

URBANIZATION AND CLIMATE CHANGE IN SMALL ISLAND DEVELOPING STATES



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Urbanization and Climate Change in Small Island Developing States

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ABBREVIATIONS AND ACRONYMS

| | |
|-----------------|---|
| ADB | Asian Development Bank |
| ADP | Ad Hoc Working Group on the Durban Platform for Enhanced Action |
| AIMS | Atlantic, Indian Ocean, Mediterranean and South China Sea |
| AOSIS | Alliance of Small Island States |
| BPOA | Barbados Programme of Action |
| CCCCI | Cities and Climate Change Initiative (of UN-Habitat) |
| CO ₂ | Carbon-Dioxide |
| COP(18) | Conference of Parties (Number 18) |
| DS | Displacement Solutions |
| ESCOAP | Economic and Social Commission for Asia and the Pacific |
| GDP | Gross Domestic Product |
| GHG | Greenhouse Gas |
| Habitat III | United Nations Conference on Housing and Sustainable Urban Development (2016) |
| HRBA | Human Rights Based Approach |
| IPCC | Intergovernmental Panel on Climate Change |
| LDCs | Least Developed Countries |
| MDGs | Millennium Development Goals |
| MGI | McKinsey Global Institute |
| MSI | Mauritius Strategy for Implementation |
| NAP | National Adaptation Plan |
| NDS | National Development Strategy |
| NGOs | non-governmental organizations |
| PNG | Papua New Guinea |
| PSUP | Participatory Slum Upgrading Program |
| RCP | Representative Concentration Pathway |
| SAMOA Pathway | SIDS Accelerated Modalities of Action |
| SDGs | Sustainable Development Goals |

| | |
|------------|--|
| SIDS | Small Island Developing States |
| SPREP | Secretariat of the Pacific Regional Environment Programme |
| UNCED | United Nations Conference on Environment and Development – Earth Summit |
| UNCSD | United Nations Conference on Sustainable Development |
| UN-DESA | United Nations Department of Economic and Social Affairs |
| UNDG | United Nations Development Group |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNGA | United Nations General Assembly |
| UN-Habitat | United Nations Human Settlements Programme |
| UN-OHRRLS | United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States |
| USA | United States of America |
| WB | World Bank |



01

2014 was designated by the United Nations as the Year of Small Islands Developing States (SIDS). Additionally, the third international conference on Small Island Developing States took place in September 2014 in Samoa, strongly reaffirming their commitment to sustainable development (See Image 02).

RATIONALE

The purpose of this briefing paper is to provide a contextual understanding of the challenges and opportunities of climate change in relation to human settlements in Small Island Developing States (SIDS). It is also an attempt at collecting initial thoughts in response to the call of Small Island Developing States for “the strengthening of the long-standing cooperation and support provided by the international community” and “enable strong, genuine and durable partnerships at the subnational, national, sub-regional, regional and international levels” (UNGA 2014).

The report of the third International Conference on SIDS contains various references to urbanization, such as land and housing, water and sanitation, energy, and infrastructure. UN-Habitat noted the call upon it and others for “establishing and maintaining, where necessary, the governance and management structures for [...] human settlements that bring together responsibilities and expertise in the areas of tourism, environment, health, disaster risk reduction, culture, land and housing, transportation, security and immigration, planning and development, and enabling a meaningful partnership approach among the public and private sector and local communities” (UNGA 2014 p11:para30:g).

While challenges of climate change and urbanization are plentiful, this paper attempts to link the climate challenges faced by human settlements with the opportunities for a renewed urban focus. With more than half the population of SIDS already living in cities, and their urban areas the most exposed to the influence of climate change, there is a growing need to address the climate challenge impacting human settlements there. Urban areas are also believed to be vital for building resilience (Hornweg & Freire 2013).

This paper starts by giving an overview of current trends in urbanization and climate change, the impact of climate change on cities in SIDS and continues by exploring the role of urban planning and design as a tool for addressing these critical issues.

With urbanization and climate change increasingly amongst the defining trends worldwide, including in small island states, SIDS require a range of partnerships on urbanization and climate change at the international, national and city level. The IPCC concluded with very high confidence, that “small islands, [...], have characteristics which make them especially vulnerable to the effects of climate change, sea level rise and extreme weather events” (Mimura et al. 2007). Haiti is one SIDS that has experienced severe climatic events in recent years, as was the case in November 2012 when heavy rains flooded Cap-Haïtien (*see Image 01*). Therefore, given that they are amongst the localities most exposed to climate change, SIDS historically have had a strong voice and leading role in global efforts to address the climate challenge.



Image 1: Haiti northern city of Cap-Haïtien after heavy rains flooded streets, homes and fields overnight on 9 November, 2014. © UN Photo/Eskinder Debebe

02

“The urgency of the issues facing the most vulnerable countries, and the political will needed to carve new solutions, can no longer hide behind the veil of self-interest and finger-pointing of the major economies. The Marshall Islands – and small island states and least developed countries around the world – firmly refuse to become collateral damage or casual discards because of the absent leadership of the most powerful. We ourselves are leading, not only through our politics, but our own actions. We are taking large strides on local adaptation efforts, but we are still walking when we must run. I challenge the thick web of climate finance actors to work with us in building our own capacity, in learning by doing, to focus on small island states as a unique category, and to recognize that the success or failure of adaptation results is not reflective of our political will, but more so of your delivery’ (Minister de Brum from the Marshall Islands at the High-level Segment of the 18th Session of the Conference of Parties to the UN Framework Convention on Climate Change)

INTRODUCTION: SMALL ISLAND DEVELOPING STATES

Small Island Developing States (SIDS) are a distinct and diverse group of 52 countries spread across the Atlantic, Pacific and Indian oceans and the Caribbean, Mediterranean and South China seas¹. SIDS face numerous challenges and constraints in their pursuit of sustainable development due to their ecological fragility and economic vulnerability. Ecologically, most of them are coastal entities with small and dispersed (in the case of archipelagic states) land areas. They generally possess a rich diversity of highly-endemic flora and fauna but relatively few natural resources. Their geographical isolation, small size of the economy and dependence on a narrow range of products often leads them to be highly dependent on international trade and therefore are vulnerable to external shocks (Ghina 2003). They also face exposure to global environmental challenges, particularly those resulting from climate change and sea level rise. However, it is important to note SIDS also possess numerous opportunities (particularly from coastal resources) (see *Table 01*).

¹ For a more detailed overview please refer to the SIDS map in Annex A, and SIDS statistics in Table B-1 in the ANNEX B.

TABLE 01: **Common Challenges and Opportunities facing SIDS**

| Challenges | Opportunities |
|--|---|
| ▪ Narrow resource base limiting the benefits of economies of scale | ▪ Aquaculture and Fisheries |
| ▪ Small domestic markets and heavy dependence on a few external and remote markets | ▪ Maritime “Blue” Economy |
| ▪ High costs for energy, infrastructure, transportation, communication, and servicing | ▪ Tourism |
| ▪ Long distances from export markets and import resources | ▪ Renewable Energies, (esp. wind & solar) |
| ▪ Low and irregular international traffic volumes | ▪ Biodiversity |
| ▪ Little resilience and high exposure to natural disasters | ▪ Ecosystem-based adaptation |
| ▪ Rapidly growing populations | |
| ▪ High volatility of economic growth | |
| ▪ Limited opportunities for private sector and a proportionately large reliance on public sector | |

Source: UN-OHRLLS 2011

These set of commonalities first highlighted SIDS as a ‘special case’ within the international community and they were formally recognized at the UN Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992, also known as the Earth Summit (UN 1993). In the two decades since the Earth Summit, the UN has been working in close cooperation with SIDS and their partner organizations such as the Alliance of Small Island States (AOSIS) to assist in delivering various Sustainable Development Goals. The role of SIDS, especially in the international climate negotiations, is significant as they are one of, if not, the most vocal, active and innovative group of states advocating for a renewed and concerted effort to fight climate change.

