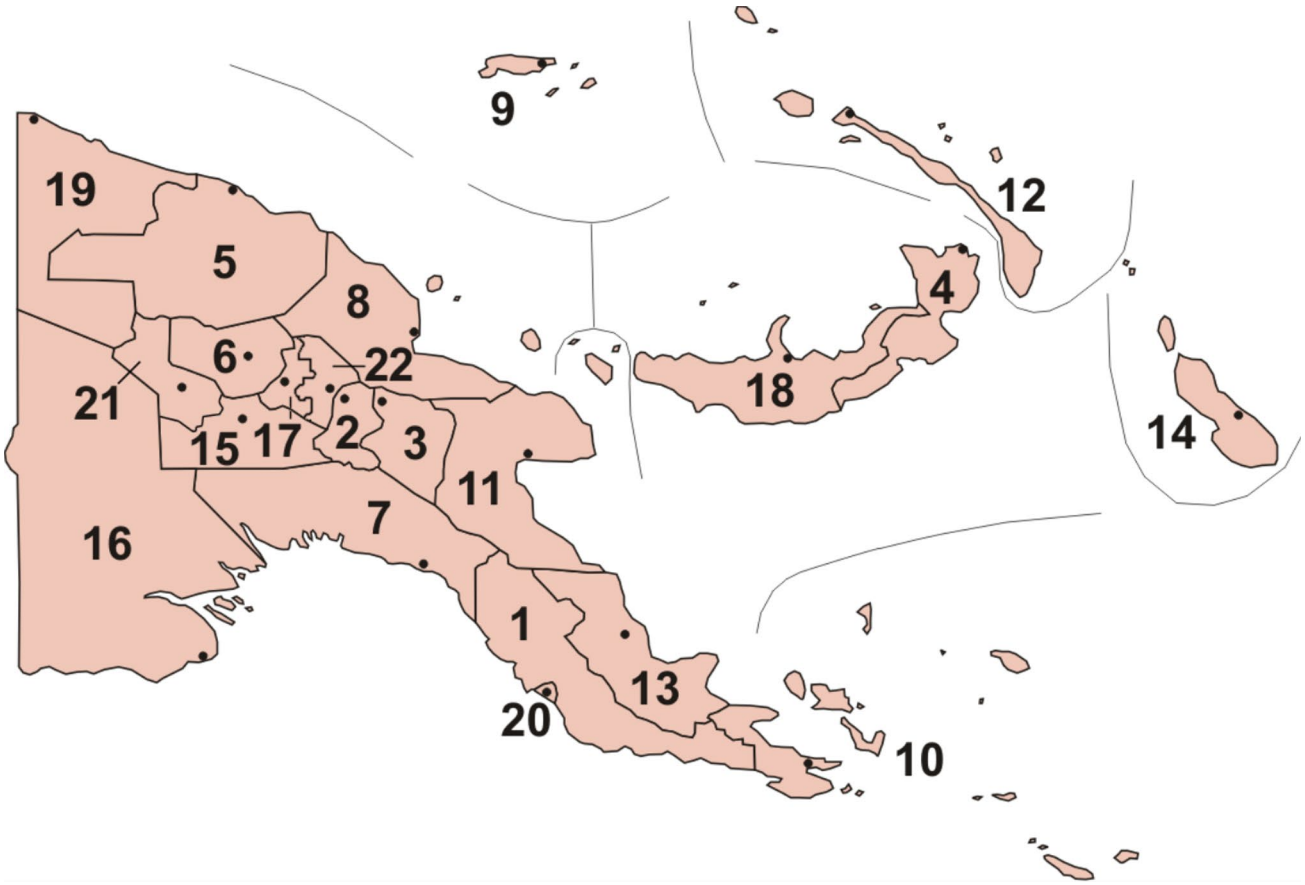
The PNG Fire Service (PNGFS) was transferred under the authority of the Minister of Defence in late 2020, alongside the NDC and NVS.[171] There are a total of 14 fire stations throughout the country, and the national headquarters is situated in Port Moresby. Fire service operation is located in Port Moresby – Waigani, Port Moresby – Gerehu, Port Moresby – Boroko, Port Moresby – Town, Kokopo, Kavieng, Mt. Hagen, Lae, Wewak, Madang, Goroka, Kimbe, Popondetta, and Alotau.[172]

National Volunteer Service

The National Volunteer Service (NVS) of PNG is a statutory body of the government established through an Act of Parliament in 1990. The volunteers were dispatched in 1993 for the first time.[173] The NVS was transitioned to the authority of the Minister of Defence in late 2020, alongside the NDS and PNGSF.[174]

Disaster Relief and Emergency Response

According to the DM Act, the National Disaster Committee is responsible for advising the NEC on the declaration of a national emergency on the advice of the NDC. The NDC has stated, "As a rule of thumb the term disaster applies when the respective disaster management authority at the ward, district, local, provincial or national level has to go beyond its political and/or administrative jurisdiction to seek assistance when responding to disaster events."[175] During past disasters in PNG, an Emergency Controller has been appointed by the NEC pursuant to the emergency powers provisions under the Constitution to lead the disaster response. This has caused some confusion about the roles and responsibilities of the NDC and the Emergency Controller during a disaster response.[176] For



1. Central Province
2. Chimbu Province
3. Eastern Highlands Province
4. East New Britain Province
5. East Sepik Province
6. Enga Province
7. Gulf
8. Madang Province
9. Manus Province
10. Milne Bay Province
11. Morobe Province
12. New Ireland Province
13. Northern Province
14. Autonomous Region of Bouganville
15. Southern Highlands Province
16. Western Province
17. Western Highlands Province
18. West New Britain Province
19. West Sepik
20. Hela Province
21. Jiwaka Province

Figure 6: Map of Provinces in PNG with Provincial Disaster Coordinators/Committees

example, the 2018 Emergency Law that was passed to establish the Emergency Controller for the Highlands Earthquake made no mention of or connection with the NDC and created a parallel coordination mechanism. It became a source of confusion for international partners trying to contribute resources to the response effort.[177] The elevation of the NDC to an independent authority may help to clarify the NDC's lead role in future disaster response.

For crises and emergencies, the DMT, which is co-chaired by the NDC Director and the UN Resident Coordinator, is the forum for strategically coordinating international assistance to support the GoPNG. Notably, the coordination of international assistance during a disaster is not covered in the DM Act, and this has been identified as a legislative gap to be addressed in future reforms.[178]

In addition to receiving international disaster relief assistance, PNG is an assisting state and has provided disaster relief as recently as January 2022 to Tonga following an undersea volcanic eruption on 15 January. Two phases of assistance were provided – the first delivered by the PNGDF in coordination with the NDC, and the second phase by the Ministry of Foreign Affairs. In January 2020, PNG sent military personnel to assist the Australian emergency bushfire response. The PNGDF deployed 80 military engineers, as well as command and liaison elements to work alongside Australian

Defence Force (ADF) elements as part of a joint task force.[179] Photo 1 shows PNGDF personnel from the Engineer Battalion arriving in Port Moresby prior to deploying to Australia to assist ADF forces in the Australian state of Victoria in support of Operation Bushfire Assist.[180]



Photo 1: PNGDF Deploy to Australia to Aid in Operation Bushfire Assist, January 2020

Armed Forces Role in Disaster Relief

The PNGDF has land, air, and maritime elements and an estimated force strength of 7,000 personnel.[181] PNG's 2013 Defence White Paper sets a force strength target of 10,000 by 2030.[182] Disaster relief is one of the six core services of the PNGDF, alongside border security; maritime surveillance, patrol, and response; public order and security; nation building; and fulfillment of international obligations.[183]

The PNG Defence Organization refers to the combined defense institutions of the Defence Ministry, the PNGDF, and the Department of Defence. The political head of the Defence Organization is the Minister of Defence, who chairs the Defence Council. The Department of Defence provides financial, policy, and administrative support to the PNGDF. The PNGDF is responsible for defense operations.[184] Figure 7 depicts the Defence Council

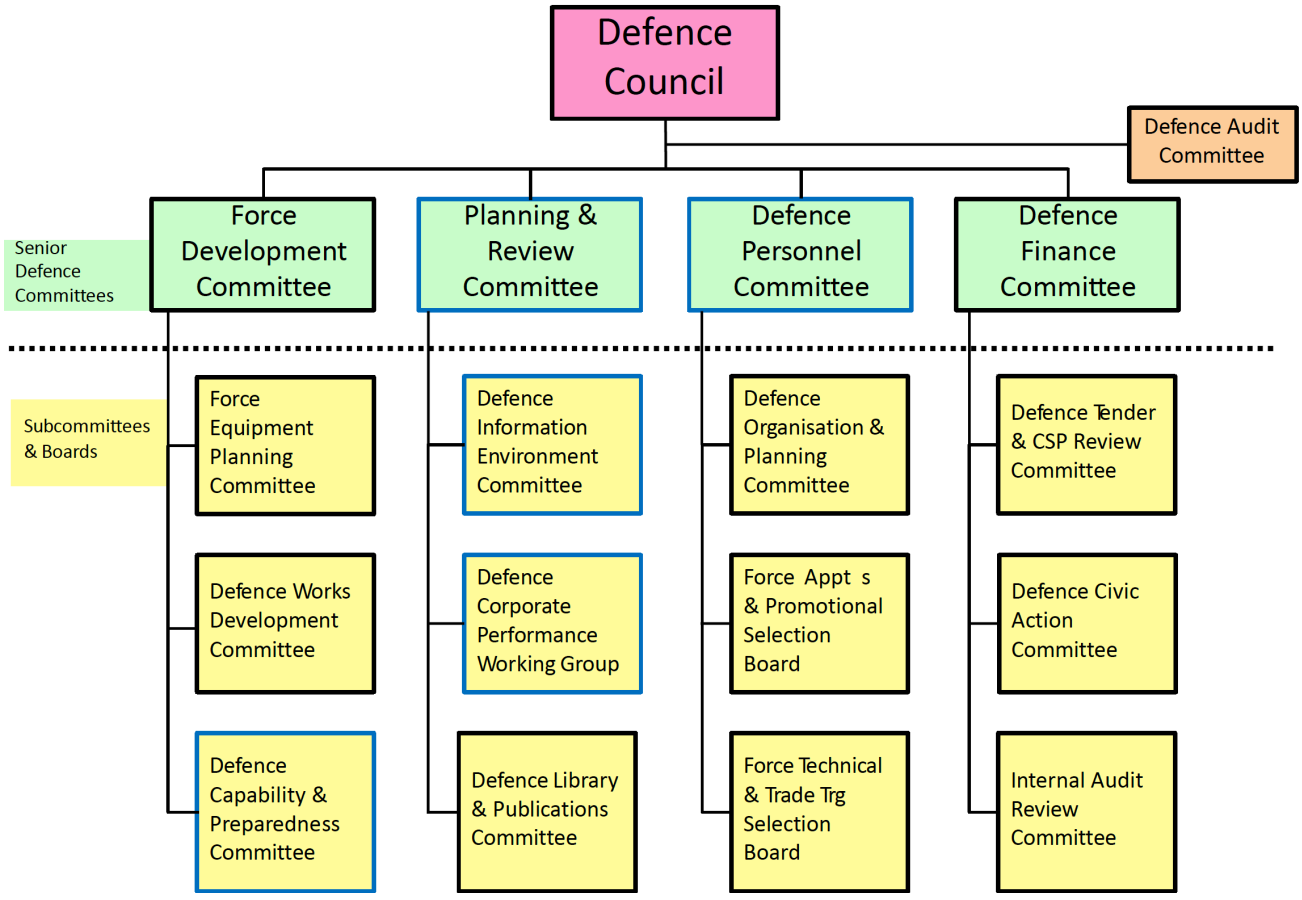


Figure 7: Defence Council Organizational Structure

organizational structure.[185]

The Commander of the Defence Force is a member of the National Disaster Committee. The PNGDF is a first responder during civil emergencies and disaster relief pursuant to the Constitution.[186] As stated earlier, the PNGDF plays a significant role in disaster response. The NEC may require the Defence Force or a part of the Defence Force to assist as Emergency Controller during a National Emergency.[187] The PNGDF played a key role in providing relief during the response to the February 2018 earthquake response. Members of the PNGDF were mobilized to assist with the delivery of supplies, as well as the restoration of services and infrastructure.[188] Recently, during the December 2021 response to king tides that affected three provinces, the PNGDF provided patrol boats to assist UN agencies such as IOM in delivering relief supplies to Manus Island.[189] The PNGDF also provides security to humanitarian responders, enabling responders to operate in insecure environments across the country.[190]

U.S. and PNG Defense Cooperation

The State Partnership Program between PNG and the Wisconsin National Guard began in 2020. In February 2022, the first in-person exchange took place when three military leaders from the PNGDF travelled to Wisconsin to meet with leaders of the 115th Fighter Wing, the Wisconsin Army National Guard's Combined Support Maintenance Shop, the 1st Battalion, 147th Aviation, the 426th Regional Training Institute, the 32nd Infantry Brigade Combat Team, and Wisconsin's Joint Force Headquarters. The partners also collaborated via several virtual exchanges between 2020 and 2022.[191]

The U.S. is seeking to increase security cooperation with PNG. A U.S. delegation travelled to Port Moresby to meet with Prime Minister James Marape and PNG defense chiefs in April 2022. Further security discussion is planned in 2022.[192]

Disaster Management Partners

Disaster Management Team

The Disaster Management Team (DMT) is a strategic body co-chaired by the UN Resident Coordinator and the NDC Director to coordinate international humanitarian support to national disaster preparedness, response, and recovery. The team includes representatives from the UN (cluster lead agencies), NGOs and churches, and the International Red Cross and Red Crescent Movement. The team's overall goal is to ensure that inter-agency humanitarian action alleviates human suffering and protects the lives, livelihoods, and dignity of people in need. Figure 8 illustrates the organizational structure of the DMT.[193]

The Humanitarian Advisory Team (HAT), a UNDP project wholly funded by the Australian Department of Foreign Affairs and Trade (DFAT), provides secretarial support to the DMT. Since the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) departed PNG in June 2015, UNDP's disaster risk management project filled the role of coordinating international humanitarian assistance in PNG through the DMT, which had been previously established as a Humanitarian Country Team when OCHA was present in the country. UNDP's DRM project ended in June 2019, but HAT remained with continuing funding from DFAT through the UN One Fund. In 2020, HAT became a stand-alone project.[194]

The DMT monitors for emergencies and crises that frequently affect the country and it maintains contingency plans for sudden-and slow-onset natural hazards, conflict-related displacement, and refugee emergencies. When international assistance is requested for emergency response, it develops and manages a joint response plan for mobilizing international resources. It also serves to collectively advocate for the prioritization of the humanitarian needs of the most vulnerable and marginalized persons affected by emergencies or crises. It oversees the Inter-Cluster Coordination Group as illustrated in Figure 9.[195]

Disaster Management Team

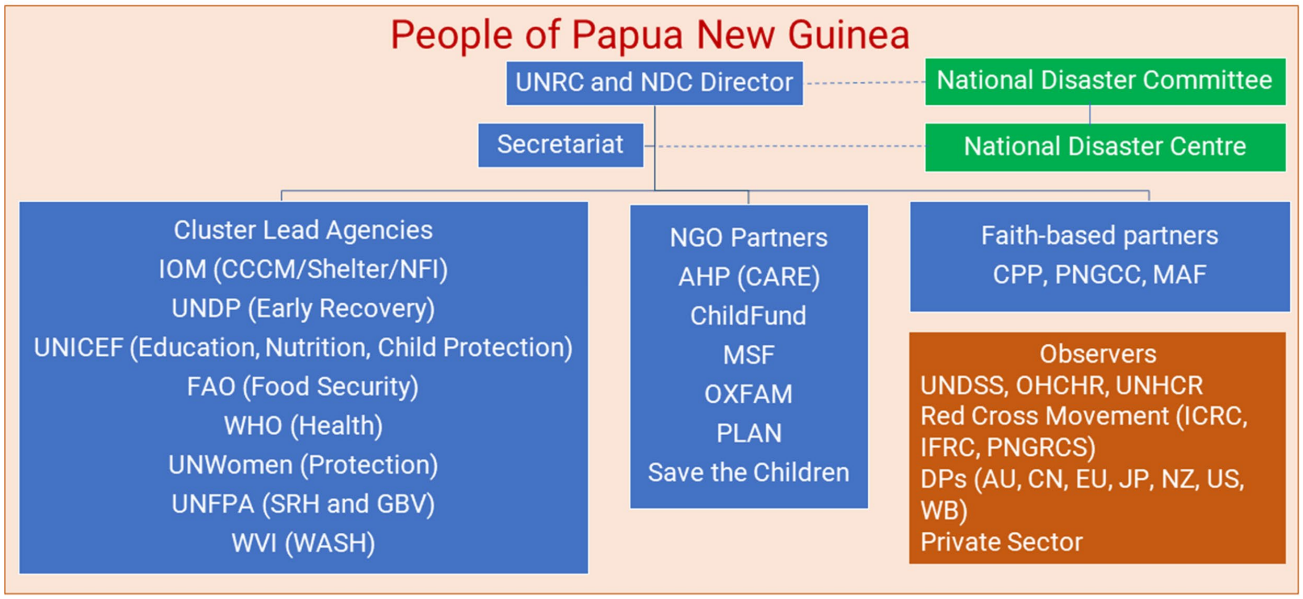


Figure 8: Disaster Management Team Organizational Structure

DMT Inter-Cluster Coordination Group

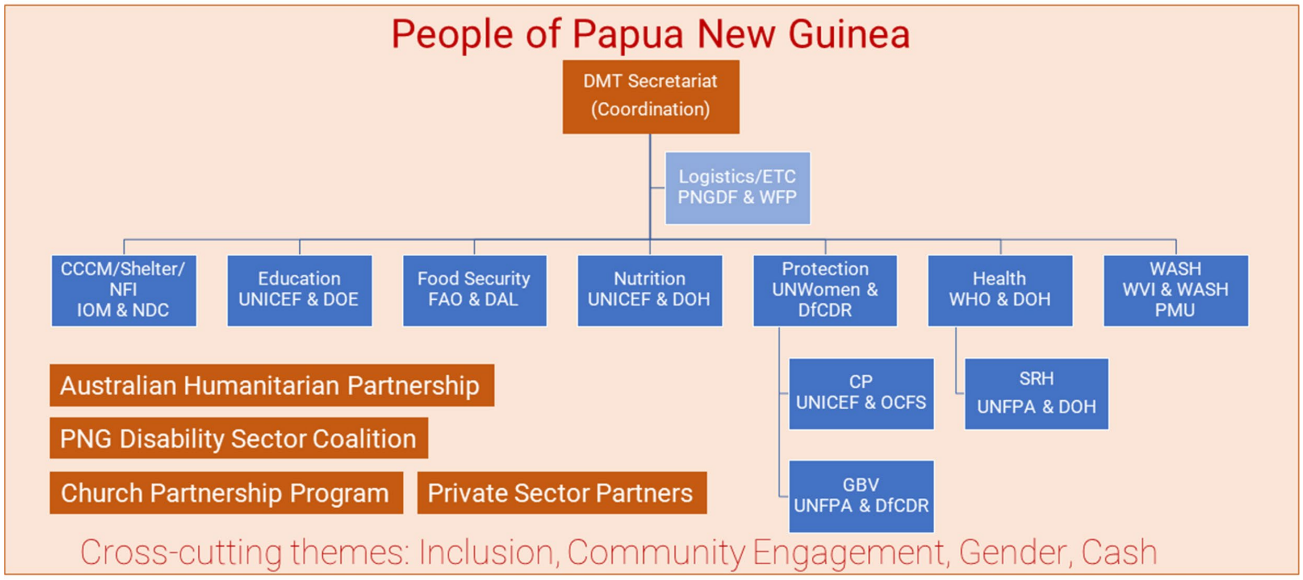


Figure 9: Inter-Cluster Coordination Group

The Inter-Cluster Coordination Group is the operational arm of the Disaster Management Team comprising cluster coordinators who work with Government, NGO, faith-based and private-sector partners to deliver specific assistance in support of the nationally led response. When they are not responding to a disaster, the clusters focus on preparedness activities. The clusters should be considering community engagement, gender, and early recovery in their activities.[196]

The operational capacity of the clusters varies and is dependent on myriad factors, including the capacities of the cluster lead agency and the government lead to dedicate focal points and resources, as well as the engagement of its member organizations. The relevant government line agencies need to be proactive in ensuring that relevant support is provided for each cluster to function effectively.[197]

The International Red Cross and Red Crescent Movement

International Committee of the Red Cross

The International Committee of the Red Cross (ICRC) is a private, independent humanitarian organization, headquartered in Geneva, Switzerland. The ICRC bases its activities on the provisions of International Humanitarian Law, and it is neutral in politics, religion, and ideology. The ICRC assists with the protection of civilian victims of armed conflict and internal strife and their direct results. Within these roles, it may take any humanitarian initiative as a neutral and independent intermediary.[198]

International Federation of Red Cross and Red Crescent Societies

The International Federation of Red Cross and Red Crescent Societies (IFRC) is a humanitarian organization that provides assistance and promotes humanitarian activities carried out by the National Societies, with a view to preventing and alleviating human suffering. IFRC was founded in 1919 and includes 192 National Societies. The IFRC carries out relief operations to assist victims of disasters and combines this with development work to strengthen the capacities of its member National Societies.[199]

Papua New Guinea Red Cross Society

The Papua New Guinea Red Cross Society was established by an Act of Parliament in 1976 as an auxiliary to the government. Today, the Red Cross Society has over 1,000 active members and volunteers in 14 provinces in PNG (as shown in Table 2).[200]

U.S. Government Agencies in Papua New Guinea

U.S. Embassy to Papua New Guinea, Solomon Islands, and Vanuatu

The U.S. Embassy in PNG is also responsible for the Solomon Islands and Vanuatu. Mr. Joe Zadrozny is the Chargé d'Affaires, a.i., since 14 April 2022.[201] A Mission Disaster Relief Officer (MDRO) and an Assistant MDRO are present and act as the focal point at the Embassy for disaster-related information, planning, and activities affecting the host country.

1. National Headquarters based in Port Moresby	8. Western Highlands Branch
2. NCD/Central branch	9. Eastern Highlands Branch
3. Milne Bay Branch	10. West New Britain Branch
4. Oro Branch	11. Eastern New Britain Branch
5. Morobe Branch	12. Bougainville Branch
6. Madang Branch Neutral Independent	13. New Ireland Branch
7. Sandaun Interim Branch	14. Manus Branch

Table 2: PNG Red Cross Society Provincial Offices

The U.S. Embassy office in Port Moresby is listed below with contact information:

U.S. Embassy in Papua New Guinea
Street address: Douglas Street Port Moresby, N.C.D, Papua New Guinea
Phone: +675-308-2100
Website: *https://pg.usembassy.gov/*

United States Agency for International Development (USAID)

USAID is the U.S. Government (USG) lead for international humanitarian assistance. USAID's disaster declaration criteria (updated 12 May 2022) is as follows:

- Evidence of significant unmet humanitarian needs;
- US Government humanitarian assistance will save lives, reduce human suffering and mitigate the impact of humanitarian emergencies on the most vulnerable;
- Host country requests or will accept international assistance;
- Responding aligns with USG interests and humanitarian objectives.[202]

USAID's work in PNG is supported by the USAID Mission in Fiji.[203] USAID's contact information includes:

Mission
Ryan Washburn, Mission Director
Betty Chung , Deputy Mission Director
Street address: 158 Princess Road, Suva, Fiji
Phone: +679-331-4466
Email: *infopacificislands@usaid.gov*

Headquarters
Sarah Mentrup, Ebony Tran, Priyanka Divecha
Desk Officers
Street address: 1300 Pennsylvania Avenue, NW
Washington, DC, USA 20523
Phone: +1 202--712-4487
Email: *smentrup@usaid.gov*; *etran@usaid.gov; pdivecha@usaid.gov*

Laws, Policies, and Plans on Disaster Management

Disaster Management Act (1984, revised 1987)

The Disaster Management (DM) Act enacted in 1984, and revised in 1987, sets out the main statutory framework for disaster management in PNG. The DM Act establishes the National Disaster Committee as the apex body to supervise the national state of preparedness for emergencies and to report on it to the NEC. The executive body of the Committee is the National Disaster Centre (NDC). The DM Act also establishes Provincial Disaster Committees with the responsibility to conduct province-specific hazard assessments, liaise and cooperate with the Provincial Executive Council in ensuring that development plans for the province take into account the hazards it is facing, prepare emergency plans for the province in accordance with guidelines laid down by the National Disaster Committee, and supervise the state of preparedness for emergencies in the province, among other tasks.[204]

The DM Act is widely characterized as in need of revision. Since September 2021, UNDP's HAT has supported consultation workshops with stakeholders to identify areas for reform. DRM gaps highlighted during consultations include the lack of dedicated funding or mechanisms to easily access funding in emergencies, and the lack of clear coordination mechanisms under the current legal framework. The existing DM Act also does not address coordination of international assistance nor does it provide mechanisms for disaster victims who are exploited or become targets for criminal activities.[205]

National Pandemic Act 2020

The National Pandemic Act (NPA) was enacted on 16 June 2020 for the purpose of responding to "a pandemic, pestilence, or a Public Health Emergency" and to enable a response.[206] The statute clarifies it is not an emergency law for the purpose of the Emergency

Powers (Part X) of the Constitution. The NPA establishes the National Control Center, as an ad-hoc body operating for a declared period. The NCC consists of a Controller, a Deputy Controller, and other persons approved by the Controller to provide operational, administrative, and ancillary support. The Controller is responsible for managing the NCC, the national response, monitoring the delivery of the national response, among other tasks.[207] Although the NPA was passed by PNG's Parliament to respond to COVID-19 in the country, the NPA does not explicitly mention COVID-19, which suggests the law will remain on the books as a stand-alone legislation for handling future pandemics, pestilence, or a Public Health Emergency.

For the COVID-19 response, the Commissioner of Police David Manning is carrying out the role of Controller.[208] The Deputy Controller, Daoni Esorom, is a medical health professional. [209]

National Disaster Risk Reduction Framework 2017-2030

The National Disaster Risk Reduction Framework 2017-2030 (NDRRF) is the most up-to-date DRM plan. The NDRRF was produced as a joint initiative between the NDC and UNDP to ensure that immediate and long-term disaster risk management challenges are addressed and planned action is aligned with the Sendai Framework for Disaster Risk Reduction 2015-2030. The NDRRF outlines four priority areas: 1) understanding disaster risk, 2) strengthening disaster risk governance to manage disaster risk, 3) investing in disaster risk reduction for resilience, 4) enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation, and reconstruction.

The NDRRF also sets the following seven targets to be achieved by 2030:

- lower average mortality rate per 100,000 between 2020-2030, compared to 2005-2015;
- lower the average number of people affected by disasters per 100,000 between 2020-2030, compared to 2005-2015;
- reduce direct disaster economic loss in relation to GDP by 2030;
- reduce disaster damage to critical infrastructure and disruption of basic services between 2020-2030, compared to 2005-2015;
- increase the number of provincial and local disaster risk reduction strategies;
- enhance international cooperation; and
- increase the availability of and access to multi-hazard early warning systems.[210]

National Disaster Mitigation Policy 2010

A National Disaster Mitigation Policy was released in 2010 that proposed the establishment of a National Environment and Disaster Mitigation Authority. Under the proposal the existing NDC would be absorbed under the Authority, whose responsibilities will also encompass the disaster management responsibilities, including environment and disaster mitigation throughout PNG. The main roles and functions of the proposed Authority would be: 1) to implement the National Environment and Disaster Mitigation Program; 2) to formulate, implement, monitor, evaluate, and manage mitigation programs and policies; 3) To secure funding and manage financial activities.[211] The implementation status of the policy is not known.

