

Department of Economic and Social Affairs  
Division for Sustainable Development

# **TRENDS**

## IN SUSTAINABLE DEVELOPMENT

### Small Island Developing States (SIDS)



United Nations  
New York, 2014

# DESA

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# FOREWORD

This publication, following up the first Trends in Sustainable Development dedicated to small island developing States (SIDS) which came out in 2010, is intended to be a stocktaking of SIDS progress in a number of key priority areas of sustainable development. As the following pages highlight, while advances have indeed been made, many of the critical challenges facing SIDS remain.

In 2012, twenty years after the 1992 Earth Summit in Rio de Janeiro, the global community gathered again in Rio to chart the way forward on reducing poverty, advancing social equity and ensuring environmental sustainability. The outcome document of that conference, “The Future We Want”, covered global issues including many of particular relevance for SIDS. In addition, a section of the document was devoted wholly to SIDS, re-affirming that they are a special case for sustainable development in view of their unique and particular vulnerabilities, and calling for a third international conference on SIDS to be convened in 2014.

The Conference will be held from 1 to 4 September 2014 in Apia, Samoa, and the current publication has been produced as a specific input to the Conference. Many of the thematic areas contained here will feature prominently at the Conference in Samoa. It is hoped that the overarching theme of the Conference, “The sustainable development of small island developing States through genuine and durable partnerships”, will inspire concrete and innovative measures to address the range of challenges that continue to face SIDS.

The current publication represents a partnership as well, and DESA/DSD wishes to express particular appreciation for the expert advice and invaluable contributions received from the Statistics Division, also under DESA. DESA also wishes to acknowledge collaboration received from the South Pacific Community (SPC), ECLAC/Caribbean and other entities in the preparation of this publication.

**Nikhil Seth**  
Director  
Division for Sustainable Development  
Department for Economic Social Affairs (DESA)  
*August 2014*

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# INTRODUCTION

Small island developing States (SIDS) are a “special case” for sustainable development: this was recognized in 1992 at the UN Conference on Environment and Development in Rio, and reaffirmed in Barbados in 1994 at the first UN Global Conference on SIDS and again in Mauritius in 2005 at the second SIDS Conference. During the Rio + 20 Conference in 2012, the “special case” was re-emphasized, and this formed the basis of the call for a Third International Conference on SIDS, to be held in Samoa in 2014.

Certain characteristics—including size, remoteness, insularity, vulnerability to external shock, and others—are shared by SIDS and together help define “special case”. But, as is evident in the following pages, many of the challenges facing SIDS do not necessarily originate from SIDS nor are they always unique to SIDS. They are global problems requiring global solutions.

Indeed, many of the urgent issues treated here, including climate change, oceans and natural disasters, are challenges related to the global commons and are decidedly not of the SIDS’ own making. But as the following pages illustrate, SIDS are on the front lines, experiencing the impacts of these threats with particular immediacy and intensity. In the realm of social development as well—from gender equality and youth employment to crime and violence and non-communicable diseases—SIDS are grappling with urgent issues that are inextricably tied to global realities.

The purpose of *Trends in Sustainable Development: Small Island Developing States*, then, is to take a careful look at a number of key global issues, but from the unique perspective offered by SIDS. It is hoped that by tracking recent progress made and gaps remaining, this publication will raise awareness of the special case of SIDS and the way SIDS sustainable development is linked with global sustainable development. Ultimately this understanding should encourage action at all levels to counteract the vulnerabilities and enhance the resilience of SIDS.



Photo credit: UN Photo/???????????????

# DEMOGRAPHIC TRENDS



Photo credit: UN Staff

## Total population

By definition, SIDS have relatively small populations—together, they boast only 0.8 per cent of the total world population—and while their populations continue to grow, the rate of growth has slowed. The annual rate of natural increase declined from 2 per cent per year in the 1975-1980 period to 1.3 per cent per year in the 2005-2010 period. It is projected that the rate will fall further to 0.76 per cent in the 2035-2040 period. The total population of SIDS stood at 59.4 million in 2012, of which 10 million were living in Atlantic, Indian Ocean, Mediterranean and South China Sea (AIMS), 38.7 million in the Caribbean and 10.6 million in the Pacific (see chart 1.1).

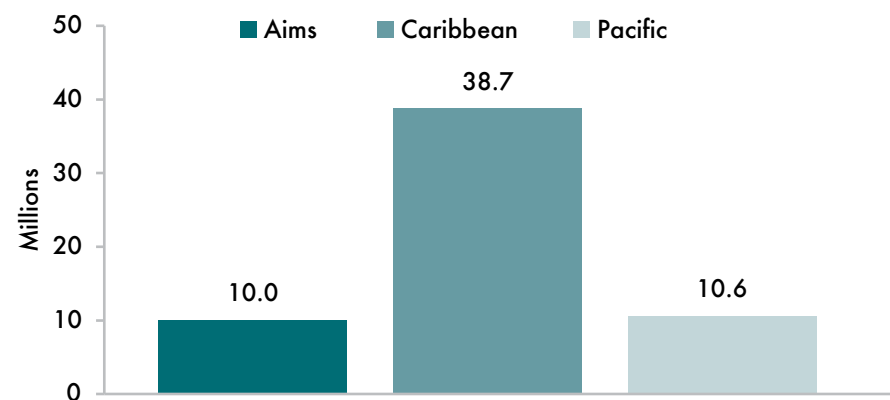
While the overall trend in population growth is slowing down, the rate of growth varies from region to region (see chart 1.2). According to UNPD estimates, the population of the Caribbean SIDS in 2030 will be 39 per

cent larger than in 1990, while it will more than double in the Pacific SIDS and AIMS (see chart 1.2). As a result, the share of the Caribbean SIDS in the total SIDS population will decrease from 70.6 per cent in 1990 to 61.4 per cent by 2030.

In some SIDS, emigration has contributed significantly to a further decline in the rate of population growth. In the period 2005-2010, within the Pacific, the rate of natural increase was 1.2 per cent in Micronesia and 1.6 per cent in Polynesia, for instance, but taking emigration into account, the growth rate in Micronesia was -0.1 per cent and in Polynesia the rate stood at 0.6 per cent (United Nations Population Division, 2013). In the Caribbean too, extensive emigration, both temporary and permanent, is changing the demographic landscape of the region.

People emigrate from SIDS for a variety of push and pull factors, often leaving a home country weakened by natural disasters and economic vulnerability in search of economic or educational opportunities elsewhere. “Brain drain” creates challenges in many SIDS, as those most qualified and with

Chart 1.1: Population of SIDS subregions, 2012 (millions)



Source: Calculation based on UN World Population Prospects

the most potential to contribute to the development of their home country feel compelled instead to leave and seek opportunity abroad. In addition, the increasingly severe effects of climate change, with more intense and frequent disasters, deleterious impact on tourism and other industries, and loss of territory due to sea level rise, may create a new phenomenon of climate migrants and will further influence demographic trends.<sup>1</sup>

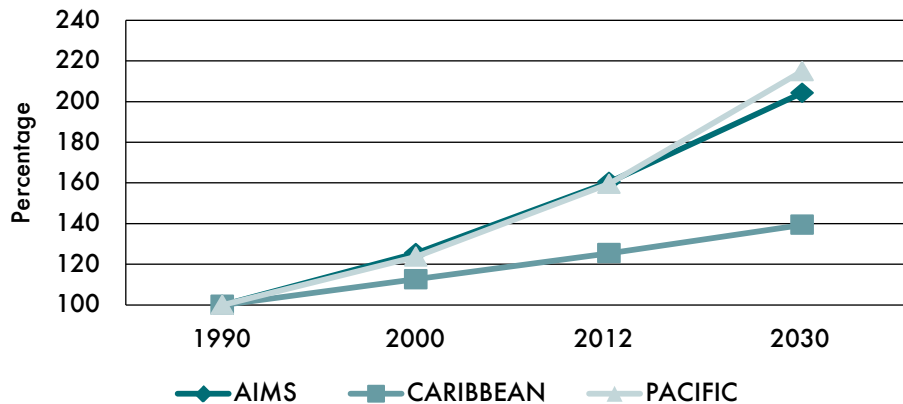
### Life expectancy

Many SIDS have made the critical demographic transition from high to low birth and death rates, while others are still in the midst of this transition. Chart 1.3 illustrates the consistent increase of life expectancy in SIDS. Average life expectancy at birth for males and females increased from 63 and 67 years in 1990 to 69 and 74 years in 2013 and, according to UNPD projections, will reach 72 and 77 years by 2030, respectively (see chart 1.3).

### Population age structure

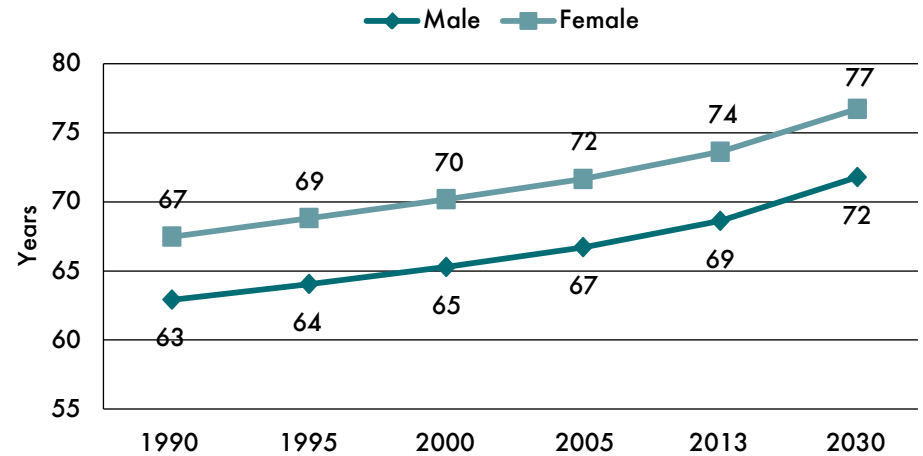
Given the demographic transition described above, the share of the population that is 60 and over will gradually increase over time (see chart 1.4), with implications for the changes of public services that may be required.

**Chart 1.2: Population growth in SIDS subregions (1990 = 100)**



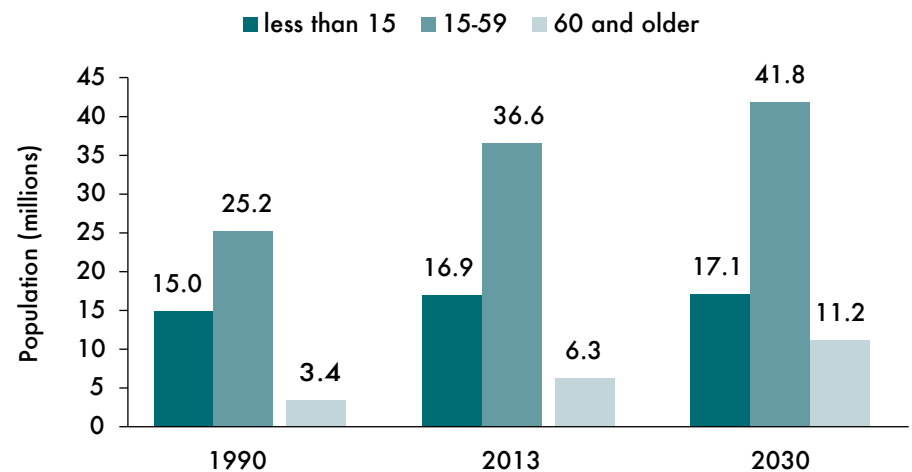
Source: Calculation based on UNDP World Population data

**Chart 1.3: Life expectancy at birth, years (SIDS average)**



Source: Calculation based on UNDP World Population data

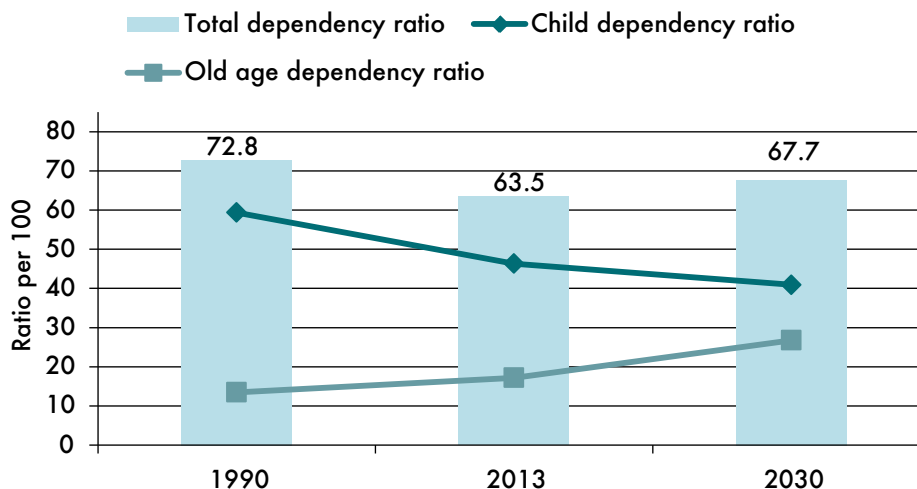
**Chart 1.4: Changes in age structure of SIDS population (in million)**



Source: Calculation based on UNDP World Population data



Chart 1.5 Changes in dependency ratios



Source: Calculation based on UNDP World Population data

Trends in age structure can be expressed in terms of three dependency ratios: (a) child dependency (ratio of the population less than 15 years old to working age population aged 15-59); (b) old-age dependency ratio (ratio of the population of 60 and older to working age population); and (c) total dependency ratio (ratio of the population groups of less than 15 and 60 and older to working age population). As shown in chart 1.5 child population is shrinking in relative terms while elderly population is growing. This trend can result in a decrease of total dependency ratio while the working age population continues to grow more quickly than the older population, but as chart 1.5 shows, the rising rate of old age dependency will increase the total dependency rate in the coming years.<sup>2</sup>

ENDNOTES

<sup>1</sup> Population and Sustainable Development in Small Island Developing States: Challenges, Progress Made and Outstanding Issues, William J. House

<sup>2</sup> Source: UN DESA calculation based on UNPD data available on <http://esa.un.org/wpp/Excel-Data/population.htm>.



Photo credit: UN Photo/Yutaka Nagata



# SOCIAL DEVELOPMENT



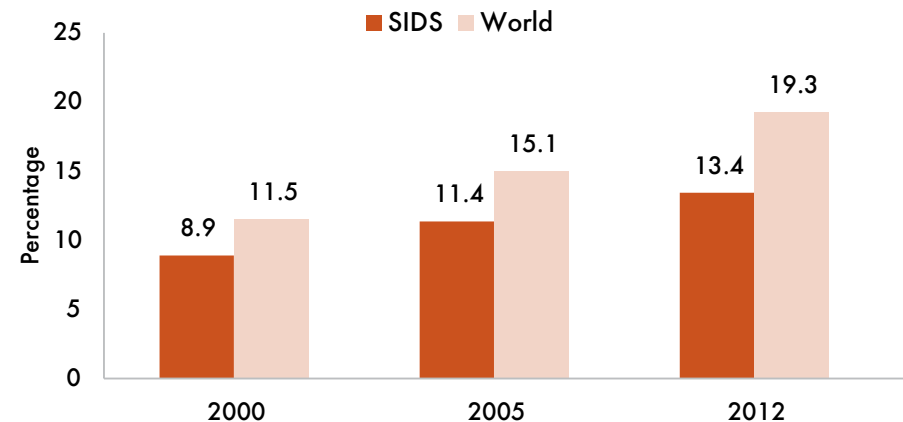
Photo credit: MTPA Tourism Office

## Gender equality

SIDS have been making progress in terms of gender equality in recent decades, as women are being incorporated in government and other aspects of public life that were once dominated by men. Female representation in national parliament is improving, and over the past decade the proportion of seats occupied by women has risen by about 5 per cent, though SIDS do still lag behind the global average (see chart 2.1).

