

OCEAN CITIES OF THE PACIFIC ISLANDS

POLICY BRIEF #1 THE OCEAN AND THE CITY

INTRODUCTION

Ocean Cities are where landscapes and seascapes meet, where human behaviour and urban development have a profound impact on marine health and climate change. Marine and coastal ecosystems are the largest carbon sink in the world and a vital source of livelihood, employment, nutrition and economic growth in cities and islands. Yet, the capacity of these ecosystems to balance our climate, protect our coastlines, and sustain human development is acutely threatened. Marine pollution and urban run-off, unsustainable coastal development and poor marine governance, rising sea levels, ocean warming and acidification endanger the health of our ocean and erode the very foundation Ocean Cities are built on.

WHAT ARE OCEAN CITIES?

The concept of 'Ocean Cities' promotes an interconnected application of marine spatial planning, nature-based solutions, land use practices and other measures that enhance inclusive urban resilience in coastal settlements and islands. For Ocean Cities, renaturing urban development so that it is ocean focused and climate resilient is premised not only on social, cultural and environmental considerations but also on maintaining ecological processes and ecosystem services supported by the ocean, so they may be protected and sustained for future generations.

For Pacific island settlements, the nexus between urban development, climate change and the ocean is of critical importance since most island communities are coastal, with some smaller island and atoll nations under five meters of elevation. Together with their regional partners, Ocean Cities of the Pacific islands can pioneer ocean-focused, climate resilient solutions for sustainable development. Recognizing

and understanding the interconnections and interdependent futures between cities and the ocean will catalyse integrated responses to increase resilience, protect ecosystems, and meet the challenges of rapidly urbanizing island societies.

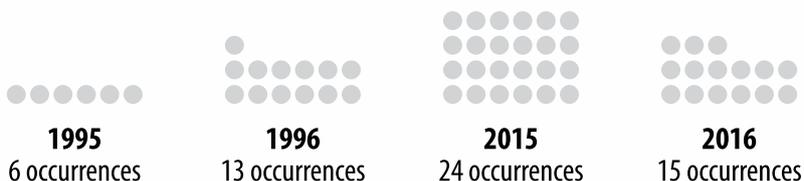
This policy brief outlines the challenges of unplanned rapid urban expansion and deteriorating ocean health, urban resilience and climate impacts on Ocean Cities. Associated opportunities for ocean friendly climate responsive urban development in Pacific islands are discussed in policy briefs two and three of this series.

Even if global warming is limited to 2°C, sea levels could continue to rise by over 5 meters over the following centuries, posing a serious threat to low-lying Ocean Cities of the Pacific islands as most urban areas are located ≤5 meters above sea level.

OCEAN CITIES OF THE PACIFIC ISLANDS ARE AT GROWING RISK OF CLIMATIC EXTREME EVENTS AND NATURAL DISASTERS



THE NUMBER OF NATURAL DISASTERS IN THE PACIFIC HAS BEEN GRADUALLY INCREASING FROM 1995 TO 2016



Projected climate change-induced sea-level rise and storm surges may cause salt-water contamination of freshwater resources and uninhabitability in Ocean Cities of the Pacific islands by the mid century.

The Pacific has the highest urbanization rate of global small island developing States today (at 4.3 per cent per year). 90 per cent of the regional population outside of Papua New Guinea live within 5km of the ocean. The urban population of the Pacific islands is expected to rise to 51 per cent by 2050.

Reefs, mangroves and coastal ecosystems store ten times more carbon than continental forests. Half the coral reefs in the Pacific that are already under acute stress from ocean warming and acidification, are under severe threat by unsustainable coastal development and accompanying marine pollution.

OCEAN CITY SPECIFIC CHALLENGES

FAST RATE OF URBAN GROWTH
 HIGH POPULATION DENSITIES AND LIMITED LAND FOR URBAN EXPANSION
 FRAGMENTED LAND TENURE
 UNSUSTAINABLE WASTE MANAGEMENT
 INADEQUATE ENVIRONMENTAL PLANNING CAPACITIES AND FINANCIAL RESOURCES
 LACK OF SUSTAINED ACTIVE CITIZENSHIP
 EXTREME VULNERABILITY TO CLIMATE CHANGE-INDUCED DISASTERS



Growth of unplanned, dense developments along coastal areas harms marine ecosystems, vulnerable populations and the urban poor, livelihoods and natural resources.