SIDS have a long-standing commitment to sustainable development. Immediately following the 1992 Rio Conference, SIDS reaffirmed the principles and commitments to sustainable development embodied in the Rio Declaration, developing a landmark action programme adapted to their specific context at the Global Conference on the Sustainable Development of Small Island Developing States in Barbados 1994. The Barbados Programme of Action guides efforts towards sustainable development, having been further enhanced and updated through the Mauritius Strategy for the further Implementation in 2005 and the recently-released SIDS Accelerated Modalities of Action (SAMOA Pathway) of 2014.



Image 02: Secretary-General Ban Ki-moon plants mangrove shoots on Tarawa, the main atoll in the Pacific island nation of Kiribati. Mangroves help to protect against rising sea levels caused by climate change. © UN Photo/Eskinder Debebe

Many SIDS face falling levels of development cooperation, gaps in technical expertise, financial and institutional obstacles and challenges related to monitoring and evaluation (UN-OHRLLS 2011). Today, as exemplified in the statement given by Minister de Brum from the Marshall Islands at the High-level Segment of the 18th Session of the Conference of Parties to the UN Framework Convention on Climate Change, SIDS require innovative and improved tools, policies and action plans more than ever in order to address the challenges of both urbanization and climate change (UNFCCC 2012). What they need from the international community is acknowledgement of their vulnerability and assistance in implementing adaptive measures. UN Secretary General Ban Ki-moon has made great efforts to highlight the unique needs of SIDS and has voiced the concern that the effects of climate change pose a danger to SIDS, particularly low-lying islands (*see Image 02*).

At the Third International Conference on Small Island Developing States in 2014 (*see Image 03*), the SIDS Accelerated Modalities of Actions (or SAMOA Pathway) was adopted with the aim of mobilizing collective action and increase the coordination of United Nations organizations in addressing the unique challenges faced by SIDS. The SAMOA Pathway provides a framework for an integrated approach to achieving sustainable development goals in SIDS, and provides a blueprint of the assistance required by them on various issues which include climate change, sustainable energy, disaster risk reduction and oceans and seas.



Image 03: 3rd International conference of Small Island Developing States meeting in Samoa, September 2014. © Wikimedia Commons/US Embassy New Zealand

03

CLIMATE CHANGE
AND SMALL ISLAND
DEVELOPING STATES

“Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased”
IPCC 2013

A defining trend of our time is climate change. In May 2013, scientists in Mauna Loa Observatory in Hawaii (USA) observed particle concentrations reach a historic threshold of 400 particles per million of CO₂, the highest concentration ever recorded. The Fifth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC 2013) also has clear messages on the situation, with little room for interpretation.

Few nations are as affected as significantly by the consequences of climate change as Small Island Developing States. SIDS account for less than 1 per cent of global greenhouse gas (GHG) emissions, but their size, geography and relatively insularity and remoteness make them particularly vulnerable to the effects of climate change, with the possible outcomes being far worse than other countries (UN- OHRLLS 2012).

Global climate change is increasing the frequency of increased temperatures, as well as the occurrence and intensity of extreme weather events, including cyclones and hurricanes (*see Image 04*). Data already indicates that sea surface temperatures have been increasing by 0.1°C per decade in the oceans surrounding most SIDS (UN-OHRLLS 2008). The IPCC (2013) explains that global surface temperature change for the end of the 21st century is likely to exceed 1.5°C relative to 1850 to 1900 for all Representative Concentration Pathway (RCP²) scenarios

² Representative Concentration Pathways (RCPs) are four greenhouse gas concentration (not emissions) trajectories adopted by the IPCC for its fifth Assessment Report (AR5)

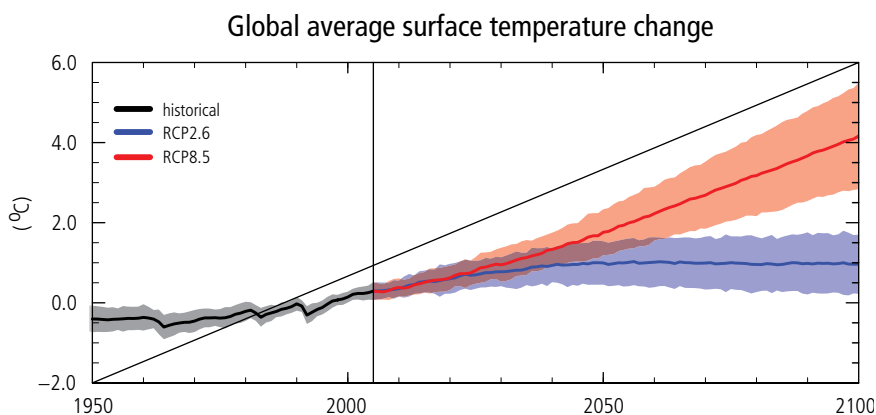


Image 04: Big waves crushing on the shore of Praia Piscina, in the Republic of São Tomé and Príncipe, during a severe storm. © Shutterstock

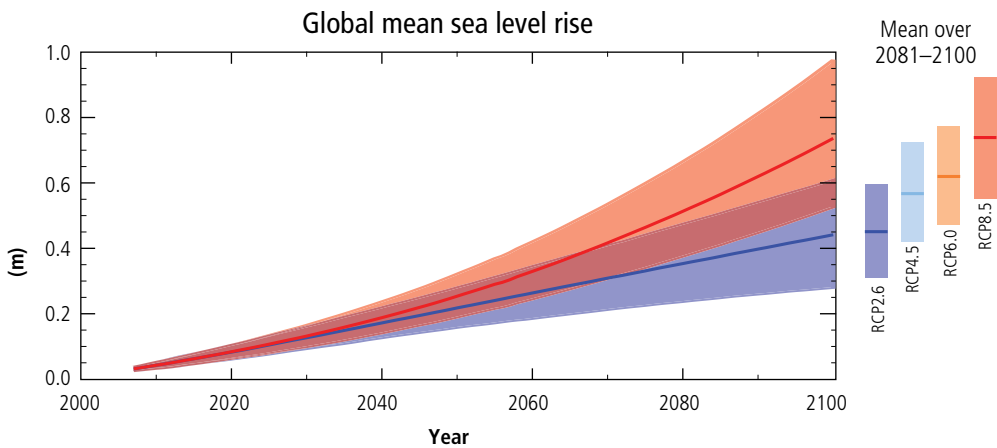
except RCP2.6. It is likely to exceed 2°C for RCP6.0 and RCP8.5 scenarios and, more likely than not, will exceed 2°C for RCP4.5 (see *Illustration 01*). These changes will continue to create challenges such as heat stress, changes to ecosystem conditions, agricultural constraints and reduced availability of freshwater.

Sea-level rise is also of great concern for SIDS, particularly the low-lying states. The average rate of sea-level rise around the Pacific region is estimated at 0.77 millimetres per year (mm/yr) and 1 mm/yr in the Caribbean. In the Indian Ocean, estimated sea-level rise is around 1.5 mm/yr. (UN-OHRLLS 2008). Stocker et al. (2013) explains that, “in the future it is very likely that there will be a significant increase in the occurrence of sea level extremes and similarly to past observations, this increase will primarily be the result of an increase in mean sea level” (p112). Under all RCP scenarios, the rate of sea level rise will very likely exceed that observed during 1971 to 2010 due to increased ocean warming and increased loss of mass from glaciers and ice sheets (see *Illustration 02*).

ILLUSTRATION 01: Global average surface temperature change (degrees Celcius) 1950 – 2100



Time series of projections and a measure of uncertainty (shading) are shown for scenarios RCP2.6 (blue) and RCP8.5 (red). Black (grey shading) is the modelled historical evolution using historical reconstructed forcings © IPCC 2013 p19.