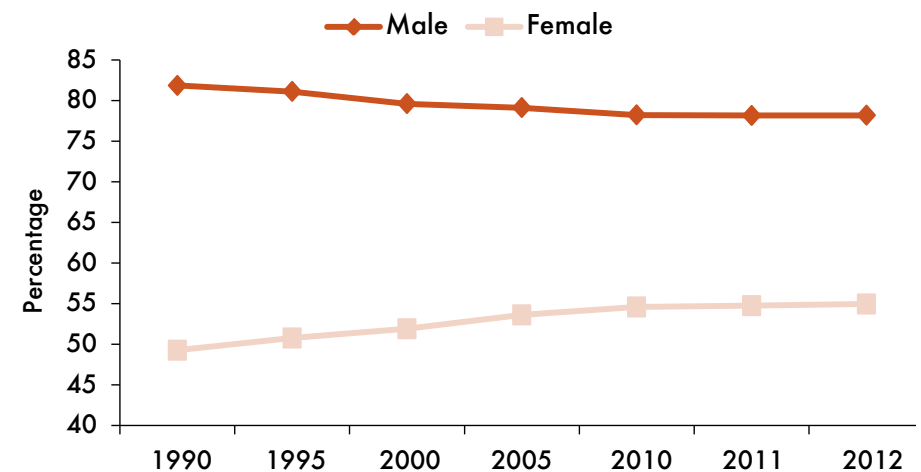
As in most regions around the world, the labour force in SIDS regions has traditionally been dominated by men. Although this remains true today, the proportion of females in the labour force has been increasing slowly but steadily. Among the SIDS regions, the Caribbean registers a higher percentage of women in the labour force, compared to the AIMS and Pacific regions. The increase in women's participation in the labour force stems from a number of factors including improved access to and increased investment in formal and non-formal education, including skills development, for women and youth (see charts 2.2 a and b).

Chart 2.1: Percentage of seats held by women in national parliaments



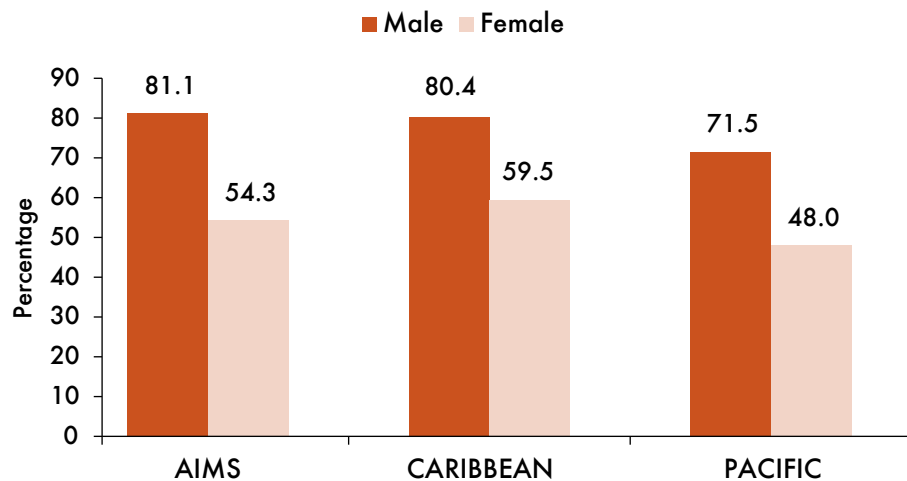
Source: Calculation based on MDG data

Chart 2.2 (a): SIDS Labour force participation rate, age group 15-64 years (percent)



Source: Calculation on ILO data

Chart 2.2 (b): SIDS regional labour force participation rate, age group 15-64, 2012 (percent)



Source: Calculation based on ILO data

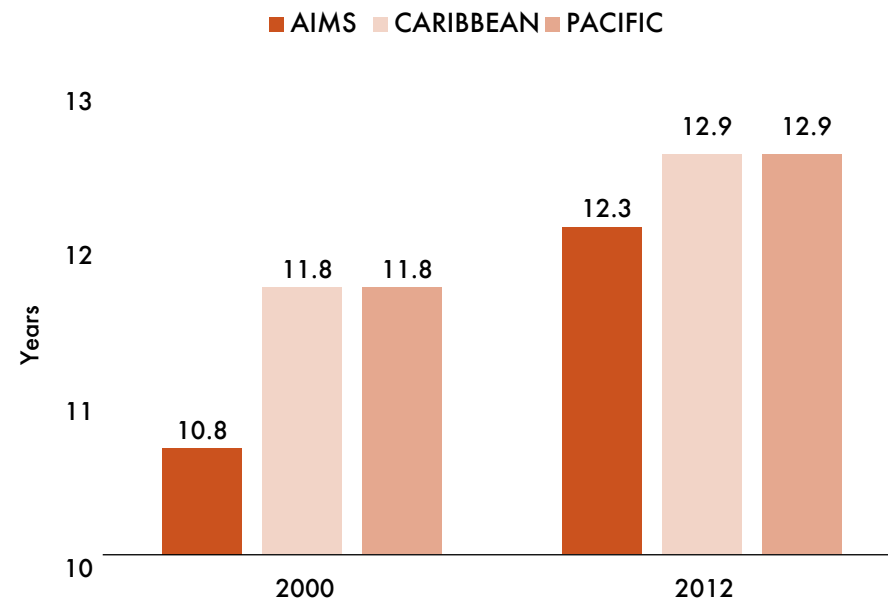
## Education

SIDS have sought to address the challenges they face in capacity development by improving access to and the quality of education. Education is a particularly high policy priority for SIDS because many SIDS have relatively young populations. Years of schooling among children in SIDS have increased in all three regions, and the AIMS region has registered the highest increase of 1.5 years, while the Caribbean and Pacific regions increased by 1.1 years, from 11.8 years to 12.9 years. Enrolment in primary education has also increased significantly, and primary school attendance is relatively high in all three regions.<sup>3,4,5</sup>

## Employment (particularly for youth)

In SIDS, as in other regions around the world, the rate of unemployed youths is higher than that of adults. Especially in the aftermath of the global economic and financial crisis, young people have been hindered by poor economic opportunities. As a result, the rate of youth unemployment in the SIDS has reached an alarming level of 37 per cent since

Chart 2.3: Expected Years of Schooling (of children)



Source: Calculation based on UNESCO Institute for Statistics Data

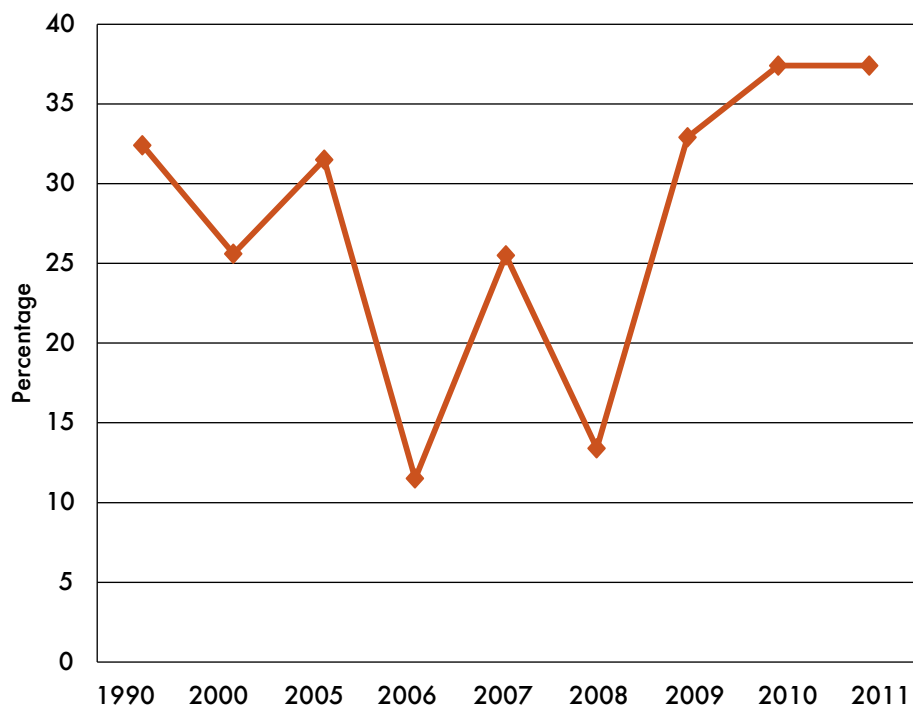
2010 (see chart 2.4). Among the three SIDS regions, this rate is found to be highest in the Caribbean.<sup>9</sup>

Due to the overall lack of employment opportunities, the youth are left to compete with older, experienced workers for similar jobs. With the majority of available formal jobs being offered by the public sector, which values seniority, opportunities for formal entry level positions for the youth are very limited. Studies show that high unemployment among youths is correlated with crime and violence, compounding the negative impact on a country's growth.<sup>10, 11, 12, 13</sup>

## Crime and Violence

Peaceful and inclusive societies provide an enabling environment for sustainable development, and crime and violence undermine its progress. In some SIDS, crime ranging from homicides, praedial or agri-

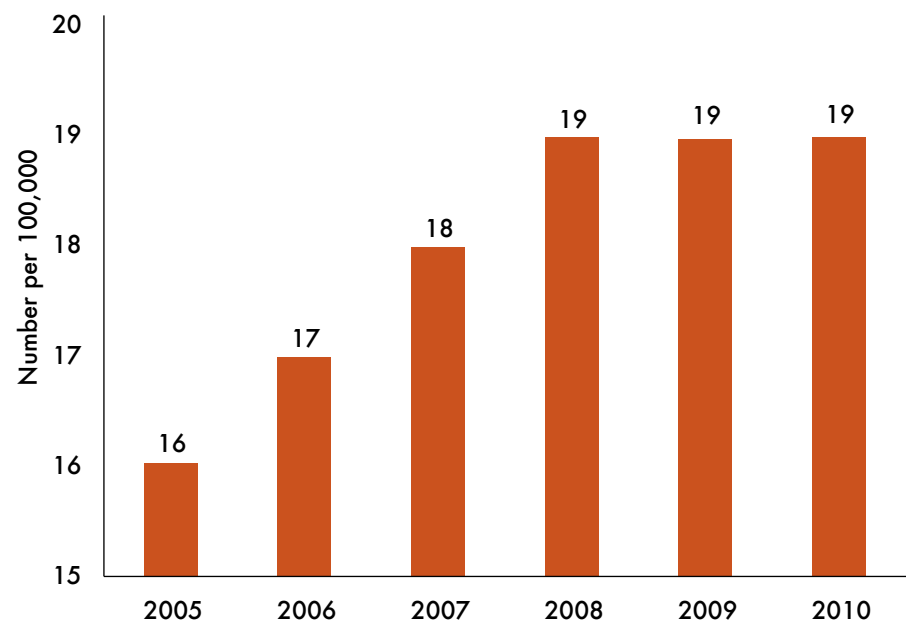
Chart 2.4: Youth unemployment (aged 15-24)



Source: Calculation based on UNDP HDR data

cultural larceny, and robbery, to domestic violence, piracy, and gang violence have slowed their sustainable development. Although there is an overall lack of data, which precludes real trend analysis, data from 19 SIDS shows an average of 19 intentional homicides per 100,000 persons (see chart 2.5). According to the UN Office of Drugs and Crime Global Study on Homicide (2013), the global average homicide rate is 6.2 per 100,000 persons. Some of the conditions that influence homicide rates include low rates of economic growth and breakdown in social cohesion. Gender-based violence (against women) poses a persistent threat to development, and studies show that rates of intimate partner violence are as high as 60 to 70 per cent in some SIDS.<sup>6, 7, 8</sup>

Chart 2.5: Number of intentional homicides, per 100,000 population (data from 19 SIDS)



Source: Calculation based on UNODC data

### Food security

Primarily net food importers, SIDS are vulnerable to the variable availability and price volatility of food imports. And with SIDS environments threatened by natural and human-induced disasters, local food security and proper nutrition are also at risk. Policy changes have seen this emerging issue added to national development strategies.

Per capita food production has declined in SIDS over the period of 1990-2011. Simultaneously, food imports have generally risen, though not consistently during the same period (see chart 2.6). Among most SIDS, threats to food security include land degradation, poor management of marine ecosystems and fisheries, lack of support for sustainable agriculture and other impacts of natural and human-induced disasters.

## Access to water and sanitation

Access to safe drinking water is a critical sustainable development issue for SIDS, with profound implications for economic growth, human rights, public health and the environment. Climate variability, water resource management and economic development are all closely linked to fresh water access. Vulnerability to natural disasters further affects the water supply and undermines poverty reduction goals including the MDGs. Although there has been an increase in access to improved drinking water sources (see chart 2.7) and sanitation facilities in SIDS, there still remains a disparity across the regions in the percentage of the population with access to these facilities.

SIDS progress on providing improved sanitation facilities for citizens has been uneven, especially in rural and remote areas, approaching 80 per cent in the Caribbean region only (see chart 2.8). In the Pacific region, sanitation access in atoll countries is affected by their remoteness and lack of water sources as well as variable rainfall patterns. Challenges faced by the other regions are similar; for the latter part of 2012, the Caribbean region received below normal rainfall, leading to a deficit in the stored water before the dry season in January 2013. In addition, the demand for fresh water in other sectors has resulted in significant competition for allocation of limited water supplies. Additionally, the rate of urbanization in SIDS places added stress on the already inadequate sanitation facilities.

SIDS have worked and continue to work with partners to provide better water and sanitation services to their populations.<sup>14, 15</sup>

## Fighting piracy in the Western Indian ocean

An economy dependent primarily on tourism and fisheries, Seychelles has recently suffered greatly from the scourge of piracy in the Western Indian Ocean. In 2009, attacks in East Africa and the Indian Ocean region, led primarily by Somalian pirates, stood at 249, and 10 vessels were hijacked within Seychelles' exclusive economic zone (EEZ) alone. The attacks were violent, with pirates taking fishermen and foreign nationals as hostages. Seychelles lost an estimated 4 per cent of the gross domestic product (GDP) from its main production sectors directly due to piracy.

Realising the eminent threat that piracy posed, Seychelles took proactive steps and exhibited leadership in bringing the international community together. Seychelles hosted the first regional Ministerial meeting on piracy and maritime security for the Eastern and Southern Africa-Indian Ocean countries (ESA-IO) in May 2010, which yielded a concrete strategy and action plan. In February 2013, in collaboration with the United Kingdom, Seychelles opened the Regional Anti-Piracy Prosecution Intelligence Coordination Centre (RAPPICC) to provide a platform for information sharing and capacity building. Seychelles has also worked with the European Union on this issue as well as with India, the United Arab Emirates and the United States, which have strengthened navy and maritime surveillance aircrafts and upgraded naval bases.

In addition, Seychelles has worked towards fostering partnerships with the UN system, and the UNODC Counter-Piracy Program assists Seychelles with judicial, prosecutorial and police capacity building programmes as well as office equipment, law books and specialist coast guard equipment.

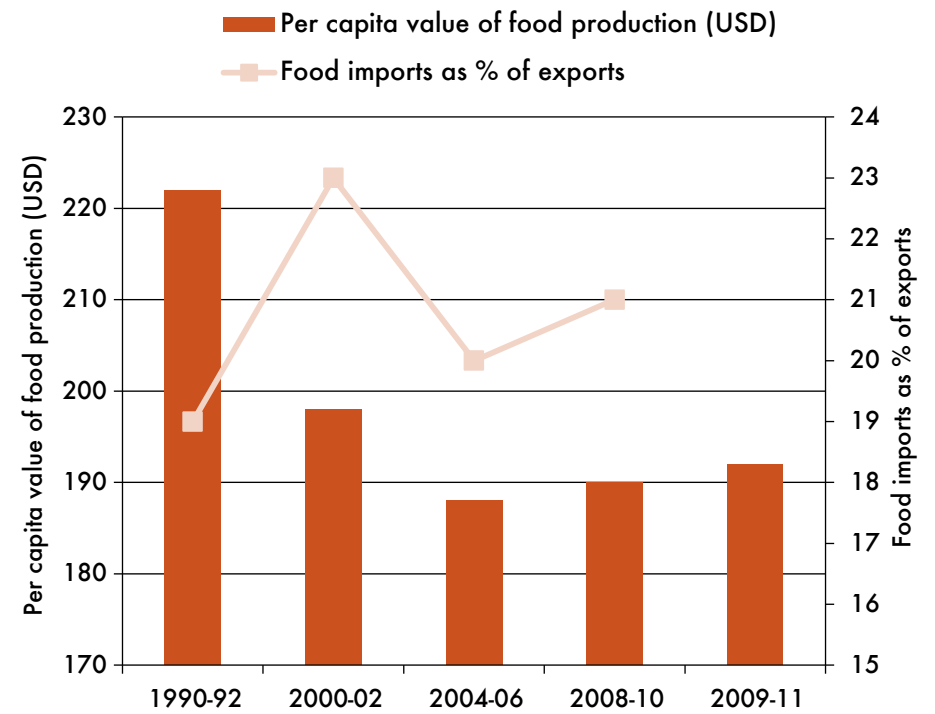
Seychelles' determination and actions have paid off, and there was not a single case of piracy reported in the period of May 2012 to May 2013.