Community Based Disaster Risk Management (CBDRM) Plans, Provincial Disaster Risk Management Strategic Plans, and Standard Operating Procedures (SOPs)

International partners, including the UN's International Organization for Migration (IOM), Save the Children, Oxfam, and others are engaged in DRM planning at the provincial and local levels. IOM is supporting the NDC to develop Community Based Disaster Risk Management (CBDRM) plans, Provincial Disaster Risk Management Strategic Plans, and Standard Operating Procedures (SOPs) in line with the NDRRF 2017-2030.[212] IOM has supported the development of SOPs in Milne Bay and Northern Oro provinces.[213]

Disaster Management Communications

Early Warning Systems

The GoPNG recognizes that the country's vulnerability to disaster is increased by incomplete hazard information and shortcomings of the early warning arrangements and communication system.[214] One of the seven targets under the NDRRF 2017-2030 is to increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments by 2030.[215]

PNG does not currently have a nation-wide multi-hazard early warning system. The PNG National Weather Service (PNGNWS) undertakes hydro-meteorological monitoring and forecasting. The Geohazards Management Division (GMD) under the Department of Mineral Policy and Geohazards Management (DMPGM) is responsible for monitoring geological hazards, including earthquakes, tsunamis, volcanic eruptions, landslides, and mass erosion events. The NDC receives hazard information from the PNGNWS and GMD/DMPGM and disseminates warnings through the radio. The NDC has a nationwide high-frequency radio communication network that links all 19 PDCs with the NDC Office. The network is integrated into the Department of Health national radio network, which covers the entire country down to the village level.[216] As of 2022 many of the Very High Frequency (VHF) and High Frequency (HF) radios are in disrepair. The NDC does not have a social media presence and its website has not been updated since 2018. The NDC receives alerts from the PDCs via email and WhatsApp messaging. [217]

Additionally, international partners support a number of local, hazard-specific early warning initiatives. For example, in 2018, Morobe Province received the first installation of a hydro-meteorological monitoring network and early warning system for floods along the Bumbu River, through an initiative supported by UNDP and the New Zealand Government's National Institute of Water and Atmospheric Research.[218] The network comprises three river water-level stations and five automatic rain gauges in the Bumbu catchment, as well as automatic weather stations in five surrounding provinces.[219]

In 2015 the GoPNG approved the country's hosting of the Regional Integrated Multi-Hazard Early Warning System (RIMES) Sub-Regional Hub for the Pacific, and committed resources to establish the hub. The sub-regional hub was envisioned as a national integrated multi-hazard early warning system that also serves the region as RIMES Sub-Regional Hub. On 13 October 2016, six national institutions that have key roles in early warning in PNG signed a Memorandum of Agreement to collaborate for the establishment, capacity building, and sustainable operation of a National Multi-Hazard Early Warning System. These institutions were the DMPGM, PNGNWS, Conservation Environment Protection Authority, Department of Agriculture and Livestock, CCDA, and the NDC.[220, 221]

PNG National Weather Service

The PNG National Weather Service (PNGNWS) is a government institution and is the sole mandatory body in the country responsible for providing meteorological and climate information to the Government and people of PNG. PNGNWS is a member of the World Meteorological Organization (WMO). The PNGNWS monitors aviation weather and marine weather and provides hydro-meteorological weather warnings.[222] PNGNWS is also part of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)-supported Regional Integrated Multi-Hazard Warning System for Africa and Asia (RIMES) project. In April 2022 participated with other Pacific countries in ESCAP's sub-regional dialogue for Pacific countries followed by a week-long workshop on impact forecasting and risk analysis.[223] The PNGNWS climate division is also developing a drought monitoring system through collaboration with the Australian Bureau of Meteorology and the World Meteorological Organization under the Climate Risk and Early Warning Systems (CREWS) initiative. [224]

Geohazards Management Division

The Geohazards Management Division (GMD) provides early warning of earthquakes, tsunamis, volcanic eruptions, landslides and mass erosion events in PNG and advice on mitigation to the NDC, other relevant authorities, and potentially affected communities, where possible.

The GMD has close links with other similar institutions, including the National Earthquake Information Service (NEIS) of the United States Geological Survey, Geoscience Australia, the Harvard University Seismological Group, the Comprehensive Nuclear Test-Ban Treaty Organization, and the Pacific Tsunami Warning Center (PTWC).

Three functional groups exist within this division. These are the Port Moresby Geophysical Observatory (PMGO), Rabaul Volcano Observatory (RVO), and Engineering Geology (EG), based in Port Moresby. Figure 10 depicts GMD's organizational structure comprised of the PMGO, RVO, and EG.[225]

Port Moresby Geophysical Observatory

The Port Moresby Geophysical Observatory (PMGO) was established in 1957 and reportedly has at least 10 seismograph stations distributed across PNG. Each station includes a seismometer and an accelerometer to record earthquake energy. Earthquake information is transmitted to the hub of the network in Port Moresby using the Telikom telephone system.[226]

PMGO is responsible for the following:

- Continuous instrument monitoring of earthquakes and tsunamis in the PNG region;
- Provision of advice and early warnings where possible to relevant authorities on significant earthquakes, potential tsunamis, and mitigation measures;
- Strategic assessments of earthquake and tsunami hazards;
- Maintenance of databases for earthquake and tsunami for PNG;
- Research into seismicity and tsunami activity with the aim of improving monitoring and assessment capabilities; and
- Public awareness programs concerning the hazards of earthquakes and tsunamis.[227]

In 2013, it was reported that local seismograph network coverage in PNG had deteriorated, and now only moderate and larger magnitude earthquakes are being located, mainly using data from the global seismograph network.[228]

Rabaul Volcano Observatory

In 2019 the Rabaul Volcano Observatory (RVO) began trialing a new proof of concept study, published by Geoscience Australia. The study explores the use of satellite monitoring to detect volcano deformation across high-risk volcanoes in PNG. Geoscience Australia has been working with PNG to develop fundamental information and practices for the effective response and management of natural hazards for over 30 years, and through this partnership has identified that RVO is physically limited in its ability to monitor the 56 volcanoes across the country. Geoscience Australia is trialing the use of remote sensing to monitor the activity of high-risk volcanoes using Interferometric Synthetic Aperture Radar (InSAR) and the Global Navigation Satellite System (GNSS) network, in collaboration with RVO.[229]

RVO is responsible for the following:

- Monitoring of volcanic activity in PNG, including instrumental surveillance of the most active and potentially active volcanoes;
- Provision of advice and early warning where possible to relevant authorities on volcanic activity, potential volcanic activity, and mitigation measures;
- Strategic assessments of volcanic hazards in PNG;
- Maintenance of database on volcanic hazards;
- Research into volcanism, volcano-seismicity, and methods of volcano monitoring with the aim of improving monitoring, assessment, and prediction capabilities; and
- Public awareness programs concerning volcanic hazards.[230]

Engineering Geology

The Engineering Geology (EG) group under GMD of DMPGM is responsible for the following:

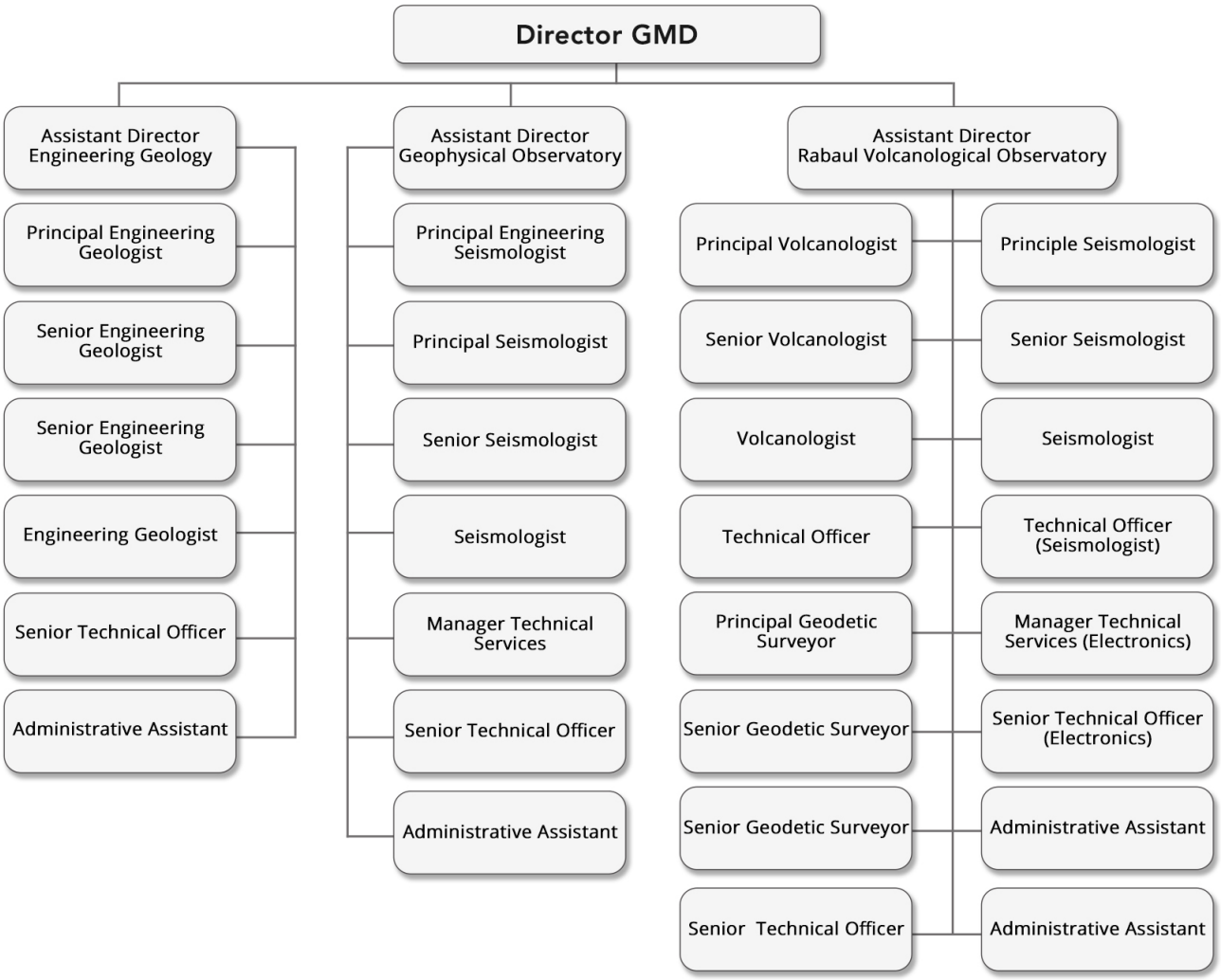


Figure 10: GMD Organizational Structure

- Monitoring of landside and mass erosion events;
- Provision of advice to relevant authorities on public safety issues following significant landslides and mass erosion events;
- Field assessments of significant landslides and mass erosion events;
- Strategic mapping and assessments of the potential hazards of landslides and mass erosion events.
- Maintenance of databases holding information on landslides and mass erosion events;
- Research into slope stability and mass erosion processes with the aim of improving monitoring and assessment capabilities;
- Awareness programs concerning landslides and mass erosion hazards; and
- Provision of geotechnical advice to relevant authorities on major infrastructure development.[231]

Information Sharing

Understanding how to overcome the information challenges that civilian and military agencies experience during a typical disaster response mission is important. Knowing what the available humanitarian assistance and disaster relief (HADR) resources are will assist Joint Task Force leaders and staff during mission planning.[232] Sharing information is critical since no single responding entity, NGO, international governmental organization (IGO), assisting state government, or the host government can be the source of all the required information.[233]

Collaboration, information sharing (IS), and networking have been the backbone of successful disaster response and preparation. Disseminating information not only to those in-country and threatened by disaster, but also to those responding to assist in the emergency has been crucial to timely, efficient, and effective disaster response. Recent technology has advanced to aid disaster predictions and alerts around the world, which has resulted in early warning and evacuation measures as well as opportunities to react and prepare for incoming threats to countries. The following are some of the ways in which information regarding disaster risk management and response are shared. Managing information is central to the overall mechanisms within disaster preparedness and response. There are many resources, stakeholders, and components to consider with IS before, during, and after a natural disaster. This section will discuss country-specific, humanitarian, regional, government, and U.S. Department of Defense (DoD) information sources.

Papua New Guinea Information Sources:

National Disaster Centre

The NDC provides information regarding hazards in PNG, disaster awareness, disaster management tools, and disaster news. The NDC website has not been updated since 2018.[234]
Website: *https://pngndc.gov.pg/*

Papua New Guinea National Control Centre for COVID-19

The National Control Center (NCC) for COVID-19 was established under the National Pandemic Act 2020. The website of the NCC provides government information on COVID-19 statistics, including new cases and the number of persons vaccinated.
Website:*https://covid19.info.gov.pg/*

National Weather Service

The PNG National Weather Service (PNGNWS) provides monitoring and forecast information related to hydro-meteorological hazards. The PNGNWS is currently developing its drought monitoring system.
Website: *http://www.pngmet.gov.pg/*

Department of Mineral Policy and Geohazards Management, Geohazards Management Division

The Geohazards Management Division (GMD) of the Department of Mineral Policy and Geohazards Management (DMPGM) is responsible for monitoring and assessing geological hazards, including earthquakes, tsunamis, volcanic eruptions, landslides and mass erosion events in PNG, as well as its neighboring countries. Based in Port Moresby, the GMD is comprised of the Port Moresby Geophysical Observatory, Rabaul Volcano Observatory and Engineering Geology. The GMD produces bulletins, event reports, and other materials related to earthquakes, tsunamis, volcanic eruptions, landslides, and mass erosion events.
Website: *http://dmpgm.webdev.datec.net.pg/*

Papua New Guinea Red Cross

The Papua New Guinea Red Cross has over 1,000 active members and volunteers in 14 provinces in PNG. The Red Cross publishes preparedness-relevant information for the general public on its website.
Website: *http://www.redcross.org.pg/*

Papua New Guinea Environment Data Portal

The PNG Environment Data Portal has 707 data sets, 4 dashboards, and 11 data stories with environmental information for decision-making.
Website: *https://png-data.sprep.org/*

Humanitarian Information Sources

United Nations Office for the Coordination of Humanitarian Affairs (OCHA) Regional Office for Asia and the Pacific (ROAP)

UN OCHA's ROAP seeks to optimize the speed, volume and quality of humanitarian assistance and coordinates emergency preparedness and response in the world's most disaster-prone region in support of national

governments. ROAP covers 41 countries, partnering with them for coordinated and effective international responses to emergency situations. Information on PNG is sourced from the Disaster Management Team in PNG.

- Website: *https://www.unocha.org/roap*
- For OCHA situation reports, click on "Subscribe" button on bottom of page.

ReliefWeb

ReliefWeb is a service of OCHA that consolidates information and analysis from organizations, countries, and disasters for the humanitarian community.
Website: *https://reliefweb.int/*

PreventionWeb

PreventionWeb is provided by the UN Office for Disaster Risk Reduction (UNDRR, formerly UNISDR) to consolidate disaster risk reduction information into an online, easy-to-understand platform.
Website: *https://www.preventionweb.net/english/*

International Federation of Red Cross and Red Crescent Societies (IFRC)

IFRC is the world's largest humanitarian organization, comprised of its 192 member National Societies including the PNG Red Cross, a secretariat in Geneva, Switzerland, and over 60 delegations around the world. The IFRC carries out relief operations to assist victims of disasters and combines this with development work to strengthen the capacities of its member National Societies. IFRC's work focuses on four core areas: promoting humanitarian values, disaster response, disaster preparedness, and health and community care.[235]
Website: *https://media.ifrc.org/ifrc*

International Committee of the Red Cross (ICRC)

ICRC is an impartial, neutral, and independent organization whose exclusively humanitarian mission is to protect the lives and dignity of victims of armed conflict and other situations of violence and to provide them with assistance. It also works to prevent suffering by promoting and strengthening international humanitarian law and universal humanitarian principles. ICRC, together with IFRC and the 192 Red Cross and Red Crescent National Societies, make up the International Red Cross and Red Crescent Movement.[236]
Website: *https://www.icrc.org/en*

Humanitarian Response

Humanitarian Response is a platform providing the humanitarian community a means to aid in coordination of operational information and related activities.

- Website: *https://www.humanitarianresponse.info*
- For information on PNG go to: *https://www.humanitarianresponse.info/en/operations/papua-new-guinea*

Global Disaster Alert and Coordination System (GDACS)

GDACS is a cooperation framework between the United Nations, the European Commission, and disaster managers worldwide to improve alerts, information exchange, and coordination in the first phase after major sudden-onset disasters.
Website: *https://www.gdacs.org/alerts/*

Virtual OSOCC

The Virtual On-Site Operations Coordination Centre (OSOCC) is a real-time online coordination tool for disaster response professionals from urban search and rescue (USAR) teams, national authorities, as well as regional and international organizations at a global level.

- Website: *https://vosocc.unocha.org/*
- The latest alerts can be found here: *http://www.gdacs.org/Alerts/default.aspx*
- To subscribe: *http://www.gdacs.org/About/contactus.aspx*

Think Hazard!

ThinkHazard! is an online tool that provides a general view of the hazards for a given location

that should be considered in project design and implementation to promote disaster and climate resilience. The tool highlights the likelihood of different natural hazards affecting project areas (very low, low, medium and high), provides guidance on how to reduce the impact of these hazards, and where to find more information. The hazard levels provided are based on published hazard data, provided by a range of private, academic and public organizations. Information is provided on Papua New Guinea regarding hazards, country assessments, projects, early warning systems, and other resources. Website: *http://thinkhazard.org*

Humanitarian Country Teams (HCT)

The Disaster Management Team (DMT) fulfills the HCT function in PNG. The DMT is a strategic body co-chaired by the UN Resident Coordinator and the NDC Director to coordinate international humanitarian support to national disaster preparedness, response, and recovery. The team includes representatives from the UN (cluster lead agencies), NGOs, churches, and the Red Cross. The team's overall goal is to ensure that inter-agency humanitarian action alleviates human suffering and protects the lives, livelihoods, and dignity of people in need.

During a disaster response, HCTs often produce Situation Reports (SitRep), usually in conjunction with OCHA.

Most HCT SitReps can be found through ReliefWeb: *https://reliefweb.int/*

Humanitarian Data Exchange (HDX)

HDX is an open platform for sharing data across crises and organizations, launched in 2014 with the goal of centralizing humanitarian data for easy access and analysis. HDX is managed by OCHA's Centre for Humanitarian Data in the Hague.

- Website: *https://data.humdata.org/*
- For information on PNG go to: *https://data.humdata.org/group/png*

Regional Information Sources

Association of Southeast Asian Nations (ASEAN) Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre)

The AHA Centre is an intergovernmental organization which aims to facilitate cooperation and coordination among ASEAN member-states and with the UN and international organizations for disaster management and emergency response in the ASEAN region.

The ASEAN Disaster Information Network (ADINET) is a repository of information concerning hazards and disasters that have occurred in the region. The platform is open to the public and allows for members of the public to submit information about any hazard or disaster to the AHA Centre. The AHA Centre will verify and validate submitted information as well as add new information from its sources. ADINET has been recording disaster information in the region since the AHA Centre became operational in 2012.
Website: *https://ahacentre.org/disaster-information-management/*

Changi Regional HADR Coordination Centre (RHCC)

Changi RHCC was launched in September 2014 by the Singapore Ministry of Defence to support the military of a disaster-affected state in coordinating relief with assisting foreign militaries. It aims to provide open, inclusive, and flexible platforms that allow both regional and extra-regional militaries to work together effectively in a multinational disaster response. Changi RHCC manages the OPERA CIS web portal to broadcast the updated situation status of multinational military responses to disasters to minimize duplication and gaps in the provision of foreign military assistance.

- Website: *https://www.changirhcc.org/*
- To subscribe to RHCC Weekly and Spot Reports, email: *Changi_RHCC@defence.gov.sg*

U.S. Government (USG) Sources

U.S. Agency for International Development (USAID)

USAID is committed to responding to crises around the world to help people and places most in need. They aim to:

- Promote Global Health
- Support Global Stability
- Provide Humanitarian Assistance
- Catalyze Innovation and Partnership
- Empower Women and Girls

USAID produces a monthly newsletter called USAID Newsletter, which is available digitally at *https://www.usaid.gov/news-information/newsletter*.

More information and updates from USAID are available via their blog, IMPACT, at *https://blog.usaid.gov/* and on Facebook, Instagram, Twitter, and YouTube.
Website: *https://www.usaid.gov/*

USAID's Bureau for Humanitarian Assistance (BHA) is responsible for leading and coordinating the U.S. Government response to disasters overseas. BHA responds to an average of 75 disasters in 70 countries every year. BHA fulfills its mandate of saving lives, alleviating human suffering, and reducing the social and economic impact of disasters worldwide in partnership with USAID functional and regional bureaus and other U.S. government agencies. BHA works with the international population to assist countries to prepare for, respond to, and recover from humanitarian crises.[237]

USAID/BHA products include situation reports and maps, which are available via email mailing lists as well as at *https://reliefweb.int/*. Information products (HA Updates/Fact Sheets, etc.) are also available on USAID's website (*https://www.usaid.gov/humanitarian-assistance*)

For BHA updates on a disaster response, ask the BHA representative for the respective DoD Geographic Combatant Command to add you to the email list, if you have a U.S. government email address:

- *BHA.INDOPACOM@usaid.gov*
- *BHA.SOUTHCOM@usaid.gov*
- *BHA.NORTHCOM@usaid.gov*
- *BHA.AFRICOM@usaid.gov*
- *BHA.SOCOM@usaid.gov*
- *BHA.CENTCOM@usaid.gov*
- *BHA.EUCOM@usaid.gov*

Pacific Disaster Center (PDC) Global

Pacific Disaster Center (PDC) Global has trademarked an early warning and decision support system called DisasterAWARE®. DisasterAWARE is primarily for disaster management practitioners and senior decision makers. It supports disaster risk reduction and best practices throughout all phases of disaster management from early warning to multi-hazard monitoring. It has a collection of scientifically verified geospatial data and modeling tools to assess hazard risks and impacts. A restricted version of DisasterAWARE is the EMOPS (Emergency Operations) system, which is specifically for the disaster management community, including government agencies and humanitarian assistance organizations serving at local, state, federal, and regional levels.[238]

PDC also provides a public version, Disaster Alert, which offers open access to a world map documenting 18 hazard types.[239] Disaster Alert has a free, early-warning app to receive customizable map-based visual alerts of active hazards. The app offers a global notification system covering natural and man-made hazards. It is available on both iPhone and Android.[240]

- Website: *https://www.pdc.org/* and *https://www.pdc.org/apps/disasteraware/*
- Emergency Operations (EMOPS) system (request account): *https://emops.pdc.org/emops/*

All Partners Access Network (APAN)

APAN is the Unclassified Information Sharing Service (UISS) for the U.S. Department of Defense (DoD). APAN provides the DoD and its mission partners community space and collaboration tools to leverage information to effectively plan, train and respond to meet their

business requirements and mission objectives. Importantly, APAN's technology team has been supporting HADR operations for over 15 years.[241] APAN has played an integral role in the success of disaster responses, such as the 2015 California Wildfire Response in the U.S. and the 2013 Typhoon Haiyan Response in the Philippines, in which they provided organizations and militaries a centralized location to share information, increase situational awareness and decrease response time and duplicated efforts for best practices in HADR services.[242]

- Website: *https://www.apan.org/*
- Note: The Multinational Communications Interoperability Program (MCIP) has an APAN site used in planning exercises and real world HADR information sharing.

Joint Typhoon Warning Center (JTWC)

JTWC provides advanced warning for U.S. Government agencies and organizations in relevant areas. The center is under the U.S. Navy of the U.S. Department of Defense. While JTWC does not offer a subscription-based service to automatically send warnings, their website posts warning messages for typhoons and tsunamis worldwide.[243]

Website: *https://www.metoc.navy.mil/jtwc/jtwc.html*

Daniel K. Inouye Asia-Pacific Center for Security Studies (DKI-APCSS)

DKI-APCSS is a U.S. Department of Defense (DoD) institute that addresses regional and global security issues, inviting military and civilian representatives of the U.S. and Asia-Pacific nations to its program of executive education and workshops.

Website: *https://apcss.org/*

The Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM)

The Center for Excellence in Disaster Management and Humanitarian Assistance is a U.S. DoD organization that was established by U.S. Congress in 1994 and is a direct reporting unit to U.S. Indo-Pacific Command. CFE-DM provides training and education to help U.S. and foreign military personnel navigate complex issues in disaster management and humanitarian assistance. They produce country focused disaster management reference handbooks, after action reports, best practices, and lessons learned for advancement in response coordination. CFE-DM also works to improve cross-coordination, reduce duplication of efforts, and promote U.S. involvement in civil-military consultations and dialogues with relevant HADR parties such as the AHA Centre, OCHA and the Changi RHCC. CFE-DM provides resources and updates at its website, as well as via their Facebook and Twitter accounts.

- Website: *https://www.cfe-dmha.org/*
- Disaster Management Reference Handbooks are available for download at: *https://www.cfe-dmha.org/Publications/Disaster-Management-Reference-Handbooks*
- CFE-DM Disaster Information Reports, Studies, Fact Sheets, Liaison Magazine issues and other information resources are available for download at: *https://www.cfe-dmha.org/Publications/Reports*
- Civil-Military Coordination in Foreign Disaster Relief Missions: Best Practices for Information Sharing, as well as other Best Practices pamphlets, is available here: *https://www.cfe-dmha.org/Publications/Best-Practices-Pamphlets*

COVID-19 Information Sharing Sources

Johns Hopkins Coronavirus Resource Center

The John Hopkins University (JHU) provides two key resources on COVID-19 information:

- JHU Coronavirus Resource Center provides a Daily COVID-19 Data in Motion report, which shares critical data on COVID-19 from the last 24 hours. Website: *https://coronavirus.jhu.edu/*
- Data repository operated by the JHU Center for Systems Science and Engineering (JHU CSSE). It is also supported by ESRI Living Atlas Team and the Johns Hopkins University Applied Physics Lab (JHU APL). Website: *https://github.com/CSSEGISandData/COVID-19*

INFORM's COVID-19 Risk Index

The INFORM COVID-19 Risk Index is a composite index that identifies "countries at risk from health and humanitarian impacts of COVID-19 that could overwhelm current national response capacity, and therefore lead to a need for additional international assistance."[244]

The INFORM COVID-19 Risk Index is primarily concerned with structural risk factors, i.e., those that existed before the outbreak. It can be used to support prioritization of preparedness and early response actions for the primary impacts of the pandemic, and identify countries where secondary impacts are likely to have the most critical humanitarian consequences.[245]

The main scope of the INFORM COVID-19 Risk Index is global and regional risk-informed resource allocation, i.e., where comparable understanding of countries' risk is important. It cannot predict the impacts of the pandemic in individual countries. It does not consider the mechanisms behind secondary impacts - for example how a COVID-19 outbreak could increase conflict risk.[246] Figure 11 depicts the INFORM COVID-19 Risk Formula.[247] Website: *https://data.humdata.org/dataset/inform-covid-19-risk-index-version-0-1-4*

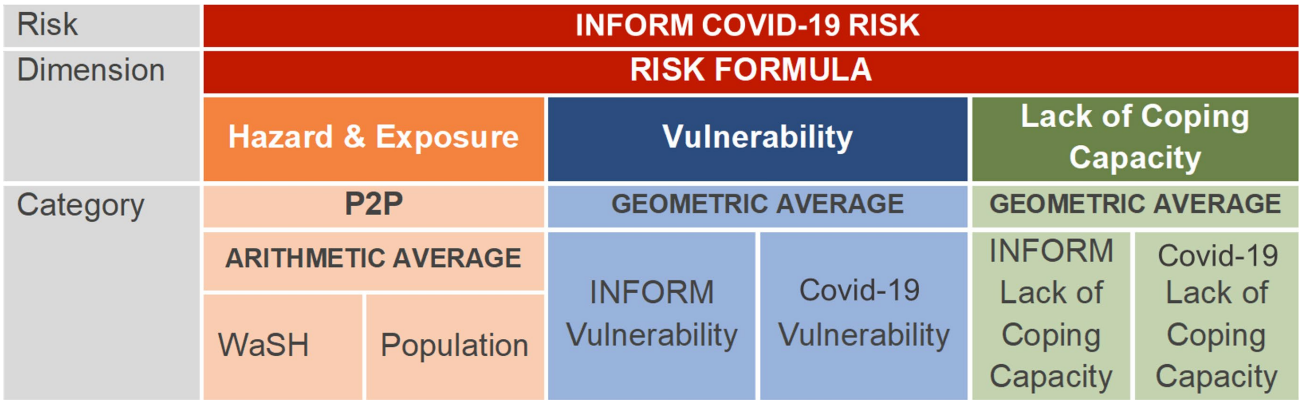


Figure 11: INFORM COVID-19 Risk Formula

INFRASTRUCTURE

The Department of Works (DOW) is the GoPNG's implementing agency for infrastructure. DOW is the biggest and one of the oldest government organizations in the country, starting as the Office of Works and Supply during the pre-independence era. DOW is the only government department with an office in every province in the country.[248] The DOW has recently been reconfigured into the Department of Works and Highways in line with the GoPNG Road Sector Institutional Reform Program, to capture the Department's new role as the key policy adviser to the GoPNG on road sector matters and as the sole Road Authority for the National Road Network under the Road (Management and Fund) Act 2020.[249]

Transport

Airports

PNG has 26 major airports serving its 19 ordinary provinces as well as Buka Airport serving the Autonomous Region of Bougainville. The Port Moresby Jacksons International Airport is the largest airport, located in the National Capital, and has routes to 35 destinations. The major airlines are Air Niugini and PNG Air. Table 3 lists the airport codes, location, and runway lengths.[250]