ILLUSTRATION 02: **Global average sea level change (m) 2000 – 2100**

Projections of global mean sea level rise over the 21st century relative to 1986–2005 from the combination of the CMIP5 ensemble with process-based models, for RCP2.6 and RCP8.5. The assessed likely range is shown as a shaded band. The assessed likely ranges for the mean over the period 2081–2100 for all RCP scenarios are given as coloured vertical bars, with the corresponding median value given as a horizontal line © IPCC 2013 p24

Not only does the gradual loss of land from submersion pose a risk, all coastal zones are at danger even if located at elevations not susceptible to permanent loss. The threat and impact of extreme weather events such as severe storms and other phenomena will likely increase in the future and, together with the loss of protective coral or floral ecosystems, significantly increase the probability of damage to coastal zones. Shorelines are at risk to loss of land due to erosion without coral reef protection from currents, waves, and storms. Cesar (1996) estimated that, for Indonesia, between USD 820–1 million per km of coastline was lost due to decreased coastal protection as a consequence of coral destruction (in Moberg and Folke 1999).

Sea-level rise threatens the very existence and sovereignty of some SIDS and could potentially lead to a substantial loss of territory in others. The island of Tuvalu and some islands of Papua New Guinea in the Pacific are already experiencing storm overwash and shrinkage of their land area by 20 cm per year

(Boyd 2001 in Gina 2003). SIDS have recognized this and, in an attempt to create the broadest possible awareness, have used the imagery of their drowning homeland to emphasize the impacts of climate change. Perhaps the most striking example of this was an underwater Cabinet meeting held by the government of the Maldives in 2009 to showcase its concerns about rising sea levels (*see Image 05*). In 2009, a delegate from Nauru reminded the international community and the Security Council that, “never before has a United Nations Member State disappeared. Now we are faced with the threat of losing many owing to the adverse effects of climate change” (UNGA 2009 p2).



Image 05: The Maldives underwater Cabinet Meeting. © Flickr_Presidency Maldives

Climate change threatens the achievement of the Sustainability Development Goals and will continue to influence and jeopardize any future development efforts for SIDS. Governments and citizens in some highly vulnerable SIDS are especially pessimistic and already “coming to grips with the idea that they may one day need to leave their cherished island homes” (DS 2012 p4). Governments are already looking for alternatives for vulnerable island communities and are discussing land acquisitions and migration options within their regions. A ‘successful mix of strategies’ is required to develop culturally appropriate solutions to the growing concern about the need for low-lying coastal communities to relocate (Bedford & Bedford 2010 p93)

As previously expressed by Willy Telavi, the former Prime Minister of Tuvalu, the concern about migration is the loss of sovereignty. There are those in favour of a new legal framework for ‘climate refugees’, possibly under the UNFCCC, or an extension of the 1951 Refugee Convention (see Biermann & Boas 2008; 2010). However, some authors argue that advocating for an international legally-binding treaty to protect ‘climate refugees’ is something that might be at odds with those communities that it is seeking to help (Kelman 2010; Smith and McNamara 2014). Discourse on climate-induced migration to a certain end constructs a narrative of these nation states as disempowered in the face of sea level rise and helpless victims. It is, therefore critical that the perspectives of ‘vulnerable’ communities are given greater significance (Farbotko & Lazrus 2012).

While movement can be a sign of vulnerability, it can also be a means to achieve security and attain human rights, especially when it can be planned. Localized or regional responses may be better able to respond to the particular needs of the affected population in determining who should move, when, in what fashion, and with what outcome. Staggered migration, circular migration or the promise of a place to migrate to if necessary might be welcomed as measures that could appeal to host and affected communities alike. Even if the scope for utilizing human rights law is probably limited in the climate change context, “its normative framework can guide policy development, highlight issues that might be obscured by a purely environmental or economic analysis, and help to articulate claims about access, adaptation and balance” (McAdam 2011 p55).

04

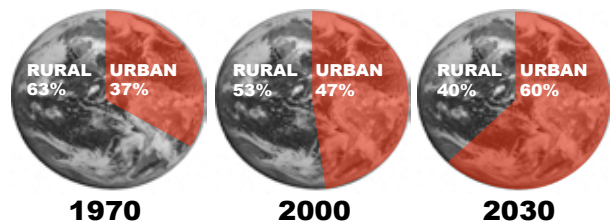
URBANIZATION
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'UN-Habitat's vision of urbanization encompasses all levels of human settlements, including small rural communities, villages, market towns, intermediate cities and large cities and metropolises, i.e. wherever a stable community is continuously located and there are housing units together with permanent social and economic activities, common public space, urban basic services, and a local governance structure.'

Dr. Joan Clos, Executive Director of UN-Habitat

Over recent decades the wave of urbanization has been phenomenal and one of the defining features of our time. Urban population has increased nearly fivefold between 1950 and 2011 and, since 2008, more than half the global population has been living in cities. Current estimates predict that the urban population will rise to more than 60 per cent of the global population by 2030 (UN-Habitat 2006) (see *Illustration 03*).

ILLUSTRATION 03: **Global urbanization trend from 1970 to 2030**



Source: UN-Habitat 2006

Cities generate more than 80 per cent of the global GDP, offering employment and most services (MGI 2011). Urbanization has led to high standards of living. Underpinning this transformation are the economies of scale that make concentrated urban centres more productive. Several advanced middle- and high-income SIDS are a testament to this fact. Planned urbanization processes are able to integrate the three pillars of sustainable development – economic, environmental and social – to create opportunities to harness the growth of cities for

positive socio-economic development. Urban centres offer a unique opportunity for poverty reduction, economic growth and achievement of the Millennium Development Goals.

The term ‘urban’ in the SIDS context can refer to a relatively small town connected by villages stretching along a coastal perimeter, a small town connected by villages on a single island, or a series of islets (ADB, 2012). With this SIDS specific definition of the term ‘urban’ in mind, it has to be noted that the global trend towards urbanization is also clearly visible in SIDS.

Of the 65 million people living in SIDS today, 38 million (59%) already live in urban settlements. Singapore and Nauru are among the most urbanized SIDS (100 per cent), while Trinidad and Tobago (13 per cent) and Papua New Guinea (12 per cent) are among the least. The urbanization rate amongst SIDS in the immediate future (2010-2015) is expected to be 1.4 per cent, just below the global average of 1.7 per cent but with striking regional and national differences. In the fastest-urbanizing region, the Pacific, the urbanization rate is currently calculated at 4.3 per cent, increasing to 16 per cent in peri-urban areas. Rapid urban growth can also be observed in other regions, for example in Haiti (3.9 per cent), Trinidad and Tobago (2.2 per cent) and Cape Verde (2.1 per cent) (UN-OHILLS 2012).

Global urbanization trends are commonly coupled with an increase in gross domestic products (GDP), especially in urban areas, through expanded services and a matured industrial sector. However, in the case of some SIDS, urbanization has not brought the expected formal increase in GDP. This can be attributed to the fact that these economies remain driven by the informal sector, agriculture and tourism. For example, in Cook Islands, Samoa and Vanuatu the urban informal sector is a significant contributor to GDP (ADB 2012) with strong urban-rural linkages and this is the case for many other SIDS. Given that development options are limited in many of these small islands, there are special challenges to planning and implementing the Sustainability Development Goals.

It is also important to note that the population for many SIDS is concentrated in their largest urban agglomeration, often the capital (see *Table B-1 in AnnexB*). The ‘primacy of capitals’ is a distinct feature in SIDS – the dominance of a single urban centre (Connell & Lea 2002). Owing to this primacy, many capitals, such as Male in the Maldives, continue to be the primary hub of administrative and economic activity, resulting in a ‘skewed’ concentration of labour, political systems and administrative services (see *Image 06*). Urban and rural boundaries



Image 06: Aerial view of Male Island, the Maldives. © Flickr_The Commonwealth

are often blurred due to extensive sprawl (Arthur 2013), and primacy and centralization discourages the development of regional centres and makes the provision of services in small towns more difficult.

For example, in Trinidad and Tobago, 3 per cent of the country's residents live in the capital Port of Spain, with a density of 3,966 persons per square kilometre. The area of Greater Port of Spain however comprises a much larger urban conurbation of roughly 25 per cent of the country's total population (Beard 2012). The small size of the islands in the Caribbean, as is the case for most SIDS, means that there is limited land space available for development and development on coastal land is a necessity. The city of Port of Spain has had a history of land reclamation in order to make more land available to the city. Furthermore, a vast majority of the city's housing that lies within relatively close proximity to employment is unaffordable to a large number of the population. This has led to the increased growth of informal settlements, with a recorded total population of 65,000 persons living in informal settlements, which is approximately one-fifth of the population of Greater Port of Spain (Beard, 2012; UN-Habitat 2012b).