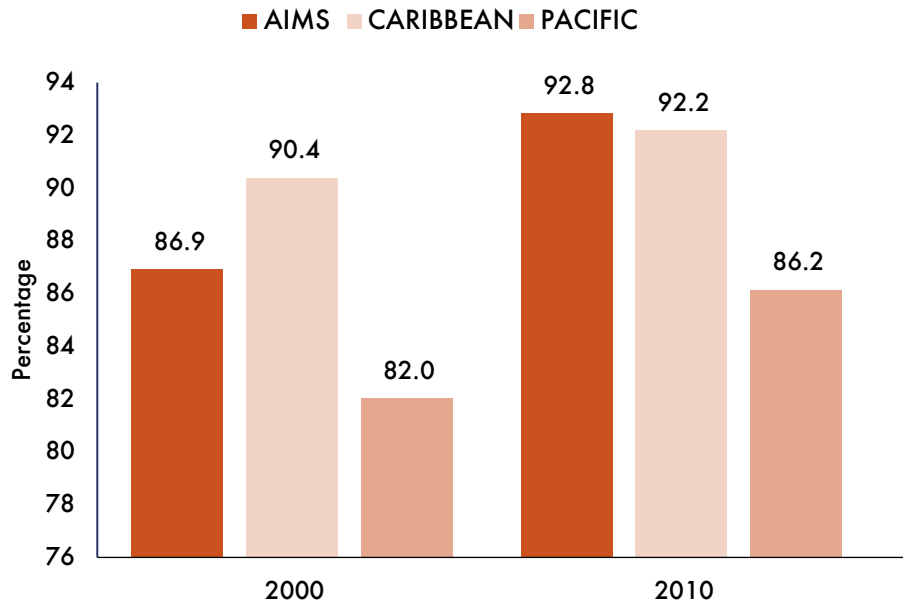
Photo credit: UN Photo/NJ

Chart 2.6: Indicators of food supply SIDS



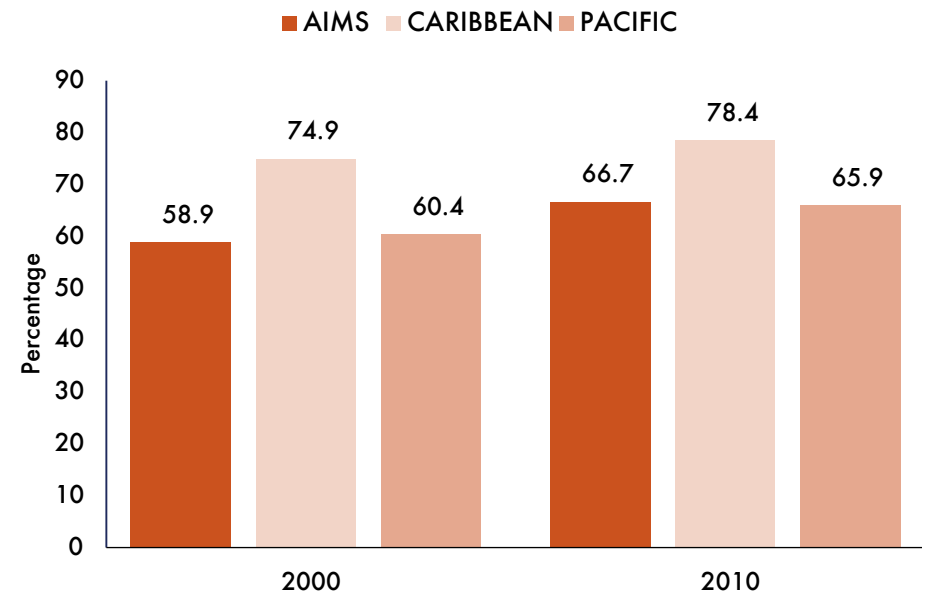
Source: Calculation based on FAO, FAOSTAT country average data

Chart 2.7: Proportion of population using an improved drinking water source (percent of population)



Source: Calculation based on WHO/UNICEF data

Chart 2.8: Proportion of population using an improved sanitation facility (percent of population)



Source: Calculation based on WHO/UNICEF data

## ENDNOTES

- <sup>3</sup> <http://www.sidsnet.org/education>
- <sup>4</sup> <http://www.adb.org/news/briefs/pacific-region-higher-education-investment-program>
- <sup>5</sup> [http://portal.unesco.org/education/en/ev.php-URL\\_ID=58976&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/education/en/ev.php-URL_ID=58976&URL_DO=DO_TOPIC&URL_SECTION=201.html)
- <sup>6</sup> Gender Domestic Violence and It's Big Bite on Small Island States, 2013  
[http://www.gdn.int/admin/uploads/editor/files/2013Conf\\_Papers/CharlotteTaylor\\_paper.pdf](http://www.gdn.int/admin/uploads/editor/files/2013Conf_Papers/CharlotteTaylor_paper.pdf)
- <sup>7</sup> Caribbean Human Development report 2012, UNDP
- <sup>8</sup> Addressing Inequalities: The Case of SIDS in the Pacific, 2012, PIFS & SPC
- <sup>9</sup> <http://www.sidsnet.org/education>
- <sup>10</sup> The Gender Perspective of the Financial Crisis  
<http://www.un.org/womenwatch/feature/financialcrisis/>
- <sup>11</sup> International Labour Office Report on Unemployment in SIDS, 2012  
[http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/publication/wcms\\_180976.pdf](http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/publication/wcms_180976.pdf)
- <sup>12</sup> Chapter 5, pg.149, para 4: [http://www.un.org/esa/socdev/unyin/documents/wyr07\\_chapter\\_5.pdf](http://www.un.org/esa/socdev/unyin/documents/wyr07_chapter_5.pdf)
- <sup>13</sup> Chapter 5: Tackling the poverty of opportunity in SIDS  
[http://www.un.org/esa/socdev/unyin/documents/wyr07\\_chapter\\_5.pdf](http://www.un.org/esa/socdev/unyin/documents/wyr07_chapter_5.pdf)
- <sup>14</sup> SD Brief, Improved and Safe Water and Sanitation at the Center of the Sustainable Development Agenda for PSIDS, Prepared by Sec. of Pacific Community, SOPAC
- <sup>15</sup> <http://www.unwater.org/statistics/statistics-detail/en/c/211757/>



# HEALTH AND NON-COMMUNICABLE DISEASES (NCDs)



Photo credit: UN Photo/Martine Perret

## Types of NCDs by region

Non-communicable diseases (NCDs) can impose devastating health, financial and economic costs on countries, and many SIDS are severely affected by this scourge.

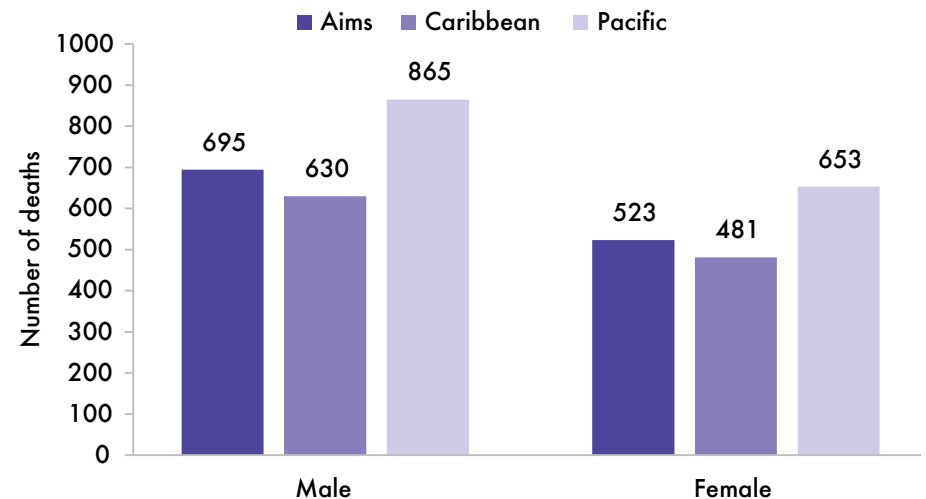
Cardiovascular disease is the leading cause of death in the Pacific islands. In 2012, the World Bank reported that NCDs accounted for 70 per cent of all deaths in 12 Pacific island countries.<sup>8</sup> The Caribbean likewise faces serious challenges in this area, with the region suffering from the highest prevalence of chronic NCDs in the Americas. In the Caribbean, heart disease and cancer are the leading causes of death among both males and females, and the economic burdens of NCDs on Caribbean countries are increasing exponentially.<sup>9</sup> Chart 3.1 shows the NCDs age standardized deaths in men and women in the three SIDS regions—notably the figures are higher among males, illustrating the higher risk factors among men.<sup>10</sup>

For SIDS in all three regions, chronic diseases lead to considerable loss in productivity and consume a large percentage of the overall resources available for diagnosis, treatment and rehabilitation. Necessary strategies for the prevention and control of NCDs include risk factor surveillance, multisector policy geared towards enabling an environment conducive to healthy behaviours, and integrated cost-effective case management at the primary health care level.<sup>11</sup>

## Access to health services

The overall level of funding allocated to public health is dictated by a variety of factors including overall strength of the economy, policy priorities and inflows of funds directed to health issues from external part-

Chart 3.1: All NCDs, deaths per 100,000 in 2008 (age standardized estimate)



Source: Calculation based on WHO data



Photo credit: UN Photo/Sophia Paris

ners.<sup>12</sup> Without adequate public health funding, the burden of health care is shifted to a country's population.

Within SIDS, the Pacific region has the largest relative expenditure on public health, spending approximately 3 per cent and 5 per cent more than the Caribbean and AIMS regions respectively, as a percentage of national GDP (see chart 3.2). Limited resource allocation means that SIDS populations do not have access to a wide range of needed healthcare resources, including primary-care clinics, specialist centres and tools for promoting healthy lifestyles. In addition, SIDS also suffer from a lack of qualified physicians, due to the lack of trained physicians within the countries, ongoing brain drain, sparse population and lack of funding.

#### ENDNOTES

<sup>8</sup> <http://www.worldbank.org/content/dam/Worldbank/document/the-economic-costs-of-noncommunicable-diseases-in-the-pacific-islands.pdf>

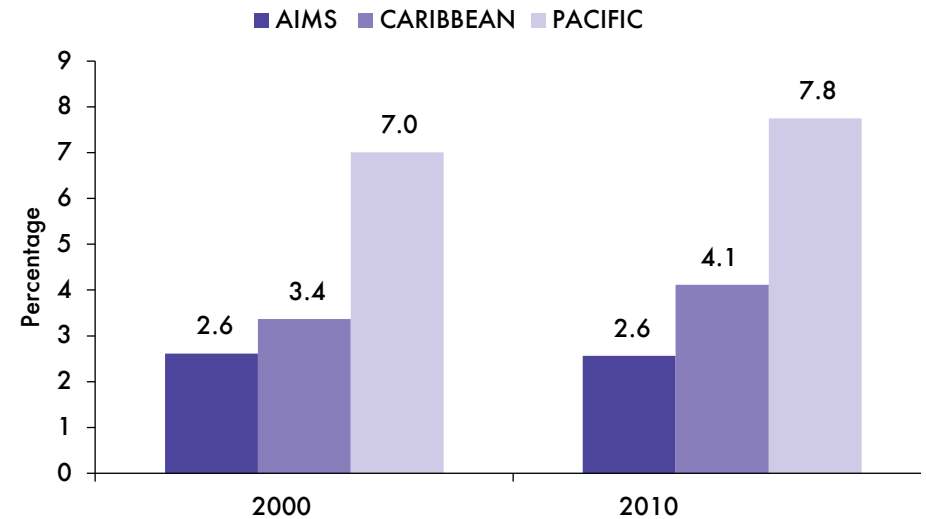
<sup>9</sup> <http://www.sids2014.org/content/documents/250Synthesis%20Report%20Final%2020%20August%202013.pdf>

<sup>10</sup> Risk factors can be genetic, behavioural or environmental

<sup>11</sup> [http://ped.sagepub.com/content/17/2\\_suppl/37.full.pdf+html](http://ped.sagepub.com/content/17/2_suppl/37.full.pdf+html)

<sup>12</sup> WHO Global Health Expenditure Atlas, 2012

Chart 3.2 Expenditure on public health (percent of GDP)



Source: Calculation based on MDG UN data



Photo credit: UN Photo/Eskinder Debebe

# CLIMATE CHANGE



Photo credit: UN Photo/Logan Abassi

SIDS are facing the devastating effects of climate change in all aspects of their societies and all sectors of their economies. The problem of climate change is not of their own making; collectively SIDS are responsible for less than 1 per cent of the world's greenhouse gas emissions.

## Global temperature change

Overall, the planet has warmed by 1.4°C since 1880, and the decade between 2003 and 2012 was 0.76°C to 0.81°C warmer than the pre-industrial average. Between 1990 and 2010, the rate of change in global average temperature has been close to 0.2°C per decade. In the Fifth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) found that already, climate-related extremes such as heat waves, droughts, floods, cyclones, and wildfires, are revealing the vulnerability of ecosystems and human systems. The best estimate for the further rise in global average

## Tuvalu - Coping with climate change

Tuvalu is composed of nine extremely small, low-lying islands with no coastal areas higher than 5 meters above sea level. This terrain makes the country particularly vulnerable to sea-level rise due to climate change and to increasingly frequent flooding. Rising mean temperatures could compound the population's risk of exposure to vector and water borne diseases and could undermine the country's development. In addition, salinization attributed to sea-level rise could hamper the country's agricultural production capacity. Tuvalu faces a risk of permanent inundation as sea-level rise is expected to continue, and the number of climate refugees is expected to increase. As such, urgent action is needed for the country to adapt to the changes.

To enhance Tuvalu's resilience to climate change, the government developed The National Strategic Action Plan for Climate Change and Disaster Risk Management 2012-2016 (NSAP) to build capacity of the people of the small island state to cope with and prepare for natural disasters and other climate change impacts. The plan, which incorporated various stakeholders' voices, is comprised of seven goals to enhance Tuvalu's capacity to adapt to climate change: address vulnerabilities and raise awareness; collect and manage data related to climate change; strengthen governance and establish robust relevant policies; establish infrastructure in view of disaster risks; promote energy security and renewable energy; enhance institutional arrangements for effective disaster management; and protect its citizens from the adverse effects of climate change. The government recognizes that climate change is a cross-cutting issue and continues to integrate it into its development planning across sectors.



temperature by the end of the twenty-first century, assuming the “business as usual” scenario—if no additional efforts are made to curb greenhouse gas emissions—is between 1.8°C and 4.0°C.<sup>13</sup>

The World Bank has reported that a four-degree increase in global temperature would bring grave threats to the planet, including: higher malnutrition rates; deadly heat waves; water scarcity; increased frequency and intensity of storms, droughts and floods; and mass extinctions including through the destruction of the coral reefs.<sup>14</sup> While these impacts would affect the entire world, the SIDS would experience many of them sooner and more intensely than other countries.