KEY ISSUES

The countries of the Pacific islands across Melanesia, Polynesia and Micronesia are made up of 20,000 islands and atolls home to about 11 million people. The ocean is centrally important to the people of the Pacific islands, with 90 per cent of the regional population outside of Papua New Guinea living within 5 km of the ocean and with most island economies overwhelmingly dependent on coastal and ocean resources.¹

Within the Pacific islands are three types of Ocean Cities –atoll cities, coastal cities, and inland cities, the latter being connected to the ocean via waterways. Pacific settlements vary greatly in terms of population size and densities, land use practices and socio-economic conditions. Similar to cities in other small island developing states, they face challenges of: fast urbanization rates, limited financial resources, capacity constraints, lack of enforcement of land use and marine spatial planning and poor engagement in local policy identification and implementation. To add to this complexity, Ocean Cities of the Pacific islands are more vulnerable to climate change-induced threats than any other cities in the world as sea levels rise and storm surges associated with tropical cyclones increase in severity and frequency.

Atoll cities are especially lacking in land area and natural resources, and face ongoing challenges in freshwater availability and waste management. Coastal cities, such as Apia in Samoa, Suva in Fiji, and Port Moresby in Papua New Guinea are highly susceptible to coastal hazards including flooding, erosion and rising sea levels. However, while coastal cities can often expand landward (assuming availability of land and appropriate legislation), atoll cities have no such option. Inland island cities, though not as threatened by such scenarios, are also linked to the ocean through waterways and have direct, significant downstream impacts on coastal ecosystems and communities.

RAPID URBANIZATION

Even though just 36 of the Pacific islands' Ocean Cities have a population greater than 5,000 people, population densities and rates of growth in many of these cities rival that of larger cities found in developing countries. In 2015, the average rate of urban growth in the Pacific reached 4.3 per cent, and 16 per cent in peri-urban areas – more than three times the global average.² The same evidence suggests the urban population of the Pacific islands is expected to rise to 51 per cent by 2050, placing further strains on infrastructure, natural resources and services.

Increasing urbanization and unbridled development continue to contribute to habitat destruction, loss of valuable ecosystems and their services, and the extinction of native flora and fauna in the Pacific. Half the coral reefs in the Pacific that are already under acute stress from ocean warming and acidification, are under severe threat by unsustainable coastal development and accompanying marine pollution.³ Reefs,

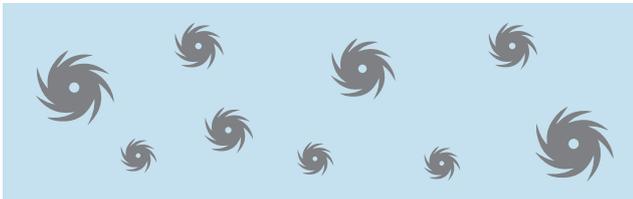
mangroves and coastal ecosystems that store ten times more carbon than continental forests are lost to unplanned urban expansion.⁴ Construction of piped drainage systems to allow for urban expansion and concrete based coastal defence changes soil erosion patterns and coastal hydrodynamics. Sand mining for development further compromises coastal integrity. The degradation of these ecosystems has socio-economic as well as environmental impacts: threatening food security, fisheries and income from tourism dependent on local biodiversity, and making coastal infrastructure even more vulnerable to erosion, flooding, salt water inundation, and storm surges.

Currently, 44 per cent of the Pacific Island region's population (excluding Australia and New Zealand) live in urban areas, with perhaps the most notoriously at-risk atoll nations being Nauru and the Marshall Islands, where 100 per cent and 78 per cent of the population live in urban areas, respectively.⁶

RISING FREQUENCY OF CLIMATE-CHANGE INDUCED NATURAL DISASTERS

The rising frequency and intensity of natural disasters is posing severe existential challenges to Pacific island countries, with land constrained coastal cities and deltas of the region already struggling to cope with inundation caused by storms, tropical cyclones and rising tides.