One urban challenge for SIDS is to ensure that this 'primacy of capitals', which produces urban sprawl in many cases, does not impede the realization of the Sustainability Development Goals. The compact urban form is a postulated option to address the negativity of sprawl. It presents an avenue to achieve resource efficiency in the utilization and management of urban land. Unlike the characteristic low density outward expansion of many SIDS cities, a compact urban form can be realized through adopting smart growth principles that mitigate sprawl and encourage walking, cycling and transit-oriented development (*see Case Study Box 01*).

Tools for achieving a compact urban form include urban growth boundaries; land use regulation such as zoning that can ensure that focus is placed on developing brownfield sites versus greenfield; infill development focusing on developing and regenerating underutilized or derelict sites and increasing density through setting clear density standards for new development projects, especially in areas close to transit.

Planning regulations and standards make up a critical component of sustainable urban development planning. Without strict enforcement of planning standards and regulations, efforts to green the environment and change behaviour would be short lived. Key policy instruments can focus on land use regulations that promote infill development and limit the amount of new or greenfield development within urban areas. Promoting high density, compact urban form and mixed use development is an efficient policy strategy.

Case Study Box 01: Promoting Integrated Dense Land Use in Urban Settlements

Based on work from UN-Habitat and the World Bank on informal settlements in Caribbean SIDS, a set of risk reduction mechanisms were developed, one of which was to promote integrated dense land use in urban settlements that will discourage development of slum areas. The more specific action ("containment policies") as well as the potential positive and negative impacts of such measures, are as follows:

Action: Containment policies that determine where growth can and cannot happen.

Positive benefits:

- Modal shift to public transport yielding reduced pollution, noise and traffic
- Lower cost of providing public services (water and sanitation, electricity, education and health)
- Gain in competitiveness through reduced energy expenditures and lower taxes
- Higher density facilitated by zoning to avoid development in at-risk areas
- Reduction in mobility needs and energy consumption
- Reduced urban sprawl and protection of natural areas from increased competition with agriculture
- Improved social equity through reduction in segregation

Potential negative impacts:

- Reduced access to housing and reduced dwelling size
- Reduction in available land for construction, increase in construction costs, increase in housing prices in the city and possible reduction in competitiveness
- Potentially larger urban heat island and larger vulnerability to heat waves
- Possible increase in natural hazard risk if containment land-use plans do not have controls for additional density in flood-prone or landslide areas

05

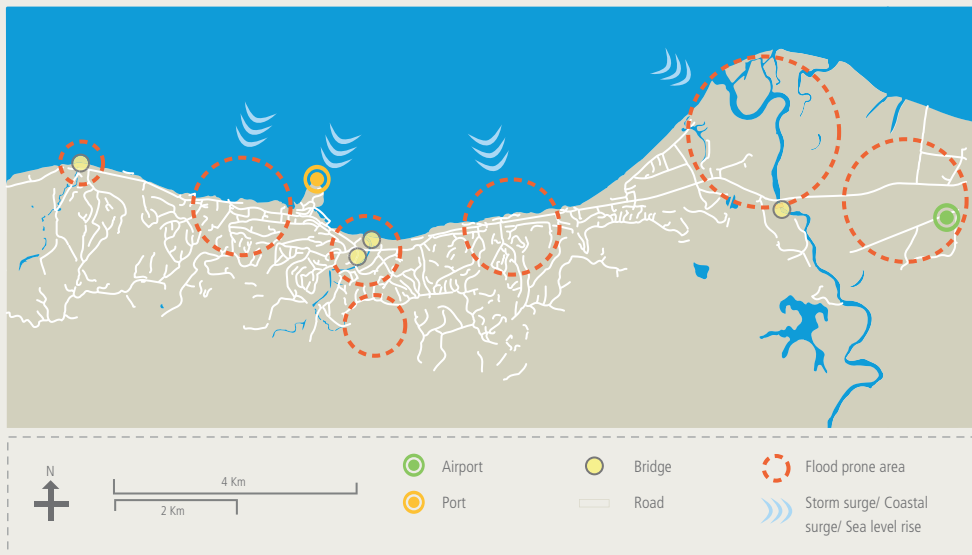
In the Caribbean more than half the population lives within 1.5 km of the sea, mostly on low-lying land. Conservative estimates, suggest that nearly 11 per cent of people in SIDS live (with striking variations between the states) in zones where the elevation is below 5 metres.

CLIMATE CHANGE IMPACTS ON TOWNS AND CITIES IN SIDS

Globally, 80 per cent of the largest cities are vulnerable to severe impacts from earthquakes, 60 per cent are at risk from storm surges and tsunamis and all face new impacts caused by climate change (UN-Habitat 2015). In many SIDS most cities and towns are experiencing the more immediate impacts of climate change, such as increased frequency and magnitude of cyclones, storms and hurricanes, all of which result in loss of lives, homes, critical urban infrastructure and natural resources (*see Case Study Box 02*). These present effects, forecasted to amplify in the future, are causing major setbacks to socioeconomic development in SIDS.

There is a distinct urban dimension of climate change in SIDS. The concentration of human settlements along with economic and social activities at or near the coast is a well-documented feature of small islands (Mimura et al. 2007). For example, in the Caribbean more than half the population lives within 1.5 km of the sea, mostly on low-lying land (*ibid.*). Conservative estimates, (*see Table B-1 in Annex B*), suggest that nearly 11 per cent of people in SIDS live (with striking variations between the states) in zones where the elevation is below 5 metres. Figure 01 is an extract from Table B-1 highlighting the most vulnerable from the list of 52 SIDS given that 20 or more per cent of their total land area is located, and total population live, below 5 metres above sea level.

Case Study Box 02: Assessment of Climate Change Vulnerability in a Local Context in Honiara, Solomon Islands

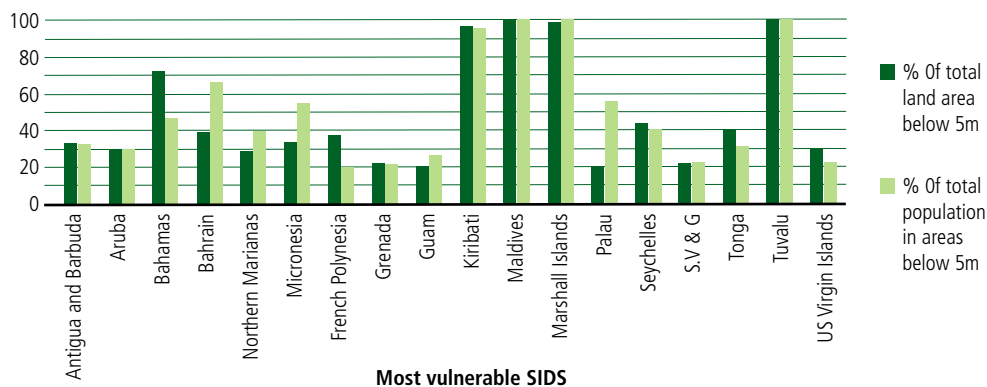


A Map of Honiara, Solomon Islands, showing the exposure and threat to the transport system © UN-Habitat 2014a

In the Solomon Islands many communities are vulnerable to climate challenges such as extreme high tides, continuous intense rainfall and storm surges, coastal erosion, flooding, tropical cyclones, saline intrusion and landslides. The urban environment of the island has been transformed through rapid growth of the urban population and expansion of the urban fabric. New urban areas have been informally developed on steep slopes and river banks and the local authorities lack the capacity to tackle these problems. Disaster risk reduction strategies and climate change consideration were absent in urban planning (UN-Habitat, 2012a).