Airport	IATA/ICAO Code	Location	Runway Length (max.)
Port Moresby Jacksons International Airport	POM	Port Moresby	9,022 ft (2,750 m); asphalt
Buka Airport	BUA	Buka Island, Bougainville	5,125 ft (1,562 m); asphalt
Daru Airport	DAU	Daru, Western Province	4,593 ft (1,400 m); asphalt
Goroka Airport	GKA	Goroka, Eastern Highlands Province	5,400 ft (1,645 m); asphalt
Gurney Airport	GUR	Gurney, Milne Bay Province	5,545 ft (1,690 m); asphalt
Girua Airport	PNP	Popondetta, Oro Province	5,495 ft (1,675 m); asphalt
Kimbe Airport	HKN	Hoskins, West New Britain Province	6,234 ft; (1,900 m); asphalt
Kiunga Airport	UNG	Kiunga, Western Province	3,937 ft (1,200 m); asphalt
Kavieng Airport	KVG	Kavieng, New Ireland Province	5,577 ft (1,700 m); asphalt
Londolovit Airport	LNV	Londolovit, New Ireland Province	3,937 ft (1,200 m); unpaved
Madang Airport	MAG	Madang Province	5,151ft (1,570 m); asphalt
Mount Hagen Kagamuga Airport	HGU	Mount Hagen, Western Highlands Province	7,185 ft (2,190 m); asphalt
Momote Airport	MAS	Manus Island, Manus Province	6,496 ft (1,980 m); asphalt
Moro Airport	MXH	Moro, Southern Highlands Province	5,807 ft (1,770 m); asphalt
Misima Island Airport	MIS	Misima Island	3,937 ft (1,200 m); asphalt
Nadzab Airport	LAE	Lae, Morobe Province	8,004 ft (2,439 m); asphalt
Tari Airport	TIZ	Tari, Hela Province	4,856 ft (1,480 m); asphalt
Tabubil Airport	TBG	Tabubil, Western Province	4,396 ft (1,340 m); asphalt
Tokua Airport (also known as Rabaul)	RAB	Tokua, East New Britain Province	5,643 ft (1,720 m); asphalt
Wewak International Airport	WWK	Wewak, East Sepik Province	5,249 ft (1,600 m); asphalt
Chimbu Airport	CMU	Kundiawa, Simbu Province	3,202 ft (976 m); asphalt
Losuia Airport	LSA	Losuia, Milne Bay Province	5,594 ft (1,705 m); asphalt
Tufi Airport	TFI	Tufi, Oro province	3,018 ft (920 m); asphalt
Mendi Airport	MDU	Mendi, Southern Highlands Province	4,396 ft (1,340 m); asphalt
Vanimo Airport	VAI	Vanimo, West Sepik Province	6,437 ft (1,962 m); asphalt
Wapenamanda Airport	WBM	Wapenamanda, Enga Province	5,249 ft (1,600 m); asphalt

Table 3: Codes and Runway Lengths for PNG Main Airports

Seaports

PNG has 15 seaports, all of which are ports of entry except for Aitape (Sandaun province) and Buka (Autonomous Region of Bougainville).[251] The main ports are Port Moresby and Lae, which account for 80% of cargo traffic.[252]

Roads

PNG has 30,000 km (18,641 mi) of roads, 8,738 km (5,430 mi) of which are 'national' roads and the responsibility of PNG's national government. All other roads are 'non-national' and the responsibility of lower levels of

Name	Location	Description
Aitape Port	Sandaun Province Latitude: 03o 08.51'S Longitude: 1420 21.24'E	This is a satellite agency port and reports to the regional Port of Madang. It is not a port of entry. Pilotage is compulsory. Pilot available at 48 hours' notice from Madang. Webpage: https://pngports.com.pg/index.php/operations/port-information/57-aitape-port
Alotau Port	Milne Bay Province Latitude: 10° 18.75'S Longitude: 150°26.8'E	Located at the eastern tip of mainland PNG, in Milne Bay Province. It is a port of entry. Pilotage is compulsory. Pilot available at 48 hours' notice from Alotau. Webpage: https://pngports.com.pg/index.php/operations/port-information/58-alotau-port
Buka Port	Autonomous Region of Bougainville Latitude: 05° 26.0'S Longitude: 154° 40.04'E	Not a port of entry. Pilotage is not compulsory. Pilot available at 48 hours' notice from Port Moresby. Webpage: https://pngports.com.pg/index.php/operations/port-information/60-daru-port
Daru Port	Western Province Latitude: 09° 50.4'S Longitude: 143°12.6'E	Port of entry. Pilotage is not available. Pilot available on request from Port Moresby. Webpage: https://pngports.com.pg/index.php/operations/port-information/60-daru-port
Kavieng Port	New Ireland Province Latitude: 02° 35.1'S Longitude: 150° 47.7'E	Port of entry. Pilotage is not compulsory. Pilot is available at 48 hours' notice from Rabaul. Webpage: https://pngports.com.pg/index.php/operations/port-information/61-kavieng-port
Kieta	Arawa, eastern Autonomous Region of Bougainville Latitude: 06o13.27'S Longitude: 155o38.25'E	The town of Arawa has few inhabitants, and is known mainly for its transport connections (wharf and airfield). The regional port is Rabaul. Port of entry. Pilotage is not compulsory. Pilots are available at 48 hours' notice from Rabaul. Webpage: https://pngports.com.pg/index.php/operations/port-information/62-kieta
Kimbe Port	West New Britain Province Latitude: 09° 28.7'S Longitude: 147° 08.35'E	Third largest port in PNG. Port of entry. Pilotage is 24 hours. Pilot available on request from Port Moresby. Regional port is Port Moresby. Webpage: https://pngports.com.pg/index.php/operations/port-information/63-kimbe-port
Lae Port	Morobe Province Latitude: 06° 44.0'S Longitude: 146° 59.0'E	Regional port and port of entry. PNG's largest port. Pilotage is compulsory. Pilots are available and based in Lae. Webpage: https://pngports.com.pg/index.php/operations/port-information/64-lae-port
Lorengau Port	Manus Province Latitude: 02° 000.08'S Longitude: 147° 16.3'E	Port of entry. Pilotage not compulsory. Pilot is available at 48 hours' notice from Madang Port and Lae Port. Webpage: https://pngports.com.pg/index.php/operations/port-information/65-lorengau-port
Madang	Madang Province Latitude: 05° 12.50'S Longitude: 145° 48.05'E	Port of entry. Port of call on cruises between Australia and Asia. Pilotage is compulsory. Pilots are available and based in Madang. Webpage: https://pngports.com.pg/index.php/operations/port-information/66-madang
Motukea Port (Port Moresby)	National Capital Latitude: 09° 28.7'S Longitude: 147° 08.35'E	Port of entry. Pilotage is compulsory. Pilots are available and based in Port Moresby. Webpage: https://pngports.com.pg/index.php/operations/port-information/69-motukea-port
Oro Bay	Oro Province Latitude: 08° 50.0'S Longitude: 148° 30.00'E	Historically, the port was at the site of a U.S. advanced base during World War II and a staging area for Allied ships. Port of entry. Port of entry. Pilotage is not compulsory. Pilot is available at 48 hours' notice from Port Moresby or Lae. Webpage: https://pngports.com.pg/index.php/operations/port-information/67-oro-bay
Rabaul	East New Britain Province Latitude: 03° 35.0'S Longitude: 152° 10.36'E	Port of entry. Pilotage is compulsory. Pilot is available and based in Rabaul, available 24 hours. Webpage: https://pngports.com.pg/index.php/operations/port-information/70-rabaul
Vanimo Port	Sandaun Province Latitude: 02° 41.09'S Longitude: 141° 17.84'E	Port of entry. Pilotage is not compulsory. Pilot available at 48 hours' notice from Madang. Webpage: https://pngports.com.pg/index.php/operations/port-information/71-vanimo-port
Wewak	East Sepik Province Latitude: 02° 41.09'S Longitude: 141° 17.84'E	Port of entry. Pilotage is compulsory. Pilot available at 48 hours' notice from Madang or Lae. Webpage: https://pngports.com.pg/index.php/operations/port-information/72-wewak

Table 4: PNG Seaports

government.[253] The DOW is responsible for maintaining the national roads throughout the country. Of this total, 5,755.20 km (3,576 mi) are graveled; 2,779.48 km (1,727 mi) are sealed; and the remaining 523.35 km (325 mi) are inaccessible due to factors such as weather conditions.[254] Figure 12 shows the road network in PNG.[255]

The main highways are:

- The Okuk Highway (formerly Highlands Highway): from Lae through to Goroko, Mt Hagen and Madang
- Hiritano Highway: from Port Moresby through to Kerema
- Magi Highway: from Port Moresby through to Aroma coast

The most extensive road networks are in Central Western Highlands, Eastern Highlands, East Sepik, Madang and West New Britain.[256] Roads typically begin in provincial coastal centers before moving further inland. This pattern of development has resulted in the emergence of 12 distinct unconnected road networks.[257] The only land border crossing into PNG is between Vanimo in Sandaun Province and Jayapura in Papua Province (West Papua), Indonesia. This border is opened in PNG from 9am-5pm, from Indonesia 8am-4pm, and generally operates smoothly but has a history of closing at short notice.

A 2018 evaluation by the Australian DFAT found that nearly 60% of national roads are considered to be in very poor condition and only 13% of national roads are in good condition. The evaluation further found that only 68% of the rural population of PNG lives within 2 km (1.24 mi) of an all-season road. [258]

Responsibility for roads is shared between the national government, provincial governments and the National Capital District Commission (NCDC). At the national level, DOW has Offices



Figure 12: Road Network in Papua New Guinea

of Works in the provinces and the National Capital District (NCD), each managed by a Provincial Works Manager (PWM). The PWMs are responsible for maintaining all national roads in their province. Road maintenance and rehabilitation are done on a project basis, when funds are available. Development and maintenance of provincial roads are carried out by Provincial Works Units (PWUs) under the control of provincial governments. These units are quite small and have limited technical capabilities. Local rural and urban roads are managed by local or municipal administrations with very few resources.[259]

Railways

There are no passenger railways in PNG but some mining sites have disused railway tracks.[260]

Waterways

Up to 59% of the population depends on water transportation. PNG has an extensive system of inland waterways extending nearly 11,000 km (6,835 miles).[261] The Sepik River is the longest, followed by the Mamberamo River and Fly River.[262] The Fly and Sepik rivers are the only two major rivers that allow access to ships of up to 3 m (9.8 ft) draught. Other river ports with navigable, accessible waterways are located in the Western, Gulf and Madang Provinces.[263] During dry seasons and droughts, rivers and connected waterways may become impassible to surface vessels.[264]

Schools

The Department of Education (DOE) is reforming the country's education structure. The current structure is comprised of two years of early childhood education; six years of primary education (elementary school); and six years of secondary education (high school). Figure 13 shows the reformed education structure since 2015.[265]

Disaster Risk Reduction in the Education Sector

One of the priority areas under the NDRRF 2017-2030 is to build understanding of disaster risks among schools (Priority 1), to invest in disaster risk resilience in schools (Priority 3), and enhance preparedness in schools (Priority 4).[266] Over the years, the PNG government has collaborated with international partners to increase DRR in schools. Recently, in Madang Province, a child-focused disaster risk reduction project conducted by World Vision, with support through the Australian Humanitarian Partnership-funded Disaster READY program is supporting 10 schools and their surrounding communities to create hazard risk maps. The exercise helps schools to think about risks and threats they could face in a disaster, and how they can better prepare.[267]

A Regional Tsunami Project was implemented

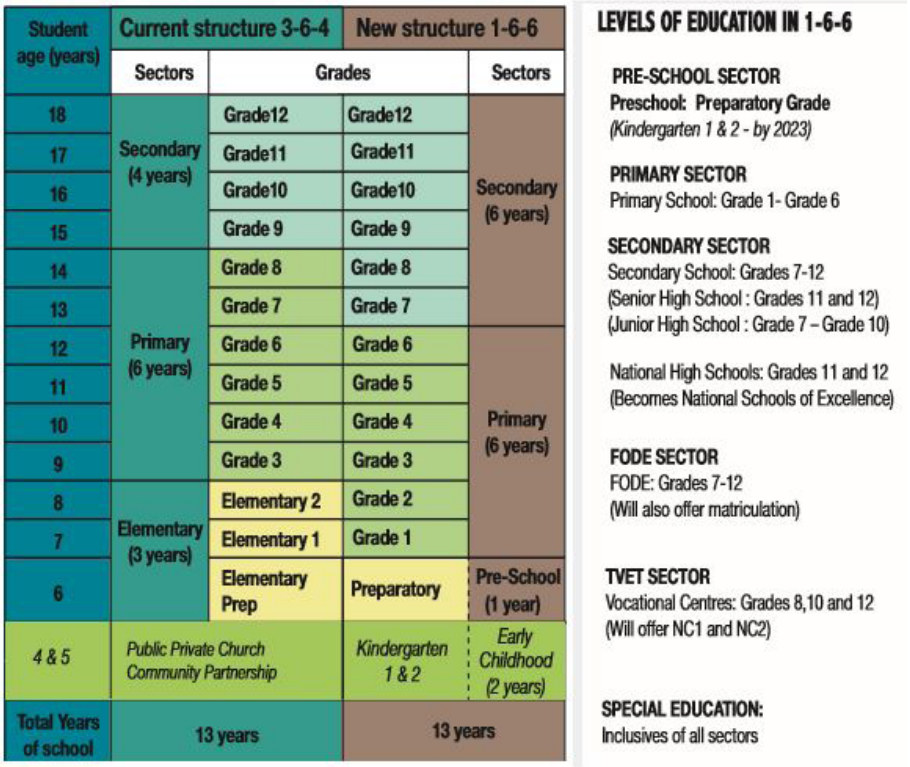


Figure 13: PNG's Reformed Education Structure

by UNDP from 2018 to 2020 with funding from Japan. The project supported the conduct of tsunami drills in three schools. The NDC, DOE and the DMPGM organized the drills for 2,000 school children and members of school administrations. School-based, tsunami-specific, awareness-raising materials were also developed and made available for replication in other schools.[268] UNDP is currently participating in Phase 3 of the Japanese-funded tsunami project. UNDP partnered with the National DOE and IOM to do tsunami preparedness planning and exercises with two at-risk schools and a community in Buka, Bougainville.[269]

Furthermore, UNICEF in 2015 supported earthquake preparedness and tsunami preparedness drills. UNICEF supported mock drill exercises at elementary schools, including Okiufa Primary School in the Eastern Highlands Province, as part of the GoPNG's Education in Emergencies and Disaster Risk Management Policy to promote emergency preparedness in schools so that children have continued safe access to education in times of emergency.[270] In 2020-2021, UNICEF worked with National DOE to develop its Education in Emergencies Response and Recovery Plan, which includes pandemic response. It is currently being rolled out to schools with help from Save the Children and other UNICEF partners. [271]

Communications

PNG's telecommunications network comprises a network of microwave radio, satellite, and intra-city optical fiber transmission systems. The National Information Communication Technology Authority regulates the telecommunication sector. Telikom PNG is the largest national provider – incorporated in 1955, it is wholly state owned. BeMobile and Digicel PNG are the major providers of mobile communication. Telikom PNG owns 50% of BeMobile. Digicel offers mobile services and has been granted a license to start landline services. Citifone is the third mobile operator to offer services in PNG. [272]

PNG is connected by two submarine cables—the Australia-Papua New Guinea-2 that runs from Sydney (Australia) to Port Moresby, and the PIPE Pacific Cable-1 that runs the Sydney-Madang-Guam-USA route. Although submarine fiber-optic cables are PNG's primary international communications link, operators and Internet service providers continue to use satellite technology for redundancy purposes or for communications services in rural areas. [273]

Rural telecommunications infrastructure development has been constrained by many factors, including the high cost of implementing and operating in difficult terrain. The PNG government, through state-owned PNG DataCo Limited, is developing a national broadband network to enhance broadband access, affordability, and quality.[274]

Fixed Telephones and Mobile Phones

Fixed telephone subscriptions is low in PNG and mobile/cellular phones are more prevalent. In 2020, PNG had 166,000 fixed telephone subscriptions[275] and over 4 million cellular phone subscriptions.[276]

Internet Access

Internet usage remains low in PNG but is rising. There were 1.37 million Internet users in PNG in January 2021. The number of Internet users increased by 20% between 2020 and 2021, and internet penetration was around 15% in January 2021.[277]

Mass Media

Television coverage is limited mainly to Port Moresby and the provincial capitals. Radio is the most popular form of mass media and the GoPNG operates a national network and provincial stations. The two major national newspapers are The National and the Post Courier, both of which are foreign owned.[278] The privately owned EMTV News channel is one of the few media outlets to promote investigative journalism. The Australian Broadcasting Cooperation (ABC) is the only foreign news organization to have a permanent base in the

capital, Port Moresby.

According to Reporters Without Borders, the media sector is relatively underdeveloped and struggles to inform the country's population who speak many different languages. Futhermore, social media are developing rapidly but poor regulation of platforms such as Facebook has led to the creation of many heavily politicized accounts whose activity mostly consists of spreading false information and attacking the work of independent reporters.[279]

Post

Post PNG is the national postal service provider of PNG with over 40 post offices nationwide. Post PNG is mandated through the Postal Services Act of 1996 and is responsible for providing postal services including domestic money orders (money remittances) in PNG.[280]

Utilities

Power

PNG Power Limited, a state-owned enterprise (SOE) that was the successor company to the Papua New Guinea Electricity Commission, supplies power to most urban centers and some adjacent rural areas. It was established under the Electricity Commission (Privatisation) Act of 2000, but remains a SOE. Hydropower stations generate much of the country's electricity, with the balance generated by thermal stations.[281]

PNG's electricity access remains extremely low, with only an estimated 13% of PNG's population having access to grid-connected electricity. The World Bank-supported PNG Energy Utility Performance and Reliability Improvement Project (EUPRIP) is being implemented from 2021 to 2026 to help establish a strong foundation for PNG Power Limited to become financially sustainable and catalyze private investments in the energy sector. Works as part of the project include the rehabilitation, reinforcement, and upgrade of infrastructure on the Port Moresby, Ramu and Gazelle grids owned and operated by PNG Power Limited.[282]

Water and Sanitation

Water PNG was established under the National Water Supply and Sewerage Act of 1986 as a SOE with responsibility for the provision and management of water supply and sewage services throughout the country, with the exception of the National Capital District (NCD). The NCD Commission Act of 1996 created NCD Water and Sewerage (trading as Eda Ranu) to take on the responsibility of supplying fresh water and sewage treatment within the NCD.

In PNG, only 40% of people have access to safe drinking water, one of the lowest rates in the Pacific Islands. Families have to collect water from catchments and water sources that are far away, with the burden often falling on women and girls to collect water. Limited access to water has a significant impact on the operations of health care facilities.[283] For the poor, getting ill or even dying from drinking dirty water is common. Over 200 children under 5 years of age die per year from diarrhea. An estimated 2 in 10 people have access to a decent toilet.[284]

HEALTH

The ten-year National Health Plan (NHP) sets out the strategic direction and priorities for both the public and private health sectors. The NHP is implemented through medium-term plans at the national and provincial levels. These are translated into operational annual implementation plans at all levels of the health system. The NHP 2011-2020 sought to address the following major health challenges: lower maternal mortality; lower infant mortality; increase immunization coverage; reduce the number of people dying from malaria, HIV, and TB; contain outbreaks of diseases, such as cholera, and prevent deaths from diarrheal illnesses; and reduce non-communicable diseases such as cancer, heart disease, and renal disease.[285] Prime Minister Marape launched the NHP 2021-2030 in December 2021. At its launch the Prime Minister reiterated that 11% of the 2022 national budget will go towards health spending.[286] The NHP 2021-2030 plan is not yet available online.

Health Care System Structure

PNG has a decentralized national health system. It is based on the primary health care (PHC) approach with a network of 1,800 community-level facilities called functioning aid posts (planned to transition to community health posts by 2030) and approximately 800 sub-health/health centers. The secondary health-care level consists of 22 provincial hospitals, one of which is also the national referral hospital. The government and Church-based service providers are the main providers of health services, both services being funded by the GoPNG. The churches play a pivotal role in health service delivery, operating over 50% of the rural health service network. There are also employer-related health-care services (agriculture, mining), and a small private medical sector and a much larger traditional sector.[287]

The Minister for Health and HIV/AIDS has the portfolio responsibility for health as determined by the Prime Minister. The Minister executes government health policy and is assisted by the National Department of Health (NDoH) to discharge that responsibility. The NDoH has an overarching governance role in the health-care system. It has statutory responsibility to oversee the establishment, maintenance, and development of a health-care system in PNG. It provides technical advice and support for the operation of health facilities and the delivery of health services and maintains a national health information system. The NDoH also oversees the management of public hospitals in accordance with the Public Hospitals Act of 1994. Figure 14 shows the organizational structure for the National Department of Health (NDoH) and Table 5 shows the main functions performed by healthcare entities at different levels of the health system in PNG.[288]

The National Health Services Standards (NHSS) of 2011 redefined PNG's health service delivery platform into seven levels:

- Level 1 – the aid post;
- Level 2 – the community health post;
- Level 3 – the rural and urban health centers;
- Level 4 – the district hospital;
- Level 5 – the provincial hospital;
- Level 6 – the regional hospital; and
- Level 7 – the national referral hospital (Port Moresby General Hospital).[289]

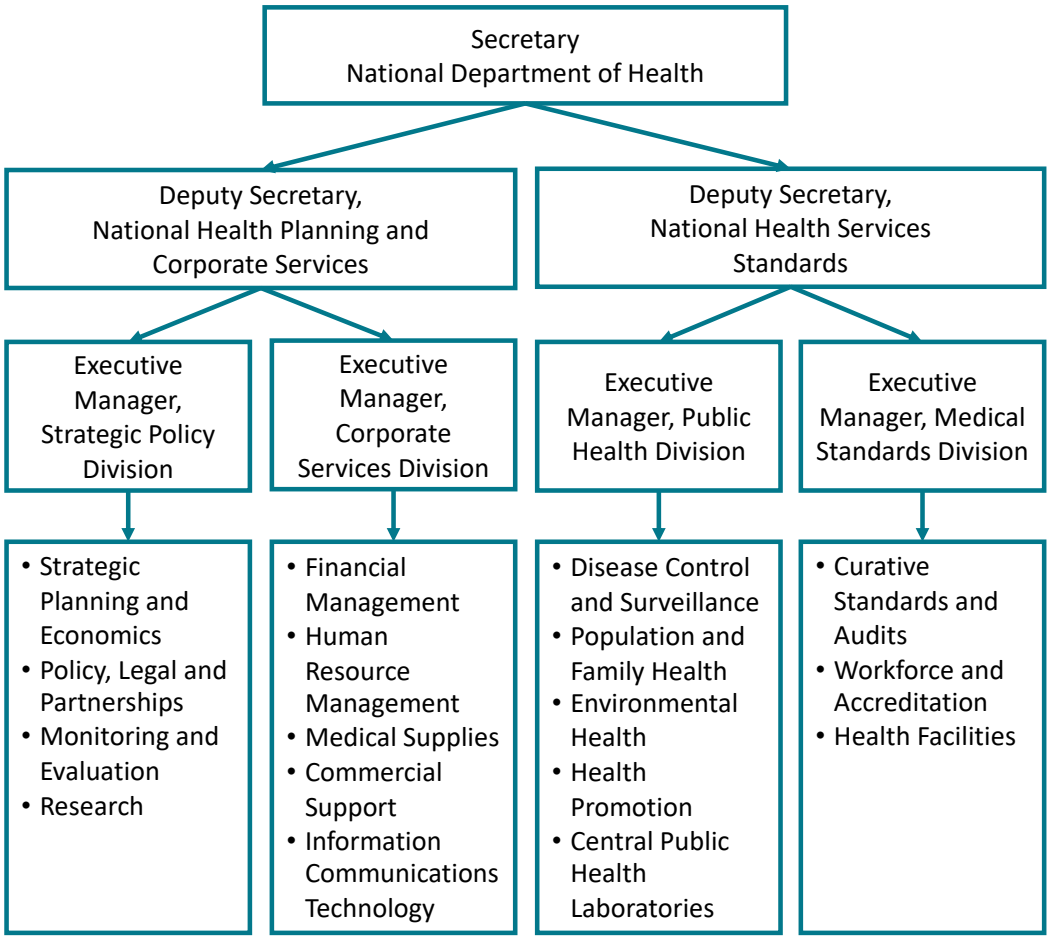


Figure 14: Organization Structure, National Department of Health

Levels of Governments	Main functions (as described in NDoH Corporate Plan 2013-2015)
National Government	• Oversee health-care system • Coordinate and provide technical advice and support to lower levels of Government • Oversee management of public hospitals
National Health Board	• Endorse the National Health Plan and recommend its adoption to the National Executive Council • It also approves standards and monitors progress against the National Health Plan • May be requested or directed to carry out enquires
National Department of Health	• Provides assistance and support to eh National Health Board to discharge its functions • Develops standards, monitors and ensures compliance against standards, as well as provide technical assistance to the provinces to assist them in implementing the NHP and meeting relevant standards • Required to maintain National Health Service Standards
Provincial Governments	• Responsible for planning, implementation and funding of the NHP through service delivery at the district level • Fun health actives that allow for minimum standards to be met • Have powers under Section 42[1] [n] of the Organic Law on Provincial Governments and Local Level Governments Administration Act, 1997 and Section 19 of the National Health Administration Act, 1997 to make laws in relation to rural health
Local Governments	• Responsible for funding health activities at the local level and should participate in planning • Provide information to the NDoH for the National Health Information Systems (NHIS) • Chair the district health management committees • Participates in planning activities
Hospitals	Specific functions described under the Public Hospitals Act (1994) and are required: • to provide curative care and support rural health-care delivery • to provide support to rural health services • to conduct in-servicing training • to develop agreements with the nongovernment sector to deliver health services

Table 5: Different Levels of the Health System in PNG

Health Strategies and Surveillance

Major communicable diseases in PNG include tuberculosis (TB), sexually transmitted infections (STI), and HIV. Non-communicable diseases include neoplasms, cancer, diabetes, mental disorders, and heart diseases. Table 6 shows the age-standardized death rates per 100,000 persons from communicable and non-communicable diseases between 2000-2015. [290]

The World Health Organization (WHO) Country Cooperation Strategy (CCS) is the WHO's strategic framework to guide its work in a country. The CCS responds to that country's national health and development agenda. In PNG, the CCS 2016-2020 focused on the health strategies and surveillance summarized in Table 7.[291]

Cause of Death	Age-standardized death rates per 100,000 population				
	2000	2005	2010	2013	2015
Communicable diseases					
Tuberculosis	18.7	17.8	15.0	12.8	11.4
Sexually transmitted infections excluding HIV	7.4	7.7	10.6	9.6	8.6
HIV/AIDS	8.3	16.3	11.5	9.6	7.9
Non-communicable diseases					
Neoplasms	120.8	124.0	124.3	123.0	122.0
Colon and rectum cancer	8.7	8.9	9.0	9.0	9.0
Larynx cancer	1.7	1.7	1.7	1.7	1.7
Tracheal, bronchus and lung cancer	18.9	19.1	18.9	19.0	19.1
Breast cancer	11.7	12.5	12.7	12.6	12.6
Cervical cancer	11.1	11.3	10.9	10.4	10.0
Diabetes mellitus	86.6	99.7	107.1	109.5	111.0
Mental disorders	1.6	1.6	1.6	1.6	1.6
Ischemic heart disease	290.9	303.5	302.4	296.6	291.7
Cardiovascular disease	633.5	646.5	634.4	614.2	598.8

Table 6: Major Communicable and Non-Communicable Diseases, 2000-2015

Strategic Priority 1 Achieving sustainable health outcomes	**Focus Area 1:** TB/HIV **Focus Area 2:** Immunization **Focus Area 3:** Reducing maternal and newborn mortality
Strategic Priority 2 Strengthening health systems	**Focus Area 1:** District health systems strengthening **Focus Area 2:** Human resources for health **Focus Area 3:** Access to essential medical products **Focus Area 4:** Health information system
Strategic Priority 3 Emergency preparedness surveillance and health security	**Focus Area 1:** Disaster preparedness and response **Focus Area 2:** Surveillance and epidemics
Strategic Priority 4 Sector overview, policy dialogue and development cooperation	**Focus Area 1:** Policy dialogue and implementation **Focus Area 2:** Effective development cooperation **Focus Area 3:** Strategic communication

Table 7: PNG-WHO Country Cooperation Strategy 2016-2020

Communicable Diseases

PNG is burdened with the following communicable diseases:

Dengue

Over the past few years PNG has experienced dengue outbreaks throughout the country, the latest one being in Port Moresby in 2016. During the 2016 outbreak, 185 cases of dengue were reported.[292] A 2017 study was the first to identify the dynamics of dengue virus evolution in PNG and highlights PNG as a center of dengue virus transmission in Australasia and the Western Pacific.[293]