BETWEEN NOVEMBER 2013 AND JUNE 2015, THE PACIFIC EXPERIENCED ONE OF THE MOST ACTIVE CYCLONE SEASONS



WITH NINE MAJOR EMERGENCIES CAUSED BY INUNDATION IN URBAN AREAS



306,000 PEOPLE AFFECTED



20,000 PEOPLE DISPLACED



USD 77 MILLION FUNDING REQUIREMENTS⁷

Urban settlements within the Pacific are more significantly at risk than in any other region in the world, with informal settlements in low-elevation areas the most vulnerable to damage. Across twelve Pacific island countries, an average of 43.2 per cent of the population lives at elevations no higher than 5 meters.⁸ Consistent sea-level rise threatens the very existence of some atoll cities and could potentially lead to substantial territory loss in other low-lying island states in remote areas of the region⁹. The tropical Western Pacific has experienced sea-level rise three times faster than the mean global sea-level rise since 1993.¹⁰

Sea-level rise also exacerbates the impact of waves on low-lying atoll coral reefs and islands, resulting in island flooding that threatens terrestrial urban infrastructure and livelihoods, and contaminates islands' underlying thin freshwater lens with saltwater.¹¹

Related oceanic events are equally elevated and present a growing threat to the wellbeing of Pacific island people. Storm surges in the Pacific are projected to increase in frequency by as much as 1000-fold by

2100, and evidence suggests the sea levels could rise by as much as 3 meters by the end of 2100.¹² Such rises in sea levels would flood entire cities in atolls such as Majuro in the Marshall Islands.

Relocation within the Pacific islands due to climate change impacts and natural disasters exacerbates socio-economic inequalities, since the poorest and most vulnerable tend to be mostly affected.

In Fiji's coastal provinces of Cakaudrove and Ra, a severe category 5 tropical cyclone struck in 2016 with total damages amounting to FJD 2.98 billion (USD 1.4 billion). In 2018, Tropical Cyclone Gita –the strongest cyclone to have hit Tonga's main islands in 60 years-- damaged around 2,250 households and 85 schools, including in the seaside capital of Nuku'alofa, Tonga.¹³

URBAN EXPANSION AND FRAGMENTED LAND TENURE

Limited land availability for urban expansion presents a critical challenge to cities of the Pacific islands. Unique land tenure arrangements, with distinct systems of inheritance, allocation of usage rights and recordkeeping, leave little public land available for mixed use development.¹⁴ Low floor to area ratios – that is the ratio of total covered area against plot size—inhibit vertical development and can result in overcrowding of low rise infrastructure.

The fragmented nature of land tenure in Ocean Cities is a considerable challenge to public urban planning and governance. City administrators are often forced to reclaim waterways and mangrove zones for residential and industrial developments, in turn displacing urban communities from their main source of livelihoods and often leading them to establish informal settlements in coastal areas highly exposed to erosion and storm surges. To compound the situation, salt water inundation affects the quality of water in coastal community wells, making it unfit for human and livestock consumption.



Informal settlements at risk in Honiara, Solomon Islands

The lack of affordable housing in atoll cities has further facilitated the expansion of informal settlements into coastal areas that are often not suitable for housing construction. In April 2014 heavy rain and flash flooding swept away entire settlements along the Mataniko River in Honiara, Solomon Islands, causing 22 deaths –mostly in areas identified as flood-prone and prohibited from housing construction. A high prevalence of informal coastal settlements not only compromises ecological stability of coastal and foreshore areas, but exposes informal dwellers to a higher risk of coastal hazards and lack of access to urban services.¹⁵

LIMITED RESOURCES AND CAPACITY

Ocean cities of the Pacific islands have limited tax bases, high dependence on fiscal transfers and rely mostly on the informal economy, agriculture and tourism¹⁶, which restricts the ability of local governments and urban planners to provide public access to quality infrastructure and services.¹⁷ At the same time, national governments have generally failed to assign sufficient resources to urban development in budget allocations, forcing international development partners or the private sector to step in to fund most infrastructure projects.¹⁸ Access to and local allocation of often fragmented financial development aid remains a challenge - between 2001 and 2007 total international aid equated to roughly USD 1.3 billion a

year.¹⁹ Insufficient government investment in education, training and building the skill and capacity of city planners to implement sustainable urban development projects in Ocean Cities in an integrated manner, further exacerbates capacity constraints.

Furthermore, data to provide a clear understanding of the challenges and opportunities in urban planning in Ocean Cities is either not readily accessible, of poor quality or lacks geographic coverage in the Pacific. The critical shortage of data required to comprehensively assess what is needed in terms of supporting local livelihoods, building resilience, valuing and protecting ecosystem services, and enabling access to essential urban services has traditionally compromised Pacific governments' ability to undertake evidence-based policy formation and planning. Significant gaps in knowledge and technical capacities in government agencies responsible for urban planning, inadequate visioning and a lack of understanding of sustainable urban planning processes and options therefore remain a key challenge in the region.