Through UN-Habitat's Cities and Climate Change Initiative, Honiara City produced the *Honiara City Climate Change Vulnerability and Adaptation Assessment* (UN-Habitat 2014). The main purpose of the vulnerability and adaptation assessment for Honiara is to provide national and local government decision makers and community leaders with information relevant to defining their adaptation priorities and plans, with the view of eventually integrating this into their regular programmes and budgets. The vulnerability and adaptation assessment is envisioned to form part of a larger strategic urban planning process. Given that the data was drawn directly from the community and involving its members, the identification of adaptation measures has certain advantages. This underscores the comprehensive approach suggested to tackle climate change at the local level. In general, the assessment provides a basis to connect climate change and urbanization tailored to a local context, and addresses both simultaneously.

FIGURE 01: Percentage of land area below 5 metres, and percentage of population inhabiting areas below 5 metres



Source: Table B-1 in Annex B

Another major concern is impact to valuable infrastructure. The infrastructure base that supports vital socioeconomic sectors of island economies tends to occupy coastal locations. Vital infrastructure, including seaports and airports, public service facilities as well as attractive tourism infrastructure are highly concentrated in locations at low elevation along the coast. For instance, in 1999 eight Eastern Caribbean states (Anguilla, Antigua and Barbuda, British Virgin Islands, Dominica, Grenada, Saint Lucia, St Vincent and the Grenadines and St Kitts and Nevis) reported estimated damages of USD 268.8 million due to Hurricane Lenny. Most of the damage reported related to coastal infrastructure, coastal communities and businesses (Arthur 2013). Furthermore, according to the World Bank, within a single year economic losses due to the 2004 hurricane season cost Caribbean countries more than USD 4 billion (World Bank 2009 in Arthur 2013) (see Image 07). The most cost-effective measures to reduce the impact to infrastructure and assets, as well as to reduce risks for people, may well be located in human settlements (see Case Study Box 03).



Image 07: Skyline of Havana, Cuba during a hurricane as waves crash against the protective seaside wall. © Shutterstock

Hay et al. (2003) identified several challenges, specifically for the transportation sector in Pacific island countries that would result from the impact of climate change. These include closure of roads, airports, harbours, bridges and other vital infrastructure systems due to flooding, physical damage and landslides. These incidences will have adverse effects for SIDS, especially in times of disasters when these infrastructures are vital for relief, supply and other essential functions.

In this regard, engineering adaptation options reduce potential damages. However, a UN-Habitat study (2014c) found that ecosystem-based approaches to adaptation are more cost-effective than pure engineering options in protecting coastal areas (UN-Habitat 2014c). Ecosystem-based adaptation ensures ecosystems remain healthy, allowing local populations to benefit from the provided environmental services such as provision of clean water, improved habitat for fish supplies and, more notably, protection from extreme weather events.

Case Study Box 03: Disaster Risk Assessment in Vanuatu

The World Bank (2011) country assessment of Vanuatu highlights that in the next 50 years, the country has a 50 per cent chance of experiencing losses exceeding USD 330 million, with casualties of more than 725 people, and a 10 per cent chance of experiencing losses exceeding USD 540 million (equivalent to 67 per cent of Vanuatu's GDP) with casualties of more than 2,150 people from extreme climate events. Additionally, it is estimated that the replacement value of all the assets in Vanuatu is USD 3.3 billion, of which about 86.5 per cent represents buildings and 12.5 per cent represents infrastructure.

Given the potential devastation particularly to urban infrastructure, urban climate change interventions are increasingly a cost-effective way to tackle climate change. The cost-effectiveness of urban-centred adaptation measures is reinforced in a country risk assessment conducted by the World Bank in Vanuatu (2009). Three of the four most cost-effective risk reduction measures proposed targeted interventions in settlements. The three measures were risk mapping to support town planning and village development; support to better integrate National Adaptation Plan (NAP) implementation and urban climate change adaptation, and support to the Ministry of Lands and National Resources for reformation of settlement land-use policies and regulations (WB 2009 p9).

Risk assessments are particularly useful in urban and development planning, as planners can use the risk profile information to identify the best location for new development areas, evaluate how natural hazards may shape their development and assess whether the benefits of reducing the risk of natural events justify the costs of implementing the risk mitigating measures. Additionally, the earthquake and tropical cyclone hazard models produced for Vanuatu also provide critical information for building codes in terms of country-specific seismic and wind loads for which buildings should be designed in order to ensure adequate shelter to the population. The risk information also helps identify existing vulnerable areas and communities located in or adjacent to these areas. This information can support more targeted intervention in community-based disaster risk management and climate change adaptation actions (WB 2011).

Vulnerability to climate change, unfortunately, is not confined to coastal cities. The IPCC's 5th Assessment Report (2013) projects that inland settlements and rural communities will also be adversely affected by the negative effects of climate change, particularly the impacts on agriculture (due to groundwater salination), rising temperatures, changing rain patterns and severe storms. Apart from the risk of storm surges or tsunamis, there is the less dramatic but equally calamitous threat of drought and water insecurity. SIDS face the possibility of extended periods of freshwater shortage and the consequences of becoming reliant on imported foodstuffs in the absence of sufficient cultivatable land. The loss of their agricultural economic base increases the vulnerability to external shocks. Additionally, the decline of their agricultural production will lead to food security issues, increased food prices and nutritional issues for SIDS. Therefore there is a serious risk of these states becoming uninhabitable regardless of future sea level rise and inundation.

Among urban dwellers, those most affected by climate change are informal settlement dwellers – a section of the population dominated by women – who are more likely to live within areas vulnerable to natural disasters. In general, women are more vulnerable to the impacts of climate changes due to gender-related challenges in access to opportunities and resources – often due to their exclusion from urban planning, land ownership and management. During natural disasters, female and child fatality rates outweigh those of males. This disparity is linked to sociocultural constraints including cultural needs for women to be accompanied by a male family member in public; gender division of labour, which, due to the nature of the work, slows the pace at which women can escape from calamities; physical restrictions on movement as a result of clothing restrictions for women in some places and lack of physical skills useful during climate events such as swimming and tree climbing.

Additionally, the responsibility to gather household supplies post-disaster is often given to women (*see Image 08*). Furthermore, often after natural disasters there is a marked increase in women-headed households (UNFPA & WEDO, 2009). For many women and societies this reality is uncharted territory that leads to changes in power hierarchies and gender tensions within societies. Due to cultural histories that do not involve women in decision making previous to disasters, women may continue to be overlooked in decision making after disasters, despite being household heads and economic providers. It is therefore import to consider these aspects of the urban gender divide when discussing the urban dimension of climate change in SIDS or in general.



Image 08: A woman carries supplies through a flooded street in Cap Haïtien. After days of continuous rains in November 2014, parts of Haiti's north, including Cap Haïtien, suffered serious flooding, leaving more than a dozen dead and thousands homeless. © UN Photo/Logan Abassi

With urbanization forecast to increase in most SIDS, specific urban challenges will be further amplified by changing climate patterns. The small size and limited resources of SIDS coupled with urbanization places a unique stress on service delivery and ecosystem services. However, even though the smallness, remoteness and limited resources of SIDS may pose a challenge, as with trade, small islands have unique opportunities to develop. The same attributes of smallness and remoteness play important roles in luring tourists and increasing the profile of SIDS as exotic tourism destinations (Scheyvens and Mommsen 2008 in UNECA 2012). Their size may make it easier to coordinate their tourism industry more efficiently and adapt and innovate to changing market demands to capitalize on new opportunities.

The Rio+20 United Nations Conference on Sustainable Development outcome document *The future we want* expressed the importance of utilizing green economy initiatives as an important tool for achieving the overarching goal of sustainable development by means of informing policies that reconcile the economic, social and environmental dimensions of development. A green economy approach provides a framework whereby decisions and strategies regarding cities and urban centres can promote resource efficiency, effective environmental management and a better standard of living for urban residents; ultimately building economically resilient, well-managed and socially-inclusive societies.