HIV/AIDs

PNG has the highest Human Immunodeficiency Virus (HIV) prevalence among the Pacific Islands. The country is one of the few in the Asia and the Pacific region in which women are at higher risk of HIV than men, with 56% of new HIV infections occurring among women.[294] An estimated 55,000 adults and children live with HIV and AIDs in PNG according to UNAIDS 2020 data. Sex workers and males who have sex with males (MSM) continue to face prejudice, moral condemnation, and violent abuse from some sectors of society, as well as harassment by police and blackmail, which are aimed especially at MSM. Their vulnerability and lack of security impacts the national response to HIV/AIDs among this population, as it drives them into hiding and affects their access to treatment and services.[295]

Malaria

PNG has seen a steady decline in malaria prevalence since 2004, when the national malaria control program was awarded a Global Fund to Fight Aids, Malaria and Tuberculosis grant. Considerable progress towards controlling malaria has been made through the national malaria control program's free distribution of long-lasting insecticidal nets (LLINs), improved diagnosis with rapid diagnostic tests, and improved access to artemisinin combination therapy.[296] However, in the past five years malaria cases have increased more than tenfold. The resurgence has been attributed to a variety of factors, from reduced government and donor commitment, limited access to key treatment and diagnostic tests, reduced effectiveness of LLINs, to the challenges of a fully devolved health system.[297]

Polio

In June 2018, PNG declared a public health emergency in response to a polio outbreak. Until then, the country had been certified polio-free since 2000. Three provinces were identified as the highest risk: Morobe, Eastern Highlands, and Madang. A large-scale vaccination campaign and increased health surveillance was launched to help detect illness and the presence of the virus.[298] The WHO, UNICEF, and multiple NGOs also supported the GoPNG on these countrywide vaccination efforts.[299] The lack of proper water and sewage sanitation has also been problematic in PNG since polio normally spreads in areas of poor hygiene.[300]

Sexually transmitted infections (STI)

PNG has a high rate of STIs such as hepatitis B, syphilis, chlamydia, and gonorrhea, in addition to HIV/AIDs as discussed above.[301] In 2018, the PNG government released the PNG National STI and HIV Strategy 2018–2022. The strategy sets out the country's response to STI and HIV at national, provincial and district levels. The strategy addresses the drivers of the STI and HIV epidemic and builds on achievements of the previous country strategic plans to achieve its goal of contributing to the country's Vision 2050 through universal access to comprehensive STI and HIV prevention, treatment, care and support.[302]

Tuberculosis

PNG has one of the highest prevalence rates of tuberculosis (TB) in the world – second in the Western Pacific region – with 30,000 new cases reported every year.[303] PNG is one of only 14 countries classified by the WHO as having the triple high burden of TB, multidrug-

resistant tuberculosis (MDR-TB) and TB-HIV co-infection. The first reports of MDR-TB were from clinics in the Australian Torres Strait Islands, bordering the South Fly District (SFD) of Western Province, which showed a dramatic increase in cases among PNG nationals between 1998 and 2002. Subsequent reports from the Torres Strait Islands clinics demonstrated alarming rates of MDR-TB, with evidence of person-to-person spread or primary transmission.[304]

Coronavirus Disease (COVID-19) or Other Major Outbreak

According to the John Hopkins University dataset, as of 17 May 2022 PNG has had 44,394 total cases and 651 deaths from COVID-19.[305] Only 3.7% of the population has been fully vaccinated according to the Reuters COVID-19 Vaccination Tracker.[306]

The following instruments govern PNG's COVID-19 arrangements:

- PNG National Pandemic Act
- PNG COVID-19 Emergency Preparedness and Response Plan
- National Ministerial Committees – led by Minister for Health and HIV/AIDs
- Interagency National Task Force – intergovernmental, donor, and partner coordination
- National Emergency Operations Center – National Controller and Deputy
- Provincial Emergency Operations Center – Provincial Focal Point

The government has set out four COVID-19 operational phases:

- Phase I: Alert, no cases (code green)
- Phase II: Containment, one case or more (code orange)
- Phase II: Mitigation, human to human transition (code red) – CURRENT as of 18 May 2022
- Phase IV: Recovery and review (code white)

The DMT has prepared a multi-sector response plan for COVID-19. Additionally, the DOE and the Department for Community Development and Religion have developed sector plans for a COVID-19 response.[307]

Non-Communicable Diseases

In PNG, predominate non-communicable diseases (NCDs) include cancer, diabetes, mental disorders, and heart diseases.[308] Nationally, at all ages, more females (49%) die from infectious, maternal, neonatal and nutritional conditions than males (41%). Conversely, slightly more males (45%) than females (42%) die from NCDs. Chronic respiratory diseases among adults are thought to be common in PNG due more to domestic pollution from burning wood in most traditional societies of PNG than from smoking. Diabetes and stroke are increasing in most urban and peri-urban communities of PNG due to life style changes from traditional diets to processed foods, physical inactivity, and high rates of cigarette smoking.[309]

Training for Health Professionals

PNG has approximately 500 doctors and 400 nurses. The country has 0.1 physicians per 1,000 people, compared to the world average of 1.566 physicians per 1,000 people. The small healthcare force is hindered by poor working conditions, low wages, and inadequate infrastructure.[310] To augment the limited number of doctors in PNG, the government has recruited doctors from overseas including India, Australia, and Cuba. In 2016, the GoPNG signed a memorandum of understanding with Cuba to recruit 20 physicians for ten district hospitals.[311]

Physicians

In order to become a physician in PNG, entry-level students must complete a five-year, full-time Bachelor of Medicine, Bachelor of Surgery (MBBS) degree at the University of Papua New Guinea. Following this, clinical rotations must be undertaken at various provincial health care

facilities. In addition, specializing in a field requires two years of advanced education and clinical residency. After completing a post-graduate diploma, a Doctorate in Medicine (MD) is available and can be completed only after the MBBS program, a thesis, and a dissertation. In order to continue education for physicians, the Medical Society of Papua New Guinea conducts yearly medical symposia where distinguished local and foreign physicians are invited to present research or share medical practice developments. For physicians to have continuing education, they rely on NGOs to help them advance with new medical updates, scientific advances, in-service trainings, and refresher programs. NGOs tend to bring international specialists to teach new skills and advancements in areas such as sexual health and care of sexually transmitted infections.[312]

Nurses

In PNG, there are two kinds of nurses – the Community Health Worker (CHW) and the professional Registered Nurse (RN). The course work to become a CHW is less than that to become a RN. CHW can find their area of study in various technical and vocational schools around PNG; this usually takes two years to complete. CHW are limited in their scope of work, usually tending to patients on duties such as medication administration, wound treatment, and counseling. In order to become a RN, students need to complete a three-year program at a vocational and trade school, which will provide them with a certificate or diploma. After successfully completing the three-year program, graduate nurses sit for a national Nursing Council Examination before licensure (RN).[313]

In addition, the University of PNG offers a Bachelor of Nursing for those licensed nurses wishing to pursue a career in nursing management. Currently, the University of PNG does not offer masters or doctoral degree programs in nursing. This makes the nursing science careers stagnant and leads to heavy reliance on physician training for current practice updates.[314] Photo 2 is of medical students from the University of PNG School of Medicine and Health Science.[315]



Photo 2: Medical Students at the University of PNG School of Medicine and Health Science

WOMEN, PEACE, AND SECURITY

The United Nations Security Council Resolution 1325 (UNSCR 1325) adopted in 2000 reaffirmed the need to fully implement international humanitarian and human rights law that protect the rights of women and girls during and after conflicts. UNSCR 1325 affirms the role of women in the prevention and resolution of conflicts and peacebuilding, and stresses their equal participation and full involvement in all efforts for the promotion of peace and security.

PNG has one of the highest rates of gender disparity in the Asia-Pacific region. PNG ranks 135 out of 156 countries in the Global Gender Gap Index, published in the World Economic Forum Global Gender Gap Report 2021. The report's Gender Gap Index ranks countries according to the calculated gender gap between women and men in four key areas: health, education, economy and politics. Countries with higher ranks have less gender disparity in these sectors than lower ranked countries.[316] PNG scored lowest in women's political empowerment due to the fact that there is no women in parliament and ministerial positions.[317] This ranks PNG in the bottom two countries, alongside Vanuatu, for widest gender gap in the Asia-Pacific region.

Rates of violence against women in PNG are one of the highest in the world. In May 2021, a special parliamentary committee on gender-based violence convened a three-day inquiry to investigate measures to prevent violence against women and girls. The inquiry found there was lack of support, funding and coordination from the GoPNG to adequately respond to the number of cases of violence against women and girls that occur in the country each year. In 2020, 15,444 cases of domestic violence were reported but only 250 people were prosecuted, and fewer than 100 people were convicted. It is estimated that more than 1.5 million people face gender-based violence in the country each year, and that a woman is beaten every 30 seconds in PNG.[318]

The parliamentary inquiry process produced a report in August 2021 and made 71 recommendations to the parliament on measures to end violence against women and girls. The inquiry and its report were welcomed as a long overdue step in the right direction.[319] To support implementation of the report's recommendations, the parliamentary committee met with development partners, including representatives from the UN, United Kingdom, New Zealand, U.S., Australia, and the European Union, to discuss partnerships to end violence against women and girls. Prime Minister James Marape stated at the UN General Assembly on 25 September 2021 that his government is working towards implementing the committee's recommendations.

In December 2019 the U.S. passed the Global Fragility Act (GFA), and on 1 April 2022, the U.S. government issued a new prologue to the 2020 U.S. Strategy to Prevent Conflict and Promote Stability, also known as the Global Fragility Strategy (GFS), identifying PNG as one of the priority countries for GFA implementation. PNG is the only Asia-Pacific country listed. The GFA calls for a long-term, whole-of-government approach to preventing conflict and mitigating violence.[320] With rates of violence against women among the highest in the world, addressing gender-based violence is likely to be a component of GFA implementation in PNG.[321]

In Bougainville, women played an integral role in the peace process at the grassroots level during the decade-long conflict. However, despite their significant contributions, women were largely excluded from the negotiations that preceded the 2001 Bougainville Peace Agreement. Women community leaders and grassroots organizers are fighting to have a voice in the post-referendum negotiations between Bougainville and the GoPNG.[322]

CONCLUSION

PNG is facing significant climate-induced natural disasters in the form of rising sea levels, coastal inundation, flash floods, and landslides, alongside regularly occurring volcanic activity and earthquake risks. The impact of climate change in PNG will be significant given that more than 85% of the population live in rural areas and rely primarily on subsistence agriculture for survival.

The GoPNG has identified several challenges in PNG's DRM system including an orientation towards response and relief with a limited focus on DRR. The GoPNG has also noted that there is a lack of a comprehensive DRM agenda at the different levels of government within PNG. Understanding among government officials of roles and responsibilities in DRM remains limited. Moreover, there is a lack of SOPs for preparedness, response and recovery. Furthermore, PNG lacks effective early warning systems for its many hazards (floods, droughts, earthquakes, volcanoes), among other challenges.[323] Revision to the DM Act is overdue given the changes in PNG's hazard risks due to climate change in the past three decades since the law was updated. Consultations led by the DMT have identified the need for a dedicated funding or mechanisms to easily access funding in emergencies, the need for clear coordination mechanisms for international assistance, and the need for support mechanisms for disaster victims who are exploited or become targets for criminal activities, among other issues to be addressed in an updated law.[324]

The transfer of the NDC, PNGFS, and NVS to the defense portfolio in 2020 suggests an alignment of DRM and disaster response capabilities with the existing resources of the PNGDF, which plays a key role in disaster response within the country.

The elevation of the NDC to an independent authority may help strengthen PNG's DRM system by dedicating more staffing and resources to addressing current challenges. An updated DM Act may help in providing a clearer operating framework for the GoPNG, NGOs, churches, and international partners supporting PNG's DRM and disaster response. The transformation of the NDC into an independent authority is expected to take place in 2022. A draft amendment to the DM Act is planned for the end of 2022.[325]

The GoPNG is developing the relevant plans to help it take action. The most up-to-date plan for DRM is the NDRRF 2017-2030, which reflects a whole-of-government effort to support DRR and DRM. This framework builds on the National Risk Reduction and Disaster Risk Management Framework for Action 2005-2015 and aligns with the global Sendai Framework for Disaster Risk Reduction 2015-2030.[326] Moreover, the GoPNG has mainstreamed tackling climate change into its development priorities, as captured in the national long-term political vision, plans, and strategies of PNG Vision 2050, the National Development Strategic Plan 2010-2030, and the Medium Term Development Plan III. Most recently, the CCDA led the development of PNG's Sustainable Development Goal (SDG) 13 Climate Action Roadmap and the National REDD+ Strategy (NRS).[327] PNG's commitment to adaptation will focus on four priority development sectors of agriculture, health, transport, and infrastructure.

APPENDICES

DoD DMHA Engagements in the Past Five Years

The list below describes the DMHA Engagements that the U.S. has had with PNG in the last five years.

Wisconsin National Guard and PNG Defense Force Exchanges – February-April 2022

The Wisconsin National Guard and PNG Defense Force (PNGDF) partnership began in 2020 and supports U.S. Army Pacific and U.S. Indo-Pacific Command efforts to strengthen a free and open Indo-Pacific. Representatives from the Wisconsin National Guard traveled to Papua New Guinea in March 2022 to strengthen their partnership with the PNGDF under the U.S. Department of Defense National Guard State Partnership Program.

In February 2022, the first in-person exchange took place when three military leaders from the PNGDF travelled to Wisconsin to meet with leaders of the 115th Fighter Wing, the Wisconsin Army National Guard's Combined Support Maintenance Shop, the 1st Battalion, 147th Aviation, the 426th Regional Training Institute, the 32nd Infantry Brigade Combat Team, and Wisconsin's Joint Force Headquarters. The partners have also collaborated via several virtual exchanges the past two years. [328]

In April, members of the Wisconsin National Guard met virtually with partners in the PNGDF to discuss military pregnancy policies and other challenges unique to women serving in the military, expanding the organization's years of advocacy for new mothers beyond state lines and into an international conversation.[329]

U.S. Navy Seabees Construct Dental Facility – December 2021

The U.S. Navy Seabees with Naval Mobile Construction Battalion (NMCB) 5 are built a dental facility at the Lombrum Naval Base, Manus Island, PNG. The Seabees are deployed to PNG—at the request of the PNGDF—to work with the PNGDF and Australian Defence Force on infrastructure improvements as part of their 2021-2022 deployment to the U.S. Indo-Pacific Command area of responsibility. The facility will provide dental care to Manus residents and the surrounding islands, drastically improving the infrastructure on Lombrum Naval Base.[330]

Papua New Guinea and U.S. Hosts Regional Land Forces Seminar – September 2021

Army chiefs from land forces from across the Indo-Pacific region gathered for the biennial Indo-Pacific Army Chiefs Conference (IPACC), held at Fort Shafter Hawaii on 14 September 2021. IPACC was co-hosted by the United States Army and the PNGDF. IPACC is a military seminar that provides a forum for senior-level officers from the Indo-Asia Pacific's regional ground forces to exchange views and ideas. The theme of the 2021 conference was Environmental Impacts on Land and Littoral Operations.[331]

Asia-Pacific Economic Cooperation Support – November 2018

The USS Green Bay (LPD 20) arrived in Port Moresby, PNG, on November 2018. That visit marked the second time a U.S. ship has visited Papua New Guinea in two months. The ship arrived in Port Moresby to provide security, and supported the Asia-Pacific Economic Cooperation (APEC) conference on 17-18 November.[332]

USS Michael Murphy Visits Papua New Guinea – October 2018

Guided-missile destroyer USS Michael Murphy (DDG 112) visited Port Moresby, on Oct. 6. Michael Murphy arrived in preparation of the Asia-Pacific Economic Cooperation (APEC) Leaders' Summit. Such port visit helps strengthen the U.S. Navy's relationship with the maritime forces of Papua New Guinea.[333]

International/Foreign Relations

The U.S. established diplomatic relations with PNG in 1975, following its independence from a UN trusteeship administered by Australia. As the most populous Pacific Island state (9.3 million: 2022 estimate)[334], PNG is important to peace and security in the Asia-Pacific region. Over the past decade, the country has generally experienced economic growth. PNG has abundant energy, agricultural, and mineral resources, but it faces challenges including a boom and bust economy, weak governance, corruption, limited capacity and infrastructure to deliver basic services, the deterioration of its health system, and a concentrated HIV/AIDS epidemic among key populations and in the Highland provinces. [335]

The U.S and PNG have enjoyed a close friendship, and the U.S. Government seeks to enhance PNG's stability as a U.S. partner. The two countries work together on many mutual priorities from improving transparency and good governance, to combating trafficking in persons, curbing the effects of environmental insecurity, protecting fisheries, improving public health, and promoting gender equality and women's economic empowerment, with an emphasis on increasing access to entrepreneurship. The U.S. and PNGDF have had a cooperative security assistance relationship focused primarily on joint humanitarian exercises and the training of PNGDF personnel. [336]

U.S. bilateral and multilateral assistance funds public health programs in PNG including the President's Emergency Plan For AIDS Relief (PEPFAR), TB, and Malaria and Neglected Tropical Diseases, and aims to advance the PNG's public health system. The U.S. builds the capacity and resilience of PNG to adapt to climate change through regional assistance that covers 12 Pacific Island countries. The U.S. supports PNG's efforts to protect biodiversity, recently announcing a US$19.6 million project to protect important ecosystems in northern PNG. The U.S. also contributes to the Coral Triangle Initiative to preserve coral reefs, fisheries, and food security in six countries including PNG. The U.S. supports efforts to improve the country's disaster preparedness and response. In 2017, the U.S provided funding for relief efforts in the Highlands, following the magnitude 7.5 earthquake. U.S. military forces, through Indo-Pacific Command in Honolulu, Hawaii, provide training to the PNGDF and have held small-scale joint training and engineering exercises. The United States provides police and other education and training courses to national security officials. U.S. companies based in PNG have also funded a range of health and development projects. [337]

PNG is eligible for preferences under the U.S. Generalized System of Preferences (GSP) program. PNG is a party to the Treaty on Fisheries between the U.S. and 16 Pacific Island parties, which provides access for certain U.S. fishing vessels in exchange for industry payments and promotes broader cooperation. Under a separate Economic Assistance Agreement (EAA) associated with the Treaty, the U.S. Government provides $21 million per year to support economic development in the region through the Pacific Islands Forum Fisheries Agency.[338]

PNG is a member of the Asia-Pacific Economic Cooperation (APEC), the Pacific Islands Forum (PIF) an observer to the Association of South East Asian Nations (ASEAN). U.S. bilateral and multilateral assistance funds public health programs in Papua New Guinea including the President's Emergency Plan For AIDS Relief (PEPFAR), Tuberculosis (TB), and Malaria and Neglected Tropical Diseases, and aims to advance the country's public health system. [339] PNG is one of the priority countries for the implementation of the U.S. 2019 Global Fragility Act.[340]

Participation in International Organizations

PNG participates in the following international organizations:

African, Caribbean and Pacific (ACP) Group of States, Asian Development Bank

(ADB), Alliance of Small Island States (AOSIS), Asia-Pacific Economic Cooperation (APEC), ASEAN Regional Forum (ARF), Association of Southeast Asian Nations (ASEAN)-Observer, Bank for International Settlements (BIS), Conference on Disarmament (CD), Extractive Industries Transparency Initiative (EITI), Food and Agriculture Organization of the United Nations (FAO), Group of 77 (G-77), International Atomic Energy Agency (IAEA), International Bank for Reconstruction and Development (IBRD), International Civil Aviation Organization (ICAO), Institute of Catastrophe Risk Management (ICRM), International Development Association (IDA), International Fund for Agricultural Development (IFAD), International Finance Corporation (IFC), International Federation of Red Cross and Red Crescent Societies (IFRCS), International Hydrographic Organization (IHO), International Labour Organization (ILO), International Monetary Fund (IMF), International Maritime Organization (IMO), International Mobil Satellite Organization (IMSO), International Criminal Police Organisation (INTERPOL), International Olympic Committee (IOC), UN International Organization for Migration (IOM), Inter-Parliamentary Union (IPU), International Organization for Standardization (ISO)-correspondent, International Telecommunications Satellite Organization (ITSO), International Telecommunications Union (ITU), Multilateral Investment Guarantee Agency (MIGA), Non-Aligned Movement (NAM), Organization of American States (OAS – observer), Organisation for the Prohibition of Chemical Weapons (OPCW), Pacific Islands Forum (PIF - partner), South Pacific Regional Trade and Economic Co-operation Agreement (SPARTECA), Pacific Community (SPC), United Nations (UN), United Nations Conference on Trade and Development (UNCTAD), UN Educational, Scientific, and Cultural Organization (UNESCO), UN High Commissioner for Refugees (UNHCR), UN Industrial Development Organization (UNIDO), Union Latina, World Tourism Organization (UNWTO), Universal Postal Union (UPU), World Customs Organization (WCO), World Federation of Trade Unions (WFTU NGOs), World Health Organization (WHO), World Intellectual Property Organization (WIPO), World Meteorological Organization (WMO), World Trade Organization (WTO).[341]

In 2020, PNG passed the International Obligations Bill, providing the legal framework for PNG's participation in UN peacekeeping operations.[342] PNG does not current contribute personnel to international peace operations.

Force Protection/Pre-Deployment Information

The following information is provided for pre-deployment planning and preparations. Visit www.travel.state.gov prior to deployments for further up-to-date information. DoD personnel must review the Foreign Clearance Guide (FCG) for travel to PNG (www.fcg.pentagon.mil). All official travel and personal travel for active duty personnel must be submitted through an APACS request. Contact information for the Defense Attaché Office can be found in the FCG if you have additional questions.[343]

Passport/Visa

To enter Papua New Guinea, U.S. citizens must have: a passport that is valid for at least six months from the date of intended travel, an onward/return airline ticket, and proof of sufficient funds.

Obtain a physical visa or eVisa prior to arrival.

All travelers must be fully vaccinated against COVID-19. No other vaccinations are currently required.

Safety and Security

Crime is a significant concern. U.S. citizens have been victims of violent crime, including sexual assault, carjacking, home invasions, kidnappings, and armed robberies.

Tensions between communal or clan groups may result in violent conflict at any time,

including in Port Moresby and other urban areas.

Exercise a high degree of caution in remote areas, as law enforcement presence is extremely limited and tourist and transportation facilities are inadequate.

Unexploded ordinance and mines may be found in Bougainville, East New Britain, and throughout the Papua New Guinea islands. Exercise caution when walking or hiking off marked roads and trails.

There has been a recent uptick in small-scale piracy, particularly in waters surrounding Madang and Milne Bay.

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Papua New Guinea
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Emergency After-Hours Telephone for U.S. citizens only: +(675) 7200-9439
Email: *ConsularPortMoresby@state.gov*
Currency Information

Local currency is the Papua New Guinean kina (PGK). Bringing in more than PGK 20,000 must be declared.

Travel Health Information

The U.S. Centers for Disease Control and Prevention (CDC) provides guidance that all travelers to PNG should be up to date on routine vaccinations. The following are additional recommendations for travel to PNG. The information in Tables 8 and 9 are taken directly from the CDC website under the Travelers Health Section (https://wwwnc.cdc.gov/travel/destinations/list/).[344]

Health Alerts for PNG: At the time of writing this handbook (22 May 2022), the CDC lists PNG as a "Level 3" or "high level" country for COVID-19. The agency recommends the following for persons traveling to PNG:

- Make sure you are vaccinated and up to date with your COVID-19 vaccines before traveling to Papua New Guinea. If you are not up to date with COVID-19 vaccines, avoid travel to Papua New Guinea.

The following actions you can take to stay healthy and safe on your trip include:

Eat and Drink Safely

Unclean food and water can cause travelers' diarrhea and other diseases. Reduce your risk by sticking to safe food and water habits.

Eat
- Food that is cooked and served hot
- Hard-cooked eggs
- Fruits and vegetables you have washed in clean water or peeled yourself
- Pasteurized dairy products

Don't Eat
- Food served at room temperature
- Food from street vendors
- Raw or soft-cooked (runny) eggs
- Raw or undercooked (rare) meat or fish
- Unwashed or unpeeled raw fruits and vegetables
- Unpasteurized dairy products
- "Bushmeat" (monkeys, bats, or other wild game)

Drink
- Bottled water that is sealed
- Water that has been disinfected
- Ice made with bottled or disinfected water
- Carbonated drinks
- Hot coffee or tea
- Pasteurized milk

Don't Drink
- Tap or well water
- Ice made with tap or well water
- Drinks made with tap or well water (such as reconstituted juice)
- Unpasteurized milk

Take Medicine

Talk with your doctor about taking prescription or over-the-counter drugs with you on your trip in case you get sick.

Prevent Bug Bites

Bugs (like mosquitoes, ticks, and fleas) can spread a number of diseases in the Philippines. Many of these diseases cannot be prevented with a vaccine or medicine. You can reduce your risk by taking steps to prevent bug bites.

What can I do to prevent bug bites?

- Cover exposed skin by wearing long-sleeved shirts, long pants, and hats.
- Use an appropriate insect repellent (see below).
- Use permethrin-treated clothing and gear (such as boots, pants, socks, and tents). Do not use permethrin directly on skin.
- Stay and sleep in air-conditioned or screened rooms.
- Use a bed net if the area where you are sleeping is exposed to the outdoors.

What type of insect repellent should I use?

- FOR PROTECTION AGAINST TICKS AND MOSQUITOES: Use a repellent that contains 20% or more DEET for protection that lasts up to several hours.
- FOR PROTECTION AGAINST MOSQUITOES ONLY: Products with one of the following active ingredients can also help prevent mosquito bites. Higher percentages of active ingredient provide longer protection.
    - DEET
    - Picaridin (also known as KBR 3023, Bayrepel, and icaridin)
    - Oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD)
    - IR3535
    - 2-undecanone
- Always use insect repellent as directed.

What should I do if I am bitten by bugs?

- Avoid scratching bug bites, and apply hydrocortisone cream or calamine lotion to reduce the itching.
- Check your entire body for ticks after outdoor activity. Be sure to remove ticks properly.

What can I do to avoid bed bugs?

Although bed bugs do not carry disease, they are an annoyance. See our information page about avoiding bug bites for some easy tips to avoid them. For more information on bed bugs, see Bed Bugs.

Safety and Security

Note that conditions can change rapidly in a country at any time. To receive updated Travel Advisories and Alerts for the countries you choose, sign up at *https://step.state.gov*.

Routine vaccines	Make sure you are up-to-date on all routine vaccines before your trip. Some of these vaccines include • Chickenpox (Varicella) • Diphtheria-Tetanus-Pertussis • Flu (influenza) • Measles-Mumps-Rubella (MMR) • Polio • Shingles
COVID-19	All eligible travelers should be up to date with their COVID-19 vaccines. Please see CDC's COVID-19 Vaccines for Specific Groups of People for more information.
Hepatitis A	• Recommended for unvaccinated travelers one year old or older going to Papua New Guinea. • Infants 6 to 11 months old should also be vaccinated against Hepatitis A. The dose does not count toward the routine 2-dose series. • Travelers allergic to a vaccine component or who are younger than 6 months should receive a single dose of immune globulin, which provides effective protection for up to 2 months depending on dosage given. • Unvaccinated travelers who are over 40 years old, immunocompromised, or have chronic medical conditions planning to depart to a risk area in less than 2 weeks should get the initial dose of vaccine and at the same appointment receive immune globulin.
Hepatitis B	Recommended for unvaccinated travelers of all ages to Papua New Guinea.
Japanese Encephalitis (for some travelers)	Recommended for travelers who: • Are moving to an area with Japanese encephalitis to live • Spend long periods of time, such as a month or more, in areas with Japanese encephalitis • Frequently travel to areas with Japanese encephalitis • Consider vaccination for travelers • Spending less than a month in areas with Japanese encephalitis but will be doing activities that increase risk of infection, such as visiting rural areas, hiking or camping, or staying in places without air conditioning, screens, or bed nets • Going to areas with Japanese encephalitis who are uncertain of their activities or how long they will be there • Not recommended for travelers planning short-term travel to urban areas or travel to areas with no clear Japanese encephalitis season.
Malaria	CDC recommends that travelers going to certain areas of Papua New Guinea take prescription medicine to prevent malaria. Depending on the medicine you take, you will need to start taking this medicine multiple days before your trip, as well as during and after your trip. Talk to your doctor about which malaria medication you should take.
Measles	Infants 6 to 11 months old traveling internationally should get 1 dose of measles-mumps-rubella (MMR) vaccine before travel. This dose does not count as part of the routine childhood vaccination series.
Rabies	Rabid dogs are commonly found in Papua New Guinea. However, if you are bitten or scratched by a dog or other mammal while in Papua New Guinea, rabies treatment is often available. Consider rabies vaccination before your trip if your activities mean you will be around dogs or wildlife. Travelers more likely to encounter rabid animals include • Campers, adventure travelers, or cave explorers (spelunkers) • Veterinarians, animal handlers, field biologists, or laboratory workers handling animal specimens • Visitors to rural areas • Since children are more likely to be bitten or scratched by a dog or other animals, consider rabies vaccination for children traveling to Papua New Guinea.
Typhoid	Recommended for most travelers, especially those staying with friends or relatives or visiting smaller cities or rural areas..
Yellow fever	Required if traveling from a country with risk of YF virus transmission and ≥1 year of age, including transit in an airport located in a country with risk of YF virus transmission

Table 8: CDC Information for Vaccine-Preventable Diseases in PNG

Ross River virus disease	Mosquito bite.
Dengue	Mosquito bites can carry dengue; there is no prophylaxis. Avoid bug bits.
Hantavirus	Hantavirus can be spread by breathing in air or accidentally eating food contaminated with the urine, droppings, or saliva of infected rodents, or bite from an infected rodent. Less commonly, it is spread by being around someone sick with hantavirus (only occurs with Andes virus). To avoid infection, avoid rodents and areas where they live, and avoid sick people.
Leptospirosis	Leptospirosis can be contracted by touching urine or other body fluids from an animal infected with leptospirosis, swimming or wading in urine-contaminated fresh water, or contact with urine-contaminated mud, or by drinking water or eating food contaminated with animal urine. To avoid infection, avoid contaminated water and soil.
Tuberculosis (TB)	TB is most commonly contracted when one breathes in TB bacteria that is in the air from an infected and contagious person who has coughed, spoken, or sang. To avoid potential contamination, avoid sick people.
Zika	Zika is spread by the bite of an infected mosquito or by an infected pregnant woman to her unborn baby. To avoid infection, avoid bug bites.