LACK OF INCLUSIVE CITIZENSHIP IN POLICY FORMATION

Across the Pacific, a lack of coordination between government ministries, sectors and other non-state actors including non-governmental organizations, development partners, and local communities, hinders the design of sustainable urban development strategies. Different stakeholders work in silos and often compete for resources instead of working together to pool resources. While this may not be specific to Ocean Cities, the lack of vertical and horizontal coordination in combination with weak stakeholder buy in in fragmented governance systems, hampers progress in sustainable urban development in the Pacific.

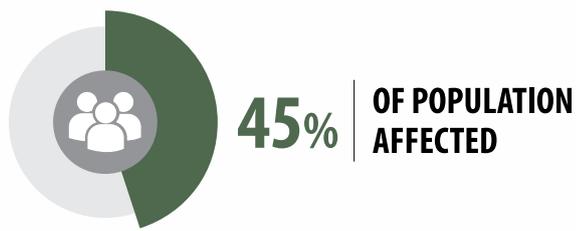
Lack of inclusiveness in development consultation processes is another major challenge. The most vulnerable groups, including people of lower socio-economic status, informal settlers, traditional landowners, displaced communities, women, youth, and people living with disabilities, are often disengaged from urban planning processes and policy formulation.²⁰

By contrast, the private sector developers and donors often have a strong influence on urban policy formulation and activities related to development projects. Coastal ecosystems in particular are threatened by the prioritization of project timelines over impact assessments and conservation measures, lacking consultation processes, an inadequate regulatory environment and post-project resourcing.

SANITATION AND WASTE MANAGEMENT

Urbanization and coastal development challenges the limits of water, sanitation and waste management systems. Projected increases in wave-driven salt water contamination of freshwater resources may compromise the habitability of low lying atolls relying on limited freshwater lenses for potable water by mid-century.²¹ The growing urban population of South Tarawa of the Republic of Kiribati is straining both the island's water resources and waste management systems, leading to health hazards and marine environmental degradation from pollution.²² In Fiji, 80 per cent of waste goes to landfill²³, while open dumping and burning remains a hazard for coastal ecosystems and human health.

The significant growth of informal and squatter settlements in Pacific urban areas due to inadequate housing supply is having equally devastating impacts on environmental and human health. Deterioration of living conditions due to overcrowding in informal settlements is impacting human health, leading to an upsurge of respiratory disease, gastroenteric disease, and infant diarrhoea. For example, informal settlements account for 34 per cent of the residential population in Port Vila and Luganville in Vanuatu.²⁴

PORT MORESBY IN PAPUA NEW GUINEA

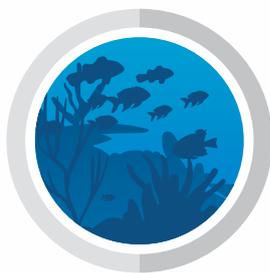
45 per cent of the population lives in informal settlements that are often built on land unsuitable for development, lacking basic urban and social services

HONIARA IN THE SOLOMON ISLANDS

40 per cent of the population lives in informal settlements, many exposed to hazards with little access to adequate sanitation²⁵

KEY OPPORTUNITIES FOR ACTION

In the face of complex and unique regional challenges also comes immense opportunity for the Pacific to pioneer an integrated policy approach for ocean-focused climate-resilient sustainable development, adapted specifically to Ocean Cities in island systems.

**OCEAN FOCUSED**

Development that recognizes the critical connection Ocean Cities share with the marine environment

**CLIMATE RESILIENT**

Solutions focused on advancing resilience strategies that strengthen urban disaster preparedness, address climate change and respond to other environmental challenges.
E.g. Mangrove habitat restoration for coastal protection

**SUSTAINABLE DEVELOPMENT**

Planning and management vision that promotes interconnected green/blue urban spaces, nature-based solutions, and inclusive, sustainable development to foster resilient and liveable cities that protect socio-economic, cultural and environmental resources

Policies premised on greater awareness of the role cities play in ocean health are key to developing localized coastal urban development approaches that build resilience in Ocean Cities on the frontline of climate change impacts.