For SIDS, the ocean and coastal environment are of strategic importance and constitute not only challenges but drivers of the economy and valuable development resources. The blue economy advocates the same desired outcome as the green economy namely, “improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP 2013 p34). The Minister of Environment, Energy and Climate Change from Seychelles Didier Dogley, said, at a side event on blue economy at the 41st session of the Intergovernmental Panel on Climate Change in Nairobi, “[the] Blue Economy will involve the sustainable development of key economic sectors such as fisheries, coastal tourism, maritime transport, exploitation of seabed resources, and potential sources of renewable energy [such as wind power]” (*see Image 09*). The sectors that are part of the blue economy are in many cases already well developed in many SIDS. However, although these opportunities can be realized, uncoordinated governance, vested business interest in unsustainable practices and negative consumer attitudes can hinder the shift to a green/blue economy.



Image 09: Renewable energy: Wind turbines in Bonaire, the Caribbean. © Donal Boyle/creative commons



06

CONCLUSION

The global impact of climate change is and will continue to be most present in Small Island Developing States as some of these nation states face the likely possibility of losing their territory due to coastal erosion and sea level rise resulting from climate change. Additionally, as is the case for most states, urbanization is and will continue to create problems for SIDS if unaddressed. Though the urban context for SIDS is unique, there continues to be a primacy of capitals which is leading to sprawl and growing informal settlements. The small size and geographic isolation of SIDS makes them vulnerable to ecological and economic shocks, especially in light of the increasing impacts of urbanization and climate change.

There are many challenges and opportunities for Small Island Developing States associated with urbanization and climate change. For continued economic and social development, one important factor will be how SIDS manage their urbanization processes, which vary significantly between states. Continued success by SIDS will also depend on whether it will be possible to enrich national development processes towards more resilient and sustainable settlements. International and regional cooperation will be required to support sustainable urban development efforts in SIDS in light of their limited resources. Care should also be taken to ensure that resilience and sustainable urbanization concepts are carefully adapted to the SIDS context. These must be well understood to tackle climate change concurrent to the pursuit of sustainable development goals. SIDS are also in an ideal position to pioneer innovative approaches to the blue economy and champion the concept (*see Image 10*).



Image 10: Boys catching fish of Atauro Island, Timor-Leste. Fishing is a cornerstone of SIDS economic activity that can be a driver for the blue economy in SIDS. © UN Photo/Martine Perret

The focus on urban areas within the context of climate change and SIDS is important because well managed cities and urban areas can address challenges such as environmental degradation, resource depletion, vulnerability to the effects of climate change and increasing demands on urban infrastructure due to urban growth and sprawl. Well-designed urban areas with large population concentrations and dense urban settlements can present opportunities for the efficient provision of adequate services such as water and electricity. It also places the most vulnerable urban dwellers (people living along the coast and hazard prone areas) at the centre of shifts towards sustainable urban management.

Urban climate change interventions need to be carefully adapted to local circumstances, capacity and access to resources, while being targeted to have positive social and economic benefits for all urban dwellers. The UN-Habitat approach for climate change mainstreaming in all levels of government and local communities could enhance the collaboration between all actors for a joint effort in climate-resilient urban development based around a common interest.

07

The effects of unplanned urbanization, and the associated issue of depopulation of outer islands, are growing. In half of the Pacific countries the majority of people live in urban areas. [...] If the need for better urban planning is not addressed now, there will be serious challenges due to increasing populations; including rise in urban poverty and associated overcrowding, ill-health, declining educational participation, growing unemployment, feelings of discouragement among youth populations, and even social conflict.

*Synthesis Report of the Pacific Regional Preparatory Meeting
10-12 July 2013, Nadi, Fiji*

RECOMMENDATIONS

It is important to address climate change in urban areas. Settlements contribute a high proportion of the world's greenhouse gases and contain a large proportion of the world's population, many of whom are greatly vulnerable to the effects of climate change. Furthermore, the majority of the real estate and critical infrastructure are located in urban agglomerations – particularly so in Small Island Developing States, where the majority of these assets are also located on vulnerable land along the coast. In line with global trends, even the smallest islands are becoming increasingly urbanized and human settlements are evolving as the prime economic, social and political centres. UN-Habitat advocates that the process of urbanization should be recognized and managed as a national priority.

As a first step towards more inclusive and sustainable settlements in the context of SIDS, a mechanism is required to manage and build resilience to the combined effects of rapid urbanization and climate change. A new approach is required that capitalizes on the opportunities and benefits of the agglomeration process equitably. Without proper planning policies and local capacity, local and national governments are simply not adequately prepared to cope with the challenges of urbanization and climate change and to realize the opportunities that urbanizations presents as an arena to address climate change in SIDS.

i. As a basis for effective enabling frameworks, develop a unique Urban Agenda for Small Island Developing States

A possible process towards addressing the need for better and sustainable urbanization in SIDS could be the development of a unique Small Island Developing States urban agenda, carefully reflecting the social, economic, environmental,

cultural and geographic characteristics of SIDS. In the Caribbean, a process has started on a regional level with the launch of the Caribbean Urban Agenda, addressing urban issues that are of a distinct Caribbean nature. It is a “*holistic and comprehensive framework*” that includes thematic programmes, a research agenda, a knowledge management facility and capacity building (Arthur 2013 p7). Additionally, UN-Habitat’s new paradigms for sustainable urban planning could provide another framework input for developing a settlement planning agenda for SIDS. Other regional initiatives, such as the Pacific Urban Forum series, can also contribute valuable inputs.

The 2015-2016 national and regional preparations for the third United Nations Conference on Housing and Sustainable Urban Development (Habitat III), present a unique opportunity to formulate this SIDS urban agenda and enrich and profit from international debate surrounding climate change and sustainable urbanization. This discussion is ongoing in many forums, and informed by UN System, Member States and Partners via a Habitat III ‘Issue Paper’ on Cities and Climate Change and Disaster Risk Management.

Effective policy enabling frameworks are needed. The Caribbean Urban Agenda could provide a good starting point to facilitate strong institutional and regulatory frameworks for the development of urban SIDS. If we accept that the first response to climate change should involve urban areas then we should also recognize that those urban areas have to be empowered as key actors in emission-reducing and resilience building efforts. Climate change and urbanization should be vertically integrated, for example through the inclusion of urban issues in national climate change policies³. This recommendation follows the notion that sound high-level policies will be embodied in laws, regulations, guidelines and programmes thus leading to action and positive results on the ground. The recommendation is supported by encouraging examples from UN-Habitat’s *Cities and Climate Change Initiative*. Several SIDS settlements are members of this Initiative and are among the champions in this field. They are Apia (Samoa), Lami (Fiji), Port Moresby (Papua New Guinea), Port Vila (Vanuatu) and Honiara (Solomon Islands).

ii. Promote more sustainable urban planning and design

Promote the development of a network of cohesive mixed-use settlements that offer a range of housing options that respond to different income levels and living preferences while providing ready access to local commerce, public services, and facilities.

Antigua and Barbuda, 2014, p20

³ For more information, please see UN-Habitat CCCI Policy Note III - UN-Habitat 2013.

SIDS should embrace policies that promote compact urban form and connected settlements to reduce the pressure on limited land resources. Compact settlements also yield other environmental benefits such as reduced greenhouse gas emissions and minimized surface sealing and degradation, which fragments ecosystems and reduces rainwater infiltration and groundwater regenerative capacity. Integrated and inclusive settlements could yield further social and economic benefits, supporting sustainable development. The compact urban form can help reduce low-density development and sprawl as well as peri-urban informal settlements, thus enhancing livelihoods for the poor and segregated populations through better access to economic opportunities and services within the core settlements.

A compact development pattern may also increase the access to marine resources, on which many SIDS' inhabitants rely. Furthermore it will ensure the broadest possible reach of basic services and infrastructure, especially mobility, further reducing the amount of marginalized urban inhabitants. At a larger scale, a commitment to compact settlements could help to stop and even reverse the trend of sprawl, thus reducing land degradation and maintain valuable agricultural and other economic activities in the peri-urban and rural areas. Compact settlements would also yield benefits in terms of economies of scale; a broader market base and specialization and lower costs for energy. Finally, this concept offers new opportunities for private investment, especially in conjunction with a wider national strategy to bolster the green and blue economy and tourism.