Table 9: CDC Information for Non-Vaccine-Preventable Diseases in PNG

Sendai Framework

The GoPNG has prepared the National Disaster Risk Reduction Framework 2017-2030 to build on the National Risks Reduction and Disaster Risk Management Framework for Action 2005-2015 and to align with the Sendai Framework for Disaster Risk Reduction 2015-2030.[345]

The Sendai Framework is the global blueprint and fifteen-year plan to build the world's resilience to natural disasters.[346] The information in this section is sourced directly from the Sendai Framework. The Sendai Framework for Disaster Risk Reduction 2015-2030 outlines seven clear targets and four priorities for action to prevent new and reduce existing disaster risks:

The Seven Global Targets include:

- Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality rates in the decade 2020-2030 compared to the period 2005-2015.
- Substantially reduce the number of affected people globally by 2030, aiming to lower average global figure per 100,000 in the decade 2020 -2030 compared to the period 2005-2015.
- Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.
- Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
- Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
- Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this Framework by 2030.
- Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.[347]

The Four Priorities of Action include:

- Understanding disaster risk;
- Strengthening disaster risk governance to manage disaster risk;
- Investing in disaster reduction for resilience; and
- Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

The Sendai Framework aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries over the next 15 years. It was adopted at the Third United Nations World Conference on Disaster Risk Reduction in Sendai, Japan in 2015.[348] The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters.[349] Figure 15 shows the Sendai DRR Framework.[350]

Chart of the Sendai Framework for Disaster Risk Reduction
2015-2030

Scope and purpose

The present framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks. It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors

Expected outcome

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries

Goal

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience

Targets

Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015	Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015	Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030	Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030	Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020	Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030	Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030

Figure 15: UN Sendai Framework for Disaster Risk Reduction 2015-2030

HFA Country Progress Report

The Hyogo Framework for Action (HFA) was adopted as a guideline to reduce vulnerabilities to natural hazards. The HFA assists participating countries to become more resilient and to better manage the hazards that threaten their development. The levels of progress of the 2011-2013 results of the HFA for PNG are represented in Figure 16 and Table 10. Table 11 provides an overview of the overall challenges and the future outlook statement from the HFA report. The 2011- 2013 is the most recent HFA report available for PNG.[351]

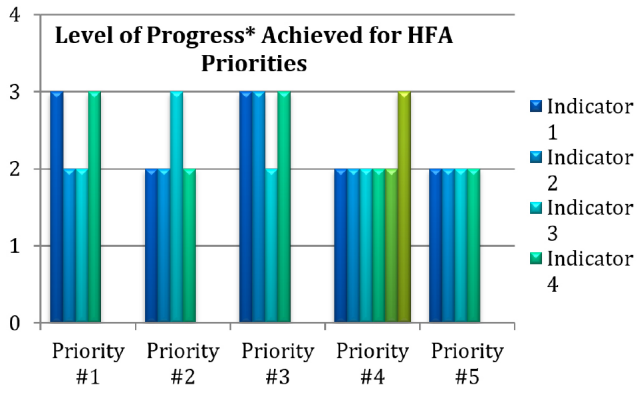


Figure 16: HFA Level of Progress Achieved

Core Indicator*	Indicator Description	Level of progress Achieved*
Priority for Action #1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.		
1	National policy and legal framework for disaster risk reduction exists with decentralized responsibilities and capacities at all levels.	3
2	Dedicated and adequate resources are available to implement disaster risk reduction plans and activities at all administrative levels.	2
3	Community participation and decentralization is ensured through the delegation of authority and resources to local levels.	2
4	A national multi sectoral platform for disaster risk reduction is functioning.	3
Priority for Action #2: Identify, assess and monitor disaster risks and enhance early warning.		
1	National and local risk assessments based on hazard data and vulnerability information are available and include risk assessments for key sectors.	2
2	Systems are in place to monitor, archive and disseminate data on key hazards and vulnerabilities.	2
3	Early warning systems are in place for all major hazards, with outreach to communities.	3
4	National and local risk assessments take account of regional / trans-boundary risks, with a view to regional cooperation on risk reduction.	2
Priority for Action #3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels		
1	Relevant information on disasters is available and accessible at all levels, to all stakeholders (through networks, development of information sharing systems, etc.).	3
2	School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices.	2
3	Research methods and tools for multi-risk assessments and cost benefit analysis are developed and strengthened.	2
4	Research methods and tools for multi-risk assessments and cost benefit analysis are developed and strengthened.	3

Table 10: National Progress Report on the Implementation of the HFA

Priority for Action #4: Reduce the underlying risk factors.		
1	Disaster risk reduction is an integral objective of environment related policies and plans, including for land use natural resource management and adaptation to climate change.	2
2	Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk.	2
3	Economic and productive sectorial policies and plans have been implemented to reduce the vulnerability of economic activities.	2
4	Planning and management of human settlements incorporate disaster risk reduction elements, including enforcement of building codes.	2
5	Disaster risk reduction measures are integrated into post disaster recovery and rehabilitation processes.	2
6	Procedures are in place to assess the disaster risk impacts of major development projects, especially infrastructure.	3
Priority for Action #5: Strengthen disaster preparedness for effective response at all levels.		
1	Strong policy, technical and institutional capacities and mechanisms for disaster risk management, with a disaster risk reduction perspective are in place.	2
2	Disaster preparedness plans and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programs.	2
3	Financial reserves and contingency mechanisms are in place to support effective response and recovery when required.	2
4	Procedures are in place to exchange relevant information during hazard events and disasters, and to undertake post-event reviews.	2

Table Notes:
*Level of Progress:
1 – Minor progress with few signs of forward action in plans or policy
2 – Some progress, but without systematic policy and/ or institutional commitment
3 – Institutional commitment attained, but achievements are neither comprehensive nor substantial
4 – Substantial achievement attained but with recognized limitations in key aspects, such as financial resources and/ or operational capacities
5 – Comprehensive achievement with sustained commitment and capacities at all levels

Table 10: National Progress Report on the Implementation of the HFA (cont.)

Future Outlook Area 1: The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction.	
Challenges:	DRR continues to be a low priority for the Government. The current institutional or governance arrangements are weak and focus more on emergency response rather than the overall DRR spectrum. Sectors do not appreciate the need for integrating DRR into their development policies and plans due to lack of hazard risk information. The NDMO as the lead DRM focal point for PNG should be able to lead the process of mainstreaming and effectively manage within existing resource constraints or limitations. The NDMO cannot be reasonably expected to lead a comprehensive process of mainstreaming involving all agencies and covering the entire country since it does not have the human and financial resources to do so. The low profile of DRR in existing discourse is a challenge that needs to be addressed. A significant aspect of the whole issue of DRM is in terms of the inextricable link between disasters and development. However, it is the general interpretation that DRM mainly hovers around disaster or emergency response.
Future Outlook Statement:	DRM systematically incorporated into national and sector plans and policies which appropriate with a focus on risk reduction.
Future Outlook Area 2: The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards.	
Challenges:	The current institutional and legal arrangements does provide for a basis for decentralized DRR. The DRM Plans and legislations are obsolete and need review to ensure that appropriate governance and legal systems are in place at all levels. The decentralized nature of government requires DRM interventions to be focused at provincial and sub provincial level. Most of the communities at risk are still out of the reach of government services. There is a need to strengthen the current institutional or governance arrangements for DRM to improve interaction and dialogue on emergency response and disaster risk mainstreaming into planning and budgeting in a manner that will be sustainable over the longer term. A general issue is the need to strengthen DRM capacities at all levels. While there are institutional mechanisms to foster increased and improved DRM activity at a provincial level the results of previous investments are mixed. Part of this is due to a significant emphasis on addressing preparedness and response rather than also looking at opportunities to address mitigation.
Future Outlook Statement:	Revision and strengthening of DRM legislation, institutional arrangements and capacities at all levels to enhance the resilience of the communities.

Table 11: HFA Country Progress Report Future Outlook Areas, PNG

Future Outlook Area 3: The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programs in the reconstruction of affected communities.	
Challenges:	Disaster impacts and losses can be reduced if all stakeholders including communities and individuals in hazard prone areas are well prepared, ready to act and are equipped with knowledge and capacities for effective disaster response. Post disaster recovery activities must be implemented parallel to the early stages of response. There must be no line separating preparedness, response, early and long term recovery from development activities. However, the systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programs is an issue in PNG. There are no recovery plans in place. Only some progress has been made with regard to response planning.
Future Outlook Statement:	DRR elements are built into disaster response, recovery and reconstruction programs to ensure sustainable development and strengthen disaster preparedness for effective response and recovery practices at all levels.

Table 11: HFA Country Progress Report Future Outlook Areas, PNG (cont.)

Country Profile

The information in the Country Profile section is sourced directly from the CIA World Fact book for PNG. Additional numbers on country comparison to the world can be found by going directly to the CIA website (https:/www.cia.gov). It discusses topics including geography, people and society, government, economy, energy, communications, military and security, transportation, terrorism, and transnational issues.[352]

Background

Papua New Guinea (PNG) was first settled between 50,000 and 60,000 years ago. PNG's harsh geography consisting of mountains, jungles, and numerous river valleys, kept many of the arriving groups isolated, giving rise to PNG's incredible ethnic and linguistic diversity. Agriculture was independently developed by some of these groups. Around 500 B.C., Austronesian voyagers settled along the coast. Spanish and Portuguese explorers periodically visited the island starting in the 1500s but none made it into the country's interior. American and British whaling ships frequented the islands off the coast of New Guinea in the mid-1800s. In 1884, Germany declared a protectorate - and eventually a colony - over the northern part of what would become PNG and named it German New Guinea; days later the UK followed suit on the southern part and nearby islands and called it Papua. Most of their focus was on the coastal regions, leaving the highlands largely unexplored.

The UK put its colony under Australian administration in 1902 and formalized the act in 1906. At the outbreak of World War I, Australia occupied German New Guinea and continued to rule it after the war as a League of Nations Mandate. The discovery of gold along the Bulolo River in the 1920s, led prospectors to venture into the highlands, where they found about 1 million people living in isolated communities. Japan invaded New Guinea in 1941 and reached Papua the following year. Allied victories during the New Guinea campaign pushed out the Japanese, and after the end of the war, Australia combined the two territories into one administration. Sir Michael SOMARE won elections in 1972 on the promise of achieving independence, which was realized in 1975. A secessionist movement in Bougainville, an island well endowed in copper and gold resources, reignited in 1988 with debates about land use, profits, and an influx of outsiders at the Panguna Copper Mine. Following elections in 1992, the PNG government took a hardline stance against Bougainville rebels and the resulting civil war led to about 20,000 deaths. In 1997, the PNG government hired mercenaries to support its troops in Bougainville, sparking an army mutiny and forcing the prime minister to resign. PNG and Bougainville signed a truce in 1997 and a peace agreement in 2001, which granted Bougainville autonomy. An internationally-monitored nonbinding referendum asking Bougainvilleans to chose independence or greater self rule occurred in November 2019, with 98% of voters opting for independence.

Geography

Location

Oceania, group of islands including the eastern half of the island of New Guinea between the Coral Sea and the South Pacific Ocean, east of Indonesia

Geographic coordinates

6 00 S, 147 00 E

Map references

Oceania

Area

total: 462,840 sq km
land: 452,860 sq km
water: 9,980 sq km

Land boundaries
total: 824 km
border countries (1): Indonesia 824 km

Coastline
5,152 km

Maritime claims
territorial sea: 12 nm
continental shelf: 200-m depth or to the depth of exploitation
exclusive fishing zone: 200 nm
measured from claimed archipelagic baselines

Climate
tropical; northwest monsoon (December to March), southeast monsoon (May to October); slight seasonal temperature variation

Terrain
mostly mountains with coastal lowlands and rolling foothills

Elevation
highest point: Mount Wilhelm 4,509 m
lowest point: Pacific Ocean 0 m
mean elevation: 667 m

Natural resources
gold, copper, silver, natural gas, timber, oil, fisheries

Land use
agricultural land: 2.6% (2018 est.)
arable land: 0.7% (2018 est.)
permanent crops: 1.5% (2018 est.)
permanent pasture: 0.4% (2018 est.)
forest: 63.1% (2018 est.)
other: 34.3% (2018 est.)

Irrigated land
0 sq km (2012)

Major rivers (by length in km)
Sepik river source and mouth (shared with Indonesia) - 1,126 km; Fly river source and mouth (shared with Indonesia) - 1,050 km

Population distribution
population concentrated in the highlands and eastern coastal areas on the island of New Guinea; predominantly a rural distribution with only about one-fifth of the population residing in urban areas

Natural hazards
active volcanism; the country is subject to frequent and sometimes severe earthquakes; mud slides; tsunamis
volcanism: severe volcanic activity; Ulawun (2,334 m), one of Papua New Guinea's potentially most dangerous volcanoes, has been deemed a Decade Volcano by the International Association of Volcanology and Chemistry of the Earth's Interior, worthy of study due to its explosive history and close proximity to human populations; Rabaul (688 m) destroyed the city of Rabaul in 1937 and 1994; Lamington erupted in 1951 killing 3,000 people; Manam's 2004 eruption forced the island's abandonment; other historically active volcanoes include Bam, Bagana, Garbuna, Karkar, Langila, Lolobau, Long Island, Pago, St. Andrew Strait, Victory, and Waiowa; see note 2 under "Geography - note"

Geography - note
note 1: shares island of New Guinea with Indonesia; generally east-west trending highlands break up New Guinea into diverse ecoregions; one of world's largest swamps along southwest coast

note 2: two major food crops apparently developed on the island of New Guinea: bananas and sugarcane

note 3: Papua New Guinea is one of the countries along the Ring of Fire, a belt of active volcanoes and earthquake epicenters bordering the Pacific Ocean; up to 90% of the world's earthquakes and some 75% of the world's volcanoes occur within the Ring of Fire

Map description
Papua New Guinea map showing major cities and islands of this archipelagic Pacific Ocean country as well as parts of neighboring countries.

People and Society

Population
9,593,498 (2022 est.)

Nationality
noun: Papua New Guinean(s)
adjective: Papua New Guinean

Ethnic groups
Melanesian, Papuan, Negrito, Micronesian, Polynesian

Languages
Tok Pisin (official), English (official), Hiri Motu (official), some 839 indigenous languages spoken (about 12% of the world's total); many languages have fewer than 1,000 speakers
note: Tok Pisin, a creole language, is widely used and understood; English is spoken by 1%-2%; Hiri Motu is spoken by less than 2%

Religions
Protestant 64.3% (Evangelical Lutheran 18.4%, Seventh Day Adventist 12.9%, Pentecostal 10.4%, United Church 10.3%, Evangelical Alliance 5.9%, Anglican 3.2%, Baptist 2.8%, Salvation Army .4%), Roman Catholic 26%, other Christian 5.3%, non-Christian 1.4%, unspecified 3.1% (2011 est.)
note: data represent only the citizen population; roughly 0.3% of the population are non-citizens, consisting of Christian 52% (predominantly Roman Catholic), other 10.7% , none 37.3%

Age structure
0-14 years: 31.98% (male 1,182,539/female 1,139,358)
15-24 years: 19.87% (male 731,453/female 711,164)
25-54 years: 37.68% (male 1,397,903/female 1,337,143)
55-64 years: 5.83% (male 218,529/female 204,717)
65 years and over: 4.64% (2020 est.) (male 164,734/female 171,916)

Dependency ratios
total dependency ratio: 63.2
youth dependency ratio: 57.4
elderly dependency ratio: 5.8
potential support ratio: 17.2 (2020 est.)

Median age
total: 24 years
male: 24 years
female: 24 years (2020 est.)

Population growth rate
2.35% (2022 est.)

Birth rate
29.03 births/1,000 population (2022 est.)

Death rate
5.54 deaths/1,000 population (2022 est.)

Net migration rate
0 migrant(s)/1,000 population (2022 est.)

Population distribution
population concentrated in the highlands and eastern coastal areas on the island of New Guinea; predominantly a rural distribution with only about one-fifth of the population residing in urban areas

Urbanization
urban population: 13.6% of total population (2022)
rate of urbanization: 2.91% annual rate of change (2020-25 est.)
total population growth rate v. urban population growth rate, 2000-2030

Major urban areas - population
400,000 PORT MORESBY (capital) (2022)

Sex ratio
at birth: 1.05 male(s)/female
0-14 years: 1.04 male(s)/female
15-24 years: 1.04 male(s)/female
25-54 years: 1.02 male(s)/female
55-64 years: 0.98 male(s)/female
65 years and over: 1 male(s)/female
total population: 1.03 male(s)/female (2022 est.)

Mother's mean age at first birth
note: median age a first birth among women 25-49

Maternal mortality ratio
145 deaths/100,000 live births (2017 est.)

Infant mortality rate
total: 33.59 deaths/1,000 live births
male: 36.91 deaths/1,000 live births
female: 30.12 deaths/1,000 live births (2022 est.)

Life expectancy at birth
total population: 69.43 years
male: 67.76 years
female: 71.19 years (2022 est.)
Total fertility rate
3.92 children born/woman (2022 est.)

Contraceptive prevalence rate
36.7% (2016/18)

Drinking water source
improved: urban: 86.2% of population
rural: 41.5% of population
total: 47.5% of population
unimproved: urban: 13.8% of population
rural: 58.5% of population
total: 52.5% of population (2020 est.)

Current Health Expenditure
2.3% (2019)

Physicians density
0.07 physicians/1,000 population (2018)

Sanitation facility access
improved: urban: 57.8% of population
rural: 18.2% of population
total: 23.5% of population
unimproved: urban: 42.2% of population
rural: 81.8% of population
total: 76.5% of population (2020 est.)

HIV/AIDS - adult prevalence rate
0.9% (2020 est.)

HIV/AIDS - people living with HIV/AIDS
55,000 (2020 est.)
note: estimate does not include children

HIV/AIDS - deaths
(2020 est.) <500
note: estimate does not include children

Major infectious diseases
degree of risk: very high (2020)
food or waterborne diseases: bacterial diarrhea, hepatitis A, and typhoid fever
vectorborne diseases: dengue fever and malaria

Obesity - adult prevalence rate
21.3% (2016)

Children under the age of 5 years underweight
27.8% (2009/11)

Child marriage
women married by age 15: 8% (2018)
women married by age 18: 27.3% (2018)
men married by age 18: 3.7% (2018 est.)

Education expenditures
1.9% of GDP (2018)

Literacy
definition: age 15 and over can read and write
total population: 64.2%
male: 65.6%
female: 62.8% (2015)

People - note
the indigenous population of Papua New Guinea (PNG) is one of the most heterogeneous in the world; PNG has several thousand separate communities, most with only a few hundred people; divided by language, customs, and tradition, some of these communities have engaged in low-scale tribal conflict with their neighbors for millennia; the advent of modern weapons and modern migrants into urban areas has greatly magnified the impact of this lawlessness

Environment

Environment - current issues
rain forest loss as a result of growing commercial demand for tropical timber; unsustainable logging practices result in soil erosion, water quality degradation, and loss of habitat and biodiversity; large-scale mining projects cause adverse impacts on forests and water quality (discharge of heavy metals, cyanide, and acids into rivers); severe drought; inappropriate farming practices accelerate land degradation (soil erosion, siltation, loss of soil fertility); destructive fishing practices and coastal pollution due to run-off from land-based activities and oil spills

Environment - international agreements
party to: Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Climate Change-Paris Agreement, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping-London Convention, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 2006, Wetlands
signed, but not ratified: Comprehensive Nuclear Test Ban

Air pollutants
particulate matter emissions: 10.91 micrograms per cubic meter (2016 est.)
carbon dioxide emissions: 7.54 megatons (2016 est.)
methane emissions: 11.05 megatons (2020 est.)

Climate
tropical; northwest monsoon (December to March), southeast monsoon (May to October); slight seasonal temperature variation
Land use
agricultural land: 2.6% (2018 est.)
arable land: 0.7% (2018 est.)
permanent crops: 1.5% (2018 est.)
permanent pasture: 0.4% (2018 est.)
forest: 63.1% (2018 est.)
other: 34.3% (2018 est.)

Urbanization
urban population: 13.6% of total population (2022)
rate of urbanization: 2.91% annual rate of change (2020-25 est.)
total population growth rate v. urban population growth rate, 2000-2030

Revenue from forest resources
forest revenues: 2.08% of GDP (2018 est.)

Revenue from coal
coal revenues: 0% of GDP (2018 est.)

Waste and recycling
municipal solid waste generated annually: 1 million tons (2014 est.)
municipal solid waste recycled annually: 20,000 tons (2016 est.)
percent of municipal solid waste recycled: 2% (2016 est.)

Major rivers (by length in km)
Sepik river source and mouth (shared with Indonesia) - 1,126 km; Fly river source and mouth (shared with Indonesia) - 1,050 km

Total water withdrawal
municipal: 223.5 million cubic meters (2017 est.)
industrial: 167.6 million cubic meters (2017 est.)
agricultural: 1 million cubic meters (2017 est.)

Total renewable water resources
801 billion cubic meters (2017 est.)

Government

Country name
conventional long form: Independent State of Papua New Guinea
conventional short form: Papua New Guinea
local short form: Papuaniugini
former: German New Guinea, British New Guinea, Territory of Papua and New Guinea
abbreviation: PNG
etymology: the word "papua" derives from the Malay "papuah" describing the frizzy hair of the Melanesians; Spanish explorer Ynigo ORTIZ de RETEZ applied the term "Nueva Guinea" to the island of New Guinea in 1545 after noting the resemblance of the locals to the peoples of the Guinea coast of Africa

Government type
parliamentary democracy under a constitutional monarchy; a Commonwealth realm
Capital
name: Port Moresby
geographic coordinates: 9 27 S, 147 11 E
time difference: UTC+10 (15 hours ahead of Washington, DC, during Standard Time)
time zone note: Papua New Guinea has two time zones, including Bougainville (UTC+11)
etymology: named in 1873 by Captain John Moresby (1830-1922) in honor of his father, British Admiral Sir Fairfax Moresby (1786-1877)

Administrative divisions
20 provinces, 1 autonomous region*, and 1 district**; Bougainville*, Central, Chimbu, Eastern Highlands, East New Britain, East Sepik, Enga, Gulf, Hela, Jiwaka, Madang, Manus, Milne Bay, Morobe, National Capital**, New Ireland, Northern, Southern Highlands, Western, Western Highlands, West New Britain, West Sepik

Independence
16 September 1975 (from the Australia-administered UN trusteeship)

National holiday
Independence Day, 16 September (1975)

Constitution
history: adopted 15 August 1975, effective at independence 16 September 1975
amendments: proposed by the National Parliament; passage has prescribed majority vote requirements depending on the constitutional sections being amended – absolute majority, two-thirds majority, or three-fourths majority; amended many times, last in 2016

Legal system
mixed legal system of English common law and customary law

International law organization participation
has not submitted an ICJ jurisdiction declaration; non-party state to the ICCt

Citizenship
citizenship by birth: no
citizenship by descent only: at least one parent must be a citizen of Papua New Guinea
dual citizenship recognized: no
residency requirement for naturalization: 8 years

Suffrage
18 years of age; universal

Executive branch
chief of state: Queen ELIZABETH II (since 6 February 1952); represented by Governor General Grand Chief Sir Bob DADAE (since 28 February 2017)
head of government: Prime Minister James MARAPE (since 30 May 2019); Deputy Prime Minister Sam BASIL (since 20 December 2020)
cabinet: National Executive Council appointed by the governor general on the recommendation of the prime minister
elections/appointments: the monarchy is hereditary; governor general nominated by the National Parliament and appointed by the chief of state; following legislative elections, the leader of the majority party or majority coalition usually appointed prime minister by the governor general pending the outcome of a National Parliament vote
election results: James MARAPE elected prime minister; National Parliament vote - 101 to 8

Legislative branch
description: unicameral National Parliament (111 seats; members directly elected in single-seat constituencies - 89 local, 20 provinicial, the autonomous province of Bouganville, and the National Capital District - by majority preferential vote; members serve 5-year terms); note - the constitution allows up to 126 seats
elections: last held from 24 June 2017 to 8 July 2017 (next to be held in June 2022)
election results: percent of vote by party - PNC 37%; NA 13%; Pangu 14%; URP 11%; PPP 4%; SDP 4%; Independents 3%; and smaller parties 14%; seats by party - NA; composition - men 108, women 3, percent of women 3%

Judicial branch
highest courts: Supreme Court (consists of the chief justice, deputy chief justice, 35 justices, and 5 acting justices); National Courts (consists of 13 courts located in the provincial capitals, with a total of 19 resident judges)
judge selection and term of office: Supreme Court chief justice appointed by the governor general upon advice of the National Executive Council (cabinet) after consultation with the National Justice Administration minister; deputy chief justice and other justices appointed by the Judicial and Legal Services Commission, a 5-member body that includes the Supreme Court chief and deputy chief justices, the chief ombudsman, and a member of the National Parliament; full-time citizen judges appointed for 10-year renewable terms; non-citizen judges initially appointed for 3-year renewable terms and after first renewal can serve until age 70; appointment and tenure of National Court resident judges NA
subordinate courts: district, village, and juvenile courts, military courts, taxation courts, coronial courts, mining warden courts, land courts, traffic courts, committal courts, grade five courts

Political parties and leaders
National Alliance Party or NAP [Patrick PRUAITCH]
Papua and Niugini Union Party or PANGU [Sam BASIL]
Papua New Guinea Party or PNGP [Belden NAMAH]
People's National Congress Party or PNC [Peter Paire O'NEILL]
People's Party or PP [Peter IPATAS]
People's Progress Party or PPP [Sir Julius CHAN]
Social Democratic Party or SDP [Powes PARKOP]
Triumph Heritage Empowerment Party or THE [Don POLYE]
United Resources Party or URP [William DUMA]
note: as of 8 July 2017, 45 political parties were registered

International organization participation
ACP, ADB, AOSIS, APEC, ARF, ASEAN (observer), C, CD, CP, EITI (candidate country), FAO, G-77, IAEA, IBRD, ICAO, ICRM, IDA, IFAD, IFC, IFRCS, IHO, ILO, IMF, IMO, Interpol, IOC, IOM, IPU, ISO (correspondent), ITSO, ITU, MIGA, NAM, OPCW, PIF, Sparteca, SPC, UN, UNCTAD, UNESCO, UNIDO, UNMISS, UNWTO, UPU, WCO, WFTU (NGOs), WHO, WIPO, WMO, WTO

Diplomatic representation in the US
chief of mission: Ambassador (vacant); Charge D'Affaires Cephas KAYO, Minister (since 31 January 2018)
chancery: 1825 K Street NW, Suite 1010, Washington, DC 20006
telephone: [1] (202) 745-3680
FAX: [1] (202) 745-3679
email address and website:
info@pngembassy.org
http://www.pngembassy.org/

Diplomatic representation from the US
chief of mission: Ambassador (vacant), Chargé d'Affaires, a.i., Joe Zadrozny since 14 April 2022.; note - also accredited to the Solomon Islands and Vanuatu
embassy: P.O. Box 1492, Port Moresby
mailing address: 4240 Port Moresby Place, Washington DC 20521-4240
telephone: [675] 308-2100
email address and website:
ConsularPortMoresby@state.gov
https://pg.usembassy.gov/

Flag description
divided diagonally from upper hoist-side corner; the upper triangle is red with a soaring yellow bird of paradise centered; the lower triangle is black with five, white, five-pointed stars of the Southern Cross constellation centered; red, black, and yellow are traditional colors of Papua New Guinea; the bird of paradise - endemic to the island of New Guinea - is an emblem of regional tribal culture and represents the emergence of Papua New Guinea as a nation; the Southern Cross, visible in the night sky, symbolizes Papua New Guinea's connection with Australia and several other countries in the South Pacific

National symbol(s)
bird of paradise; national colors: red, black

National anthem
name: O Arise All You Sons
lyrics/music: Thomas SHACKLADY
note: adopted 1975

National heritage
total World Heritage Sites: 1 (cultural)
selected World Heritage Site locales: Kuk Early Agricultural Site

Economy

Economic overview
Papua New Guinea (PNG) is richly endowed with natural resources, but exploitation has been hampered by rugged terrain, land tenure issues, and the high cost of developing infrastructure. The economy has a small formal sector, focused mainly on the export of those natural resources, and an informal sector, employing the majority of the population. Agriculture provides a subsistence livelihood for 85% of the people. The global financial crisis had little impact because of continued foreign demand for PNG's commodities.