### Sea level rise

For SIDS, as for the coastal areas of other countries, the rising level of oceans and seas is one of the most dramatic and concrete effects of a changing climate.<sup>15</sup>

The sea level rises for three reasons. One, as the global temperature increases, ocean water warms and expands, and, as a result, the same amount of water takes up more space. This “thermal expansion” was the primary cause of sea level rise for 75-100 years after the beginning of the Industrial Revolution. In recent years, the second driver, the melting of glaciers and polar ice caps, has overtaken thermal expansion as the primary cause. The third driver, melting of the ice sheets on West Antarctica and Greenland, is also speeding sea level rise, and scientists predict that this driver will have the most severe long-term impact.<sup>16</sup>

Some SIDS, especially low-lying atolls, are already losing significant amounts of territory due to the rising seas. And because the coastal areas are often the most densely populated in SIDS, this loss of territory will have a profound impact on SIDS society and culture. In extreme cases, SIDS are exploring options in other countries for resettling populations or for bolstering food security threatened by the encroaching salt water.<sup>17</sup>

### Climate change adaptation and mitigation

The United Nations Framework Convention on Climate Change (UNFCCC) recognizes that addressing climate change requires both mitigation

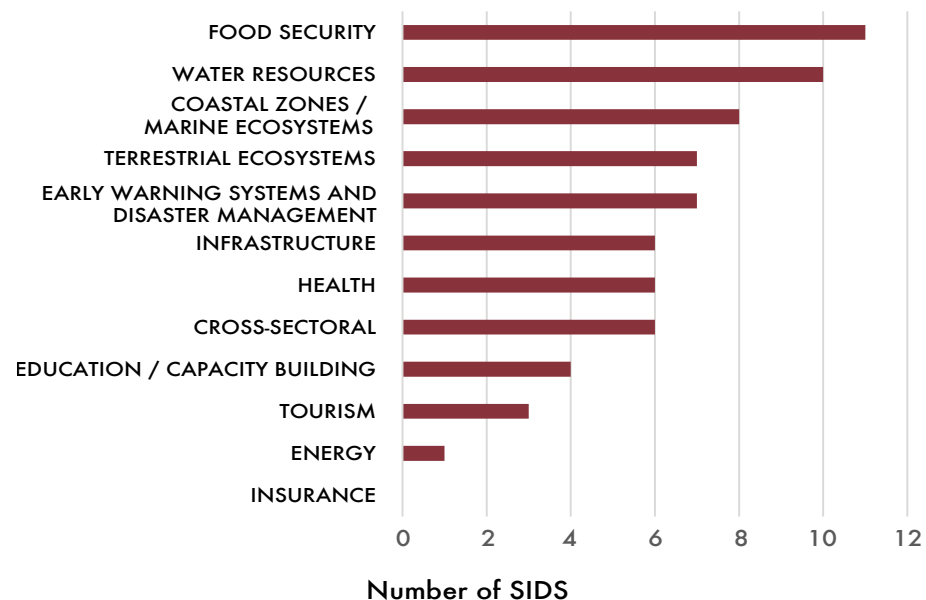


Photo credit: UN Photo/Logan Abassi

of its cause—greenhouse gas emissions—and adaptation to its effects. For many SIDS, strong and proactive adaptation strategies are quickly becoming necessary for survival. Under the UNFCCC, the Cancun Adaptation Framework supports Parties to the UNFCCC to implement adaptation actions, including through national adaptation programmes of action (NAPAs) for the Least Developed Countries (LDCs). The Cancun Adaptation Framework encourages other developing countries to create their own action plans and programmes applying the approaches used for the NAPAs, which, as shown in chart 4.1, cover a wide range of sectors. The UNFCCC has supported 12 of the most vulnerable SIDS, current and former LDCs, in developing NAPAs. Chart 4.1 shows that food security, water resources and coastal zones/marine ecosystems are sectors of highest concern for most SIDS in this group.

As noted above, SIDS have a very low level of emissions, so mitigation as such is not a policy priority with global implications. However, many SIDS are opting to show moral leadership in the area, aggressively pursuing renewable energy and, in the case of many SIDS, pledging to work toward national climate neutrality.<sup>18</sup>

**Chart 4.1: Number of SIDS with National Adaptation Programmes of Action (NAPA) projects, by sector, in 2013)**



Source: Calculation based on UNFCCC country data

## ENDNOTES

- <sup>13</sup> IPCC, 2014: Summary for policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32.
- <sup>14</sup> World Bank, *Turn down the heat: why a 4 degree warmer world must be avoided*, Washington, DC, 2012
- <sup>15</sup> Union of Concerned Scientists; [http://www.ucsusa.org/global\\_warming/science\\_and\\_impacts/impacts/causes-of-sea-level-rise.html](http://www.ucsusa.org/global_warming/science_and_impacts/impacts/causes-of-sea-level-rise.html)
- <sup>16</sup> <http://ocean.nationalgeographic.com/ocean/critical-issues-sea-level-rise/>
- <sup>17</sup> Global and European sea-level rise (CLIM 012), European Environment Agency, available at: <http://www.eea.europa.eu/data-and-maps/indicators/sea-level-rise-1/assessment>
- <sup>18</sup> UNFCCC: National Adaptation Programmes of Action, May 2013, available at: [https://unfccc.int/files/cooperation\\_support/least\\_developed\\_countries\\_portal/napa\\_project\\_database/application/pdf/napa\\_index\\_by\\_country.pdf](https://unfccc.int/files/cooperation_support/least_developed_countries_portal/napa_project_database/application/pdf/napa_index_by_country.pdf)

# OCEANS AND SEAS



Photo credit: UN Photo/???????????????

## Ocean acidification

Scientists estimate that the oceans currently absorb about one quarter of the carbon dioxide (CO<sub>2</sub>) produced by human activity. Therefore as the level of CO<sub>2</sub> in the atmosphere rises, the oceans absorb increasing amounts. The sea water chemistry is, in turn, changed when CO<sub>2</sub> dissolves in the oceans, and this causes ocean acidification. Ocean acidification in recent decades is occurring a hundred times faster than during the last 55 million years.<sup>19</sup>

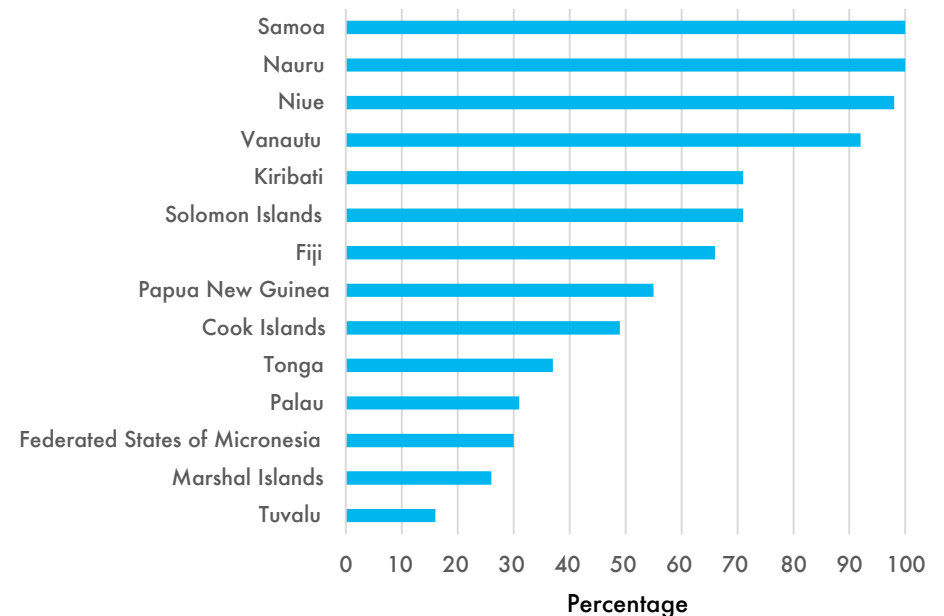
Surface-ocean pH has declined from 8.2 to 8.1 over the industrial era due to the growth of atmospheric CO<sub>2</sub> concentrations. While this is a decline of 0.1, it corresponds to a 30 per cent change in oceanic acidity. Average surface-water pH is projected to decline further from 8.1 to 7.7 or 7.8 by

the year 2100, depending on future CO<sub>2</sub> emissions, which would represent a 100 to 150 per cent increase in acidity. Ocean acidification already reaches into the deep ocean, particularly in high latitude areas.

The changing acidity causes particularly severe damage to marine organisms like coral, oysters, clams, phytoplankton and zooplankton that build shells and skeletons from calcium carbonate. Because these creatures form the base of the marine food chain, threats to them have a severe impact on the entire ocean ecosystem.

People in SIDS who particularly rely on the ocean's ecosystem services are also vulnerable to ocean acidification and may increasingly need to

**Chart 5.1: Reefs threatened (medium or higher) (percent of total area of reefs)**



Source: Calculation based on GCRMN country data





Photo credit: UN Photo/Martine Perret

adapt or cope with its effects in the coming decades. Shellfish fisheries and aquaculture in some areas may be able to cope by adjusting their management practices to the new reality of ocean acidification, but even with adaptive measures, ocean acidification and its negative impacts such as tropical coral reef loss will affect tourism, food security and shoreline protection for many of the world's poorest people, particularly in SIDS.

### **Coral reefs**

Globally, overfishing and destructive fishing is currently the most widespread threat to coral reefs, followed by watershed-based pollution, coastal development, and marine-based pollution and damage from ships. The 2011 Reefs at Risk Revisited report prepared by the World Resources Institute in collaboration with other partners emphasized that of 108 countries and territories studied, the most reef-dependent were almost all small-island states, many located in the Pacific and the Caribbean. It identified almost 50 per cent of Pacific reefs as being threatened by local activities, with 20 per cent rated as having a high or very high threat. In the Caribbean, the Mesoamerican Reef—the world's second

largest barrier reef—is similarly threatened by coastal development and runoff as well as cruise ship wastewater and unrestricted tourist diving, snorkeling and boating.

When reviewing medium- to long-term impacts, global climate change is the most severe threat. Rising sea surface temperatures are inducing coral bleaching, which occurs when the warmer water temperatures cause corals to expel the algae living within them. This makes the coral more vulnerable and may lead to mortality. Climate change is also leading to more frequent and more destructive cyclones, typhoons and other storms, which are further threatening the coral reefs. In addition, as noted above, ocean acidification resulting from increased CO<sub>2</sub> emissions undermines the health of coral reefs. Recent studies predict the dominance of algae on Caribbean reefs by 2030-2050, as they often colonize dead corals after coral bleaching events, thereby preventing the settlement of new corals.<sup>20</sup>

Coral reefs are an invaluable natural resource in their own right and a critical building block of ocean ecosystems. They are also crucial for their numerous economic, social and environmental benefits, including their contribution to livelihoods, food security, economic development and shoreline protection. The IPCC Fifth Assessment Report (2014) estimates that more than 500 million people depend on coral reef ecosystems for food and other resources; and for tourism alone, coral reefs have a \$9.6 billion annual economic value.

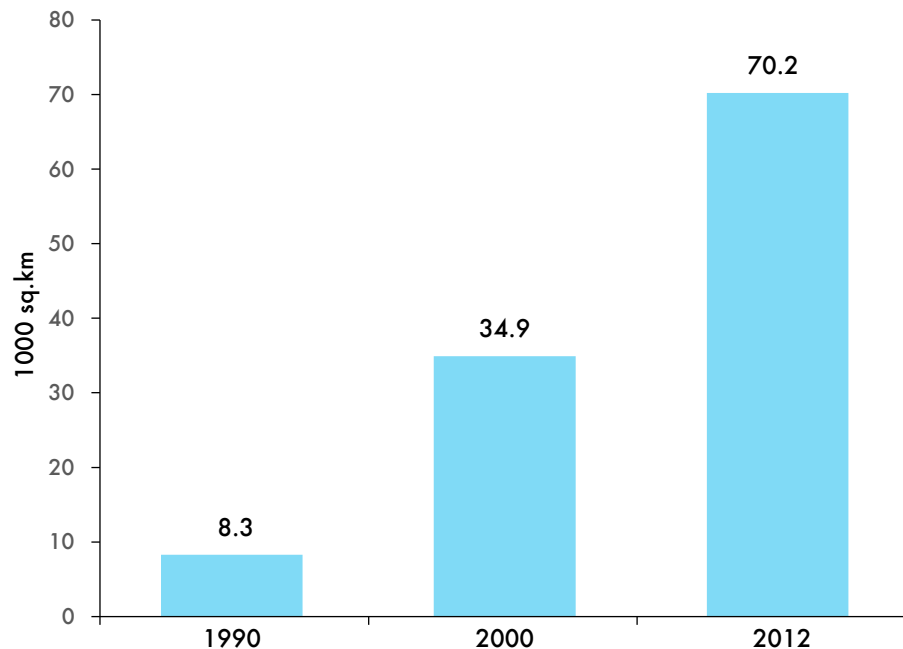
### **Marine protected areas**

The term “marine protected area” (MPA) refers to a geographically defined area that is designated or regulated and managed to achieve specific conservation objectives. The concept encompasses a number of levels of protection, ranging from “no-use zones” that do not allow any human entry or activities, to “no-take zones” where only non-extractive activities such as diving and recreation are allowed but no fishing of any kind, to “buffer zones”, which are transitional zones from no-take zones to those zones allowing moderate activities such as hook-and-line fishing, and finally “multiple use areas” where all recreation, fishing and aquaculture activities are allowed but the area is still protected.

Apart from protecting the environment, MPAs also have economic and social benefits. Marine protected areas can effectively contribute to poverty eradication, economic growth and food security, for example, by improving fish catches, generating higher incomes and creating job opportunities, particularly in tourism, enhancing local governance, and empowering local communities and women.<sup>21</sup>

As shown in chart 5.2, the past 20 years have seen a dramatic increase in MPAs within SIDS exclusive economic zones (EEZs). As a result of both national and international efforts, the MPAs in SIDS reached 70.2 thousand square km in 2012, approximately eight times more than in 1990 (see chart 5.2). This data does not include recently established MPAs in Kiribati and the Cook Islands, together totaling nearly 3 million square km.

**Chart 5.2: Changes in marine protected areas in SIDS (1,000 sq. km)**



Source: Based on UN MDG database, 2013  
 Note: Not included is the 2008 establishment of the Phoenix Islands Protected Area by Kiribati, totaling 408,250 square km, or the Cook Islands' protected area.

## Sustainable fisheries

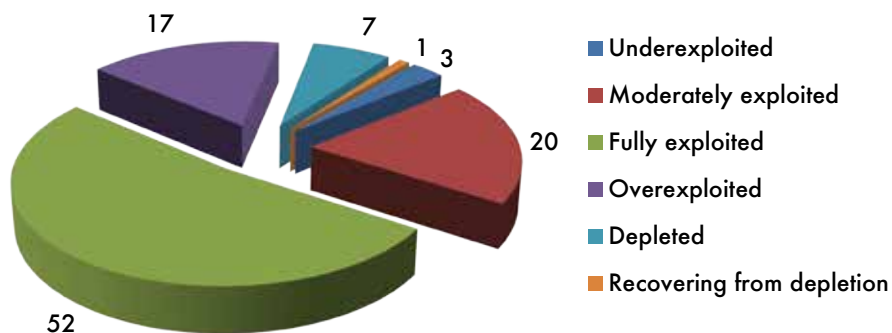
For many SIDS, fisheries constitute a significant pillar of their economy, a major source of livelihoods and the primary supply of protein for their populations. The health and sustainability of fisheries are inextricably tied to the sustainable development of SIDS. It is therefore of grave concern that of the 600 world marine fish stocks monitored by FAO, the great majority of stocks are fully exploited, overexploited or depleted (see chart 5.3). Fisheries in SIDS are facing numerous threats, including overexploitation, land-based pollution and inadequate fisheries monitoring, control and surveillance systems at both the national and regional levels.

Globally, the fish trade continues to grow rapidly, with 2013 likely to set a new record of 160 million tons from wild capture (56 per cent) and aquaculture (44 per cent). As shown in chart 5.4, fish catches by SIDS represent relatively small total tonnage, but they were increasing in most SIDS



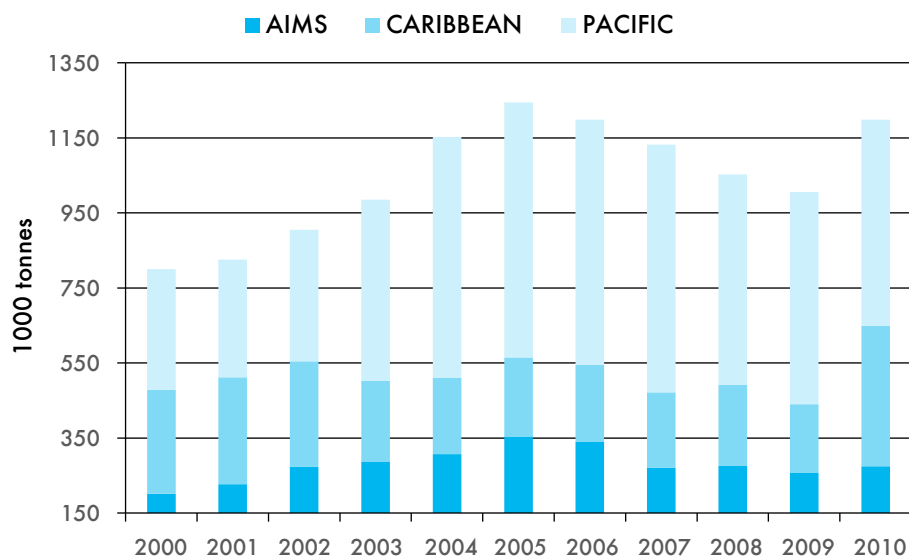
Photo credit: UN Photo/Martine Perret

**Chart 5.3: General situation of world fish stocks  
(percent of total estimated stock)**



Source: Calculations based on FAO World Fish Stock data

**Chart 5.4: Fish capture  
(1,000 tonnes)**



Source: Calculation based on FAO Fisheries and Aquaculture data, 2012

regions in the period from 2000 to 2010.