In the pursuit of more compact urban settlements for sustainable urban development, planning regulations and standards make up a critical component. Without strict enforcement of planning standards and regulations, efforts to green the environment and change behaviour would be short lived. Key policy instruments should focus on land use regulations that promote infill development and limit the amount of new or greenfield development around urban areas. Promoting high densities, compact urban form and mixed use development is an efficient policy strategy with numerous co-benefits.

iii. Consider ecosystems-based approaches to adaptation

The cities and towns of Small Islands Developing States should consider their natural resources and give attention to their protection or careful occupation in the urban expansion process. The natural ecosystems can be a useful and cost-effective tool in climate change adaptation. Coastal ecosystems can help reduce risks and minimize the area vulnerable to natural disasters and therefore support

Case Study Box 04: Ecosystem-based adaptation in Lami Town



A map of Lami Town, Fiji, showing a mix of the conventional engineering and ecosystem options identified and evaluated by the team © UN-Habitat 2014c

UN-Habitat's Cities and Climate Change Initiative (CCCI), in collaboration with the United Nations Environment Programme (UNEP) and with the expert support of the Secretariat of the Pacific Regional Environment Programme (SPREP) and Conservation International, assisted Lami Town, Fiji, to assess its vulnerability to climate change, and compare the costs and benefits of varying adaptation options (UN-Habitat 2014c).

The assessment is unique in that it offered a head-to-head comparison of traditional engineering approaches with ecosystem-based approaches to adaptation, as well as mixes of the two approaches. In terms of specific scenarios, the study concluded that the highest cost-benefit ratio is for the pure ecosystem-based adaptation scenario. However, the study also recognized that engineering options, while less cost-effective in reducing potential damages than ecosystem-based alternatives, produce greater results overall with an assumed damage avoidance of 25 to 50 per cent, compared to only 10 to 25 per cent for the purely ecosystem-based approach. Trade-offs thus exist between approaches. In the end, composite approaches often may be the most desirable

The estimated benefits of the adaptation actions across the scenarios range from Fijian dollars 8 to 9.50 (USD 3.96 to USD 4.66) for every dollar spent on adaptation. Benefits of the actions included avoided damages related to health costs, avoided potential damage to businesses and households and other ecosystem services being maintained or enhanced.

the urban resilience of coastal settlements within SIDS. National and local climate action can enable planners and managers to protect existing ecosystems and renovate lost areas, incorporating such systems into strategies for adapting to climate change. Ecosystem-based adaptation is emerging as a viable option for local and national governments to increase resilience to climate change impacts as in the case of Lami Town, Fiji, (*see Case Study Box 04*).

As cities have begun to devise ways to adapt to climate change in recent years, interest in ecosystem-based approaches to adaptation have grown. Ecosystem-based adaptation ensures ecosystems remain healthy, allowing local populations to benefit from the provided environmental services such as provision of clean water, improved habitat for fish supplies and, more notably, protection from extreme weather and sea-level events. Healthy ecosystems may also serve as carbon sinks and thus provide the added benefit of mitigating local greenhouse gas emissions.

iv. Incorporate an inclusive human rights-based approach

As part of the United Nations family, UN-Habitat is committed to respect, promote and protect human rights in its activities. UN-Habitat seeks to underpin its interventions with universal values that promote the adoption and implementation of a strong human rights based approach to development.

Promoting and mainstreaming human rights enhances the focus of urban development and climate change adaptation on the meaningful contributions and participation of all segments of communities. Due to the persistence of various forms of inequality and discrimination in many urban environments, some groups remain excluded, stigmatized or in some way marginalized. Despite challenges, urbanization presents an opportunity for increased equity and empowerment of marginalized groups.

The main changes mainstreaming human rights seek to bring about are addressed in a three-fold manner: proactively empower claim-holders (such as the marginalized) to assert their rights; enable duty bearers (such as public entities) to meet their obligations with regard to the rights of claim holders and hold duty bearers to account in fulfilling their obligations (UN-Habitat 2014b).

Furthermore, there is also the need to employ the human rights-based approach in the international context as in the debate over the future of low-lying islands, as some are at risk of future submersion resulting from sea level rise. The

discussion on possible evacuation of communities should be inclusive of the affected communities as well as the host communities. All stakeholders should be involved in determining a timeline, prioritizing options and identifying those most vulnerable. The discussion should not be one of disempowered island states but one of states able to determine their own fate even in the face of the most severe impacts of climate change.

v. Prioritize investments and improve local capacity

SIDS understandably focus a considerable part of their climate efforts on adaptation. For many SIDS, immediate actions to strengthen basic and critical infrastructure are required to reduce present vulnerabilities and climate risks to manageable levels. Advocating for such measures and investments remains an important task for SIDS and partners. Otherwise, given competing priorities, such investments in resilience run the risk of being deferred and never implemented. Additionally, adaptation and resilience policies and plans should give precedence to the resilience of systems that ensure the continual provision of basic urban services. This could begin by identifying existing and planned facilities and processes considered critical; those which are essential for the continuity of basic services when faced with environmental and natural disasters.

Capacity building and training is critical for the effective deployment of initiatives particularly as it relates to compact urban planning, adaptation and promoting the blue and green economy. UN-Habitat through its Cities and Climate Change Initiative has worked to increase local government capacity in responding to climate change (*see Image 11*). Many ideas and best practices can be shared across countries and regions. However, new technologies and best practices used elsewhere require the capacity building and retooling of locals.

vi. Compile adequate local data and information systems

Analyzing local data helps to respond to climate change through better-coordinated and integrated policies and knowledge-based action plans. Central to this effort is the availability of robust weather and climate data and information to understand scenarios in the short, medium and long term and enhance decision-making processes. Additionally, timely data on urbanization is required to assess trends, with a focus on how it relates to sprawl and the formation of informal settlements, particularly in vulnerable areas. Satellite



Image 11: UN-Habitat through its Cities and Climate Change Initiative facilitated local government engagement in Lami Town, Fiji. This led to community action, for example, efforts to re-plant mangroves as an ecosystems-based adaptation option. © Lami Town Council

imagery can assist in this endeavour, however, SIDS-appropriate imagery is required. It is accepted that imagery at a much smaller scale (approx. 1 km) is required for SIDS compared to the general scale of remote sensing imagery (10 km). Furthermore, to best delineate informal settlements from the formal, an even smaller scale of remote sensing is required at approximately 50 cm. Ultimately, capturing information from communities and involving them in the generation of knowledge and decision making, in addition to engaging with regional partners, will ensure a more robust database and informed actions.

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ANNEX A GLOBAL NETWORK OF SIDS