Mineral deposits, including copper, gold, and oil, account for nearly two-thirds of export earnings. Natural gas reserves amount to an estimated 155 billion cubic meters. Following construction of a $19 billion liquefied natural gas (LNG) project, PNG LNG, a consortium led by ExxonMobil, began exporting liquefied natural gas to Asian markets in May 2014. The project was delivered on time and only slightly above budget. The success of the project has encouraged other companies to look at similar LNG projects. French supermajor Total is hopes to begin construction on the Papua LNG project by 2020. Due to lower global commodity prices, resource

revenues of all types have fallen dramatically. PNG's government has recently been forced to adjust spending levels downward. Numerous challenges still face the government of Peter O'NEILL, including providing physical security for foreign investors, regaining investor confidence, restoring integrity to state institutions, promoting economic efficiency by privatizing moribund state institutions, and maintaining good relations with Australia, its former colonial ruler. Other socio-cultural challenges could upend the economy including chronic law and order and land tenure issues. In August, 2017, PNG launched its first-ever national trade policy, PNG Trade Policy 2017-2032. The policy goal is to maximize trade and investment by increasing exports, to reduce imports, and to increase foreign direct investment (FDI).

Real GDP (purchasing power parity)
$36.69 billion (2020 est.)
$38.17 billion (2019 est.)
$36.06 billion (2018 est.)
note: data are in 2017 dollars

Real GDP growth rate
2.5% (2017 est.)
1.6% (2016 est.)
5.3% (2015 est.)

Real GDP per capita
$4,100 (2020 est.)
$4,300 (2019 est.)
$4,200 (2018 est.)
note: data are in 2017 dollars
GDP (official exchange rate)
$19.82 billion (2017 est.)

Inflation rate (consumer prices)
5.4% (2017 est.)
6.7% (2016 est.)

Credit ratings
Moody's rating: B2 (2016)
Standard & Poors rating: B- (2020)

GDP - composition, by sector of origin
agriculture: 22.1% (2017 est.)
industry: 42.9% (2017 est.)
services: 35% (2017 est.)
GDP - composition, by end use
household consumption: 43.7% (2017 est.)
government consumption: 19.7% (2017 est.)
investment in fixed capital: 10% (2017 est.)
investment in inventories: 0.4% (2017 est.)
exports of goods and services: 49.3% (2017 est.)
imports of goods and services: -22.3% (2017 est.)

Agricultural products
oil palm fruit, bananas, coconuts, fruit, sweet potatoes, game meat, yams, roots/tubers, vegetables, taro

Industries
copra crushing, palm oil processing, plywood production, wood chip production; mining (gold, silver, copper); crude oil and petroleum products; construction, tourism, livestock (pork, poultry, cattle), dairy products, spice products (turmeric, vanilla, ginger, cardamom, chili, pepper, citronella, and nutmeg), fisheries products

Industrial production growth rate
3.3% (2017 est.)

Labor force
3.681 million (2017 est.)

Labor force - by occupation
agriculture: 85%
industry: NA
services: NA

Unemployment rate
2.5% (2017 est.)
2.5% (2016 est.)

Population below poverty line
37% (2002 est.)

Gini Index coefficient - distribution of family income
50.9 (1996)

Household income or consumption by percentage share
lowest 10%: 1.7%
highest 10%: 40.5% (1996)

Budget
revenues: 3.638 billion (2017 est.)
expenditures: 4.591 billion (2017 est.)

Budget surplus (+) or deficit (-)
-4.8% (of GDP) (2017 est.)

Public debt
36.9% of GDP (2017 est.)
36.9% of GDP (2016 est.)

Taxes and other revenues
18.4% (of GDP) (2017 est.)

Fiscal year
calendar year

Current account balance
$4.859 billion (2017 est.)
$4.569 billion (2016 est.)

Exports
$10.6 billion (2018 est.) note: data are in current year dollars
$9.224 billion (2016 est.)

Exports - partners
Australia 26%, China 26%, Japan 22%, Taiwan 7% (2019)

Exports - commodities
natural gas, gold, copper, lumber, crude petroleum, nickel, palm oil, fish, coffee (2019)

Imports
$4.84 billion (2018 est.) note: data are in current year dollars
$2.077 billion (2016 est.)

Imports - partners
Australia 33%, China 19%, Singapore 14%, Malaysia 9% (2019)

Imports - commodities
refined petroleum, excavation machinery, crude petroleum, foodstuffs, delivery trucks (2019)

Reserves of foreign exchange and gold
$1.735 billion (31 December 2017 est.)
$1.656 billion (31 December 2016 est.)

Debt - external
$17.94 billion (31 December 2017 est.)
$18.28 billion (31 December 2016 est.)

Exchange rates
kina (PGK) per US dollar -
3.5131 (2020 est.)
3.4042 (2019 est.)
3.36915 (2018 est.)
2.7684 (2014 est.)
2.4614 (2013 est.)

Energy
Electricity access
electrification - total population: 58.9% (2018)
electrification - urban areas: 82% (2018)
electrification - rural areas: 55.4% (2018)

Electricity - production
3.481 billion kWh (2016 est.)

Electricity - consumption
3.237 billion kWh (2016 est.)

Electricity - exports
0 kWh (2017 est.)

Electricity - imports
0 kWh (2016 est.)

Electricity - installed generating capacity
900,900 kW (2016 est.)

Electricity - from fossil fuels
63% of total installed capacity (2016 est.)
country comparison to the world: 123

Electricity - from nuclear fuels
0% of total installed capacity (2017 est.)
Electricity - from hydroelectric plants
30% of total installed capacity (2017 est.)

Electricity - from other renewable sources
7% of total installed capacity (2017 est.)

Crude oil - production
45,000 bbl/day (2018 est.)
Crude oil - exports
55,600 bbl/day (2015 est.)

Crude oil - imports
22,220 bbl/day (2015 est.)

Crude oil - proved reserves
183.8 million bbl (1 January 2018 est.)
Refined petroleum products - production
22,170 bbl/day (2015 est.)

Refined petroleum products - consumption
37,000 bbl/day (2016 est.)

Refined petroleum products - exports
0 bbl/day (2015 est.)

Refined petroleum products - imports
17,110 bbl/day (2015 est.)

Natural gas - production
11.18 billion cu m (2017 est.)

Natural gas - consumption
99.11 million cu m (2017 est.)

Natural gas - exports
11.1 billion cu m (2017 est.)
Natural gas - imports
0 cu m (2017 est.)
country comparison to the world: 172
Natural gas - proved reserves
210.5 billion cu m (1 January 2018 est.)

Communications
Telephones - fixed lines
total subscriptions: 166,000 (2020 est.)
subscriptions per 100 inhabitants: 2 (2020 est.)
Telephones - mobile cellular
total subscriptions: 4.018 million (2018)
subscriptions per 100 inhabitants: 47.62 (2019 est.)
country comparison to the world: 131

Telecommunication systems
general assessment: telecom services stymied by rugged terrain, high cost of infrastructure, and poverty of citizens; services are minimal with little change in fixed-line tele-density in two decades; progress in mobile platforms with almost 90% coverage on 3G and LTE; GSM available in remote areas; Internet slow and expensive, available to pockets of the population; facilities provide radiotelephone, telegraph, coastal radio, aeronautical radio, and international radio communication services; launch of satellite and landing of submarine cable will improve most services in the region; government supports training to boost digital transformation; Australia attempted to block Chinese investment in cooperative network; importer of broadcasting equipment from China (2020)

domestic: access to telephone services is not widely available; fixed-line nearly 2 per 100 and mobile-cellular nearly 48 per 100 persons (2019)
international: country code - 675; landing points for the Kumul Domestic Submarine Cable System, PNG-LNG, APNG-2, CSCS and the PPC-1 submarine cables to Australia, Guam, PNG and Solomon Islands; satellite earth station - 1 Intelsat (Pacific Ocean) (2019)
note: the COVID-19 pandemic continues to have a significant impact on production and supply chains globally; since 2020, some aspects of the telecom sector have experienced downturn, particularly in mobile device

production; many network operators delayed upgrades to infrastructure; progress towards 5G implementation was postponed or slowed in some countries; consumer spending on telecom services and devices was affected by large-scale job losses and the consequent restriction on disposable incomes; the crucial nature of telecom services as a tool for work and school from home became evident, and received some support from governments

Broadcast media
4 TV stations: 1 commercial station operating since 1987, 1 state-run station launched in 2008, 1 digital free-to-view network launched in 2014, and 1 satellite network Click TV (PNGTV) launched in 2015; the state-run National Broadcasting Corporation operates 3 radio networks with multiple repeaters and about 20 provincial stations; several commercial radio stations with multiple transmission points as well as several community stations; transmissions of several international broadcasters are accessible (2018)

Internet country code
.pg

Internet users
total: 965,373 (2019 est.)
percent of population: 11% (2019 est.)
Broadband - fixed subscriptions
total: 21,000 (2020 est.)
subscriptions per 100 inhabitants: 0.23 (2020 est.)
less than 1
country comparison to the world: 165

Transportation
National air transport system
number of registered air carriers: 6 (2020)
inventory of registered aircraft operated by air carriers: 48
annual passenger traffic on registered air carriers: 964,713 (2018)
annual freight traffic on registered air carriers: 30.93 million (2018) mt-km

Civil aircraft registration country code prefix
P2

Airports
total: 561 (2021)
Airports - with paved runways
total: 21
over 3,047 m: 1
2,438 to 3,047 m: 2
1,524 to 2,437 m: 12
914 to 1,523 m: 5
under 914 m: 1 (2021)

Airports - with unpaved runways
total: 540
1,524 to 2,437 m: 11
914 to 1,523 m: 53
under 914 m: 476 (2021)

Heliports
2 (2021)

Pipelines
264 km oil (2013)

Roadways
total: 9,349 km (2011)
paved: 3,000 km (2011)
unpaved: 6,349 km (2011)

Waterways
11,000 km (2011)

Merchant marine
total: 177
by type: container ship 6, general cargo 81, oil tanker 3, other 87 (2021)

Ports and terminals
major seaport(s): Kimbe, Lae, Madang, Rabaul, Wewak
LNG terminal(s) (export): Port Moresby

Military and Security

Military and security forces
Papua New Guinea Defense Force (PNGDF; includes land, maritime, and air elements); Ministry of Police: Royal Papua New Guinea Constabulary (2021)

Military expenditures
0.4% of GDP (2021 est.)
0.4% of GDP (2020 est.)
0.3% of GDP (2019) (approximately $100 million)
0.3% of GDP (2018) (approximately $100 million)
0.3% of GDP (2017) (approximately $110 million)

Military and security service personnel strengths
the Papau New Guinea Defense Force has approximately 3,000 active duty troops, including a land element of about 2,500 (2021)

Military equipment inventories and acquisitions
the PNGDF has a limited inventory consisting of a diverse mix of foreign-supplied weapons and equipment; Papua New Guinea has received most of its military assistance from Australia (2021)

Military service age and obligation
16 years of age for voluntary military service (with parental consent); no conscription (2021)

Military - note
as of 2021, Australia and the US were assisting Papua New Guinea with expanding and improving the Defense Force naval base at Lombrum on Manus Island; the US first established a Lombrum base in 1944 during World War II

Transnational Issues

Disputes - international
relies on assistance from Australia to keep out illegal cross-border activities from primarily Indonesia, including goods smuggling, illegal narcotics trafficking, and squatters and secessionist

Refugees and internally displaced persons
refugees (country of origin): 11,601 (Indonesia) (mid-year 2021)
IDPs: 14,000 (natural disasters, tribal conflict, inter-communal violence, development projects) (2020)
stateless persons: 9 (mid-year 2021)

Trafficking in persons
current situation: Papua New Guinea is a source, destination, and transit country for men, women, and children subjected to sex trafficking and forced labor; women and children are subjected to sex trafficking and domestic servitude; families may sell girls into forced marriages to settle debts, leaving them vulnerable to forced domestic service; local and Chinese men are forced to labor in logging and mining camps; migrant women from Malaysia, Thailand, China, and the Philippines are subjected to sex trafficking and domestic servitude at logging and mining camps, fisheries, and entertainment sites
tier rating: Tier 3 — Papua New Guinea does not fully meet the minimum standards for the elimination of trafficking and is not making significant efforts to do so; despite remaining at Tier 3, the government continued to identify some trafficking victims and a prominent trafficking case was advanced; however, the government did not provide protective services for victims and did not systematically implement its victim identification procedures; corruption among officials in the logging sector remains a problem, and they continue to facilitate sex trafficking and forced labor; no alleged traffickers were convicted; the government dedicates little financial and human resources to combat trafficking, and awareness of trafficking is low among government officials (2020)

Illicit drugs
transit point for smuggling drugs such as methamphetamine and cocaine; major consumer of cannabis

Acronyms and Abbreviations

AIDS	Acquired immunodeficiency syndrome
ADRA	Adventist Development and Relief Agency
ACP	African, Caribbean and Pacific Group of States
APAN	All Partners Access Network
AOSIS	Alliance of Small Island States
ADINET	ASEAN Disaster Information Network
ARF	ASEAN Regional Forum
APG	Asia/Pacific Group on Money Laundering
ADB	Asian Development Bank
AHA Centre	Assistance on Disaster Management
ASEAN	Association of Southeast Asian Nation
ADF	Australian Defence Force
DFAT	Australian Government Department of Foreign Affairs and Trade
AHP	Australian Humanitarian Partnership
MBBS	Bachelor of Medicine, Bachelor of Surgery
BUR	Biennial Update Report
BTT	Bougainville Transition Team
BHA	Bureau for Humanitarian Assistance
CRS	Catholic Relief Services
CFE-DM	Center for Excellence in Disaster Management and Humanitarian Assistance
RHCC	Changi Regional HADR Coordination Centre
CCDA	Climate Change and Development Authority
CCMA	Climate Change Management Act
CED	Community Economic Development
CHW	Community Health Worker
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
COP26	26th United Nations Conference of the Parties on Climate Change
COVID-19	Coronavirus Disease 2019
CCS	Country Cooperation Strategy
DKI-APCSS	Daniel K. Inouye Asia-Pacific Center for Security Studies
DCP	Defence Cooperation Program
DMT	Disaster Management Team
DRM	Disaster risk management
DRR	Disaster risk reduction
MD	Doctorate in Medicine

EWS	Early warning system
EAA	Economic Assistance Agreement
ENSO	El Niño Southern Oscillation
EOC	Emergency Operation Centre
EMOPS	EMOPS
EITI	Extractive Industries Transparency Initiative
ft.	feet
FAO	Food and Agriculture Organization of the United Nations
GBV	Gender-based violence
GDACS	Global Disaster Alert and Coordination System
GFA	Global Fragility Act
GFS	Global Fragility Strategy
Global Fund	Global Fund to fight AIDS, Tuberculosis and Malaria
GRI	Global Risk Index
GoPNG	Government of Papua New Guinea
GDP	Gross Domestic Product
GNI	Gross National Income
G-77	Group of 77
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
HAT	Humanitarian Advisory Team
HADR	Humanitarian Assistance and Disaster Relief
HCT	Humanitarian Country Teams
HDX	Humanitarian Data Exchange
INFORM	Index for Risk Management
IS	Information sharing
IPU	Inter-Parliamentary Union
IATA	International Air Transport Association
IBRD	International Bank for Reconstruction and Development
ICAO	International Civil Aviation Organization
ICRC	International Committee of the Red Cross
INTERPOL	International Criminal Police Organization
IDA	International Development Association
IFRC	International Federation of Red Cross and Red Crescent Societies
IFC	International Finance Corporation
IFAD	International Fund for Agricultural Development
IGO	International Governmental Organization

IHR	International Health Regulation
ILO	International Labor Organization
IMO	International Maritime Organization
IMF	International Monetary Fund
INGO	International non government organizations
IOC	International Olympic Committee
ITU	International Telecommunications Union
ITIC	International Tsunami Information Centre
JMSDF	Japan Ground Self Defense Force
JICA	Japan International Cooperation Agency
JHU CSSE	JHU Center for Systems Science and Engineering
JHU	John Hopkins University
JHU APL	Johns Hopkins University Applied Physics Lab
JPDA	Joint Petroleum Development Area
JTWC	Joint Typhoon Warning Center
km	Kilometers
LDCs	Least Developed Countries
LGBTQI+	Lesbian, Gay, Bisexual, Transgender, Queer, Intersex +
LNG	Liquefied Natural Gas
LLINs	long-lasting insecticidal nets
MMR	Measles-Mumps-Rubella
m	meters
MoH	Ministry of Health
MD-TB	multidrug-resistant tuberculosis
MIGA	Multilateral Investment Guarantee Agency
NAP 1325	National Action Plan for implementing UNSCR 1325
NAP	National Adaptation Plan
NCC	National Control Centre for COVID-19
NDC	National Disaster Centre
NDMD	National Disaster Risk Management Directorate
NDRRF	National Disaster Risk Reduction Framework 2017-2030
NEC	National Executive Council (Cabinet)
NHP	National Health Plan
NHSS	National Health Services Standards
NRS	National REDD+ Strategy
SISN	National Security Integration System
NVS	National Volunteer Service

NDC	Nationally Determined Contributions
MFAT	New Zealand Ministry of Foreign Affairs and Trade
NAM	Non-Aligned Movement
NCB	Non-communicable disease
NGO	Non-government organization
ND-GAIN	Notre Dame Global Adaption Initiative
ODA	Official Development Assistance
OSOCC	On-Site Operations Coordination Centre
OPCW	Organization for the Prohibition of Chemical Weapons
PDC	Pacific Disaster Center
PIF	Pacific Island Forum
PTWC	Pacific Tsunami Warning Center
PNG	Papua New Guinea
PMG	Peace Monitoring Group
PNGSF	PNG Fire Service
PDNA	Post Disaster Needs Assessment
PEPFAR	President's Emergency Plan For AIDS Relief
PHC	primary health care
PMDT	Programmatic Management of Drug Resistant TB
PDCs	Provincial Disaster Centres
PEC	Provincial Executive Council
PPP	public-private partnership
ROAP	Regional Office for Asia and the Pacific
RN	Registered nurse
RCO	Resident Coordinator's Office
STI	Sexually Transmitted Infection
SitRep	Situation Report
SIDS	Small Island Developing States
SFD	South Fly District
SAOFFG	Southeastern Asia-Oceania Flash Flood Guidance
sq. km	square kilometers
sq. mi	square mi
SOPs	Standard Operating Procedures
SOE	state owned enterprise
SDG	Sustainable Development Goal
TC	Tropical Cyclone
TB	Tuberculosis

DoD	U.S. Department of Defense
GSP	U.S. Generalized System of Preferences
USG	U.S. Government
UNICEF	UN Children's Fund
UNDAF	UN Development Assistance Framework
UNESCO	UN Educational, Scientific, and Cultural Organization
UNIDO	UN Industrial Development Organization
IOM	UN International Organization for Migration
UNDRR	UN Office for Disaster Risk Reduction
UISS	Unclassified Information Sharing Service
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNCBD	United Nations Convention on Biological Diversity
UNCCCD	United Nations Convention on Combating Desertification
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNAIDS	United Nations Programme on HIV/AIDS
UNSCR 1325	United Nations Security Council Resolution 1325
USAID	United States Agency for International Development
UPU	Universal Postal Union
WASH	Water, Sanitation, and Hygiene
WPS	Women, Peace, and Security
WBG	World Bank Group
WCO	World Customs Organization
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization
UNWTO	World Tourism Organization
WTO	World Trade Organization
WMO	World Meteorological Organization
UNWTO	World Tourism Organization
WTO	World Trade Organization

Endnotes

1 Ella L. Howes et. al, "Effects of Climate Change Relevant to the Pacific Islands", Centre for Environment, Fisheries and Aquaculture, Pacific Marine Climate Change Report Card, Science Review 2018: pp 1-19, accessed via PNG Environment Data Portal on 4 May 2022, https://png-data.sprep.org/resource/climate-change-overview-pacific

2 Climate Risk Profile: Papua New Guinea", The World Bank Group, 2021, https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15871-WB_Papua%20New%20Guinea%20Country%20Profile-WEB.pdf 17; Stephanie McLennan and Rachel LaFortune, "Papua New Guinea's Rapid Tides Expose Climate Risks", Human Rights Watch, 20 December 2021, https://www.hrw.org/news/2021/12/20/papua-new-guineas-rapid-tides-expose-climate-risks

3 "Indigenous Knowledge for Risk Reduction: Documenting Community Practice in Papua New Guinea", International Organization for Migration, 2015, accessed via ReliefWeb on 3 May 2022, https://reliefweb.int/sites/reliefweb.int/files/resources/PNG%20indigenous%20knowledge%20report%20print.pdf, 1.

4 "USAID Partners with IOM, UN OCHA, and Australian DFAT to deliver assistance to communities affected by king tides", U.S. Embassy to Papua New Guinea, Solomon Islands, and Vanuatu, 15 February 2022, accessed 8 June 2022, https://pg.usembassy.gov/usaid-partners-with-iom-un-ocha-and-australian-dfat-to-deliver-assistance-to-communities-affected-by-king-tide-flooding-in-papua-new-guinea/

5 "H.R.2116 - Global Fragility Act", U.S. Congress, https://www.congress.gov/bill/116th-congress/house-bill/2116#:~:text=Passed%20House%20(05%2F20%2F2019)&text=This%20bill%20directs%20the%20Department,funds%20to%20support%20such%20efforts.

6 Staff Sgt. Alice Ripberger, "Wisconsin Guard Develops Partnership With Papua New Guinea", National Guard, News, 27 April 2022, https://www.nationalguard.mil/News/Article/3012017/wisconsin-guard-develops-partnership-with-papua-new-guinea/

7 World Population Dashboard, UNFPA, accessed 19 May 2022, https://www.unfpa.org/data/world-population/PG; Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 6.

8 Ella L. Howes et. al, "Effects of Climate Change Relevant to the Pacific Islands", Centre for Environment, Fisheries and Aquaculture, Pacific Marine Climate Change Report Card, Science Review 2018: pp 1-19, accessed via PNG Environment Data Portal on 4 May 2022, https://png-data.sprep.org/resource/climate-change-overview-pacific

9 Sarah M. Munoz, "Understanding the human side of climate change relocation", The Conversation, 5 June 2019, https://theconversation.com/understanding-the-human-side-of-climate-change-relocation-115887

10 Stephanie McLennan and Rachel LaFortune, "Papua New Guinea's Rapid Tides Expose Climate Risks", Human Rights Watch, 20 December 2021, https://www.hrw.org/news/2021/12/20/papua-new-guineas-rapid-tides-expose-climate-risks

11 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, 2.

12 Section 15 of the DM Act states, "[t]he National Disaster Centre shall, in addition to such functions and duties as are provided under any other Act, co-ordinate all disaster situations and surveillance matters". https://www.preventionweb.net/publication/papua-new-guinea-disaster-management-act-1984

13 Part X of the Constitution of the Independent State of Papua New Guinea, http://www.paclii.org/pg/legis/consol_act/cotisopng534/

14 Ibid.

15 "Disaster roles transferred to Defence Ministry", The National, 19 August 2020, accessed 10 May 2022, https://www.thenational.com.pg/disaster-roles-transferred-to-defence-ministry/

16 Climate Risk Profile: Papua New Guinea", The World Bank Group, 2021, https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15871-WB_Papua%20New%20Guinea%20Country%20Profile-WEB.pdf 17; Stephanie McLennan and Rachel LaFortune, "Papua New Guinea's Rapid Tides Expose Climate Risks", Human Rights Watch, 20 December 2021, https://www.hrw.org/news/2021/12/20/papua-new-guineas-rapid-tides-expose-climate-risks

17 Interview with Richard Higgins, Disaster Management Team Secretariat, on 2 June 2022.

18 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022 and interview on 2 June 2022.

19 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022.

20 PNG National Disaster Risk Reduction Framework 2017-2030, accessed on PreventionWeb on 3 May 2022, https://www.preventionweb.net/publication/papua-new-guinea-national-disaster-risk-reduction-framework-2017-2030#:~:text=The%20Papua%20New%20Guinea%20National,Cooperation%20Disaster%20Risk%20Reduction%20Plan, 7-8.

21 "Papua New Guinea", Britannica, accessed 19 May 2022, https://www.britannica.com/place/Papua-New-Guinea

22 CIA World Factbook, accessed 22 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/map

23 "PNG: Government", CIA World Factbook, accessed 20 May 2020, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#government

24 "U.S. Relations With Papua New Guinea", U.S Department of State, 21 January 2020, https://www.state.gov/u-s-relations-with-papua-new-guinea/

25 "PNG: International Organization Participation", CIA World Factbook, accessed 23 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#people-and-society

26 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, i.

27 "PNG: Background", CIA World Factbook, accessed 19 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/

28 Ibid.

29 "Papua New Guinea", Britannica, accessed 19 May 2022, https://www.britannica.com/place/Papua-New-Guinea

30 "Papua New Guinea", Britannica, accessed 19 May 2022, https://www.britannica.com/place/Papua-New-Guinea; see also "PNG: Background", CIA World Factbook, accessed 19 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#people-and-society

31 "Regional Peacekeeping Force: Bougainville Peace Agreement", University of Notre Dame, Peace Accords, accessed 19 May 2022, https://peaceaccords.nd.edu/provision/regional-peacekeeping-force-bougainville-peace-agreement

32 Joshua Mcdonald, "Bougainville Inches Closer to Independence", The Diplomat, 19 July 2021, https://thediplomat.com/2021/07/bougainville-inches-closer-to-independence/

33 World Population Dashboard, UNFPA, accessed 19 May 2022, https://www.unfpa.org/data/world-population/PG

34 "National Population Housing Census", National Statistics Office, accessed 19 May 2022, https://www.nso.gov.pg/census-surveys/national-population-housing-census/; The 2021 Census was planned for July but deferred to 2024 due to Covid-19-related measures instituted by the government that prohibit domestic travel.

35 World Population Dashboard, UNFPA, accessed 19 May 2022, https://www.unfpa.org/data/world-population/PG; see also "PNG: Population Growth Rate", CIA World Factbook, accessed 22 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#people-and-society

36 "National Population Housing Census", National Statistics Office, accessed 19 May 2022, https://www.nso.gov.pg/census-surveys/national-population-housing-census/; The 2021 Census was planned for July but deferred to 2024 due to Covid-19-related measures instituted by the government that prohibit domestic travel.

37 World Population Dashboard, UNFPA, accessed 19 May 2022, https://www.unfpa.org/data/world-population/PG

38 "PNG: Languages", CIA World Factbook, accessed 19 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#people-and-society

39 PNG Vision 2050, https://www.treasury.gov.pg/html/publications/files/pub_files/2011/2011.png.vision.2050.pdf, 14.

40 "Human Development Report 2020", UNDP, https://hdr.undp.org/sites/default/files/Country-Profiles/PNG.pdf, 2.

41 "Daily life and social customs", Britannica, accessed 19 May 2022, https://www.britannica.com/place/Papua-New-Guinea/Security#ref53960

42 "Papua New Guinea: Ethnic groups", Britannica, accessed 7 June 2022, https://www.britannica.com/place/Papua-New-Guinea/Climate#ref53945

43 "PNG: Ethnic Groups", CIA World Factbook, accessed 19 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#people-and-society

44 "Papua New Guinea", Minority Rights Group International, Updated February 2018, https://minorityrights.org/country/papua-new-guinea/

45 "National Population Housing Census", National Statistics Office, accessed 19 May 2022, https://www.nso.gov.pg/census-surveys/national-population-housing-census/; The 2021 Census was planned for July but deferred to 2024 due to Covid-19-related measures instituted by the government that prohibit domestic travel.

