


Chapter 9

Implications of Climate Change in the Pacific Region

Keshmeer Makun

 <http://orcid.org/0000-0002-0235-1192>

University of the South Pacific, Fiji

ABSTRACT

Pacific island countries are at the cliff edge of the climate and economic crisis. This crisis poses a significant threat to the region's environment, economy and the well-being of its people. As a region and as countries, the Pacific faces some of the hardest choices in their struggle for a sustainable and resilient model of development. The economic crisis has been exacerbated by the COVID-19 pandemic and the resulting adverse impact on the tourism industry and trade. With falling GDP and a rise in public spending to cushion the ravages of the pandemic, Pacific countries have seen themselves in a sovereign debt crisis and increasing poverty. This chapter examines these issues in the Pacific region context. It attempts to realize the social and economic effects of climate change, adaptation and mitigation measures and growing fiscal challenges for economic development in the developing island economies. The implications of these contemporary issues suggest urgent and accelerated action to advance resilience and sustainable development.

INTRODUCTION

The 23 Pacific Island Countries (PICs) and territories¹ mostly consist of small and isolated islands, some of them with low-lying land, in the Pacific Ocean. Every island has a finite supply of resources and a delicate biodiversity. With a combined population of over 12 million, they represent a variety of ethnic and cultural backgrounds.

Climate change has been named as one of the major challenges of this era for the PICs. The region's distinct geography and environment, its fragile economic structure, its distinctive demographics, and the interactions between these various factors all contribute to its vulnerability to climate change. The majority of the economic activity in many of the Pacific countries is focused on low-lying coastal areas with large population densities and little agricultural land. Thus, it is anticipated that rising sea levels will seriously affect these coastal communities and cities, as well as harm human habitats and infrastructure.

DOI: 10.4018/979-8-3693-2845-3.ch009

Furthermore, the Pacific region has faced several unique obstacles to economic development and growth over the last few decades. These include long-term issues relating to economic diversification, capacity building, and maintaining a nation's connection to the global financial system (Davies, 2023). But in the near to medium term, there are more pressing issues due to threats from climate change, high levels of government debt, and poverty. Because of its strong reliance on outside demand, the Pacific was also hard hit by the COVID-19 pandemic. Travel restrictions particularly hurt nations that depended on tourism. For instance, Fiji where the share of tourism is about 40 percent was worst affected (Fiji Ministry of Economy, 2022). One-third of Fiji's formal workforce lost hours or jobs altogether in the immediate wake of widespread travel restrictions. Socioeconomic issues including poverty are further exacerbated as a result of a high percentage of informal employment in Pacific industries dependent on tourism, such as food, crafts, and market stalls (ILO, 2021).

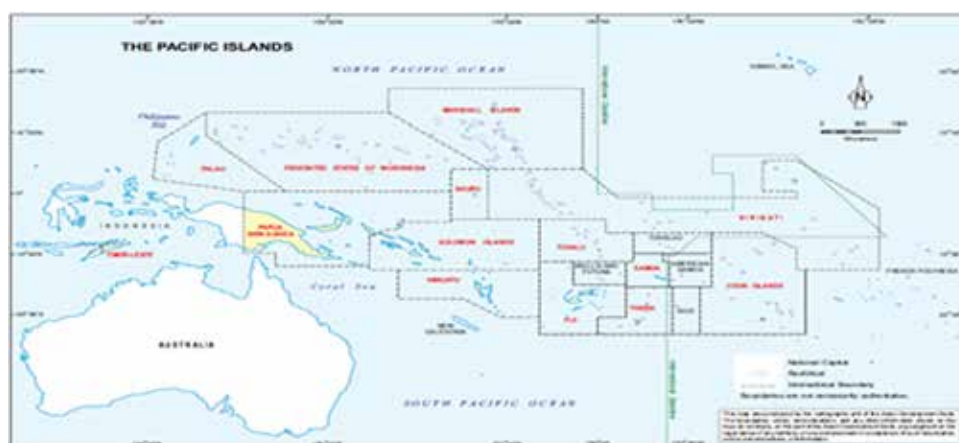
This chapter examines recent economic development challenges in Pacific economies. These countries have faced a series of challenges in recent years, including the COVID-19 pandemic and several natural disasters. Although at an uneven pace, the region is experiencing a recovery as a result of favorable economic policies. Nonetheless, persistent obstacles like the existential threat posed by climate change, the sustainability of government debt, and socioeconomic problems are anticipated to increase the pressure on numerous Pacific countries to achieve robust and sustainable economic growth. The chapter disentangles the adverse impacts of these issues and examines how Pacific countries are fighting its impact to protect their well-being. The plight of the Pacific is used to argue for policy options in overcoming these challenges. The remainder of this chapter is organized as follows. Section 2 provides the geography and economic setting of the Pacific Island Countries (PICs). Section 3 discusses climate change, livelihood and economic impact. It also provides climate adaptation and mitigation measures in the Pacific context. Section 4 looks at the fiscal challenges facing the Pacific. Finally, Section 6 concludes with policy implications.

Geography and Economies of Pacific Countries

The PICs are dispersed throughout the Pacific Ocean (Figure 1). The sovereign zone of the area is up to 10,000km in length (east to west) and 3,000 km in length (north to south). With its numerous islands, the region boasts a lengthy coastline measuring about 25,000 km, which accounts for about 3% of the world's total coastline. This coastline is longer than the combined lengths of China and India (ADB 2004). The majority of people in the area reside 1.5 km or less from the coast. Up to 80% of people live close to the coast in smaller nations like Samoa (Hay and Wedderburn, 2011). The majority of cities and infrastructure, such as airports and government buildings, are situated near the coast, making them vulnerable to storm surges and flooding.