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ANNEX B

SIDS URBAN STATISTICS

TABLE B-1: SIDS Urban Statistics

| Small Island Developing States (SIDS) | Urban Population (thousands) | Total Population (thousands) | Percentage Urban | Average Annual Rate of Change of the Urban Population 2010-2015 (in %) | Population In the Largest City (% of Urban Population) ² | Largest City – (by Inhabitants) | Land area where elevation is below 5m (% of total land area) | Population living in areas where elevation is below 5m (% of total population), 2000 |
|---------------------------------------|------------------------------|------------------------------|------------------|--|---|---------------------------------|--|--|
| American Samoa** | 65 | 70 | 93.2 | 1.87 | 100.0 | <i>Tafuna</i> | 17.9 | 9.9 |
| Anguilla** | 16 | 16 | 100.0 | 1.56 | - | <i>North Side</i> | - | - |
| Antigua and Barbuda | 27 | 90 | 29.8 | 0.96 | 100.0 | <i>St. John's</i> | 32.4 | 32.3 |
| Aruba** | 51 | 108 | 46.8 | 0.54 | 69.9 | <i>Oranjestad</i> | 29.6 | 29.6 |
| Bahamas | 293 | 347 | 84.3 | 1.37 | 83.3 | <i>Nassau</i> | 72.0 | 46.5 |
| Bahrain | 1,174 | 1,324 | 88.7 | 2.21 | 15.5 | <i>Manama</i> | 39.0 | 66.6 |
| Barbados | 122 | 274 | 44.4 | 1.35 | 92.7 | <i>Bridgetown</i> | 15.7 | 15.7 |
| Belize | 142 | 318 | 44.7 | 1.54 | - | <i>Belize City</i> | 9.5 | 15.8 |
| British Virgin Islands** | 10 | 23 | 40.6 | 1.48 | - | <i>Road Town</i> | - | - |
| Cape Verde * | 314 | 501 | 62.6 | 2.12 | 42.2 | <i>Praia</i> | 14.5 | 13.8 |
| Commonwealth of Northern Marianas** | 56 | 61 | 91.5 | 1.87 | 100.0 | <i>San Antonio</i> | 28.1 | 39.3 |
| Comoros * | 211 | 754 | 28.0 | 2.84 | 26.1 | <i>Moroni</i> | 13.5 | 14.0 |
| Cook Islands** | 15 | 20 | 73.5 | 0.88 | - | <i>Avarua</i> | - | - |
| Cuba | 8,459 | 11,254 | 75.2 | -0.08 | 25.2 | <i>Havana</i> | 12.7 | 10.0 |
| Dominica | 45 | 68 | 67.1 | 0.18 | 30.0 | <i>Roseau</i> | 9.4 | 10.4 |
| Dominican Republic | 7,007 | 10,056 | 69.7 | 2.03 | 31.6 | <i>Santo Domingo</i> | 4.1 | 3.0 |
| Federated States of Micronesia | 25 | 112 | 22.6 | 0.98 | 29.7 | <i>Pohnpei</i> | 33.4 | 54.9 |
| Fiji | 454 | 868 | 52.2 | 1.55 | 39.7 | <i>Nasinu</i> | 11.4 | 11.0 |
| French Polynesia** | 141 | 274 | 51.4 | 1.07 | 97.3 | <i>Papeete</i> | 37.6 | 19.8 |
| Grenada | 41 | 105 | 39.1 | 1.24 | 100.0 | <i>St. George's</i> | 21.7 | 21.7 |
| Guam** | 170 | 182 | 93.2 | 1.23 | 100.0 | <i>Tamuning</i> | 20.4 | 26.6 |
| Guinea-Bissau * | 680 | 1,547 | 43.9 | 3.59 | 45.8 | <i>Bissau</i> | 9.5 | 18.8 |
| Guyana | 214 | 756 | 28.4 | 0.53 | 59.5 | <i>Georgetown</i> | 2.7 | 31.3 |
| Haiti * | 5,409 | 10,124 | 53.4 | 3.68 | 53.7 | <i>Port-au-Prince</i> | 3.9 | 5.4 |
| Jamaica | 1,432 | 2,751 | 52.0 | 0.51 | 41.4 | <i>Kingston</i> | 7.1 | 5.8 |
| Kiribati * | 44 | 101 | 43.9 | 1.83 | 101.9 | <i>Bairiki</i> | 96.7 | 95.2 |

| Small Island Developing States (SIDS) | Urban Population (thousands) | Total Population (thousands) | Percentage Urban | Average Annual Rate of Change of the Urban Population 2010-2015 (in %) | Population In the Largest City (% of Urban Population) ² | Largest City – (by Inhabitants) | Land area where elevation is below 5m (% of total land area) | Population living in areas where elevation is below 5m (% of total population), 2000 |
|---------------------------------------|------------------------------|------------------------------|------------------|--|---|---------------------------------|--|--|
| Maldives * | 132 | 320 | 41.2 | 3.91 | 97.1 | <i>Malé</i> | 100.0 | 100.0 |
| Marshall Islands | 39 | 55 | 71.8 | 2.03 | 79.4 | <i>Majuro</i> | 99.0 | 99.4 |
| Mauritius | 546 | 1,307 | 41.8 | 0.57 | 28.0 | <i>Port Louis</i> | 7.1 | 5.6 |
| Montserrat** | 1 | 6 | 14.2 | 1.89 | - | <i>Brades</i> | - | - |
| Nauru | 10 | 10 | 100.0 | 0.59 | - | <i>Yaren</i> | - | - |
| Netherlands Antilles** | 189 | 203 | 93.4 | 0.91 | - | <i>Willemstad</i> | - | - |
| New Caledonia** | 157 | 255 | 61.7 | 1.24 | 94.1 | <i>Nouméa</i> | 8.0 | 34.2 |
| Niue** | 1 | 1 | 37.9 | -1.63 | - | <i>Alofi</i> | - | - |
| Palau | 17 | 21 | 84.2 | 1.67 | 74.4 | <i>Koror</i> | 21.4 | 55.6 |
| Papua New Guinea | 874 | 7,014 | 12.5 | 2.73 | 37.5 | <i>Port Moresby</i> | 1.8 | 2.0 |
| Puerto Rico** | 3,704 | 3,746 | 98.9 | 0.06 | 74.1 | <i>San Juan</i> | 7.7 | 11.3 |
| Samoa * | 37 | 184 | 19.9 | 1.44 | 97.1 | <i>Apia</i> | 7.3 | 15.6 |
| São Tomé & Príncipe * | 106 | 169 | 62.7 | -3.13 | 56.5 | <i>São Tomé</i> | 14.7 | 11.1 |
| Seychelles | 47 | 87 | 53.6 | 0.78 | 56.3 | <i>Victoria</i> | 43.9 | 41.3 |
| Singapore | 5,188 | 5,188 | 100.0 | -0.50 | 95.0 | <i>Singapore</i> | 8.1 | 12.1 |
| Solomon Islands * | 113 | 552 | 20.5 | 3.01 | 71.4 | <i>Honiara</i> | 11.5 | 13.4 |
| St. Kitts and Nevis | 17 | 53 | 32.0 | 1.05 | 77.7 | <i>Basseterre</i> | 19.0 | 22.1 |
| St. Lucia | 31 | 176 | 17.5 | 1.10 | 45.6 | <i>Castries</i> | 8.0 | 8.0 |
| St. Vincent & the Grenadines | 54 | 109 | 49.3 | 4.65 | 53.2 | <i>Kingstown</i> | 22.0 | 22.0 |
| Suriname | 369 | 529 | 69.7 | 1.44 | 72.4 | <i>Paramaribo</i> | 3.4 | 68.2 |
| Timor-Leste * | 327 | 1,154 | 28.3 | 4.25 | 54.4 | <i>Dili</i> | 2.9 | 4.4 |
| Tonga | 25 | 105 | 23.4 | 0.84 | 100 | <i>Nuku'alofa</i> | 40.5 | 31.3 |
| Trinidad and Tobago | 185 | 1,346 | 13.7 | 2.21 | 32.9 | <i>Chaguanas</i> | 8.0 | 7.5 |
| Tuvalu * | 5 | 10 | 50.6 | 1.04 | 100 | <i>Funafuti</i> | 100.0 | 100.0 |
| U.S. Virgin Islands** | 104 | 109 | 95.5 | -0.10 | 52.8 | <i>Charlotte Amalie</i> | 31.0 | 22.0 |
| Vanuatu * | 61 | 246 | 24.9 | 3.64 | 77.8 | <i>Port Vila</i> | 11.7 | 10.8 |

Sources: 1 UN DESA (2012)5
2 World Bank (2013)10

Italics - Capital cities

* - Least Developed Countries (LDCs)

** - Non-UN member states/associate members of regional commission

Cities_{and} Climate Change Initiative

The United Nations Human Settlements Programme (UN-Habitat) supports governments and local authorities, in line with the principle of subsidiarity, to respond positively to the opportunities and challenges of urbanization. UN-Habitat provides normative advice and technical assistance on transforming cities and other human settlements into inclusive centers of vibrant economic growth, social progress and environmental safety. Climate change and urbanization are two of the defining global trends of the young 21st century. In response to this important linkage, UN-Habitat has brought together its multiple climate change activities under the flagship **Cities and Climate Change Initiative (CCCI)**.

The Cities and Climate Change Initiative (CCCI) is helping cities in developing and low-income countries to address the climate challenge, with emphasis on a sound assessment of vulnerabilities and risks, urban planning, good governance, and practical initiatives for municipalities and their citizens. Launched in 2008 in just four cities, CCCI has expanded until to date it has assisted over 45 cities in 23 countries. CCCI has been generously supported by the Government of Norway, Cities Alliance, and the Government of Sweden.

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