With the importance of fisheries to SIDS society and economy, implementation of international fisheries instruments and agreements (e.g., FAO Code of Conduct for Responsible Fishing) is critically important to achieve sustainable fisheries.

#### ENDNOTE

- <sup>19</sup> UNEP: The Natural Fix?: The Role of Ecosystems in Climate Mitigation
- <sup>20</sup> S. Wooldridge and others, "Precursors for resilience in coral communities in a warming climate: a belief network approach" in Marine Ecology Progress Series, vol. 295 (2005), pp. 157-169.
- <sup>21</sup> Nature's Investment Bank, How Marine Protected Areas Contribute to Poverty Reduction; See also: SG report A/66/298: Protection of coral reefs for sustainable livelihoods and development

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# NATURAL DISASTER MANAGEMENT



Photo credit: UN Photo/Marco Domino

## Disasters and their impact

SIDS are located in zones highly affected by natural disasters including hurricanes, droughts, and floods. Over the period of 1990-2013, SIDS overall were affected by 491 natural disasters, divided in the proportions illustrated in chart 6.1.

The impacts of natural disasters on SIDS are manifold, including loss of lives, livelihoods and land. Between 1990 and 2013 the highest values recorded for SIDS were around US\$ 8 billion for the estimated damages in 2010 and almost 6 million persons for the total population affected in 2001 (see chart 6.2). Notable is the case of Cuba with Hurricane Sandy in 2012. Killing 11 people and damaging more than 100,000 homes in its wake, damages of Hurricane Sandy in Cuba amounted to more than US \$2 billion.<sup>22</sup> Haiti, Jamaica and the Bahamas also suffered significant damages from Sandy.<sup>23</sup> The Pacific region, too, has sustained severe harm from natural disasters, and indeed has been deemed the most disaster-affected

region in the world.<sup>24</sup> In December 2012, Tropical Cyclone Evan battered Fiji and Samoa, displacing more than 5,000 people, stranding tourists on the island and costing millions of US dollars in damage.<sup>25</sup> It was the worst cyclone recorded in the area in over 20 years and the islands continue to rebuild from its destruction.

The population of SIDS affected directly by natural disasters in 2001-2010 rose significantly compared to the previous decade. This increase was driven by increased migration towards the coastal and urban areas and

## Dealing with Drought in Cape Verde

Cape Verde is highly susceptible to drought and severe weather conditions. During the 20th century this island nation experienced extreme seasonal droughts that led to malnutrition, heavy emigration and an estimated 200,000 deaths.

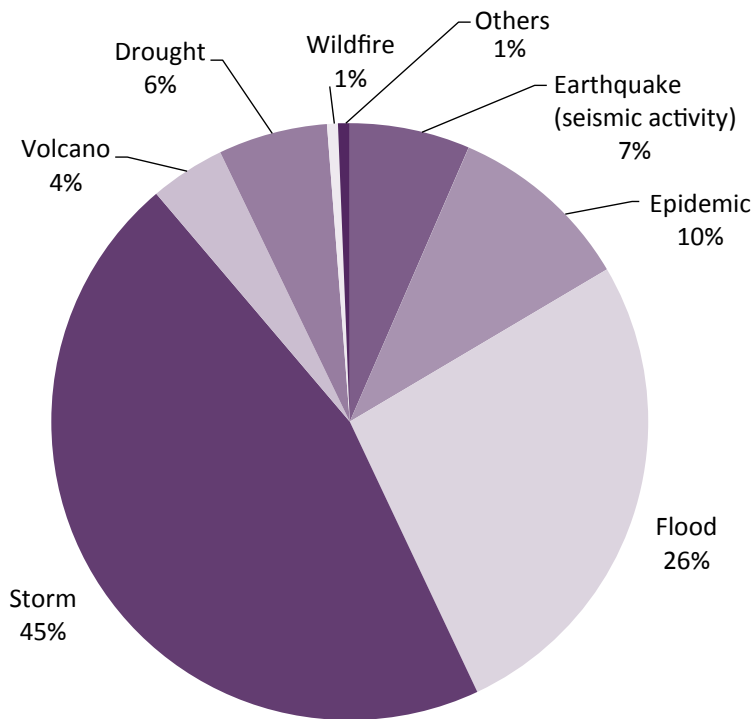
From the 1970s to the 1990s, Cape Verde, in part reflecting climatic trends in the Sahel Region, experienced a decrease in the duration of the wet season. In the 1990s, droughts caused an estimated 80 per cent decrease in grain crops, which prompted the government to appeal for international food aid. The 1998 drought exacerbated the food constraints already felt by the country and adversely affected roughly 10,000 people. Cape Verde was again struck by a country-wide drought in 2002 that imposed a negative impact on the lives of nearly 30,000 people.

If the current trends in this drought-prone nation persist, Cape Verde will continue to experience reduced annual rainfall combined with rising temperatures that could limit future cultivation of the maize crop, the only cereal grown in Cape Verde. Already the country suffers from low food self-sufficiency and currently imports about 82 per cent of the nation's food from overseas.



brought with it an increase in the economic cost of damage from natural disasters. Between 2001-2010, the estimated cost of damage was US \$22,457 million, almost triple the figure of the previous decade, US \$8,944 million (chart 6.3).

**Chart 6.1: Natural disasters affecting SIDS in 1990-2013**  
(percent of total number of disasters)



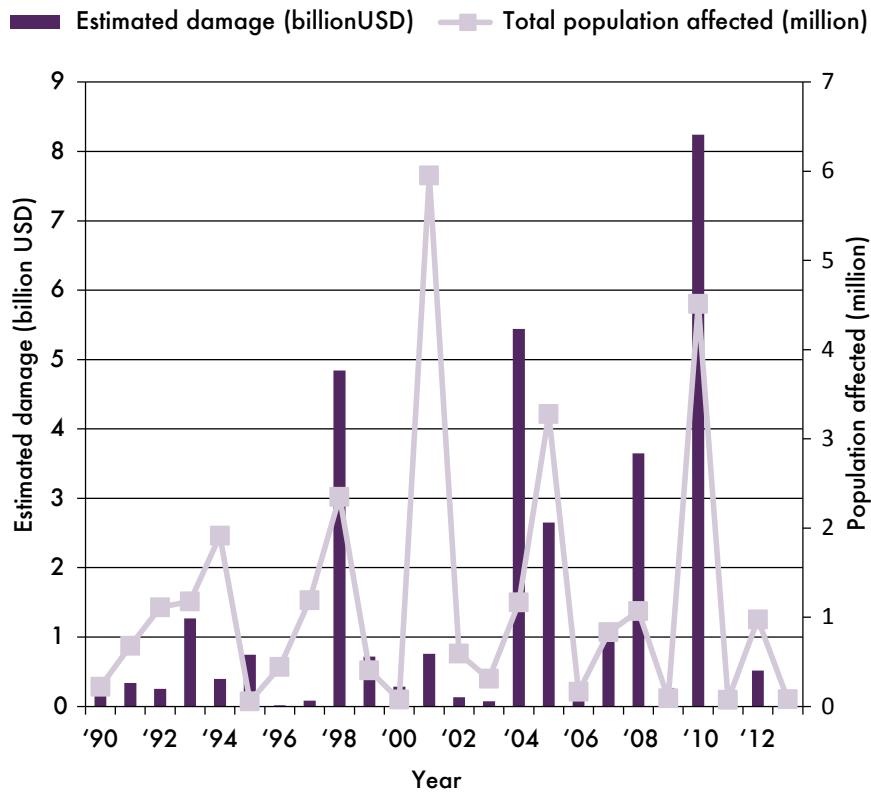
Source: Calculation based on EMDAT: The OFDA/CRED International Disaster database, 2014

### Coping with Natural Disasters in the Solomon Islands

In April 2014, severe rains pounded the Solomon Islands, creating severe flash flooding in the capital City of Honiara. The flood destroyed infrastructure in the city and significantly damaged houses, buildings, and hospitals. As the flash floods continued, bridges were swept away, many roads were rendered inaccessible, and part of the airport terminal was inundated. The flood left about 10,000 people homeless, caused dozens of fatalities, and exposed people to water and vector borne diseases like dengue fever due to contaminated water and lack of access to medical services. Malnutrition and access to affordable food was an immediate concern for the island nation, as damaged road and transport routes made importing extremely difficult.

Immediately after the 2014 flooding, the Government requested international assistance for what is considered to be the worst floods in the country's history. Honiara's water system was only able to run at 40 per cent in the weeks after the floods and water quality remained a concern. Immediately following the floods, over 30 evacuation centers were established and emergency response teams were put in place to address the shelter, sanitation, and nutrition needs of those affected. Projections estimate that long term support will be necessary for thousands of residents whose homes and land near the Mataniko River were completely destroyed by the flooding.

Chart 6.2: Estimated damages from natural disasters and total population affected in SIDS



Source: Calculation based on Country data - CRED International Disaster database, 2014

### Natural Disaster Risk Management in Cuba

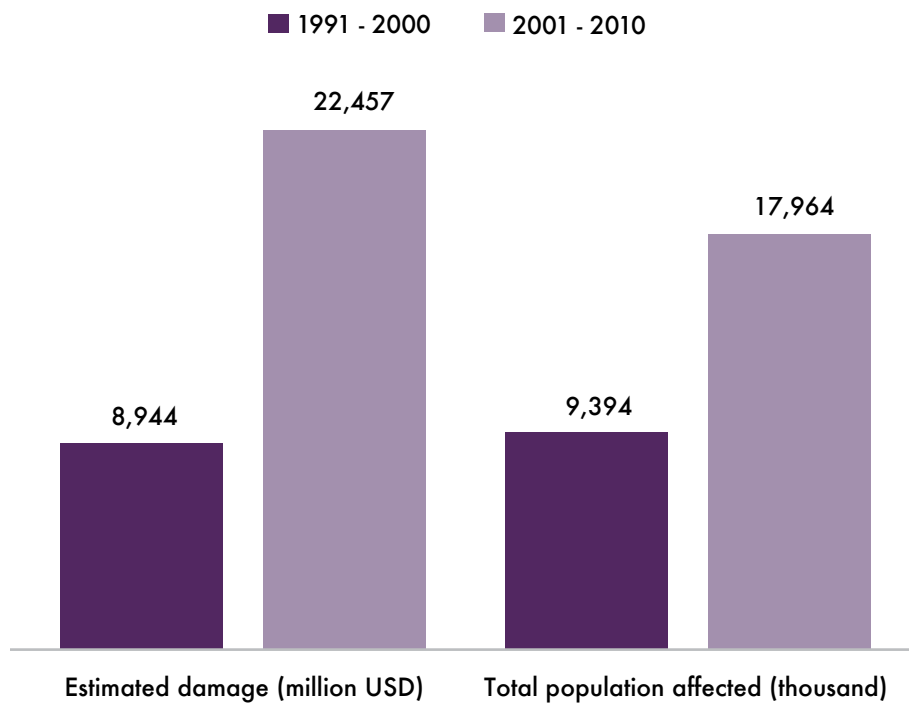
With a hurricane season spanning over six months (June-November), Cuba has made natural disaster risk management a high priority and has put in place an effective preparedness system. Where in 1963, Hurricane Flora caused 1,200 fatalities, Hurricane Georges in 1998 killed four people in Cuba as opposed to 600 people in other countries in the region. By 2008, Hurricane Ike and Hurricane Gustav, which claimed 195 and 153 lives respectively in other countries, together claimed a total of seven lives in Cuba.

The Cuban government has addressed the problem at the legal, institutional, and social levels. The Civil Defence System, since its inception, has evolved continuously, and in 2005, the Joint Staff of National Civil Defence (EMNDC), with the support of UNDP, founded the Risk Reduction Management Centres (RRMCs). Subordinate to the local governments in municipalities, RRMCs are responsible for conducting research, compiling data, checking vulnerability, disseminating information, coordination and encouraging preparedness. Education on disaster risk management has integrated awareness and preparedness into the social fabric of society. As a result, people are in a position to individually analyse the data available to gauge the potential threat. Coordination and constant citizen engagement are two pillars of the successful disaster risk management in Cuba.

In 2012, Hurricane Sandy destroyed more than 300,000 homes and affected 3 million people in Cuba. Despite the magnitude, Hurricane Sandy took only eleven lives in Cuba, while other countries suffered a total death toll of 285.



Chart 6.3: Estimated damages from natural disasters and total population affected in SIDS: a comparison of two decades



Source: Calculation based on Country data - CRED International Disaster database, 2014

ENDNOTE

- <sup>22</sup> <http://www.cubahurricanes.org/history-hurricane-sandy.php>
- <sup>23</sup> <http://www.usaid.gov/sites/default/files/documents/1866/02.15.13%20-%20Haiti%20Hurricane%20Sandy%20Fact%20Sheet.pdf>
- <sup>24</sup> <http://www.ipc-undp.org/pressroom/files/ipc207.pdf>
- <sup>25</sup> [http://worldnews.nbcnews.com/\\_news/2012/12/17/15965186-island-paradise-fiji-battered-by-deadly-tropical-storm](http://worldnews.nbcnews.com/_news/2012/12/17/15965186-island-paradise-fiji-battered-by-deadly-tropical-storm)



Photo credit: UN Photo/Evan Schneider

# ENERGY



Photo credit: Masdar Corporate

## Fuel imports

Most SIDS rely on fuel imports for the vast majority of their energy needs, which makes them extremely vulnerable to fluctuating global energy prices and transportation costs. As of 2011, expenditure on fuel imports in SIDS reached 11.9 per cent of GDP (see chart 7.1), higher than health-care spending in the SIDS region. The economic burden of fossil fuel imports slows SIDS development and, together with the severe environmental burden of CO<sub>2</sub> emissions, makes the shift to renewable energy a sustainable development imperative.

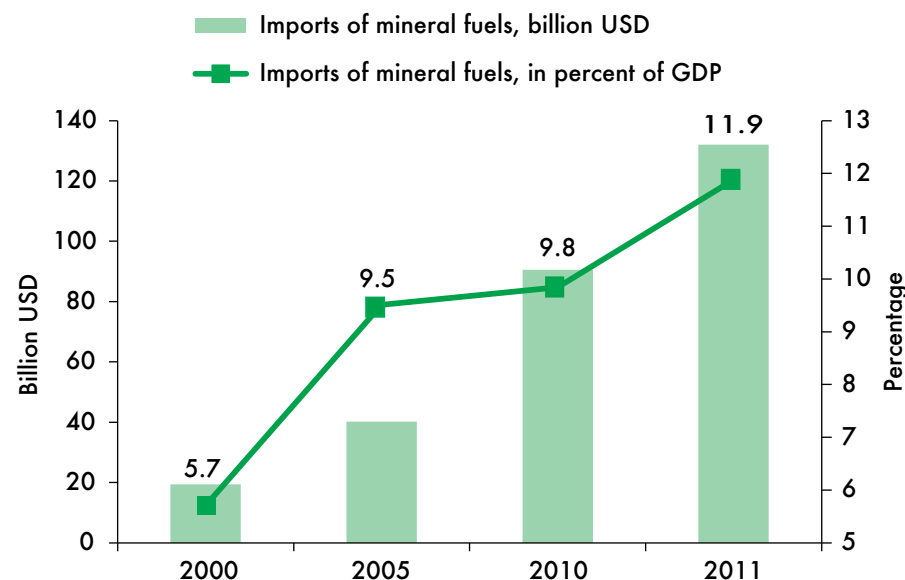
Transition to cleaner sources of energy has been slow in SIDS. However, with the aid of development partners, SIDS have advanced ambitious targets to become less reliant on fossil fuels and are putting in place policies to support the transition to cleaner, renewable forms of energy. Energy efficiency and conservation measures are also important and cost-effective ways of reducing the use of fossil fuels.