Implications of Climate Change in the Pacific Region

Figure 1. Map of the Pacific Island countries



About 540577 km² of land make up the region as a whole, with 84% of the land being in PNG. Many of the island nations are tiny, taking up less than 1,000 square kilometers. At 10 km², Tokelau is the smallest (Table 1). The size and economic standing of the 23 Pacific Island Countries and Territories (PICTs) vary considerably as well. With a 2022 GDP per capita of US\$36,753, New Caledonia is the richest country in the region. In terms of social indicators, Wallis and Futuna have an average life expectancy of 80 years, while Papua New Guinea's is 65.

There are presently over 12 million people living in the Pacific region, with 73% of them residing in PNG. The population of the area has grown by 50% since 1995, with an average annual growth rate of 2.95% over the past 17 years. In contrast, over the same period, the population of Asia increased at an average annual rate of 1.3%. By 2050, there will be 24 million people living in the region, with 17 million of those people living in PNG alone (UN, 2013). An array of resources, such as freshwater, food production, and land, are under growing stress due to fast population growth. When added to the vulnerability to climate change, the additional strain that rapid population growth places on resources creates significant risks to islanders.

Table 1. Background of the Pacific Island countries

Country	Population	Land area (KM ²)	Max height above sea level (M)	Per capita income (USD) 2022	Life expectancy
American Samoa	57085	200	966	12449	73
Cook Islands	15406	240	652	18806	75
Federated States of Micronesia	105987	700	791	3830	73
Fiji	901603	18270	1324	5524	67
French Polynesia	280855	3520	2241	21696	79
Guam	179900	540	406	34340	77
Kiribati	122735	810	81	1884	67

continued on following page

Table 1. Continued

Country	Population	Land area (KM ²)	Max height above sea level (M)	Per capita income (USD) 2022	Life expectancy
Marshall Islands	54446	180	10	4797	65
Nauru	11928	20	71	10020	64
New Caledonia	274330	18280	1628	36753	79
Niue	1532	260	68	19464	71
Northern Mariana Islands	56986	460	965	20959	78
Palau	17976	460	242	13230	70
Papua New Guinea	9311874	452860	4509	2666	65
Pitcairn Islands	50	47	347	na	-
Samoa	200999	2830	1857	4265	73
Solomon Islands	744407	27990	2335	2001	70
Tokelau	1497	10	5	7445	69
Tonga	99283	720	1033	4952	71
Tuvalu	10778	30	5	5575	64
Vanuatu	307941	12190	1877	3098	70
Wallis and Futuna	11302	140	524	11674	81

Note: nc is not available. Source: Secretariate of the Pacific Community (SPC) (2022)

The PICs primary industries are mining, fishing, tourism, and agriculture. However, the services sector accounts for a large portion of the GDP in most Pacific nations. For instance, in 2019 it ranged from 1.6% in PNG to 66% in the Cook Islands. For many of the Pacific countries, tourism is the leading source of foreign exchange and a major player in the region's economy. In 2010, the sector contributed roughly 56% of GDP to Palau, 44% to the Cook Islands, 34% to Vanuatu, and 23% to Fiji.

The region saw an increase in total international tourist arrivals from 1.9 million in 2015 to roughly 2.3 million in 2019. Fiji continued to be a popular destination, with 894389 tourist arrivals in 2019 (FBOS, 2019). Despite being a significant source of revenue for the community, the tourism industry is highly contingent on the region's unique topography and environment, which includes its beaches, coral reefs, and marine resources. The detrimental effects of climate change are especially likely to affect these coastal resources. According to ADB (2013), agriculture accounts for 29% of GDP in PNG, 28% in FSM, and 26% in Kiribati, indicating its economic significance. In 2019, the Pacific region's top five tourism destinations were China, New Zealand, Australia, the US, and Europe.

Table 2. International tourism arrivals in the Pacific

Pacific Island destination	2015	2016	2017	2018	2019	2020
American Samoa	20335	20050	19987	20221	19237	748
Cook Islands	125132	146473	161362	168760	171606	25073
Federated States of Micronesia	30240	29485	-	19207	19712(e)	-
Fiji	754835	792320	842884	870309	894389	140628
French Polynesia	183831	192495	198306	216458	236642	77014

continued on following page

Implications of Climate Change in the Pacific Region

Table 2. Continued

Pacific Island destination	2015	2016	2017	2018	2019	2020
Kiribati	5426	5118	5663	6895	7906	1409
Marshall Islands	6311	5332	6034	6347	10771	-
Nauru	-	3038	-	-	-	-
New Caledonia	114072	115676	120697	120343	130458	31228
Niue	7707	8918	9922	10502	9834 (e)	-
Palau	161931	138416	122726	106273	94030	18174
Papua New Guinea	190581	155789	142943	121503	159563	38665
Samoa	136104	145176	155098	167651	173920	20485
Solomon Islands	21623	23192	25709	27866	28930	4080
Tonga	53731	59130	62136	54046	67517	8932
Tuvalu	2344	2465	2477	3242	3611	-
Vanuatu	79279	95117	109108	115634	120628	21965
Wallis and Futuna	-	-	-	-	4637(e)	2902
Total	1954519	2020692	2103638	2152709	2264791	391303

Note: (e) is SPTO estimates. Source: SPTO (2021).