46 "PNG: Major urban areas", CIA World Factbook, accessed 19 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#people-and-society

47 World Atlas, accessed 19 May 2022, https://www.worldatlas.com/articles/what-languages-are-spoken-in-papua-new-guinea.html; see also preamble to the Papua New Guinea Constitution.

48 "PNG: Languages", CIA World Factbook, accessed 19 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#people-and-society

49 "International Religious Freedom Report", U.S. Department of State, 2021, https://www.state.gov/wp-content/uploads/2022/05/PAPUA-NEW-GUINEA-2021-INTERNATIONAL-RELIGIOUS-FREEDOM-REPORT.pdf

50 PNG National Disaster Risk Reduction Framework 2017-2030, 45.

51 "One month of earthquakes in Papua New Guinea leave children traumatized", UNICEF, 28 March 2018, https://www.unicef.org/eap/press-releases/one-month-earthquakes-png-leave-children-traumatized#:~:text=Available%20data%20indicate%20that%20girls,emotional%20abuse%20during%20their%20lifetime.

52 Nattha Keenapan, "In earthquake-hit PNG, children suffer from trauma long before the disaster", UNICEF, 2 May 2018, https://www.unicef.org/png/stories/earthquake-hit-png-children-suffer-trauma-long-disaster

53 World Population Dashboard, UNFPA, accessed 19 May 2022, https://www.unfpa.org/data/world-population/PG

54 Rarau P, Vengiau G, Gouda H, et alPrevalence of non-communicable disease risk factors in three sites across Papua New Guinea: a cross-sectional studyBMJ Global Health 2017;2:e000221, accessed 20 May 2022, https://gh.bmj.com/content/2/2/e000221

55 Alison Dyer, Dr. Gabrielle Bardall and Terry Ann Rogers, "Violence Against Women in Papua New Guinea", International Foundation for Electoral Systems, 2019, https://www.ifes.org/sites/default/files/violence_against_women_in_papua_new_guinea_-_assessment_summary_june_2019.pdf

56 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, 2.

57 "PNG National Policy on Disability 2015-2025", Department for Community Development and Religion, accessed 20 May 2022, https://www.un.org/development/desa/disabilities/wp-content/uploads/sites/15/2020/02/PNG_National_Disability_Policy.pdf

58 "Papua New Guinea Crisis Response Plan 2021", IOM, Global Crisis Response Platform, accessed 20 May 2022, https://crisisresponse.iom.int/response/papua-new-guinea-crisis-response-plan-2021/year/2021

59 Sarah M. Munoz, "Understanding the human side of climate change relocation", The Conversation, 10 June 2019, https://theworld.org/stories/2019-06-10/understanding-human-side-climate-change-relocation

60 Darren James, "Lost at sea: the race against time to save the Carteret Islands from climate change", ABC Australia, 3 August 2018, https://www.abc.net.au/news/2018-08-04/the-race-against-time-to-save-the-carteret-islanders/10066958?nw=0&r=HtmlFragment

61 "ADB's Work in Papua New Guinea", ADB, accessed 19 May 2022, https://www.adb.org/countries/papua-new-guinea/overview

62 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, 3.

63 "Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 7.

64 https://www.treasury.gov.pg/html/publications/files/pub_files/2011/2011.png.vision.2050.pdf

65 https://policy.asiapacificenergy.org/sites/default/files/Development%20Strategic%20Plan%202010-2030.pdf

66 https://www.ccda.gov.pg/sites/default/files/documents/PNG%20Medium%20Term%20Development%20Plan%20III_Volume%201.pdf

67 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, 29.

68 "ADB's Work in Papua New Guinea", ADB, accessed 19 May 2022, https://www.adb.org/countries/papua-new-guinea/overview

69 ADB PNG. Accessed 19 May 2022. https://www.adb.org/countries/papua-new-guinea/main

70 "2021 Country Reports on Human Rights Practices: Papua New Guinea", U.S. Department of State, Bureau of Democracy Human Rights and Labor, 2021, https://www.state.gov/reports/2021-country-reports-on-human-rights-practices/papua-new-guinea/

71 "PNG: Government", CIA World Factbook, accessed 20 May 2020, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#government

72 "PNG: Government", CIA World Factbook, accessed 20 May 2022; "Constitution of Papua New Guinea", Commonwealth Governance, accessed 20 May 2022, https://www.commonwealthgovernance.org/countries/pacific/papua_new_guinea/constitution/

73 PNG Electoral Commission, accessed 20 May 20220, https://www.pngec.gov.pg/

74 Parliament approved the addition of seven districts ahead of the 2022 General Election. See "Parlt approves 7 new districts", The National, 23 March 2022, https://www.thenational.com.pg/parlt-approves-7-new-districts/

75 PNG 2011 National Population and Housing Census Report, accessed via OCHA HDX on 20 May 2022, https://data.humdata.org/dataset/cod-ps-png, 7; "Country Profile 2019: Papua New Guinea", Commonwealth Local Government Forum, http://www.clgf.org.uk/default/assets/File/Country_profiles/Papua_New_Guinea.pdf, 1.

76 "Understanding the human side of climate change relocation", The Conversation, 5 June 2019, https://theconversation.com/understanding-the-human-side-of-climate-change-relocation-115887

77 Brian Harding and Nicole Cochran "New U.S. Plan is an Opportunity to Deepen Engagement with Papua New Guinea", United States Institute of Peace, Analysis and Commentary, 5 April 2022, https://www.usip.org/publications/2022/04/new-us-plan-opportunity-deepen-engagement-papua-new-guinea

78 "COP commitments on deforestation a flicker of hope in PNG", RNZ, 16 November 2021, accessed 23 May 2022, https://www.rnz.co.nz/international/pacific-news/455757/cop-commitments-on-deforestation-a-flicker-of-hope-in-png; "Climate Risk Profile: Papua New Guinea", The World Bank Group, 2021, https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15871-WB_Papua%20New%20Guinea%20Country%20Profile-WEB.pdf 2.

79 "Country Profile: PNG", LandLinks, USAID, January 2021, https://www.land-links.org/country-profile/papua-new-guinea/

80 "Papua New Guinea", Britannica, accessed 19 May 2022, https://www.britannica.com/place/Papua-New-Guinea

81 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, 1; "PNG: geography: climate", CIA World Factbook, accessed 20 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#geography

82 INFORM Risk Mid-2022. European Commission. Accessed 3 May 2022. https://drmkc.jrc.ec.europa.eu/inform-index

83 Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 6.

84 "Indigenous Knowledge for Risk Reduction: Documenting Community Practice in Papua New Guinea", International Organization for Migration, 2015, accessed via ReliefWeb on 3 May 2022, https://reliefweb.int/sites/reliefweb.int/files/resources/PNG%20indigenous%20knowledge%20report%20print.pdf , 1.

85 "Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 6; "Disaster Risk Management:

Background", UNDP, PNG, accessed 11 May 2022, https://www.pg.undp.org/content/papua_new_guinea/en/home/operations/projects/crisis_prevention_and_recovery/disaster-risk-management.html

86 See PNG National Disaster Risk Reduction Framework 2017-2030, accessed on PreventionWeb on 3 May 2022, https://www.preventionweb.net/publication/papua-new-guinea-national-disaster-risk-reduction-framework-2017-2030#:~:text=The%20Papua%20New%20Guinea%20National,Cooperation%20Disaster%20Risk%20Reduction%20Plan, 7 and "Indigenous Knowledge for Risk Reduction: Documenting Community Practice in Papua New Guinea", International Organization for Migration, 2015, accessed via ReliefWeb on 3 May 2022, https://reliefweb.int/sites/reliefweb.int/files/resources/PNG%20indigenous%20knowledge%20report%20print.pdf, 4.

87 "Indigenous Knowledge for Risk Reduction: Documenting Community Practice in Papua New Guinea", International Organization for Migration, 2015, accessed via ReliefWeb on 3 May 2022, https://reliefweb.int/sites/reliefweb.int/files/resources/PNG%20indigenous%20knowledge%20report%20print.pdf , 1.

88 PNG National Disaster Risk Reduction Framework 2017-2030, accessed on PreventionWeb on 3 May 2022, https://www.preventionweb.net/publication/papua-new-guinea-national-disaster-risk-reduction-framework-2017-2030#:~:text=The%20Papua%20New%20Guinea%20National,Cooperation%20Disaster%20Risk%20Reduction%20Plan, 7-8.

89 Ella L. Howes et. al, "Effects of Climate Change Relevant to the Pacific Islands", Centre for Environment, Fisheries and Aquaculture, Pacific Marine Climate Change Report Card, Science Review 2018: pp 1-19, accessed via PNG Environment Data Portal on 4 May 2022, https://png-data.sprep.org/resource/climate-change-overview-pacific

90 "Climate Risk Profile: Papua New Guinea", The World Bank Group, 2021, https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15871-WB_Papua%20New%20Guinea%20Country%20Profile-WEB.pdf

91 Ibid.

92 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, 2.

93 "PNG National REDD+ Strategy", Government of Papua New Guinea, Climate Change and Development Authority, https://redd.unfccc.int/files/4838_1_papua_new_guinea_national_redd_2b_strategy.pdf, 3.

94 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, 2.

95 "Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 11.

96 UNFCCC stands for United Nations Framework Convention on Climate Change. The Convention has near universal membership (197 Parties) and is the parent treaty of the 2015 Paris Agreement. The main aim of the Paris Agreement is to keep the global average temperature rise this century as close as possible to 1.5 degrees Celsius above pre-industrial levels. See UNFCC website https://unfccc.int/about-us/about-the-secretariat

97 The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. See UNFCCC wesbite https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

98 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, i.

99 "About Us", CCDA website, accessed 3 May 2022, https://www.ccda.gov.pg/policies

100 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, I; See also "What is REDD+", UNFCCC, accessed 4 May 2022, https://unfccc.int/topics/land-use/workstreams/redd/what-is-redd#:~:text=REDD%2B%20is%20a%20framework%20created,carbon%20stocks%20in%20developing%20countries.

101 "Development of Papua New Guinea's National Adaptation Plan for Climate Change", Climate Law & Policy, accessed 4 May 2022, https://www.climatelawandpolicy.com/en/projects-items/301-development-of-papua-new-guinea-s-national-adaptation-plan-for-climate-change.html

102 "Beyond Barriers: Papua New Guinea Case Study", Humanitarian Advisory Group, March 2022, https://humanitarianadvisorygroup.org/wp-content/uploads/2022/03/HAG_WV_Case-Study_PNG-1.pdf, 14.

103 "Papua New Guinea Crisis Response Plan 2021", IOM, 19 February 2021, accessed 16 May 2022, https://crisisresponse.iom.int/response/papua-new-guinea-crisis-response-plan-2021/year/2021; "Belching out copper, gold and waste", World Wildlife Fund for Nature, Archive Content, accessed 16 May 2022, https://wwf.panda.org/discover/knowledge_hub/where_we_work/new_guinea_forests/problems_forests_new_guinea/mining_new_guinea/ok_tedi_forest_new_guinea/

104 "APEC 13th Emergency Preparedness Working Group Meeting, Port Moresby, Papua New Guinea, 24-25 February 2018", APEC-EPWG, accessed 12 May 2022, https://www.apec-epwg.org/media/2232/7d7a8b74c005d96238782be53913d4e8.pdf

105 "Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 10, 12.

106 United Nations Office for the Coordination of Humanitarian Affairs, "When the Mountains Trembled: Two Years Since the PNG Highlands Earthquake", 26 February 2020, https://ocharoap.exposure.co/when_the_mountains_trembled

107 "Climate Risk Profile: Papua New Guinea", The World Bank Group, 2021, https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15871-WB_Papua%20New%20Guinea%20Country%20Profile-WEB.pdf, 5, 14.

108 "Polio outbreak in Papua New Guinea", World Health Organization, accessed 6 June 2022, https://www.who.int/westernpacific/emergencies/papua-new-guinea-poliovirus-outbreak; Joseph Pundu & Patrick Kaiku "PNG and the next pandemic", DevPolicy Blog, 29 June 2020, https://devpolicy.org/png-and-the-next-pandemic-20200629-1/?utm_source=rss&utm_medium=rss&utm_campaign=png-and-the-next-pandemic-20200629-1

109 "Papua New Guinea COVID-19 Statistics", PNG Joint Agency Task Force, National Control Centre for COVID-19, accessed 10 May 2022, https://covid19.info.gov.pg/

110 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022.

111 "PNG: Key Vulnerability", Word Bank Climate Change Portal, accessed 10 May 2022, https://climateknowledgeportal.worldbank.org/country/papua-new-guinea/vulnerability#:~:text=According%20to%20a%20World%20Bank,and%20sea%20surface%20temperatures%20rise.

112 "Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 10.

113 "Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 6, 9; "New volcano monitoring tool to be trialled in Papua New Guinea", DFAT, 13 February 2019, https://www.ga.gov.au/news-events/news/latest-news/new-volcano-monitoring-tool-to-be-trialled-in-papua-new-guinea

114 "Papua New Guinea Volcanoes", The Smithsonian Institution, accessed 6 June 2022, https://volcano.si.edu/volcanolist_countries.cfm?country=Papua%20New%20Guinea

115 "Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 12.

116 Email from Richard Higgins, Disaster Management Team Secretariat in PNG, on 29 May 2022.

117 "Climate Risk Profile: Papua New Guinea", The World Bank Group, 2021, https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15871-WB_Papua%20New%20Guinea%20Country%20Profile-WEB.pdf 16.

118 "Current and future tropical cyclone risks in the South Pacific", Pacific Catastrophe Risk Assessment and Financing Initiative and Pacific-Australia Climate Change Science and Adaptation Planning Program, June 2013, https://www.pacificclimatechange.net/sites/default/files/PCRAFI_cyclone-risk_regional-risk-assessment.pdf, 9.

119 "Current and future tropical cyclone risks in the South Pacific", Pacific Catastrophe Risk Assessment and Financing Initiative and Pacific-Australia Climate Change Science and Adaptation Planning Program, June 2013, https://www.pacificclimatechange.net/sites/default/files/PCRAFI_cyclone-risk_regional-risk-assessment.pdf, 1.

120 Davies, H.L., Simeon, O.B., Hope, G. et al., "Past major tsunamis and the level of tsunami risk on the Aitape coast of Papua New Guinea", Nat Hazards 96, 1019–1040 (2019), https://link.springer.com/article/10.1007/s11069-019-03585-5#article-info

121 Reuters, "Skull found in Papua New Guinea was world's 'oldest-known tsunami victim', The Guardian, 25 October 2017, https://www.theguardian.com/science/2017/oct/25/skull-tsunami-papua-new-guinea-oldest-victim

122 "Disaster Risk Reduction in Papua New Guinea: Status Report 2019", United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific, Bangkok, Thailand, https://www.preventionweb.net/files/68266_682309pngdrmstatusreport.pdf, 9, 10.

123 Brian Harding and Nicole Cochran "New U.S. Plan is an Opportunity to Deepen Engagement with Papua New Guinea", United States Institute of Peace, Analysis and Commentary, 5 April 2022, https://www.usip.org/publications/2022/04/new-us-plan-opportunity-deepen-engagement-papua-new-guinea

124 Email from Richard Higgins, Disaster Management Team Secretariat in PNG, on 29 May 2022.

125 "Ok Tedi Mine: Unearthing Controversy", World Resource Institute, unknown date, http://pdf.wri.org/wr2002_case_oktedi_papua.pdf

126 "Papua New Guinea: Chinese-owned Ramu Nickel spills 200,000 litres of toxic slurry into the sea; co. commits to address compensation", Business and Human Rights Resource Centre, accessed 6 June 2022, https://www.business-humanrights.org/en/latest-news/papua-new-guinea-chinese-owned-ramu-nickel-spills-200000-litres-of-toxic-slurry-into-the-sea-co-commits-to-address-compensation/

127 "Papua New Guinea - Manam volcano eruption (GDACS, UN OCHA, media) (ECHO daily Flash of 20 April 2022)", ReliefWeb, accessed 10 May 2022, https://reliefweb.int/report/papua-new-guinea/papua-new-guinea-manam-volcano-eruption-gdacs-un-ocha-media-echo-daily-flash

128 Stephanie McLennan and Rachel LaFortune, "Papua New Guinea's Rapid Tides Expose Climate Risks", Human Rights Watch, 20 December 2021, https://www.hrw.org/news/2021/12/20/papua-new-guineas-rapid-tides-expose-climate-risks

129 "Papua New Guinea: Landslide: 2020/03/21", ADRC, accessed 10 May 2022, https://www.adrc.asia/view_disaster_en.php?NationCode=&Lang=en&Key=2375

130 "Papua New Guinea: Mt. Ulawun Volcano - Jun 2019", ReliefWeb, GlideVO-2019-000118-PNG, https://reliefweb.int/disaster/vo-2019-000118-png

131 "Papua New Guinea – Manam Volcano Eruption (DG ECHO, UN DMT) (ECHO Daily Flash of 10 December 2018)", ReliefWeb, 10 December 2018, https://reliefweb.int/report/papua-new-guinea/papua-new-guinea-manam-volcano-eruption-dg-echo-un-dmt-echo-daily-flash-10

132 The Guardian. Papua New Guinea hit by 7 magnitude earthquake. October 11, 2018. https://www.theguardian. com/world/2018/oct/11/papua-new-guinea-hit-by-7- magnitude-earthquake

133 "Papua New Guinea: Polio Outbreak - Jun 2018", Relief Web, Past disasters, GlideEP-2018-000080-PNG, accessed 10 May, 2022, https://reliefweb.int/disaster/ep-2018-000080-png

134 OCHA Regional Office Asia Pacific. 2018 Year in Review. January 10, 2019. https://ocharoap.exposure.co/2018-year-in-review

135 USAID. March 13, 2018. https://www.usaid.gov/crisis/ papua-new-guinea

136 UN PNG. UN Responds to the Earthquake in Papua New Guinea. April 30, 2018. https://unitednationspng.exposure.co/un-responds-to-the-earthquake-in-papua-new-guinea

137 ReliefWeb. Papua New Guinea: Kadovar Volcano. January 2018. https://reliefweb.int/disaster/vo-2018-000002-png

138 National Disaster Centre. Massive PNG landslide wipes out sleeping village. November 19, 2016. http://pngndc.gov. pg/?p=441

139 European Commission. Disaster Risk Management Knowledge Centre (DRMKC). INFORM Global Risk Index. Methodology. https://drmkc.jrc.ec.europa.eu/inform-index/InDepth/Methodology

140 INFORM Report 2020. Shared Evidence for Managing Crisis and Disasters. https://publications.jrc.ec.europa.eu/repository/bitstream/JRC120275/01_inform_2020_online_%284%29.pdf

141 European Commission. Disaster Risk Management Knowledge Centre (DRMKC). INFORM GRI Country Risk Profile. PNG, accessed 10 May 2022, https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk/Country-Risk-Profile

142 The DM Act replaced the Emergency Provisions Act 1979.

143 "Papua New Guinea Country Brief", Australian Government Department of Foreign Affairs and Trade, https://www.dfat.gov.au/geo/papua-new-guinea/papua-new-guinea-country-brief

144 Disaster Management Act 1984 Part II Section 6, http://www.paclii.org/pg/legis/consol_act/dma1984191.pdf

145 Part X of the Constitution of the Independent State of Papua New Guinea, http://www.paclii.org/pg/legis/consol_act/cotisopng534/

146 "PNG declares State of Emergency in Highlands Earthquake Disaster Areas", Papua New Guinea Today, 1 March 2018, accessed 7 June 2022, https://news.pngfacts.com/2018/03/png-declares-state-of-emergency-in.html; "Criticism of Police Commissioner's juggling act as head of the COVID-19 emergency response", ABC, 18 September 2020, accessed 7 June 2022, https://www.abc.net.au/radio-australia/programs/pacificbeat/criticism-of-png-police-commissioners-juggling-act/12676626

147 Interview with Richard Higgins, Disaster Management Team Secretariat in PNG on 2 June 2022.

148 "Disaster roles transferred to Defence Ministry", The National, 19 August 2020, accessed 10 May 2022, https://www.thenational.com.pg/disaster-roles-transferred-to-defence-ministry/

149 Interview with Richard Higgins, Disaster Management Team Secretariat, 2 June 2022.

150 Section 202 of the Constitution of the Independent State of Papua New Guinea, http://www.paclii.org/pg/legis/consol_act/cotisopng534/

151 "PNG Overview", IFRC, Resilience Library, accessed 23 May 2022, https://www.rcrc-resilience-southeastasia.org/disaster-law/international-disaster-response-law-in-the-pacific/country-profiles/papua-new-guinea/papua-new-guinea-overview/

152 "Papua New Guinea – Overview", IFRC, Resilience Library, accessed 22 May 2022, https://www.rcrc-resilience-southeastasia.org/disaster-law/international-disaster-response-law-in-the-pacific/country-profiles/papua-new-guinea/papua-new-guinea-overview/

153 Interview with IOM Mission team in PNG on 19 May 2022.

154 Email from Richard Higgins, Disaster Management Team Secretariat in PNG, on 29 May 2022.

155 Interview with IOM Mission team in PNG on 19 May 2022; interview with Richard Higgins, Disaster Management Team Secretariat on 2 June 2022.

156 Part X of the Constitution of the Independent State of Papua New Guinea, http://www.paclii.org/pg/legis/consol_act/cotisopng534/

157 Interview with Richard Higgins, Disaster Management Team Secretariat on 2 June 2022.

158 "Madang Province embraces plans to reduce disaster risks", ReliefWeb, 27 September 2017, https://reliefweb.int/report/papua-new-guinea/madang-province-embraces-plans-reduce-disaster-risks

159 Interview with Richard Higgins, Disaster Management Team Secretariat on 2 June 2022.

160 "APEC 13th Emergency Preparedness Working Group Meeting, Port Moresby, Papua New Guinea, 24-25 February 2018", APEC-EPWG, accessed 12 May 2022, https://www.apec-epwg.org/media/2232/7d7a8b74c005d96238782be53913d4e8.pdf; Rose Godana Goina, Linda Vaike, Jesse McCommon and Jessica Lees, "Beyond Barriers: Papua New Guinea Case Study", Humanitarian Advisor Group, March 2022, https://humanitarianadvisorygroup.org/insight/https-humanitarianadvisorygroup-org-insight-beyond-barriers-papua-new-guinea-case-study/

161 PNG National Disaster Management Plan 1987. Accessed 11 May 2022, https://www.rcrc-resilience-southeastasia.org/wp-content/uploads/2020/04/PNG-National-Disaster-Management-Plan-1987.pdf

162 DM Act, Part II, Division 1, Section 3. http://www.paclii.org/pg/legis/consol_act/dma1984191.pdf

163 DM Act, Part II, Division 1, Section 3. http://www.paclii.org/pg/legis/consol_act/dma1984191.pdf

164 "About Us", PNG National Disaster Centre, accessed 10 May 2022, https://pngndc.gov.pg/?page_id=45

165 "About Us", PNG National Disaster Centre, accessed 10 May 2022, https://pngndc.gov.pg/?page_id=45

166 Interview with Richard Higgins, Disaster Management Team Secretariat in PNG, on 2 June 2022.

167 "Provincial Disaster Centres", PNG National Disaster Centre, accessed 10 May 2022, https://pngndc.gov.pg/?page_id=100

168 "Provincial Disaster Centres", PNG National Disaster Centre, accessed 10 May 2022, https://pngndc.gov.pg/?page_id=100

169 "Provincial Disaster Centres", NDC, accessed 12 May 2022, https://pngndc.gov.pg/?page_id=142

170 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022.

171 "Disaster roles transferred to Defence Ministry", The National, 19 August 2020, accessed 10 May 2022, https://www.thenational.com.pg/disaster-roles-transferred-to-defence-ministry/

172 PNGFS, accessed 22 May 2022, https://www.pngfire.gov.pg/our-fire-stations/

173 NVS, Facebook Page, accessed 22 May 2022, https://www.facebook.com/National-Volunteer-Service-421584048184481/about/

174 "Disaster roles transferred to Defence Ministry", The National, 19 August 2020, accessed 10 May 2022, https://www.thenational.com.pg/disaster-roles-transferred-to-defence-ministry/

175 "Emergency & Disaster Management and Disaster Risk reduction in Papua New Guinea", PNG National Disaster Centre (Undated), accessed 11 May 2022, https://www.humanitarianlibrary.org/sites/default/files/2014/02/dm_country_report.pdf

176 The reporting of the 2018 Highland Earthquake response suggested separate efforts by the Emergency Controller and the NDC. Richard Higgins, Disaster Management Team Secretariat, during an interview on 2 June 2022 confirmed there was no direct relationship between the Emergency Controller and the NDC during the response.

177 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022.

178 "Disaster Management Act under review", UNDP, Press Release, 28 September 2021, https://www.pg.undp.org/content/papua_new_guinea/en/home/presscenter/pressreleases/2021/disaster-management-act-under-review.html

179 "PNG government approves K10 million in relief assistance to the Kingdom of Tonga", Department of the Prime Minister and National Executive Council, Press Release, 31 January 2022, https://www.pmnec.gov.pg/index.php/secretariats/pm-media-statements/427-png-government-approves-k10-million-in-relief-assistance-to-kingdom-of-tonga;

180 Stephen Kuper, "Papua New Guinea lends a hand during Australian bushfires", Defence Connect, 15 January 2020, https://www.defenceconnect.com.au/key-enablers/5417-papua-new-guinea-lends-a-hand-during-australian-bushfires

181 "Papua New Guinea Defence Force", PNG Facts, accessed 12 May 2022, https://www.pngfacts.com/papua-new-guinea-defence-force.html

182 "Papua New Guinea Defence White Paper 2013", ASPI, https://www.aspistrategist.org.au/wp-content/uploads/2014/01/131220-PNG-Defence-White-Paper.pdf

183 "Core Services", PNGDF, accessed 12 May 2022, http://www.defence.gov.pg/core_services/cs_disaster_relief.html

184 "Papua New Guinea Defence White Paper 2013", ASPI, https://www.aspistrategist.org.au/wp-content/uploads/2014/01/131220-PNG-Defence-White-Paper.pdf, 23.

185 PNGDO Corporate Governance Committees and Board, accessed 6 June 2022, http://www.defence.gov.pg/

186 Part X of the Constitution of the Independent State of Papua New Guinea, http://www.paclii.org/pg/legis/consol_act/cotisopng534/

187 "PNG Overview", IFRC, Resilience Library, accessed 23 May 2022, https://www.rcrc-resilience-southeastasia.org/disaster-law/international-disaster-response-law-in-the-pacific/country-profiles/papua-new-guinea/papua-new-guinea-overview/

188 Jefrey Elapa, "Quake Rock Hela, SHP", Post-Courier, 27 February 2018, accessed 12 May 2022, https://postcourier.com.pg/quake-rocks-shela-shp/

189 Interview with IOM Mission team on 19 May 2022. See also PNG IOM Newsletter Jan-Apr 2022, https://roasiapacific.iom.int/sites/g/files/tmzbdl671/files/documents/20220503-iom-png-newsletter1_2022.pdf

190 Interview with IOM Mission team in PNG on 19 May 2022.

191 Staff Sgt. Alice Ripberger, "Papua New Guinea military leaders visit Wisconsin Guard", U.S. Army, News, 15 February 2022, https://www.army.mil/article/254025/papua_new_guinea_military_leaders_visit_wisconsin_guard

192 Kirsty Needham, "U.S. seeks to increase security cooperation with Papua New Guinea", Reuters, 25 April 2022, https://www.yahoo.com/video/u-seeks-increase-security-cooperation-035017954.html

193 Provided by Richard Higgins, Disaster Management Team Secretariat, via email on 29 May 2022.

194 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022.

195 Ibid.

196 Ibid.

197 Ibid.

198 International Committee of the Red Cross (ICRC). The Movement. Accessed 23 March 2020. https://www.icrc.org/en/movement#:~:text=The%20International%20Red%20Cross%20and,armed%20conflicts%20and%20other%20emergencies.