## Increase in the use of renewable energy

The potential for renewable energy use in SIDS is vast and transition to some of these sources has been slow but favourable. Since 2002, electricity production from hydropower has increased greatly, growing more than 10 per cent per year for a number of years (see chart 7.3). This has produced positive results for the environment, as the use of fuel wood for energy has not increased significantly since 2002. The remaining challenges then concern access to new technologies and financing for implementing new strategies and technologies aimed at reducing the region's dependence on fossil fuels and managing the inherent risks as a result of that dependency.

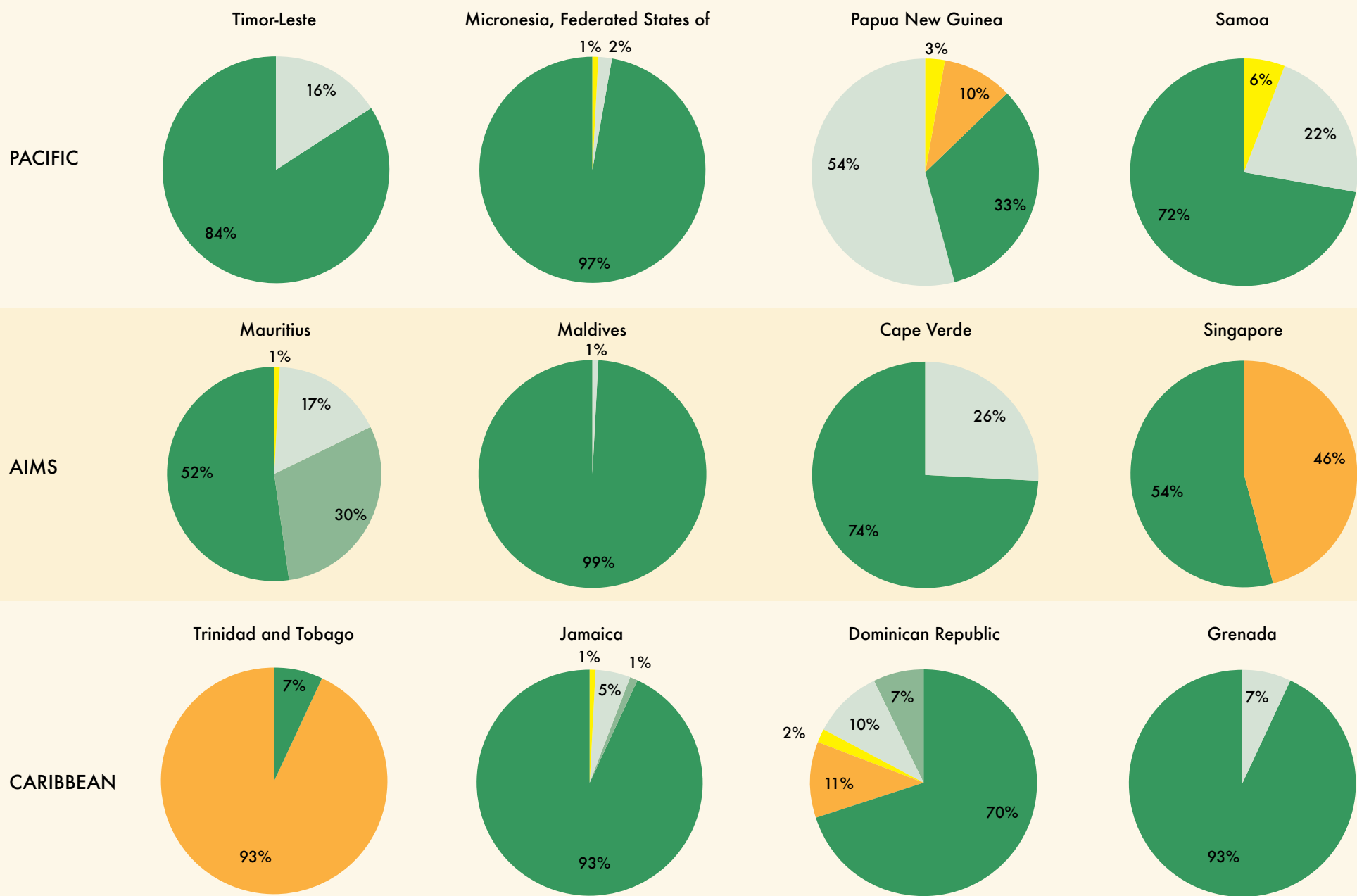
In 2012, the Antigua Public Utilities Authorities (APUA) launched Green Antigua, an initiative that focuses on reducing the wastage of water and

**Chart 7.1: Imports of mineral fuels (22 SIDS)**  
(total and in percent of GDP)



Source: UNSD (UN comtrade and UN data)

Chart 7.2: Total energy supply in twelve SIDS countries across the three regions (2010)



■ Oil ■ Coal ■ Biomass ■ Natural gas ■ Primary Electricity (hydro, nuclear, geothermal, tide, wind and other sources)

Source: UNSD Energy Statistics Data

electricity through the use of market incentives, public awareness, training and certifying renewable energy technicians, and allowing interconnection of non-fuel electricity generation of up to 50 Kw. Additionally, Barbuda has seen the emergence of micro-scale businesses creatively recycling used oil, both crude and cooking oil, to create other types of vehicular fuel.<sup>26</sup> The Government has also entered into an agreement with a private

### Renewable Energy in Niue

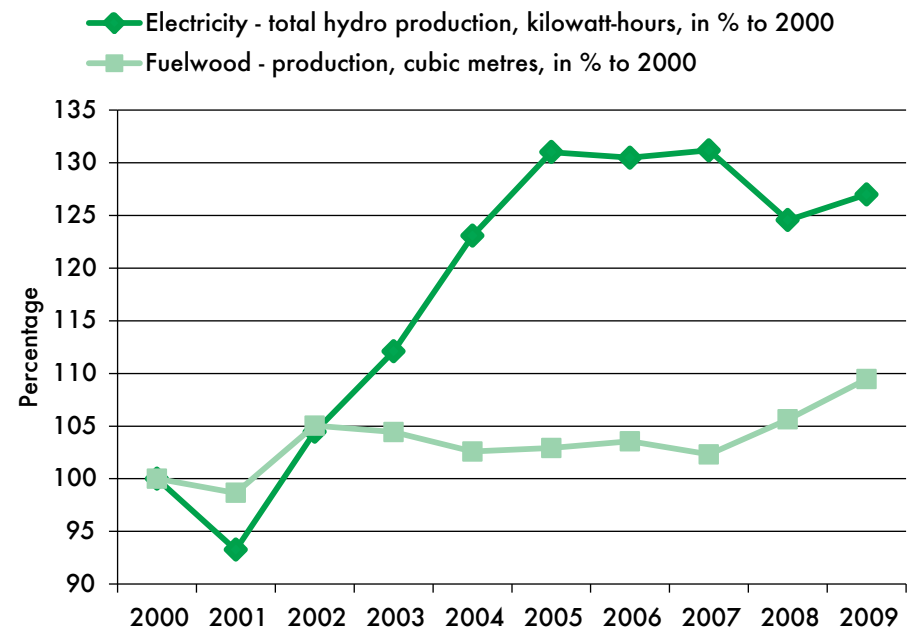
The Government of Niue enacted the Niue Energy Policy and Energy Action Plan in 2005, which committed to “convert 30 per cent of all electricity generation to renewable energy by 2013 and 100 per cent by 2020.” As a result, total petroleum imports in 2010 were 2.272 million litres as opposed to 2.514 million litres in 2005.

The action plan included the promotion of wind, solar and biomass energy resources. However, a report by the International Renewable Energy Agency (IRENA) in 2013 found that biomass would not be a feasible renewable resource due to the “protected status of forests, land tenure issues and the lack of large plantation of economically useful tree crops”. The report also highlighted the need for larger infrastructural support in order to develop wind energy.

The report estimated that “if renewable energy and energy efficiency measures are aggressively applied, about 15 per cent of the diesel fuel used for electricity generation can be cost-effectively saved and about 25 per cent can be economically saved through solar and wind systems connected to the grid.”

Recently, Niue has successfully connected solar energy to the National Power Grid. In February 2014, the Government commissioned a solar project, funded by the Government of Japan’s Pacific Environment Community (PEC) fund and administered by the Pacific Islands Forum Secretariat, which will supply solar-generated electricity to the entire nation and save approximately NZ \$137,000 per annum. Fully functional now, this project is also expected to reduce GHG emissions by 329 tons per year.

Chart 7.3: Changes in production of renewable energy



Source: UNSD Energy Statistics database

company to supply St. Kitts with some 20 megawatts of wind energy. The potential construction of a waste-to-fuel plant and a solar energy plant is also being considered by the Government to produce cleaner energy.

Developing a sector as complex and vital as energy needs a comprehensive, planned approach. Notably, the island of Tonga in the Pacific region has devised a 10-year plan for the energy sector. With support from donors, it aims to reduce reliance on imported fuel for electricity generation. The Cook Islands, also in the Pacific region, has set ambitious targets on renewable electricity: 50 per cent of all energy to be from renewable sources by 2015 and 100 per cent by 2020. SIDS are setting ambitious targets, and the potential gains are substantial—sustainable energy is vital for their development and prosperity.<sup>27</sup>

### ENDNOTES

<sup>26</sup> <http://www.apua.ag/1269-2/>

<sup>27</sup> <http://www.sids2014.org/content/documents/2505ynthesis%20Report%20Final%202020%20August%202013.pdf>



# TOURISM



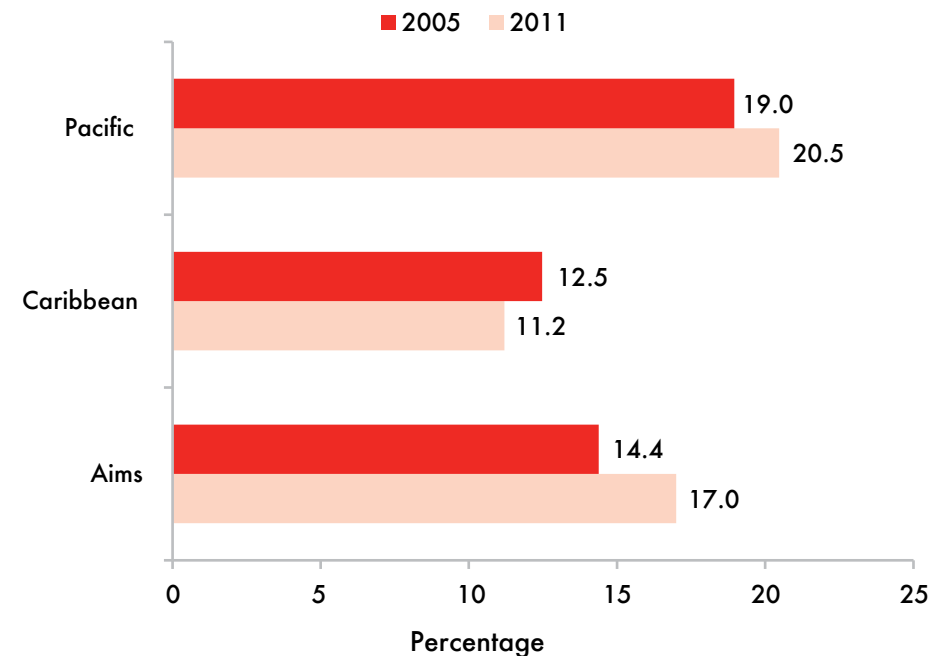
Photo credit: MTPA Tourism Office

Inbound tourism continues to be one of the most important contributors to the economic growth in SIDS, providing employment and spurring development in related sectors such as agriculture, manufacturing and construction. Over the period of 2005-2011, the Pacific and AIMS regions registered an increase in inbound tourism expenditures (see chart 8.1) as a percentage of GDP, with the AIMS region registering the largest growth. Charts 8.1 and 8.3 together illustrate that the tourism industry grew in the Caribbean region as well, but, because other sectors of the economy were expanding at the same time, the share of GDP arising from tourism declined slightly. According to reports of the United Nations World Tourism Organisation (UNWTO), growth in tourism receipts rose along with the increase in the

number of arrivals in all three regions during the 2012-2013 period.

It should be noted that the tourism industry in SIDS is highly volatile, affected by a number of external shocks including global economic downturns and the onslaught of natural disasters. The economic crisis of 2008-2009 decimated the tourism sector of SIDS, increasing the unemployment rate and stagnating economic growth. When major storms and other extreme weather events strike, SIDS are often faced with infrastructure damage and long recovery periods. During the recovery, tourists may be discouraged from visiting, further delaying an island's return to pre-disaster levels of tourist revenue.

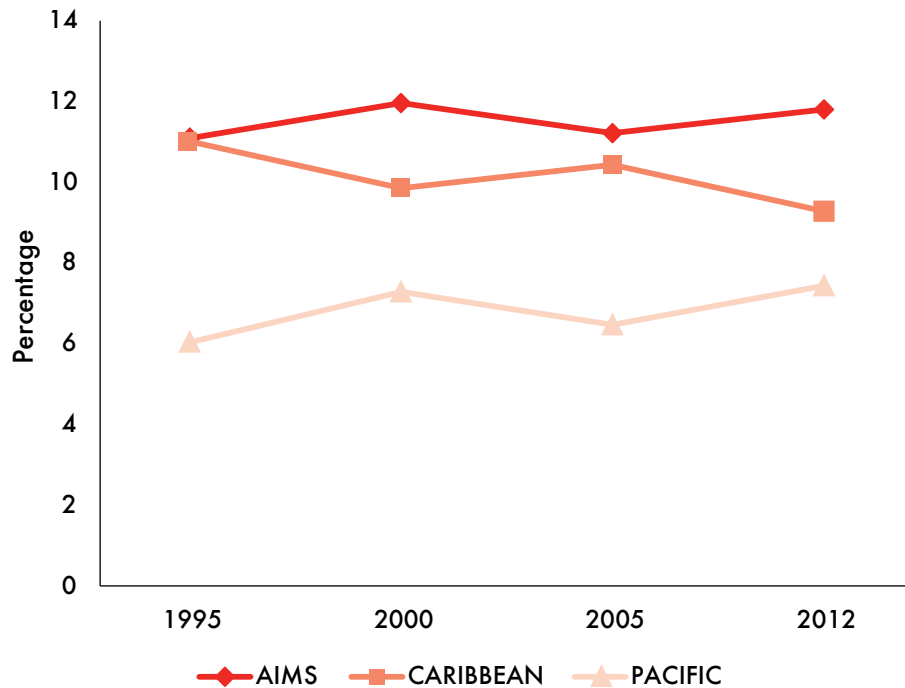
**Chart 8.1: Changes in the share of inbound tourism expenditures in GDP**



Source: UNWTO and UNSD database



Chart 8.2: Travel and tourism direct contribution to employment (percent)

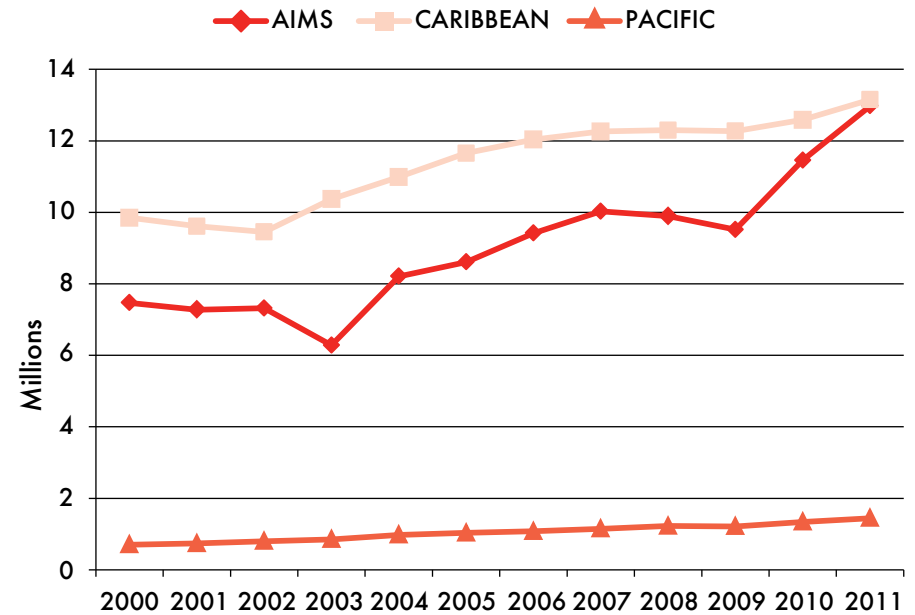


Source: Calculation based on The World Travel & Tourism Council (WTTC)\_ estimates