Climate Change, Livelihood, and Economic Impact

The climate crisis in the Pacific poses a substantial threat to the region's environment, economy, and the well-being of its people. As a region and as countries, the Pacific faces some of the hardest choices in their struggle for a sustainable and resilient model of economic development. First, the growing burden of the climate crisis affects all areas of life including livelihood and human security. The impact of climate change on livelihood is happening with severity not seen before. Second, and arising from the first and for other reasons, several of the global goals are getting out of reach altogether. While Pacific Island countries made some progress on SDGs, the region as a whole is largely falling behind. Third is growing multidimensional and multisectoral vulnerabilities across, touching all aspects of human life. Climate impact is felt most acutely by marginalized groups including children, the disabled, elderly, and women. As a result, climate change weighs the whole region from the smallest to its largest. For instance, Cyclone Pam in 2015 wiped out 70 percent of Vanuatu's GDP (Government of Vanuatu, 2015), and Cyclone Winston in 2016, wiped out one-third of countries GDP (Government of Fiji, 2016). Climate change is slowly and cripplingly also impacting infrastructure. The maintenance cost of infrastructure has increased a millionfold because of increased intense rates of climate impacts (Branchoux et al., 2018). The critical infrastructure, from digital to wharves to jetties to key government service centers such as health centers, schools, and coastal communities all stand exposed to flooding and storm damage.

The impact of climate change on the Pacific region's resources is also growing. The research shows that the Pacific's tuna stocks are depleting as they are migrating to cooler waters of South America due to rising ocean temperatures (Reinert, 2017). The effects of climate change have raised the cost of doing business and supplying goods and services to the Pacific. Before, these increases were gradual and slow; now, they are substantial and swift. The impact of the climate crisis on food and nutrition security both on land-based as well as aquatic agriculture is worsening. Traditionally, subsistence agriculture and fisheries

supported valuable protein consumption in the region. However, agriculture productivity is stagnant and per capita output is declining even in countries with small population growth (ADB, 2011). The food consumption pattern shows increasingly high dependence on imported foods, rapidly replacing local foods among the Pacific countries. Reflecting the food production and consumption trend in the Pacific, the World Health Organization (2010) noted high-calorie intake among the Pacific population, and yet the nutritional quality has declined. This has led to worsening health conditions in Pacific populations, where diabetes and nutrient deficiencies are common occurrences. As reported by the Intergovernmental Panel on Climate Change (IPCC), the climate crisis has both explicit and implicit impacts on food security. For small island nations, increasing climate-induced natural disasters and sea level rise will further reduce the agricultural output in the long term. Climate change also threatens the Pacific's reef system. The new era of 'global boiling' has the potential to trigger the total collapse of inshore aquatic food and ecosystems. It is already a reality across much of the urban Pacific where low-quality imported canned fish has replaced fresh seafood as a regular meal for a lot of Pacific islanders.

The economics of climate change is based on the notion that climate change is one of the significant market failures where the social and economic costs of greenhouse gases are not being paid for by those who produce them. Long-term and intergenerational in nature, climate change is marked by uncertainty and non-negligible risks of significant and irreversible change. It deals with non-marginal economic effects and has a global reach. The UK Government was provided with the Stern Review on the Economics of Climate Change in 2006, which elucidated the application of economics in tackling this issue and clarified the worldwide consequences of both inaction and response (Stern, 2007). Even though our comprehension of the costs and benefits has changed over the past decades, this analysis still seems to be applicable. In essence, the price of doing nothing has increased as our science advances, but the costs of taking action have dropped as a result of the sharp decline in the price of green technologies, the efficiency gains that come with moving toward a low-carbon, climate-resilient (LCCR) economy, and the large co-benefits that accompany it.

The Pacific region is one of the most disaster-prone areas in the world. For instance, in 2015, of the 344 disasters reported worldwide, 160 occurred in the region, making up 47% of the total. Over 16,000 people lost their lives in the region as a result of large-scale catastrophic disasters, more than twice as many as in 2014. The economic damages to Asia and the Pacific totaled over US\$45.1 billion, with even higher indirect losses. These figures, however, are wildly underestimated because the full cost of all the disasters that have affected the area, particularly the slow-moving ones like heat waves, droughts, and rise in sea levels, has not been systematically assessed. Since 1970, the region has experienced 2.24 billion disaster-related incidents that have cost over \$400 billion in damages (UNESCAP, 2016). These events have resulted in a continuous deterioration of development assets, including homes, schools, hospitals, and roads. The financial toll that natural disasters take on in the region is rising. The damage has also been increasing as a percentage of GDP, rising from 0.16 percent in the 1970s to 0.34 percent in the ten years between 2005 and 2014. The average annual cost of disasters in the region has risen from US\$1.8 billion in the 1970s to US\$73.8 billion between 2004 and 2013. This is a forty-fold increase and accounts for 49% of the average annual losses worldwide (UNESCAP, 2016).