People of the Pacific islands traditionally have a strong cultural and socio-economic connection to the ocean that connects thousands of islands and cities and provides opportunities for trade, tourism, fisheries and migration. In line with the Pacific Islands Forum Framework for Pacific Regionalism²⁶ built on a shared

'Blue Pacific' identity, local authorities and urban planners would benefit from revitalizing a common ocean narrative in urban communities. Drawing on traditional knowledge and Pacific experiences to develop an ocean-friendly approach to urban resilience would promote nature-based solutions, integrated coastal zone and marine spatial planning, and community engagement in Ocean Cities to protect ocean-based livelihoods.

Pacific island countries are increasingly accessing global climate funds for adaptation and mitigation projects, with Cook Islands, Fiji, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu having already accessed about USD 250 million for adaptation and mitigation programmes. Leveraging climate finance for ocean-friendly sustainable urban development is an opportunity to protect vital carbon sinks and build resilience against climate change impacts in Ocean Cities.

Policies could update and build on existing national sustainable development strategies and well established national building and planning guidance, some of which have been recently updated to include 'green' and resilient elements for the urban built environment. The National Building Code of Samoa, has a section on climate change adaptation and natural disaster resilience; and the Kiribati National Building Code requires all buildings to include a rainwater collection and reuse system, and promotes the use of solar panels wherever possible.²⁷

Recent international and regional frameworks have strengthened Pacific island leaders' efforts to reframe the global perception of Pacific island countries from SIDS to potential leaders in the ocean-sustainability space, which carries a more empowering focus on 'blue' or ocean economies. However, targeted policy measures that reduce the vulnerability of Ocean Cities and their populations are critical to continue building on this momentum.

Some policy responses in this direction are identified below:

Develop ocean-friendly urban development strategies

- Develop a Pacific regional approach to ocean-responsive urbanization, including a more appropriate definition of cities based on population density (rather than a threshold of number of inhabitants), and characteristics of urban living –such as the reliance on urban services and infrastructure and more fragmented governance systems linked to complex land tenure structures.
- Explore how island settlements, ecosystems and urban services are interlinked through a systems lens. Leverage urban transformation research that combines complex system studies with urban studies specific to Ocean Cities, to develop new forms of intervention to foster their sustainability.
- Higher prioritization of urban issues, inter alia in national budgets, to recognize cities as places of transformation where multiple issues related to the ocean, climate change, resilience and poverty elimination intersect.
- Consider introducing new land governance practices that enable inclusive and climate-responsive urban expansion to address fragmentation and increased stakeholder participation.
- Through open dialogue, develop Ocean City implementation approaches articulating the role of cities in ocean health and the importance of the ocean as the socio-economic and environmental foundation of Ocean Cities in Pacific islands.

Improve mechanisms for analysis

- Develop tools that enable better analysis of trade-offs between competing priorities (economic, environmental, and social), and that identify and value coastal and marine ecosystem services and economic benefits of sustainable urban development decisions. Such evidence could improve policy-making and help to shift the allocation of budgets towards sustainable urban development.
- Employ climate modelling, vulnerability assessments and participatory land-use planning processes to help communities identify and address critical areas for conservation.

Enhance climate financing abilities

- Strengthen institutional and governance mechanisms through climate financing readiness and public finance management programmes. This may encourage development partners to support 'risk-proofing' in critical sectors such as water, health, education and transport infrastructure.

Invest in long-term capacity building

- Invest in skills building (e.g. through tertiary scholarships) in urban planning, data management, sustainable and nature-based coastal protection, valuation of ecosystem services and use of traditional and other technology such as geographic information systems.
- Develop the capacity and tools required to help town planners monitor and understand patterns of urban growth and visualize spatial vulnerabilities to multiple hazards such as sea-level rise, storm surges, erosion and flooding, to inform policies for risk reduction and resilience.

Enhance policy making structures

- Improve institutional coordination across horizontal and vertical levels of governance to increase coherence of policies, improve accountability and facilitate more efficient planning across stateowned, customary, and private parcels of lands.
- Engage and include all stakeholders --including local communities, city authorities, nongovernmental organizations, civil society, the private sector and development partners-- in the policy formulation process. This can encourage policy ownership, improve outcomes and achieve multi-stakeholder buy-in for implementation, monitoring and evaluation of policies.
- Develop pathways and mechanisms to ensure inclusion of the most vulnerable groups and communities in policy formulation and decision-making processes. This includes designing and supporting the implementation of decentralised local level initiatives e.g. for conservation and waste management.
- Mobilize the resources and capacities available through regional and international mechanisms and platforms to establish more inclusive processes for resilient and sustainable urban development in the region.

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ENDNOTES

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