### Tourism impact on employment

Tourism is an economic engine for most SIDS. According to estimates from the World Travel and Tourism Council (WTTC), travel and tourism’s direct contribution to employment in 2012 was around 12 per cent for the AIMS regions, 9 per cent for the Caribbean and 7 per cent for the Pacific. While travel and tourism’s contribution to employment has been increasing in the AIMS and Pacific regions, since 2005 it has decreased in the Caribbean region (Chart 8.2). However, the WTTC reports that tourism and related industries are expected to account for 14.8 per cent of the GDP and provide 17.15 per cent of employment in the Caribbean in 2014.<sup>28</sup>

Chart 8.3: Arrivals of inbound visitors to SIDS (millions)



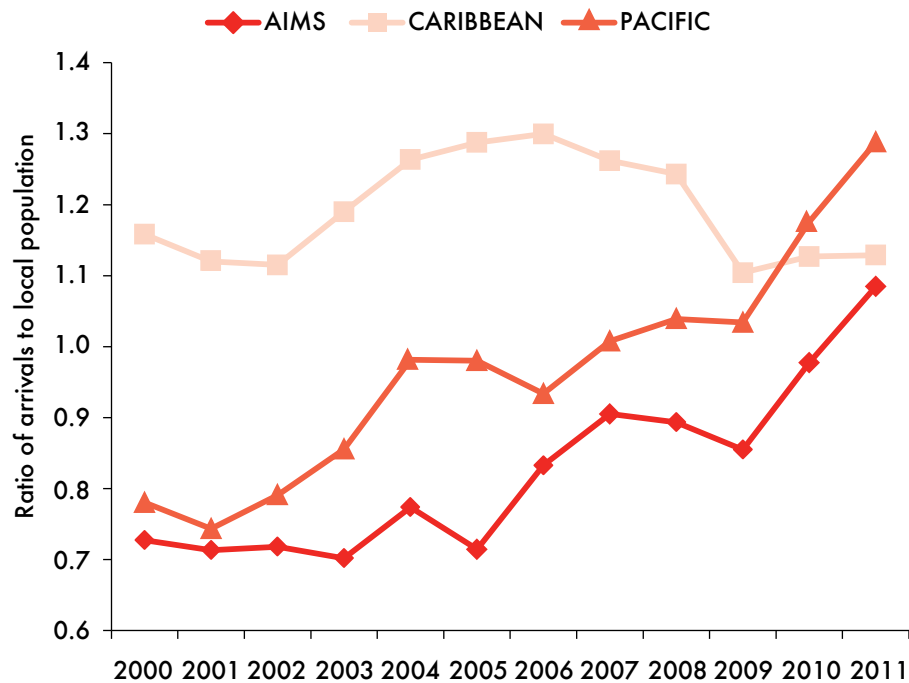
Source: Calculation based on UNWTO data

### Visitor arrivals

The AIMS and Caribbean regions receive a higher volume of visitor arrivals than the Pacific (Chart 8.3), but as shown in chart 8.4, the ratio of visitor arrivals to local population is growing sharply in the Pacific and AIMS regions and remains fairly steady in the Caribbean. There is tremendous variety within the Caribbean, however: the Bahamas, for instance, with a population of 370,000 people sees 5-6 million tourist arrivals per year. The ratio of annual arrivals of inbound visitors to local population can be used to assess the socioeconomic impact of tourism in SIDS.

Individual countries are following their own trajectories in tourism, and in 2012, Caribbean SIDS such as the Dominican Republic and the Bahamas reported solid growth in visitor arrivals, above 5 per cent.<sup>29</sup> In the AIMS region, Seychelles has focused particular attention to their tourism industry in recent years, creating a “brand” reflecting their emphasis on luxury and sustainability that has attracted record numbers of visitors to the island.<sup>30</sup>

Chart 8.4: Changes in ratio of annual arrivals of inbound visitors to local population



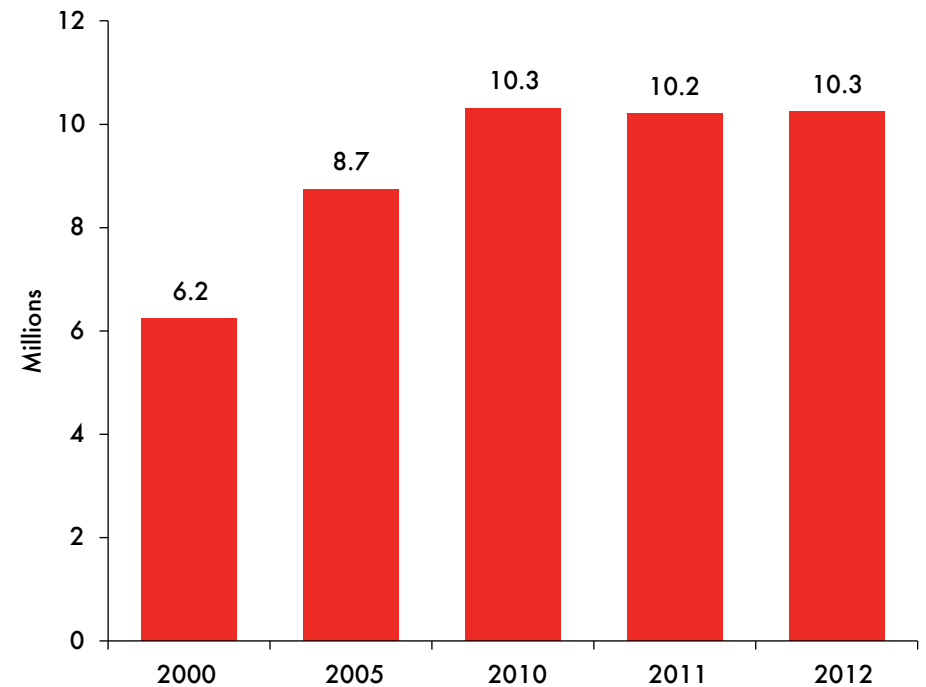
Source: Calculation based on UNWTO and UNDP data (Nauru and Timor-Leste not included)

### Cruise ship tourism

With the increase in frequency of airlift into and across regions, air transportation is the predominant mode of arrival among overnight visitors to SIDS. However, cruise ship tourism is also very important as cruise passengers represent over one half of all international arrivals for most Caribbean SIDS. From the year 2000, cruise ship passenger arrivals to the Caribbean increased by more than 4 million, as seen in chart 8.5, a growth of more than 69 per cent. Cruise ship tourism is also increasingly important in the Pacific. In 2013, for instance, 133 cruise ships visited Vanuatu alone—with daily visits during some periods throughout the year.

Cruise liner tourism brings with it particular environmental challenges including wastewater and other waste disposal, coastal degradation, and

Chart 8.5: Arrivals of cruise passengers to the Caribbean SIDS



Source: Calculation based on UNWTO data (Guyana not included)

other concerns. Many SIDS are working with the cruise industry to ensure that it grows in a sustainable manner.

### ENDNOTES

<sup>28</sup> WTTC; The Caribbean- The Impact of Travel and Tourism on Jobs and the Economy [http://www.caribbeanhotelassociation.com/downloads/Press\\_WTTCCaribReport.pdf](http://www.caribbeanhotelassociation.com/downloads/Press_WTTCCaribReport.pdf)

<sup>29</sup> UNWTO, Tourism Highlights 2013 <http://www.state.gov/r/pa/ei/bgn/1857.htm>

<sup>30</sup> Ronald Jumeau, Ambassador for Climate Change and SIDS, Permanent Mission of Seychelles, at EGM of International Year SIDS, 4-5 Dec. 2013

# WASTE MANAGEMENT



Photo credit: UN Staff

Adequate waste management is a prerequisite for sustainable development. As the urban population of some SIDS has grown significantly in recent years, the need for extensive waste management systems has likewise increased. Data are limited, but the amount of municipal waste collected in SIDS increased slightly from 2005 to 2009 (see chart 9.1: based on data from Antigua and Barbuda, Bahamas, Belize, Cuba, Dominican Republic, Mauritius, Singapore and Suriname).

For SIDS in general, almost 90 per cent of waste generated is sent to landfills and the percentage of recycled and composted waste is quite minimal. This situation is particularly problematic, given the limited land area of SIDS and the potential for environmental damage and public health risks caused by landfills, especially in the absence of sufficient regulations.

Singapore stands out as a leading example of waste management innovation, where 57 per cent of waste is recycled, 41 per cent is incinerated and a mere 2 per cent is sent to landfills.

## Hazardous waste, transboundary waste

The disposal of hazardous and chemical waste related to agriculture and manufacturing poses another challenge, as some SIDS lack adequate facilities for storage and disposal. SIDS are also faced with the concern of transboundary waste from the effluents of cruise ships berthing at their ports or shipping vessels transiting through their EEZs and territorial waters. Some SIDS member states have signed and ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, through which they are seeking ways to manage this type of waste properly.

## Wastewater management

SIDS' capacity to manage wastewater adequately is continuously developing as access to the necessary technologies becomes available. Most SIDS for which data were available have more than 20 per cent of their population connected to a wastewater collecting system.<sup>35</sup>

## ENDNOTE

<sup>35</sup> UNSD Environmental Indicators and Selected Time Series

## SOURCES

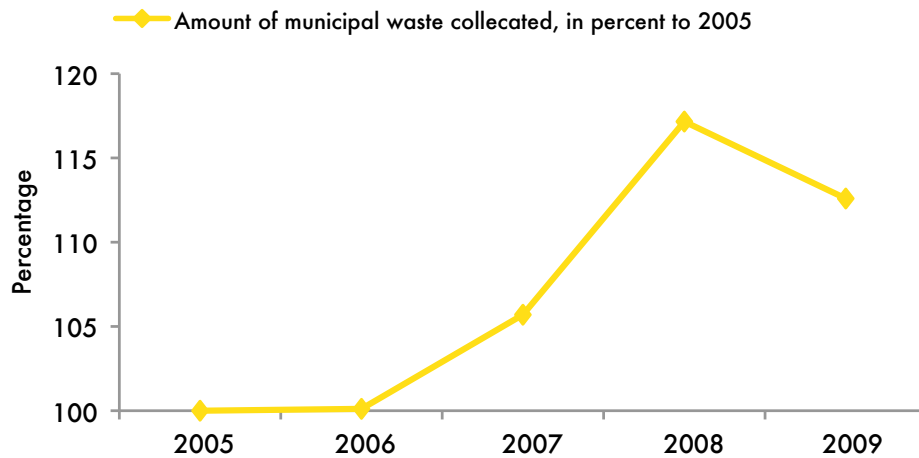
Jennifer L. Post, 2007, *Solid Waste Management in Jamaica – An Investigation into Waste Reduction Strategies*, Michigan Technological University

Albert Binger, 2011, *Economic Opportunities in Waste Management in Small Island Developing States (SIDS)*, CSD Intersessional Conference on Building Partnerships for Moving Towards Zero Waste, Tokyo, Japan

SOPAC, 2002, UNEP: *Directory of Environmentally Sound Technologies for Waste Management in Pacific SIDS*, Suva, Fiji

SPREP, 1999, *Guidelines for Municipal Solid Waste Management Planning in Small Island Developing States in the Pacific Region*, Apia, Samoa UNOHRLS, 2011, *SIDS: Small Islands Big(ger) Stakes*, United Nations, New York Clairvair Squires, 2006, *Public Participation in Solid Waste Management in SIDS*, Barbados

**Chart 9.1: Municipal waste collected**  
(a group of 8 SIDS, in percent to 2005)



Source: UNSD Environmental Indicators and Selected Time Series



Photo credit: UN Photo/Martine Perret

## Waste Management in Singapore

In 2012, Singapore's solid waste generation stood at 8,016 tonnes per day. Recognising the constraints of limited land area and dense population, Singapore has taken measures to control and dispose of waste efficiently. The National Environment Agency (NEA) responsible for the waste management system is pursuing the goal of 'Toward Zero Landfill' and 'Toward Zero Waste', with a target of improving the recycling rate to 65 per cent by 2020 and 70 per cent by 2030.

Singapore's waste management system is based on collection, minimisation at source, reusing, recycling and incineration. Singapore adopted Waste-to-Energy (WtE) incineration, which reduces waste volume by 90 per cent. At the WtE plants, non-hazardous waste that cannot be reused or recycled is burned, and the by-products are used to generate electricity or as industry scrap metal. All gas is treated and filtered before being released into the atmosphere. The non-incinerable waste along with the ash generated from incineration is then transported to the Semaku Island landfill.

In 2012, Semaku, which is expected to meet Singapore's waste disposal needs until 2035 and beyond, received an average of 2,300 tonnes of ash and non-incinerable waste daily. The Island, however, has not been relegated to waste disposal alone. The government has planted mangroves, preserved the rich biodiversity and turned it into a tourist attraction.

Privatization has played an important role in Singapore's efficient waste management system. The NEA licenses waste collection to Public Waste Collectors (PWC) for the nine geographic areas. Presently, four PWCs operate in Singapore, and they are all required to provide recycling facilities in their areas of operation. Such initiatives, among others focused on recycling, have resulted in the recycling rate reaching close to 60 per cent in 2012, where it was 40 per cent in 2000.



# FINANCE AND TRADE



Photo credit: UN Staff

SIDS face a number of challenges to economic development, including finite natural resources, heavy reliance on imports and limited export base, distance from markets, lack of economies of scale, and the potential for frequent extreme weather conditions. In addition, many experience a high level of public debt, which weakens macroeconomic stability and draws public funds away from important development expenditures in order to service the debt. Any defaults could undermine a government's capacity to borrow further and possibly deter future foreign investments.

## External debt stocks (percentage of the GNI) in SIDS and commercial debts

Chart 10.1 shows the changes in external debt stocks in SIDS. This figure

has increased substantially over the years, though it is worth noting that the percentage of the GNI that this represents has declined because of the generally expanding economies. It is also important to consider the great diversity within the SIDS grouping. In 2010, 14 SIDS had debt to GDP ratios of more than 60 per cent, and 8 SIDS, primarily from the Caribbean region, registered ratios of more than 100 per cent.<sup>36</sup> For some SIDS, high public debt levels have been a persistent and unresolved problem for over a decade; in others, rapid debt accumulation is a relatively recent phenomenon posing serious problems for development.

The external debt stock of the private sector has also increased considerably, reaching more than USD 16 billion in 2011 (see chart 10.2).

## ODA and other financing available to LDC SIDS, middle- and higher-middle income SIDS

Many SIDS continue to rely on Official Development Assistance (ODA), in part due to limited access to other forms of external capital, such as bond finance or Foreign Direct Investment (FDI)—although this is now changing for some countries.<sup>37</sup> In 2011, SIDS received an average of USD 160 million each in ODA.<sup>38</sup> Although figures show that a large quantity of ODA is given to SIDS, in fact a subset of countries receive the bulk of this aid, specifically, the SIDS LDCs. Regionally as well, there are variations in aid allocation, with Pacific SIDS on average receiving a higher sum of ODA compared to the Caribbean and the AIMS regions (see chart 10.3). However, as seen in chart 10.3, there was a large influx of funds to the Caribbean at the time of the 2010 earthquake in Haiti.