Average annual loss (AAL) is a metric used to estimate future losses from disasters. This is the annual amount that nations should set aside to deal with potential threats. According to AAL estimates, 18 nations² in the Asia-Pacific region have ratios of more than 10% to social spending with Vanuatu having the highest ratio at 76% (UNISDR, 2015). The region's sixteen nations had AAL to gross fixed capital formation ratios greater than 5%. These ratios demonstrate the significant impact that disasters

Implications of Climate Change in the Pacific Region

will have on the region's future development. Small Pacific island states are predicted to lose 20 times more of their capital stock in disasters each year on average than are countries in Europe and Central Asia. Approximately 20 percent of the small Pacific island states total social expenditures go toward the AAL, while only 1.19 percent goes toward this purpose in North America and less than one percent in Europe and Central Asia.

The effects of these risks are exacerbated in the Asia-Pacific area by increased exposure of individuals and their belongings as well as persistently high socioeconomic vulnerability despite decades of economic expansion. Low adaptive capacity and low incomes exacerbate vulnerability. The main factor contributing to greater exposure in developing nations has been the accelerated, unplanned urbanization-related development of hazardous areas. This is a significant problem in the Asia-Pacific area, where the current average 40–45% urbanization rate is predicted to rise to over 50% in the next ten years.

The significant population displacements in the area have had an additional effect (IDMC, 2015). 84% of the 19.2 million additional people who were displaced in 2015 as a result of disasters happened in the Asia-Pacific area (IDMC, 2015). In 2015, there were over 20,000 recorded cases of displacement in fifteen countries within the region. By 2050, it is predicted that more extreme weather events linked to climate change will occur more frequently, pushing the global population of displaced people up to 150–200 million. About 150 million people in the region are at risk of sea level rise, with Bangladesh (26 million), China (73 million), India (20 million), small island states, and other countries accounting for the majority of those affected (31 million) (Myers, 2002). One of the most important human crises of our day is likely to be the problem of displacement brought on by climate change (IDMC, 2015).

Advanced and large developing economies are major players in the Paris Agreement's implementation. For instance, in Asia over the past 20 years, annual average emissions have increased at a rate of more than 4%, surpassing that of any other region. At present, the region is home to five out of the ten countries that emit the most greenhouse gases globally, namely China, India, Indonesia, Japan and the Russia (Table 3)³. China, Japan, Indonesia, and the Russian Federation are currently all above the global average of about 4.69 MtCO₂e even when measured per person. In the long run, the region's high emissions are predicted to continue due to population expansion, urbanization, and high economic growth, which could result in the region's volume doubling by 2050.

Table 3. Carbon emissions in HICs, Asia and PICs, 2020

HICs	Total emissions (MtCO₂e)	Emissions per capita (tCO₂e/ person)	Emission per GDP (tCO₂e/million\$GDP)
Australia	585.42	22.78	440.88
Canada	731.54	19.23	444.59
New Zealand	70.86	13.92	334.66
UK	411.12	6.13	149.13
USA	5289.13	15.96	253.14
Asia			
China	12295.62	8.71	837.14
India	3166.95	2.29	1187.15
Indonesia	1475.83	5.40	1394.02

continued on following page

Table 3. Continued

HICs	Total emissions (MtCO₂e)	Emissions per capita (tCO₂e/person)	Emission per GDP (tCo₂e/million\$GDP)
Japan	1062.78	8.42	210.86
Russia	1799.98	12.49	1209.40
PICs			
Fiji	-0.81	-0.90	-176.28
Kiribati	0.09	0.74	489.58
Marshall Islands	0.16	2.79	674.64
Micronesia	0.16	1.38	390.61
Nauru	0.05	4.37	415.89
Palau	0.20	10.82	759.76
Papua New Guinea	51.65	5.77	2094.02
Samoa	0.65	3.25	799.76
Solomon Islands	46.25	67.33	29915.41
Tonga	0.27	2.54	548.94
Vanuatu	0.59	1.92	656.38

Note: HICs are high-income countries. PICs are Pacific Island countries. Source: CAIT Climate Data Explorer (<http://cait.wri.org>).

The ambition required to maintain the long-term temperature goal set in Paris is still far beyond what is currently included in nationally determined contributions (NDCs). According to a recent study, the NDCs' current commitments only contain an average temperature rise of 2.9°C (UNEP, 2016). By 2030, the Asia Pacific region will need to rise to the occasion and at least double the goals outlined in the current NDCs.

As I write this section, a recent report by UNEP (2023) points out some damning developments on the impacts of climate change. It reports that global inequality continues to persist. Climate impacts are unfairly distributed. Globally, the top 10 percent of income earners are responsible for nearly half of the total emissions. The bottom 50 percent of income earners contribute only 12 percent of emissions. Based on current policies, we are on a path to 3°C warming. Even with unconditional nationally determined contributions, we are facing 2.9°C warming as mentioned above (UNEP, 2023). As a result, limiting warming to 1.5°C requires unprecedented action.

Pacific Climate Adaptation Initiative and Strategies

The nations of the Pacific Islands have taken the initiative to establish an institutional framework aimed at integrating climate change concerns into their respective national legal systems. Sea level rise and climate change are expected to have an impact on important development sectors, according to the vulnerability and adaptation assessment. These areas include fisheries, human health, coastal areas and resources, forestry and agriculture, and water resources. Since extreme climate-related events are already happening, the threat of climate change is no longer a concern for the future. As a result, funding for a number of community adaptation projects was provided by development and donor partners. Community-based adaptation included seawall construction in the villages, planting mangroves again, developing capacity, and ensuring financial stability. The projects raised community awareness of the

Implications of Climate Change in the Pacific Region

effects of climate change and sea level rise in addition to assisting communities in strengthening their resilience.