199 International Federation of Red Cross (IFRC). Who we are. Accessed 23 March 2021. http://www.ifrc.org/en/who-we-are/

200 PNG Red Cross, accessed 13 May 2022, http://www.redcross.org.pg/

201 U.S. Embassy PNG, Solomon Islands, and Vanuatu, accessed 13 May 2022, https://pg.usembassy.gov/deputy-chief-of-mission-joe-zadrozny/

202 "ADS CHAPTER 251", USAID, Revised 15 May 2022, Responsible Office: BHA, File Name: 251_051222, https://www.usaid.gov/ads/policy/200/251

203 "USAID Pacific Island Regional Profile", 19 April 2022, accessed 23 May 2022, https://www.usaid.gov/sites/default/files/documents/2022_Pacific_Islands_Regional_Profile.pdf

204 "Papua New Guinea: Disaster Management Act 1984", PreventionWeb, accessed 13 May 2022, https://www.preventionweb.net/publication/papua-new-guinea-disaster-management-act-1984

205 "Disaster Management Act under review", UNDP, 28 September 2021, https://www.pg.undp.org/content/papua_new_guinea/en/home/presscenter/pressreleases/2021/disaster-management-act-under-review.html

206 Preamble to the NPA. Accessed 7 June 2022, https://covid19.info.gov.pg/files/June2020/18062020/National%20Pandemic%20Act%202020-%28Certified%29.pdf

207 Section 8 (Function of the Controller) of the NPA. https://covid19.info.gov.pg/files/June2020/18062020/National%20Pandemic%20Act%202020-%28Certified%29.pdf

208 COVID-19 PNG website, https://covid19.info.gov.pg/

209 Dr Daoni Highlight Statistics on COVID-19. https://covid19.info.gov.pg/dr-daoni-highlights-statistics-on-covid-19/

210 NDRR, accessed 13 May 2022, https://www.preventionweb.net/publication/papua-new-guinea-national-disaster-risk-reduction-framework-2017-2030

211 National Disaster Mitigation Policy 2010, accessed via PreventionWeb on 13 May 2022, https://www.preventionweb.net/files/22034_18270mitigationpolicy1.pdf

212 "Papua New Guinea Crisis Response Plan 2021", IOM, accessed 16 May 2022, https://crisisresponse.iom.int/response/papua-new-guinea-crisis-response-plan-2021/year/2021; interview with IOM Mission team in PNG on 19 May 2022.

213 Interview with IOM Mission team in PNG on 19 May 2022.

214 NDRRF 2017-2030, 11.

215 NDRRF 2017-2030, 15.

216 "Emergency & Disaster Management and Disaster Risk Reduction in Papua New Guinea", NDC, 2014, https://www.humanitarianlibrary.org/sites/default/files/2014/02/dm_country_report.pdf, 21.

217 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022.

218 "Papua New Guinea: Bumbu Gets Country's First Early Warning Flood System", UNDP via PreventionWeb 30 May 2018, accessed 16 May 2022m https://www.preventionweb.net/news/papua-new-guinea-bumbu-gets-countrys-first-early-warning-flood-system

219 "Solutions: Early warning of PNG floods", NIWA, October 2018, https://niwa.co.nz/news/solutions-early-warning-of-png-floods

220 Govt. of Papua New Guinea convenes the 9th meet of the RIMES Council" RIMES, 23 August 2017, accessed 9 June 2022, https://www.rimes.int/?q=rimes-council-meeting-png

221 "Project Terms of Reference", UN ESCAP, accessed 7 June 2022, https://www.unescap.org/sites/default/files/TTF-27-RIMES-Project-Terms-of-Reference.pdf

222 PNGNWS accessed 16 May 2022, http://www.pngmet.gov.pg/warnings/smartalert/

223 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022

224 Kuleshov, Yuriy & Inape, Kasis & Watkins, Andrew & Bear-Crozier, A. & Chua, Zhi-Weng & Xie, Pingping & Kubota, Takuji & Tashima, Tomoko & Stefanski, Robert & Kurino, Toshiyuki. (2019). Climate Risk and Early Warning Systems (CREWS) for Papua New Guinea. 10.5772/intechopen.85962. Accessed 16 May 2022, https://www.researchgate.net/publication/333701562_Climate_Risk_and_Early_Warning_Systems_CREWS_for_Papua_New_Guinea/citation/download

225 GMD, DMPGM, accessed 16 May 2022, http://dmpgm.webdev.datec.net.pg/about-us/geohazards-management-division/

226 "Papua New Guinea: Seismic monitoring gets a boost", ReliefWeb, 15 October 2008, accessed 16 May 2022, https://reliefweb.int/report/papua-new-guinea/papua-new-guinea-seismic-monitoring-gets-boost

227 PMGO, DMPGM, accessed 16 May 2022, http://dmpgm.webdev.datec.net.pg/port-moresby-geophysical-observatory/

228 Lawrence Anton and Gary Gibson, "Earthquake Hazard In Papua New Guinea: Problems And The Way Forward", Australian Earthquake Engineering Society, 2013, accessed 16 May 2022, https://aees.org.au/wp-content/uploads/2013/11/10-Anton-Lawrence.pdf

229 "New volcano monitoring tool to be trialled in Papua New Guinea", DFAT, 13 February 2019, https://www.ga.gov.au/news-events/news/latest-news/new-volcano-monitoring-tool-to-be-trialled-in-papua-new-guinea

230 RVO, DMPGM, accessed 16 May 2022, http://dmpgm.webdev.datec.net.pg/rabaul-volcano-observatory/

231 EG, DMPGM, accessed 16 May 2022, http://dmpgm.webdev.datec.net.pg/about-us/engineering-geology/

232 Center for Excellence in Disaster Management & Humanitarian Assistance. Humanitarian Assistance Response Training (HART) Module: HA/DR Information. September 2018.

233 Joint Publication 3-29. Foreign Humanitarian Assistance. 14 May 2019. Page IV-35. https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_29.pdf?ver=2019-05-21-150525-607

234 Interview with Richard Higgins, Disaster Management Team Secretariat in PNG, on 2 June 2022.

235 Email communication from Julia Hartelius, Interim Disaster Law Coordinator, International Federation of Red Cross and Red Crescent Societies (IFRC). Asia Pacific Regional Office. April 15, 2019.

236 Email communication from Julia Hartelius, Interim Disaster Law Coordinator, International Federation of Red Cross and Red Crescent Societies (IFRC). Asia Pacific Regional Office. April 15, 2019; "Who We Are", ICRC, accessed 20 December 2021, https://www.icrc.org/en/who-we-are/mandate

237 U.S. Agency for International Development (USAID). Humanitarian Assistance. Accessed 23 March 2021. https://www.usaid.gov/humanitarian-assistance

238 Pacific Disaster Center (PDC Global). About DisasterAWARE. Accessed 23 March 2021. https://www.pdc.org/apps/disasteraware/about-disasteraware/

239 Pacific Disaster Center (PDC Global). Disaster Alert. Accessed 23 March 2021. https://disasteralert.pdc.org/disasteralert/

Pacific Disaster Center (PDC Global). DisasterAWARE Quick Start User Guide, 2019, Version 6.5. https://disasteraware.pdc.org/help/Quick-Start-Guide-DisasterAWARE-screen.pdf

240 Pacific Disaster Center (PDC Global). DisasterAlert™. Accessed 23 March 2021. https://www.pdc.org/apps/disaster-alert/

241 All Partners Access Network (APAN). About Us. Accessed 23 March 2021. https://www.apan.org/pages/about

242 All Partners Access Network (APAN). Solutions. Accessed 23 March 2021. https://www.apan.org/pages/solutions-hadr

243 JWTC. Frequently Asked Questions, https://www.metoc.navy.mil/jtwc/jtwc.html?faq#sub ; Tsunami Frequently Asked Questions, https://www.metoc.navy.mil/jtwc/jtwc.html?tsunami-faq

244 HDX, 'INFORM COVID-19 Risk Index Version 0.1.4', accessed 23 October 2021, https://data.humdata.org/dataset/inform-covid-19-risk-index-version-0-1-4

245 Ibid.

246 Ibid.

247 https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Covid-19, downloaded from the first Excel file.

248 DOW, accessed via DevEx on 17 May 2022, https://www.devex.com/organizations/department-of-works-and-implementation-papua-new-guinea-130368; DOW website is here: https://www.works.gov.pg/

249 DOW, accessed 7 June 2022, http://www.works.gov.pg/

250 "The 26 biggest airports in Papua New Guinea", World Data Info, accessed 16 May 2022, https://www.worlddata.info/oceania/papua-new-guinea/airports.php; See various for runway lengths: https://www.airport-technology.com/projects/port-moresby-jacksons-international-airport/#:~:text=Port%20Moresby%20Jacksons%20International%20Airport%20runways,shorter%20at%206%2C777ft%20each; https://skyvector.com/airport/AYBK/Buka-Airport; https://skybrary.aero/airports/aydu; https://skyvector.com/airport/AYGR/Girua-Airport; https://www.tripmondo.com/papua-new-guinea/airports/lnv-londolovit-airport/; https://skyvector.com/airport/AYMH/Mount-Hagen-Airport

251 PNG Port Corporation, accessed 17 May 2022, https://pngports.com.pg/index.php/operations/port-information

252 "New legislation and targets put Papua New Guinea's transport infrastructure on the road to improvement", Oxford Business Group, accessed 17 May 2022, https://oxfordbusinessgroup.com/overview/room-grow-new-legislation-and-achievable-targets-ensure-transport-infrastructure-road-improvement

253 "Road Management in Papua New Guinea: An Evaluation of a Decade of Australian Support", DFAT, February 2018, https://www.oecd.org/derec/australia/australia-ode-evaluation-road-management-in-papua-new-guinea-brief.pdf

254 "Department of Works and Implementation (Papua New Guinea)", DevEx, accessed 17 May 2022, https://www.devex.com/organizations/department-of-works-and-implementation-papua-new-guinea-130368

255 "Road Management in Papua New Guinea: An Evaluation of a Decade of Australian Support", DFAT, February 2018, https://www.oecd.org/derec/australia/australia-ode-evaluation-road-management-in-papua-new-guinea-brief.pdf

256 "2.3 Papua New Guinea Road Assessment", DLCA, accessed 17 May 2022, https://dlca.logcluster.org/display/public/DLCA/2.3+Papua+New+Guinea+Road+Assessment

257 "New legislation and targets put Papua New Guinea's transport infrastructure on the road to improvement", Oxford Business Group, accessed 17 May 2022, https://oxfordbusinessgroup.com/overview/room-grow-new-legislation-and-achievable-targets-ensure-transport-infrastructure-road-improvement

258 "Road Management in Papua New Guinea: An Evaluation of a Decade of Australian Support", DFAT, February 2018, https://www.oecd.org/derec/australia/australia-ode-evaluation-road-management-in-papua-new-guinea-brief.pdf

259 "Road Management in Papua New Guinea: An Evaluation of a Decade of Australian Support", DFAT, February 2018, https://www.oecd.org/derec/australia/australia-ode-evaluation-road-management-in-papua-new-guinea-brief.pdf

260 "Transport-Railways-German New Guinea", PNG Buai, accessed 17 May 2022, https://www.pngbuai.com/300socialsciences/transport/railgerman1a.html

261 CIA World Factbook, accessed 17 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/

262 "Vital waterways for people and wildlife", WWF, accessed 17 May 2022, https://wwf.panda.org/discover/knowledge_hub/where_we_work/new_guinea_forests/area_forests_new_guinea/new_guinea_forests_ecosystems/rivers_new_guinea_forests/

263 "New legislation and targets put Papua New Guinea's transport infrastructure on the road to improvement", Oxford Business Group, accessed 17 May 2022, https://oxfordbusinessgroup.com/overview/room-grow-new-legislation-and-achievable-targets-ensure-transport-infrastructure-road-improvement

264 Logistics Capacity Assessment. Papua New Guinea Country Profile. 1.1 Papua New Guinea Humanitarian Background. Last edited February 1, 2016. https://dlca.logcluster.org/display/public/DLCA/1.1+Papua+New+Guinea+Humanitarian+Background

265 "Reformed Education Structure", DOE, accessed 18 May 2022, https://www.education.gov.pg/quicklinks/parents.html

266 NDRRF 2017-2030, https://www.preventionweb.net/files/64804_pngndrrffinalviewsmall.pdf

267 "Students in Madang learn about disaster preparedness", World Vision, 20 January 2020, https://www.wvi.org/stories/papua-new-guinea/students-madang-learn-about-disaster-preparedness

268 "Strengthening Disaster Risk Management in Papua New Guinea Phase 1 (2015-2019)", UNDP, accessed 18 May 2022, https://www.pg.undp.org/content/papua_new_guinea/en/home/projects/disaster-risk-management.html

269 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022.

270 "Promoting emergency preparedness in Papua New Guinean schools", UNICEF, 20 January 2015, https://www.unicef.org/png/stories/promoting-emergency-preparedness-papua-new-guinean-schools

271 Email from Richard Higgins, Disaster Management Team Secretariat, on 29 May 2022.

272 ETC. Accessed 17 May 2022, https://www.etcluster.org/countries/papua-new-guinea

273 Ibid.

274 Ibid.

275 World Bank Data, accessed 17 May 2022, https://data.worldbank.org/indicator/IT.MLT.MAIN?locations=PG

276 World Bank Data, accessed 17 May 2022, https://data.worldbank.org/indicator/IT.CEL.SETS?locations=PG

277 Simon Kemp, "Digital 2021: Papua New Guinea", Data Report, 12 February 2021, https://datareportal.com/reports/digital-2021-papua-new-guinea

278 "Papua New Guinea profile – media", BBC, 5 September 2017, accessed 17 May 2022, https://www.bbc.com/news/world-asia-15592924

279 Reporters Without Borders, accessed 17 May 2022, https://rsf.org/en/country/papua-new-guinea

280 PNG Post, accessed 17 May 2022, https://www.postpng.com.pg/

281 "Utilities of Papua New Guinea", Commonwealth Governance, accessed 18 May 2022, https://www.commonwealthgovernance.org/countries/pacific/papua_new_guinea/utilities/

282 "Papua New Guinea: Improved access to reliable, affordable energy", World Bank, Press Release, 6 April 2021, https://www.worldbank.org/en/news/press-release/2021/04/06/papua-new-guinea-improved-access-to-reliable-affordable-energy

283 "Papua New Guinea: Clean Water Access to End the Walk for Water for Women and Girls", World Bank, Feature Story, 20 March 2018, https://www.worldbank.org/en/news/feature/2018/03/20/papua-new-guinea-clean-water-access-to-end-the-walk-for-water-for-women-and-girls

284 WaterAid PNG, accessed 18 May 2022, https://www.wateraid.org/us/where-we-work/papua-new-guinea

285 National Health Plan 2011–2020 (NHP), https://www.health.gov.pg/pdf/PNGNHP%20Brochure_2014.pdf

286 "PNG PM Marape Launches 10-year National Health Plan", Papua New Guinea Today, 9 December 2021, https://news.pngfacts.com/2021/12/png-pm-marape-launches-10-year-national.html

287 "Independent State of Papua New Guinea Health System Review", Health Systems in Transition, Vol. 9. No.1 2019, https://www.jstor.org/stable/resrep28454.1?seq=1, 30.

288 "Independent State of Papua New Guinea Health System Review", Health Systems in Transition, Vol. 9. No.1 2019, https://www.jstor.org/stable/resrep28454.1?seq=1, 36.

289 "Papua New Guinea-WHO Country Cooperation Strategy 2016-2020", WHO PNG, https://www.who.int/publications/i/item/WPRO-2016-DPM-005, 4.

290 "Independent State of Papua New Guinea Health System Review", Health Systems in Transition, Vol. 9. No.1 2019, https://www.jstor.org/stable/resrep28454.1?seq=1, 20.

291 "Papua New Guinea-WHO Country Cooperation Strategy 2016-2020", WHO PNG, https://www.who.int/publications/i/item/WPRO-2016-DPM-005, 15.

292 Peter R Moore, Andrew F van den Hurk, John S Mackenzie, Alyssa T Pyke. 2017. Dengue viruses in Papua New Guinea: evidence of endemicity and phylogenetic variation, including the evolution of new genetic lineages. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5750459/

293 Moore, Peter R et al. "Dengue viruses in Papua New Guinea: evidence of endemicity and phylogenetic variation, including the evolution of new genetic lineages." Emerging microbes & infections vol. 6,12 e114. 20 Dec. 2017, doi:10.1038/emi.2017.103, accessed 19 May 2022, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5750459/

294 "Virtual training for antiretroviral therapy prescribers launched in Papua New Guinea", UNAIDs, 4 August 2020, https://www.unaids.org/en/keywords/papua-new-guinea

295 Carol Kidu, "A National Response to the HIV Epidemic in Papua New Guinea", UN Chronicle, accessed 18 May 2022, https://www.un.org/en/chronicle/article/national-response-hiv-epidemic-papua-new-guinea

296 Cleary, E., Hetzel, M.W., Siba, P.M. et al. Spatial prediction of malaria prevalence in Papua New Guinea: a comparison of Bayesian decision network and multivariate regression modelling approaches for improved accuracy in prevalence prediction. Malar J 20, 269 (2021). https://doi.org/10.1186/s12936-021-03804-0, accessed 18 May 2022 at htt"ps://malariajournal.biomedcentral.com/articles/10.1186/s12936-021-03804-0#citeas

297 Sarthak Das, "Papua New Guinea is battling the world's oldest pandemic: malaria. How can it get back on track?", World Economic Forum, 13 September 2021, https://www.weforum.org/agenda/2021/09/papua-new-guinea-malaria/

298 CNN. Polio outbreak confirmed in Papua New Guinea. Susan Scutti. June 27, 2018. https://www.cnn.com/2018/06/26/health/polio-papua-new-guinea-bn/index. Html

299 Australia Department of Health. 2018. 2018 Outbreak of Polio in PNG. http://www.health.gov.au/internet/main/ publishing.nsf/Content/ohp-polio-PNG.htm

300 IAMAT. 2018. Papua New Guinea. https://www.iamat. org/country/papua-new-guinea/risk/polio

301 "The Prevalence of Sexually Transmitted Infections in Papua New Guinea: A Systematic Review and Meta-Analysis", PLoS One. 2010; 5(12): e15586, Published online 2010 Dec 23. doi: 10.1371/journal.pone.0015586, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3009733/#:~:text=High%20prevalences%20of%20chlamydia%2C%20gonorrhoea,and%2039.3%25%20respectively%20were%20observed.

302 "Papua New Guinea National STI and HIV Strategy 2018–2022", National Department of Health - Papua New GuineaNational AIDS Council - Papua New Guinea, accessed 18 May 2022, https://www.aidsdatahub.org/resource/papua-new-guinea-national-sti-and-hiv-strategy-2018-2022

303 "The tuberculosis epidemic in Papua New Guinea", World Vision, accessed 18 May 2022, https://www.worldvision.com.au/global-issues/work-we-do/poverty/our-approach-to-tuberculosis#:~:text=Papua%20New%20Guinea%20has%20one,is%20also%20preventable%20and%20curable.

304 "The emergency response to multidrug-resistant tuberculosis in Daru, Western Province, Papua New Guinea, 2014–2017", Public Health Action. 2019 Sep 21; 9(Suppl 1): S4–S11, Published online 2019 Sep 21. doi: 10.5588/pha.18.0074, accessed 18 May 2022, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6735456/

305 JHU Coronavirus Resource Center, accessed 18 May 2022, https://coronavirus.jhu.edu/region/papua-new-guinea

306 Reuters COVID-19 Vaccination Tracker, accessed 18 May 2022, https://graphics.reuters.com/world-coronavirus-tracker-and-maps/vaccination-rollout-and-access/

307 "COVID-19 Multi-Sector Response Plan - Papua New Guinea Disaster Management Team (as of 3 September 2020)", ReliefWeb, 4 September 2020, accessed 18 May 2022, https://reliefweb.int/report/papua-new-guinea/covid-19-multi-sector-response-plan-papua-new-guinea-disaster-management-0

308 "Independent State of Papua New Guinea Health System Review", Health Systems in Transition, Vol. 9. No.1 2019, https://www.jstor.org/stable/resrep28454.1?seq=1, 20.

309 Kitur, U., Adair, T., Riley, I. et al. Estimating the pattern of causes of death in Papua New Guinea. BMC Public Health 19, 1322 (2019). https://doi.org/10.1186/s12889-019-7620-5, accessed 19 May 2022, https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-019-7620-5#citeas

310 Kendall Carll, "4 Key Facts About Healthcare in PNG", The Borgen Project, Blog, 28 May 2021, https://borgenproject.org/healthcare-in-papua-new-guinea/

311 "Training of Doctors in Papua New Guinea", Papau New Guinea Today, Letter from Dr. James Naipao. President, National Doctors Association, 31 January 2018, https://news.pngfacts.com/2018/01/training-of-doctors-in-papua-new-guinea.html

312 Gregorio, Mark Anthony. 2011. A Glimpse of the Healthcare Workforce in Papua New Guinea. https://www.pfizer.com/files/responsibility/global_health/mark_anthony_gregorio.pdf

313 Gregorio, Mark Anthony. 2011. A Glimpse of the Healthcare Workforce in Papua New Guinea. https://www.pfizer.com/files/responsibility/global_health/mark_anthony_gregorio.pdf

314 Ibid.

315 Photo taken by Ness Kerton for AUSAID, 5 June 2013,https://en.wikipedia.org/wiki/Health_in_Papua_New_Guinea#/media/File:Second_year_medical_students_from_the_UPNG_School_of_Medicine_and_Health_Science._Port_Moresby_General_Hospital,_PNG._(10720542195).jpg

316 "Global Gender Gap Report 2021", World Economic Forum, 2021, https://www3.weforum.org/docs/WEF_GGGR_2021.pdf, 10.

317 Ibid, 315.

318 Stephanie McLennan, "Women in Papua New Guinea are Suffering an Epidemic of Violence - The Government Must Act", Human Rights Watch, 30 September 2021, https://www.hrw.org/news/2021/10/01/women-papua-new-guinea-are-suffering-epidemic-violence-government-must-act

319 Stephanie McLennan, "Women in Papua New Guinea are Suffering an Epidemic of Violence - The Government Must Act", Human Rights Watch, 30 September 2021, https://www.hrw.org/news/2021/10/01/women-papua-new-guinea-are-suffering-epidemic-violence-government-must-act

320 Erol Yaynoke, "The Global Fragility Strategy Gets a Refresh", Center for Strategic and International Studies, 4 April 2022, https://www.csis.org/analysis/global-fragility-strategy-gets-refresh

321 Meeting with Department of State's Bureau of Conflict and Stabilization Operations, Deputy Assistant Secretary Robert J. Faucher, at CFE-DM on 18 April 2022.

322 Michael Kabuni and Ancuta Hansen, "Women's inclusion in the Bougainville negotiations", Asia & Pacific Policy Society, Policy Forum, 20 May 2022, https://www.policyforum.net/womens-inclusion-in-the-bougainville-negotiations/

323 "APEC 13th Emergency Preparedness Working Group Meeting, Port Moresby, Papua New Guinea, 24-25 February 2018", APEC-EPWG, accessed 12 May 2022, https://www.apec-epwg.org/media/2232/7d7a8b74c005d96238782be53913d4e8.pdf;

324 "Disaster Management Act under review", UNDP, 28 September 2021, https://www.pg.undp.org/content/papua_new_guinea/en/home/presscenter/pressreleases/2021/disaster-management-act-under-review.html

325 Interview with IOM Mission team in PNG on 19 May 2022; interview with Richard Higgins, Disaster Management Team Secretariat in PNG, on 2 June 2022.

326 PNG National Disaster Risk Reduction Framework 2017-2030, accessed on PreventionWeb on 3 May 2022, https://www.preventionweb.net/publication/papua-new-guinea-national-disaster-risk-reduction-framework-2017-2030#:~:text=The%20Papua%20New%20Guinea%20National,Cooperation%20Disaster%20Risk%20Reduction%20Plan, 7-8.

327 "Papua New Guinea's Enhance Nationally Determined Contribution", Papua New Guinea Climate Change and Development Authority, 2020, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Papua%20New%20Guinea%20Second/PNG%20Second%20NDC.pdf, I; See also "What is REDD+", UNFCCC, accessed 4 May 2022, https://unfccc.int/topics/land-use/workstreams/redd/what-is-redd#:~:text=REDD%2B%20is%20a%20framework%20created,carbon%20stocks%20in%20developing%20countries.

328 Staff Sgt. Alice Ripberger, "Papua New Guinea military leaders visit Wisconsin Guard", U.S. Army, News, 15 February 2022, https://www.army.mil/article/254025/papua_new_guinea_military_leaders_visit_wisconsin_guard

329 "Wisconsin Guard Develops Partnership with Papua New Guinea", USINDOPACM, News, 28 April 2022, https://www.pacom.mil/Media/News/News-Article-View/Article/3014118/wisconsin-guard-develops-partnership-with-papua-new-guinea/

330 Petty Officer 1st Class Stephane Belcher, "U.S. Navy Seabees Construct Dental Facility", INDPACOM, News, 28 December 2021, https://www.pacom.mil/Media/News/News-Article-View/Article/2884747/us-navy-seabees-construct-dental-facility/

331 U.S Army Pacific, "Papua New Guinea and U.S. Hosts Regional Land Forces Seminar", USINDPACOM, News, 22 September 2021, https://www.pacom.mil/Media/News/News-Article-View/Article/2785519/papua-new-guinea-and-us-hosts-regional-land-forces-seminar/

332 U.S. Indo-PACOM. 2018. USS Green Bay Arrives in Port Moresby for Asia-Pacific Economic Cooperation Support. http://www.pacom.mil/Media/News/News-Article-View/ Article/1689392/uss-green-bay-arrives-in-port-moresby-for-asia-pacific-economic-cooperation-sup/

333 Commander U.S. PACFLEET. 2018. Michael Murphy visits Papua New Guinea ahead of APEC 2018. https://www.cpf.navy.mil/news.aspx/130379

334 https://thediplomat.com/2021/07/bougainville-inches-closer-to-independence/

World Population Dashboard, UNFPA, accessed 19 May 2022, https://www.unfpa.org/data/world-population/PG

335 "U.S. Relations With Papua New Guinea", U.S. Department of State, 21 January 2020, https://www.state.gov/u-s-relations-with-papua-new-guinea/

336 "U.S. Relations With Papua New Guinea", U.S. Department of State, 21 January 2020, https://www.state.gov/u-s-relations-with-papua-new-guinea/

337 "U.S. Relations With Papua New Guinea", U.S. Department of State, 21 January 2020, https://www.state.gov/u-s-relations-with-papua-new-guinea/

338 "U.S. Relations With Papua New Guinea", U.S. Department of State, 21 January 2020, https://www.state.gov/u-s-relations-with-papua-new-guinea/

339 "U.S. Relations With Papua New Guinea", U.S. Department of State, 21 January 2020, https://www.state.gov/u-s-relations-with-papua-new-guinea/

340 Erol Yaynoke, "The Global Fragility Strategy Gets a Refresh", Center for Strategic and International Studies, 4 April 2022, https://www.csis.org/analysis/global-fragility-strategy-gets-refresh

341 "PNG: International Organization", CIA World Factbook, accessed 22 May 2022, https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#geography

342 "Papua New Guinea moves closer to contributing first blue helmets to UN missions", UN, 27 September 2010, https://news.un.org/en/story/2010/09/353842-papua-new-guinea-moves-closer-contributing-first-blue-helmets-un-missions

343 U.S. Department of State. Philippines International Travel Information. Accessed 22 May 2022. https://travel.state.gov/content/travel/en/international-travel/International-Travel-Country-Information-Pages/PapuaNewGuinea.html

344 CDC. Travelers' Health: PNG. Accessed 22 May 2022. https://wwwnc.cdc.gov/travel/destinations/traveler/none/papua-new-guinea?s_cid=ncezid-dgmq-travel-single-001 https://wwwnc.cdc.gov/travel/destinations/traveler/none/philippines?s_cid=ncezid-dgmq-travel-single-001

345 PNG National Disaster Risk Reduction Framework 2017-2030, accessed on PreventionWeb on 3 May 2022, https://www.preventionweb.net/publication/papua-new-guinea-national-disaster-risk-reduction-framework-2017-2030#:~:text=The%20Papua%20New%20Guinea%20National,Cooperation%20Disaster%20Risk%20Reduction%20Plan, 7-8.

346 PreventionWeb.net. Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030. http://www.preventionweb.net/files/44983_sendaiframeworkchart.pdf

347 UNISDR. Sendai Framework for Disaster Risk Reduction. https://www.unisdr.org/we/coordinate/sendai-framework

348 PreventionWeb.net. Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030. http://www.preventionweb.net/files/44983_sendaiframeworkchart.pdf

349 UNISDR. Sendai Framework for Disaster Risk Reduction. https://www.unisdr.org/we/coordinate/sendai-framework

350 PreventionWeb.net. Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030. http://www.preventionweb.net/files/44983_sendaiframeworkchart.pdf

351 PreventionWeb. 2011. National progress report on the implementation of the Hyogo Framework for Action (2011-2013) – Interim. https://www.preventionweb.net/files/28697_png_NationalHFAprogress_2011-13.pdf

352 CIA World Factbook. PNG. Accessed 22 May 2022. https://www.cia.gov/the-world-factbook/countries/papua-new-guinea/#introduction



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