Over the years, ODA levels have generally risen (see chart 10.3). However, because increases and decreases in aid frequently reflect the economic conditions in donor countries, SIDS may receive relatively less aid in times of global financial downturn, precisely when they need it most.<sup>39</sup>



## Remittances

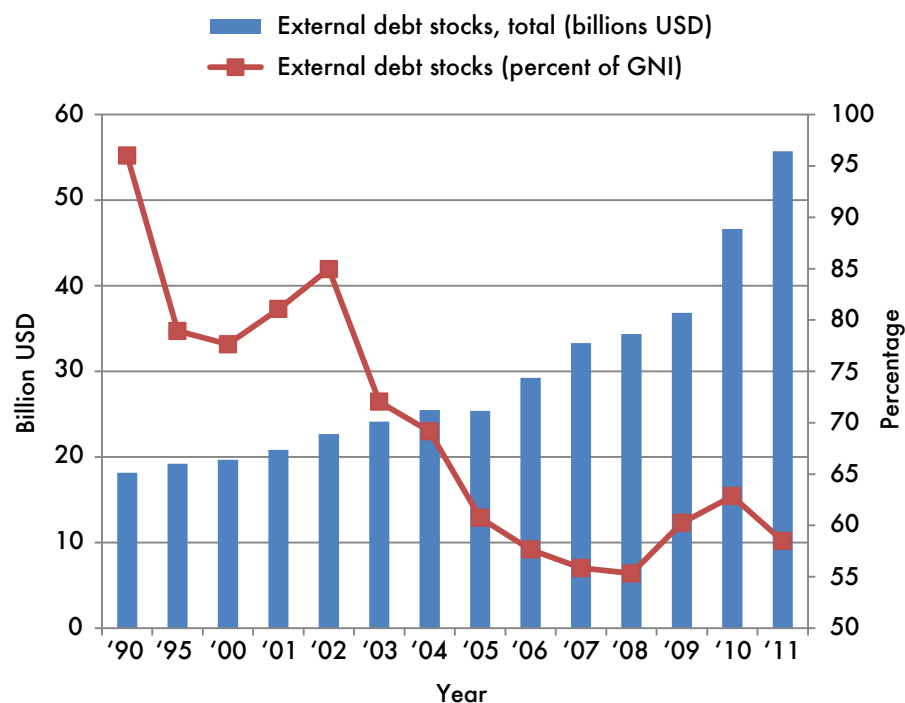
Remittances sent to home countries by migrants are considered an increasingly important source of financing for development and human welfare, especially for those countries with high emigration rates, including many SIDS.<sup>40</sup> According to the World Bank, global remittances topped USD 510 billion in 2012, more than three times the size of ODA flows. Within SIDS, the Caribbean and Pacific regions have received the highest amount of personal remittances over the years (see chart 10.4), and these numbers continue to grow (see chart 10.5).

## Net trade in goods and services

SIDS continue to face major challenges in trade development, due in part to their small share of global markets as well as the erosion of trade agreements that would allow preferential treatment. As seen in chart 10.6, the net trade in goods and services plummeted around the 2008 global financial and economic crisis. This reflects the fact that while tourist arrivals and other sources of revenue fell drastically in that period, fixed imports costs for food, fuel and other necessities remained constant. The net trade ratio has yet to recover.

With their distance from market centres, and with limited economies of scale, SIDS have always suffered from high import and export costs. Air and sea transport is very expensive and is vulnerable to fluctuations in fuel prices, and the relatively low volume of imports and exports translates into very high unit prices (see chart 10.8).<sup>41</sup>

Chart 10.1: Changes in external debt stocks



Source: Calculation based on World Bank Development Indicators database

## ENDNOTE

<sup>36</sup> IMF, Preserving Debt Sustainability in Low-Income Countries in the Wake of the Financial Crisis, 2010, pg.17

<sup>37</sup> UNDP MDGs in SIDS 2010

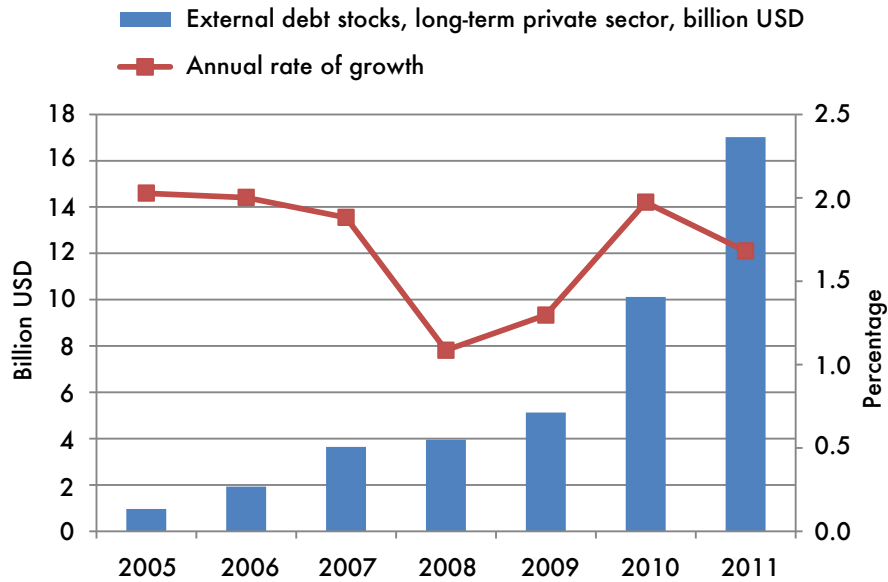
<sup>38</sup> UNOHRLLS Factsheet

<sup>39</sup> Official Development Assistance, UNDP

<sup>40</sup> Financing for Sustainable Development in SIDS, UNDESA 2013

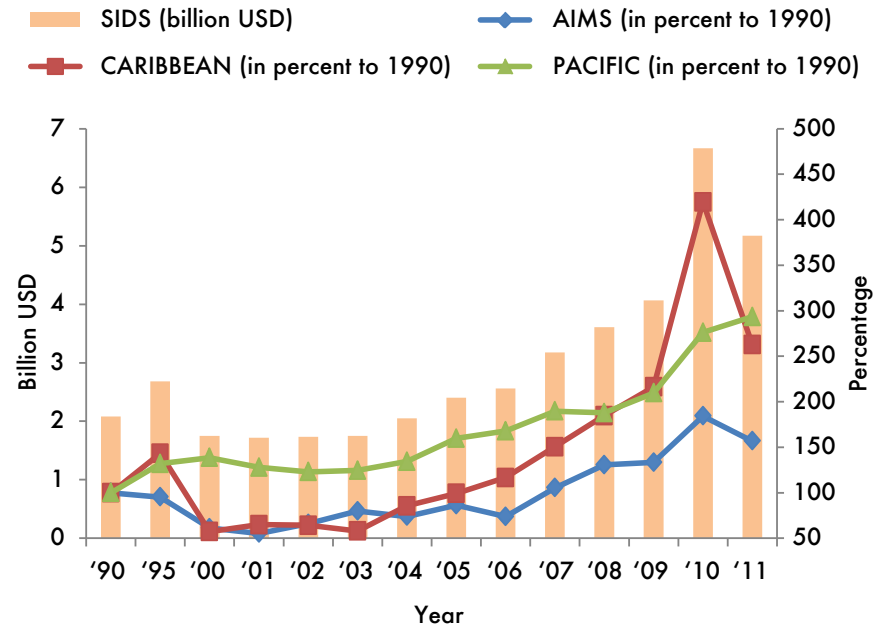
<sup>41</sup> 2014, Charmaine Gomes, The case of SIDS of the Caribbean: The challenge of building resilience

Chart 10.2: Long-term external debt stocks of private sector  
(group of 10 SIDS)



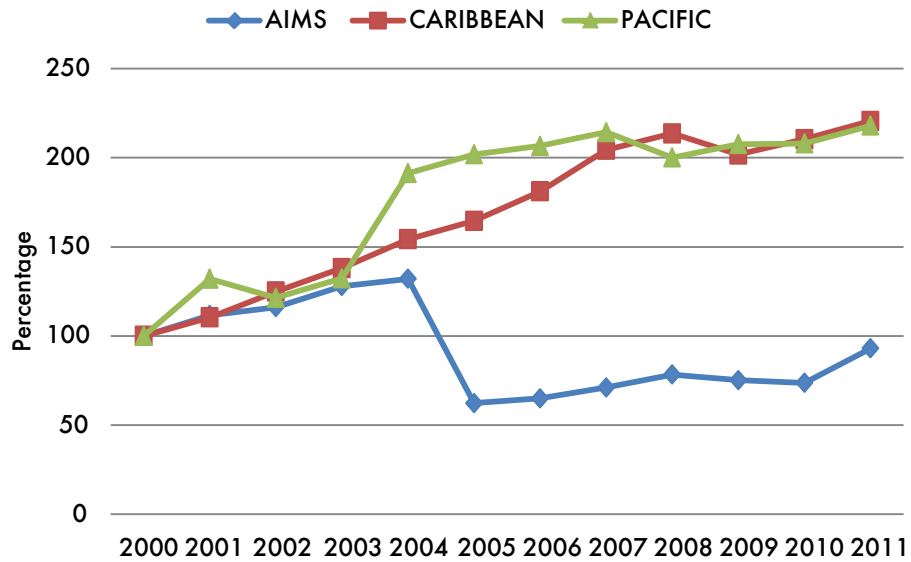
Source: Calculation based on World Bank Development Indicators database

Chart 10.3: Net official development assistance received by SIDS



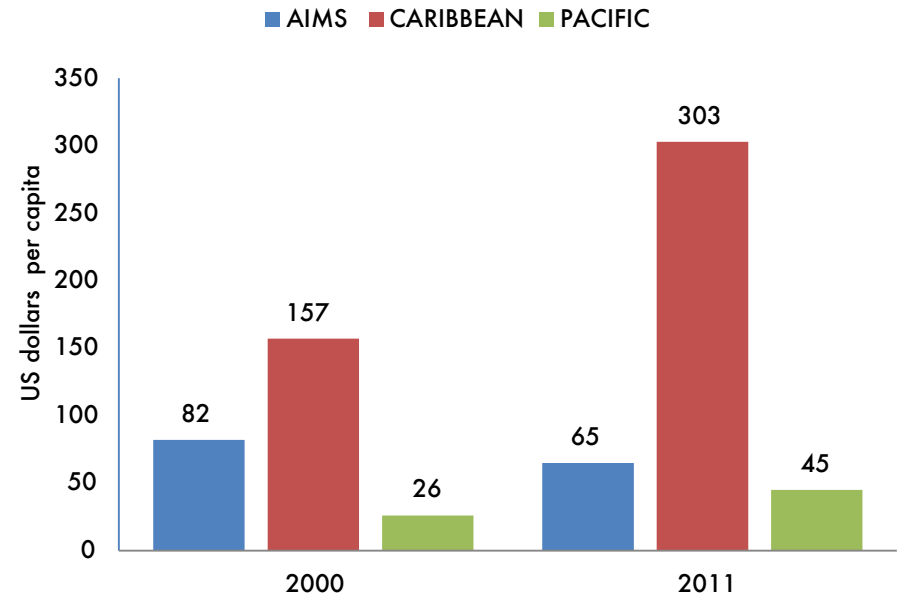
Source: Calculation based on World Bank Development Indicators database

Chart 10.4: Growth of personal remittances  
(2000 = 100%)



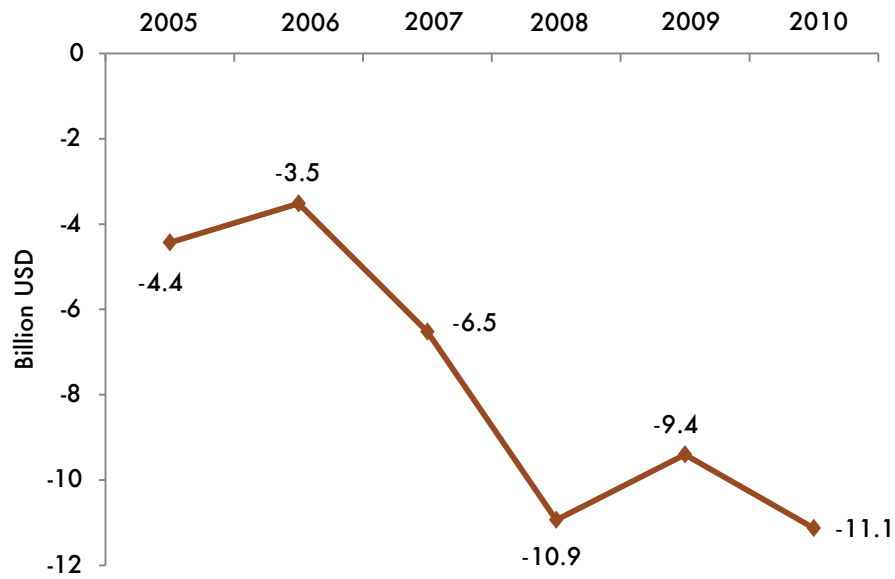
Source: Calculation based on World Bank Development Indicators database

Chart 10.5: Changes in personal remittances per capita



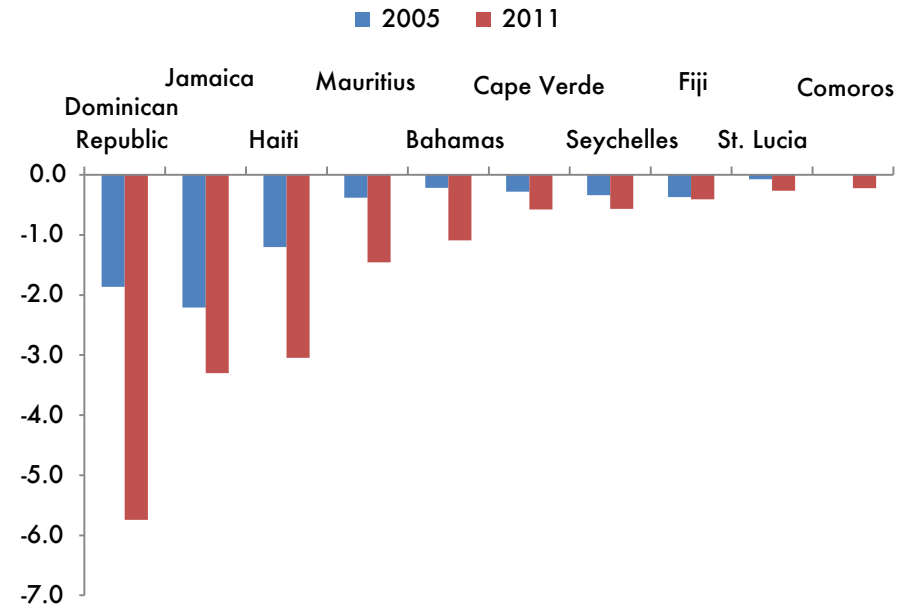
Source: Calculation based on World Bank Development Indicators database

Chart 10.6: Combined net trade in goods and services  
(25 SIDS, billions USD)



Source: Calculation based on World Bank Development Indicators database

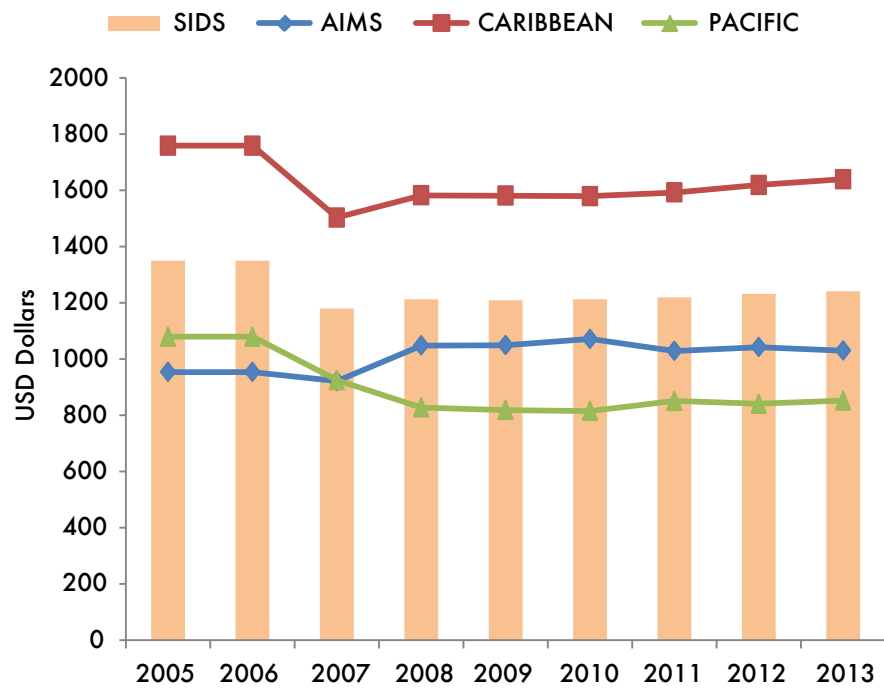
Chart 10.7: Net trade in goods and services of selected SIDS  
(billion USD)



Source: Calculation based on World Bank Development Indicators database



Chart 10.8: Cost to import  
(USD per container)



Source: Calculation based on World Bank Indicators



Photo credit: UN Staff