With the assistance of regional and global organizations such as the United Nations Development Program, the Secretariat of the Pacific Community, the Secretariat of the Pacific Regional Environment Program, the United States, Australia, Nature Conservancy, and the United Nations Children's Fund, specific adaptation measures have been implemented.

Specific measures:

Farmers in Vanuatu are raising crops that are more climate-adaptable and breeding pigs that can withstand more heat. Coral farming and solar-powered fruit driers have also been introduced to the nation.

In Fiji, efforts are primarily focused on REDD+ and the relocation of communities that are at risk from climate change.

In Tonga, the priorities are agroforestry, food security, and land use planning.

A multidisciplinary Ridge-Community-Reef Climate Change Adaptation Approach is presently being used in the Solomon Islands. Here, a variety of partners are collaborating on a programmatic level. Based on an integrated vulnerability assessment carried out across the entire island of Abaiang in Kiribati, the government incorporated climate adaptation measures into the planning for local development. All elementary and secondary school teachers have received training on climate change-related topics. The courses were designed with the unique conditions of the area in mind.

A few communities in Samoa's Upolu and Savaii, as well as the Federated States of Micronesia, are focusing on sustainable resource management for their coastal areas. Six fish aggregation devices have been placed in the Federated States of Micronesia and sixteen in Samoa to lessen the burden on the coastal waters, which are already heavily overfished.

Vanuatu has collaborated with the program to create concepts for micro-hydroelectric power and solar systems that are connected to the grid. The show has also covered the opportunities that wind and solar energy provide for other islands.

A number of states in the Pacific Island region have included lessons on climate change and its effects in their curricula for primary and secondary education, as well as programs for teacher preparation and ongoing professional development.

A Case Study – Training Climate Leaders in the Pacific

Launched in 2007 and overseen by the European Commission, the Global Climate Change Alliance (GCCA) is an initiative of the European Union that supports developing nations most vulnerable to climate change in their efforts to develop and implement adaptation and mitigation strategies. It also aims to strengthen dialogue and cooperation on climate change with these nations. The University of the South Pacific (USP) is carrying out the Pacific portion of the project in support of the Global Climate Agreement (GCCA) through the Pacific Centre for Environment and Sustainable Development (PaCE-SD). The primary goal of the USP EU GCCA program is to increase the ability of nations included in the African, Caribbean, and Pacific Group of States (ACP) to adapt to the effects of climate change. In addition to developing and implementing sustainable strategies for community adaptation to climate change, based

on a better understanding of the impacts of climate change and variability in the Pacific region, this is accomplished through training national and regional experts on climate change and adaptation.

Activities and outcomes:

There are three primary parts to the program:

1. Developing a cadre of locally skilled professionals to support and mentor governments, non-governmental organizations, and regional development partners in their efforts to adapt to climate change, as well as to train others in adaptation, particularly at the community level, is the main goal of capacity building. Students from the surrounding areas are eligible to apply for scholarships and courses to pursue the Postgraduate Diploma, Masters, and PhD programs in climate change at USP. To facilitate the sharing of experiences, obstacles, and knowledge among communities and stakeholders, local networks addressing climate change will be established.
2. It is anticipated that community involvement in climate change adaptation will significantly boost local communities' resilience and give them better tools to create, carry out, and maintain long-term adaptation plans. Before, during, and after implementation in a given community, a seven-step process is followed, which consists of the following: formation of the National Project Advisory Committee (NPAC), rapid assessment using the PaCE-SD methodology, pilot site selection, vulnerability and adaptation assessments using the PaCE-SD methodology, adaptation plan implementation, and monitoring and evaluation. A collection of “best practice” resources for community adaptation projects has been put together and distributed to pertinent parties.
3. Adaptive strategies best suited for the Pacific region have been developed, along with tools for monitoring and projecting climate change through applied research. The project has produced several successes, such as: Educating the climate leaders of tomorrow through both formal and informal means. Since the Climate Change program began, 84 students have earned post-graduate diplomas, 17 have earned master's degrees in science, and 7 are presently pursuing a doctorate. Participants in the UNFCCC negotiations include USP Climate Change program students and alumni. A total of 681 local trainers have received training through non-formal means.

Regional Cooperation

Numerous regional cooperation platforms attempt to address aspects of disaster resilience and climate change, given the urgency of climate change adaptation in the Pacific island countries. The Pacific Islands Forum (PIF)'s 2022 endorsement of the 2050 Strategy for the Blue Pacific Continent, which aims to create a resilient Pacific Region, was the most recent example of collective action. Following the Boe Declaration on Regional Security in 2018, which referred to climate change as the “single greatest threat to the livelihoods, security, and wellbeing of the peoples of the Pacific,” comes the 2050 Strategy. Boe's declarations are built upon earlier ones, and the United Nations Framework Convention on Climate Change (UNFCCC) is referenced in all Pacific strategies and frameworks. The UNFCCC has recognized all Pacific Island nations as parties, and the nations to which they are attached have recognized the territories as parties as well. Numerous islands work together to advocate for climate change action at the United Nations (UN) and its affiliate organizations.

These island nations draft and submit Nationally Determined Contributions (NDCs), which set forth goals for reducing emissions and mitigating the effects of climate change, as parties to the Paris Agreement under the UNFCCC. Through the UNFCCC and its subsidiary agreements, major development banks and multilateral financial institutions are entrusted with allocating funds designated expressly for

Implications of Climate Change in the Pacific Region

climate change adaptation (CCA). Australia, China, the United States (U.S.), Japan, Korea, the European Union (EU), and the United Kingdom (UK) are some of the major bilateral donors. Because both CCA and disaster risk reduction (DRR) are based on the idea of risk mitigation, the Pacific Islands, both individually and through intergovernmental organizations, frequently access and utilize multilateral and bilateral funding to develop plans that integrate both.

The Fiscal Challenges and Economic Development

Pacific Island Countries are facing a serious economic crisis that has been exacerbated by the COVID-19 pandemic and resulting adverse impact on the tourism industry and trade. The impact of COVID-19 has a greater impact on tourism-dependent economies like Fiji, Palau, Samoa, Tonga, and Vanuatu, which saw an average decline in output of 6.5 in 2021. Declining global demand also adversely impacted commodity-exporting countries such as PNG, Solomon Islands, and Tuvalu. According to the IMF (2021), for the whole Pacific region, the GDP declined by an average of 2.4% in 2021.

Pacific countries have found themselves in a sovereign debt crisis as a result of declining GDP and increased public spending to stem the pandemic's negative effects. Debt to GDP, a widely used benchmark, increased from an average of 32% in 2019 (before COVID-19) to 42.2% in 2021 for Pacific countries, according to country reports from the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (2022). The debt-to-GDP ratios of Fiji and Palau are over 80% and 70%, respectively.

The government's capacity to fund public services is currently limited by the alarming debt levels and climate catastrophe. The geography of Pacific Island economies and their isolation from global markets result in high infrastructure provision costs. Because of the increased initial investment required for climate-resilient infrastructure and the high maintenance costs resulting from repeated damages, the Pacific region is more vulnerable to natural disasters and climate-induced shocks, which raises infrastructure costs. The extreme events linked to climate change are increasing, making the debt levels in the Pacific more unstable. Additionally, remoteness increases the cost of imports for inputs like capital equipment, mineral fuels, and other intermediate goods that are typically unavailable domestically. Prices are now rising even more in the island nations, particularly for necessities because of pandemic-induced supply shocks and the Russia-Ukraine war.

Since Pacific countries are now more vulnerable to financial distress, the risk is increasing, according to a recent debt sustainability analysis by the IMF and World Bank. There is a significant chance of financial distress for seven low-income Pacific Island nations: Kiribati, Marshall Islands, Micronesia, PNG, Samoa, Tonga, and Tuvalu. Vanuatu and Solomon Islands have very little ability to withstand shock, but they are both moderately vulnerable to debt distress. The IMF has upgraded Timor-Leste's rating from low risk to moderate risk of debt distress. While the IMF's assessment indicates that debt is sustainable for middle-income nations like Fiji, Nauru, and Palau, in the case of Fiji, the debt situation has gotten worse and is now riskier. The ADB (2021), while downgrading creditworthiness, notes sustained deterioration in Fiji's debt sustainability, which has increased the risk of debt distress.

The available data from the World Bank (2022) show that the majority of the Pacific's external debt is with multilateral agencies compared to bilateral creditors. Asian Development Bank is the major creditor for countries like Fiji, PNG Samoa, Solomon Islands, Tonga, and Vanuatu, holding about 38% of all external debt, followed by China (22%), the World Bank (13%), and Australia and Japan (6%).

Going forward, Pacific Island countries urgently need to improve their fiscal capacity so that they can invest in economic recovery and effectively undertake climate adaptation and mitigation measures. Additional revenue will also be required for import-dependent Pacific, especially for food and energy commodities, for which prices have been increasing. Nonetheless, governments may be forced to enact austerity measures in order to increase their fiscal capacity due to the ongoing trade deficit and high debt levels. This will probably impede economic recovery and make poverty and inequality in the region worse. Accelerated fiscal consolidation may also be detrimental to attaining the SDGs and developing a Pacific region that is climate resilient.

The economies of the Pacific region require significant financial resources in order to develop fiscal capacity. For the Pacific, grants and access to concessional financing will be essential. The vulnerabilities of the Pacific Island countries are not sufficiently taken into account by the current international financial architecture, especially the debt architecture. Pacific Island countries need long-term financing not only for sustainable fiscal capacity building and infrastructure development but also for human capital development in the long run. For these investments, the World Bank (2016) estimates show that the Pacific Island would require more than 10% of their GDP annually and an additional 5% to 10% of GDP for climate and disaster resilience costs until 2040.

According to the UNESCAP (2022) estimates, the gap between actual and potential revenue is significant in the Pacific. Thus, Pacific Island countries could consider generating domestic economic activities to increase their revenue base. While the Island nations have substantial advantages in agriculture, manufacturing, and other value-adding activities, these sectors face challenges such as high cost of operation due to high capital and transport costs, consistent supply of inputs, and the disconnect between motivation to commercialize and the requisite political confidence, policies, and resource, which needs to be deliberately addressed.

Pacific Island countries need to work with development partners and multilateral agencies to direct a path toward the sustainable expansion of financial and technical services and balance priorities to address fundamental infrastructure development and institutional reforms and undertake complementary measures to manage national debt. ADB's (2021) Pacific Economic Monitor series shows that day-to-day management of public finance in the Pacific has improved, however, it remains an area for further capacity building. Experience from other developing economies that have managed to maintain sound fiscal position and control national debts highlights the essential need for developing a comprehensive approach including strengthening investment prioritization, public financial management planning via short to medium-term frameworks, and wider public sector reforms to improve operational efficiencies.

CONCLUDING REMARKS

Pacific island countries are at the cliff edge of the climate and economic crisis. This crisis poses a significant threat to the region's environment, economy, and the well-being of its people. This chapter examines three main pressing issues of its time It should be: including climate change impact, adaption and mitigation measures and fiscal challenges in the context of the Pacific island countries. Climate change has significant implications for the Pacific region affecting both the environment and livelihoods. The impacts are diverse and multifaceted, involving sea level rise, volatile weather patterns and very common and intense weather patterns. These changes pose serious challenges to the economic and social well-being of the Pacific Island countries. Pacific countries also face fiscal challenges that impact their

Implications of Climate Change in the Pacific Region

economic development. This is often linked with the unique features of the region, including remote geography, narrow economic base and vulnerability to climate-related natural disasters. Lack of fiscal space and high levels of debt can lead to debt servicing burdens, limiting the country's capacity to invest in critical sectors like education, healthcare, infrastructure and climate mitigation and adaptation.

So what can be done about the plight of the Pacific islanders? According to UNEP (2023), to achieve the Paris Agreement goal, countries must cut emissions by at least 28-42 percent. All countries must act with ambition. All countries must urgently accelerate low-carbon transformations. All countries have opportunities for economic development, all countries have opportunities for job creation, all countries have opportunities for reduced air pollution, and all countries have opportunities to align development and climate goals. For low and middle-income countries (where PICs fall), increased financial support is needed. Urgent global action is needed. The global stock take at COP28 is an opportunity to accelerate action. In the short term, we must make deep emission cuts. In the long term, this must be combined with increased carbon dioxide removal. Political leadership and global cooperation are paramount. The next decade will shape our future.

It is time for the Pacific's combined diplomacy must be brought to bear on universal climate finance. The Pacific financial need for climate adaptation between now and 2030 is estimated to be over 10 billion US dollars and the window of adaptation is fast closing. For many of the low-lying countries and areas in the Pacific, this is very significant. Consequently, the days of receiving freebies in collaboration with development partners are long gone. Now is the ideal time to provide finance at the necessary pace and scale. Talk and more policy commitments are not relevant at this time. Now is the moment to deliver. If resources are delivered on the scale and speed required to do that then the Pacific and the rest of the world are together and moving towards strength. There should be no ambiguity in the commitment to deal with the climate crisis. Leaders in the Pacific have a good opportunity to write a new chapter in the region's history. The 2050 'Blue Pacific strategy' is an important document to start giving hope to the young Pacific islanders and one that can lead the Pacific into a more resilient and sustainable region.

Furthermore, the Pacific region's long-term development needs can be greatly aided by appropriate debt financing. To address future concerns about debt obligations and the corresponding limitations on domestic resources, robust frameworks for accountability, transparency, and effective debt monitoring are necessary. Reducing transaction costs, investments with significant economic returns, and shifting to a Program-based approach to increase the effect and scale is crucial for the Pacific's long-term fiscal sustainability and supporting the well-being of Pacific communities. Given the struggles facing the Pacific region, there is no need to enter into geopolitical contestation at a time when the region is so exposed to their economic and existential threat. The gap between the actions and words of the development partners is widening. There is a gap between their stated position and the resources they are providing. Global funds and multinational banks need to take into account the vulnerabilities of PICs when it comes to financing their needs. Soft loans are not the appropriate source of funding for regions to adapt to climate change. Moreover, if PICs are to turn the region's smallness and weakness into a stronger strength, they need to develop appropriate regional architecture. The regional institutions that comprise the regional architecture must have the necessary resources to provide the region with real-time alternatives and a policy framework. The region as a whole must integrate. Leaders in the Pacific should know that, and they cannot fail the young and children in the Pacific. Inaction, business as usual, doing the same thing and doing less or nothing, all essentially mean the same thing. All that means that we will condemn the young future generation.

REFERENCES

- Asian Development Bank. (2013). *Key Indicators for Asia and the Pacific 2013: Asia's Economic Transformation-Where to? How and How Fast*.
- Asian Development Bank. (2021), Policy paper – Fiji: Country classification, ADB, Philippines, Manilla. <https://www.adb.org/sites/default/files/institutional-document/753796/fiji-country-classification.pdf>
- Asian Development Bank. (2021), Pacific Economic Monitor Series. <https://www.adb.org/publications/series/pacific-economic-monitor>
- Asian Development Bank (ADB). (2004). *Pacific Region Environmental Strategy 2005–2009* (Vol. 1). Strategy Document.
- Asian Development Bank (ADB). (2011). *Food Security and Climate Change in the Pacific*.
- Borovnik, M. (2006, April). 2006, 'Working overseas: Seafarers' remittances and their distribution in Kiribati'. *Asia Pacific Viewpoint*, 47(1), 151–161. 10.1111/j.1467-8373.2006.00298.x
- Branchoux, C., Fang, L., & Tateno, Y. (2018). Estimating infrastructure financing needs in the Asia-Pacific least developed countries, landlocked developing countries, and small island developing states. *Economies*, 6(3), 43. 10.3390/economies6030043
- Chand, S., & Yala, C. 2008, 'Informal land systems with urban settlements in Honiara and Port Moresby', *Making Land Work Volume two: case studies on customary land and development in the Pacific*, AusAID, Canberra, Australia.
- Chung, M. 2007, 'No Fit State: Housing for the urban poor in Fiji', unpublished manuscript.
- Davies M (2023), 'Correspondent Banking in the South Pacific', *RBA Bulletin*, June.
- Economic and Social Commission for Asia and the Pacific (ESCAP). (2022). Staying afloat: ensuring public debt sustainability in the Pacific islands. <https://www.unescap.org/blog/staying-afloat-ensuring-public-debt-sustainability-pacific-islands>
- Fiji Bureau of Statistics. (2016). *Employment and Unemployment Survey in Fiji*. Fiji Bureau of Statistics.
- Fiji Bureau of Statistics. (2019). *Household Income and Expenditure Survey (HIES) in Fiji*. Fiji Bureau of Statistics.
- Government of Fiji. (2016). Post -disaster needs assessment tropical cyclone Winston.
- Government of Vanuatu (GoV). (2015). Tropical cyclone Pam-humanitarian action plan.
- Hay, W., & Wedderburn, S. (2011). "Ridge to Reef" Management Approaches: Addressing Interactions in Samoa's Coastal Zone. *Inprint*, 2011(3), 40–44.
- IDMC (2015), *Disaster-related displacement risk: measuring the risk and addressing its drivers*, March.
- ILO. (2016). *Fiji Labour Market Update*. International Labour Organization.

Implications of Climate Change in the Pacific Region

ILO. (2021), 'Informal Sectors of Fiji, Palau, Tonga and Vanuatu Key to COVID-19 Economic Recovery', Press Release, 26 February.

IMF. (2021). "Republic of Fiji", *Country Report, No. 21/257*. International Monetary Fund.

International Finance Corporation (IFC). (2019). *The Business Case for Workforce Response to Domestic and Sexual Violence in Fiji*. World Bank Group.

International Monetary Fund. (2021). *Pacific Islands Monitor*. IMF.

Jha, R., & Dang, T. (2011). Vulnerability to Poverty in Papua New Guinea in 1996. *Asian Economic Journal*, 24(3), 235–251. 10.1111/j.1467-8381.2010.02038.x

Ministry of Economy Fiji. (2021). *Economic and Fiscal Update to the 2021-2022 Budget*, Ministry of Economy, Republic of Fiji, Suva, Myers, N. (2002), Environmental refugees: A growing phenomenon of the 21st century. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, 357, 609–613.

Pacific Islands Forum Secretariat (PIF). (2010). *2010 Pacific Regional MDGs Tracking Report*, Pacific Islands Forum Secretariat.

Reinert, M. (2017). Pacific island fish migrating to cooler seas. *SciDev. net-Environment*.

Stern, N. H. (2007). *The economics of climate change: the Stern review*. Cambridge University Press. 10.1017/CBO9780511817434

Thomas, F., & Tonanibeia, K. (2006). Pacific Island Rural Development: Challenges and Prospects in Kiribati. In Connell, J., & Waddell, E. (Eds.), *Environment, Development and Change in Rural Asia-Pacific: between local and global*. Routledge.

Umaphathi, N., Tsurunyan, S., & Pabon, L. 2011, *Poverty Trends, Profiles and Small Area Estimation (Poverty Maps) in Republic of Fiji (2003–09)*, Social Protection Unit, Human Development Group, East Asia and Pacific Region, World Bank.

UNEP. (2016). *Emissions Gap Report 2016*. UNEP.

UNEP. (2023). *Emissions Gap Report 2023*. UNEP.

United Nations. 2013. *World Population Prospects: The 2012 Revision*. United Nations Department of Economic and Social Affairs, Population Division. CD-ROM Edition.

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). (2016). *The economics of climate change in the Asia-Pacific region*.

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). (2022). *Debt landscape and Fiscal management Issues in Pacific Small Island Developing States*. United Nations.

United Nations Office for Disaster Risk Reduction (UNISDR) (2015). *Global assessment report on disaster risk reduction 2015*.

World Bank. (2016). *Climate and Disaster Resilience*, The World Bank, Washington, DC. <https://thedocs.worldbank.org/en/doc/7203714696148417260070022016/original/PACIFICPOSSIBLEClimate.pdf>

World Bank. (2022), *International Debt Statistics*, Washington, D.C.: World Bank. <https://www.worldbank.org/en/programs/debt-statistics/ids>

World Health Organization. (2010, July). Pacific islanders pay heavy price for abandoning traditional diet. *Bulletin of the World Health Organization*, 88(7), ●●●.20616964

ENDNOTES

- ¹ This includes 14 sovereign nations and 9 foreign owned territories which includes of Norfolk Islands (by Australia), Britain Pitcairn Island (by Britain), New Caledonia, French Polynesia, Wallis and Futuna (by France), Tokelau (by New Zealand), and the American Samoa, Guam, and Northern Mariana Islands (by USA).
- ² These include French Polynesia, Vanuatu, Phillippines, Tonga, Bangladesh, Lao, Fiji, Cambodia, Bhiton, Micronesia, Palau, Solomon Islands, Afghanistan, American Samoa, Pakistan, Nepal, China, Viet Nam.
- ³ Intems of total global emission, China represent 25.8%, the US 11.1%, India 6.7%.