

Population patterns in small island developing states

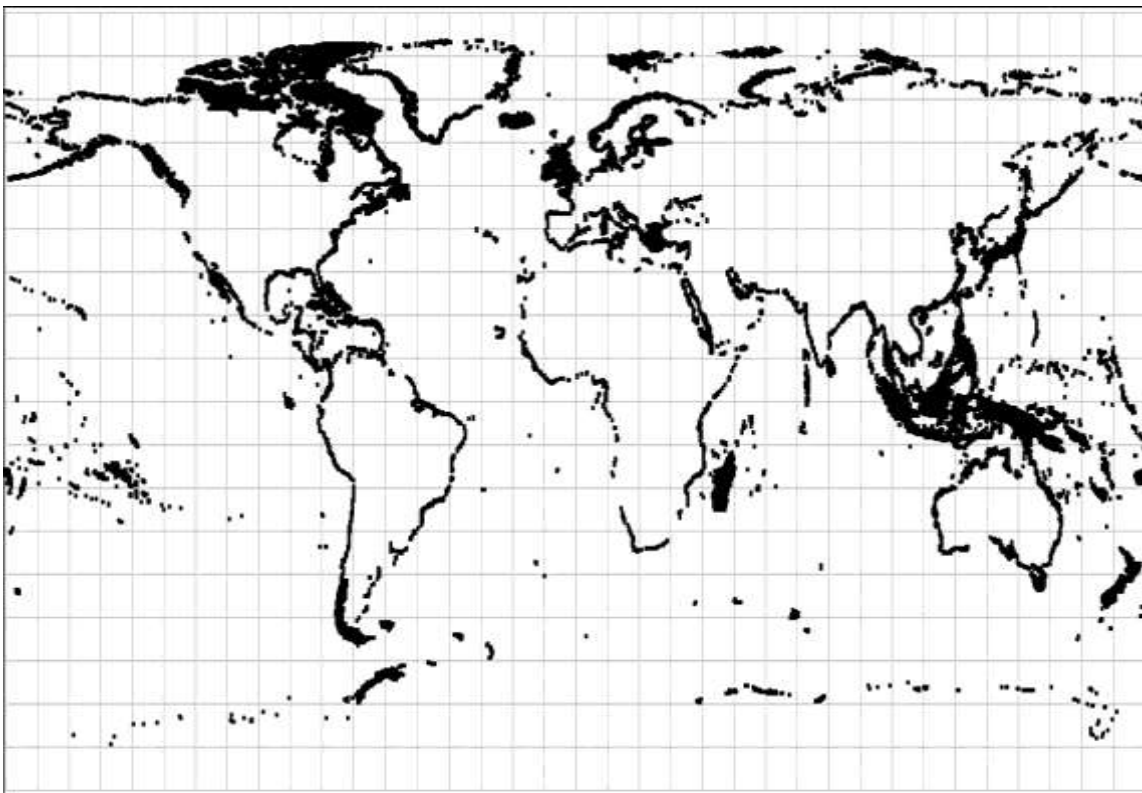
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Opportunities and constraints affect the life course of individuals. This chapter shows how living on an island tends to produce certain patterns, especially high levels of migration during the working ages.

It has been estimated that around 9-10% of the world's population lives on islands, that is, pieces of land entirely surrounded by water (Royle 1989). There is no general agreement on how many islands there are in the world, while many of the world's islands are uninhabited. Figure 1 (below) shows that every land mass is almost completely outlined by islands, and islands are sprinkled throughout the world's oceans. Islands and the nature of their settlement vary enormously in character. For example, the vast expanse of Greenland has only a few thousand people, while the island nations of Indonesia, Philippines and Japan support many millions. There are also countless tiny islands, some with only a handful of people. Politically most islands are part of a single entity, but a few are divided between two or more countries, e.g. Hispaniola (Dominican Republic and Haiti).

FIGURE 1. World map showing only islands



Source: Personal Communication *Prof. Godfrey Baldaccino, University of Malta*

Small Island Developing States (SIDS) deserve special attention because their population size and composition are largely determined by external political and economic factors. This tends to produce different population characteristics from mainland states with similar attributes of land and natural resources. SIDS also provide good examples of how the life course can be shaped by a particular type of environment.

This chapter focuses on the Caribbean, Indian Ocean Region and Pacific Region, the three world regions composed almost entirely of SIDS. Although all but a few are now independent, their demography and economic development have been shaped to a very large extent by their colonial past, and most continue to have strong links with metropolitan countries.

EARLY DEMOGRAPHY AND IMPACT OF FIRST CONTACT

Before contact with European powers, most islands in the Caribbean, Indian Ocean and Pacific Ocean experienced the moderately high, fluctuating fertility and relatively high mortality levels typical of pre-industrial societies, with population size determined by the availability of habitable land. They were generally free of the infectious diseases that ravaged continents in the pre-industrial era, although vector-borne diseases were probably widespread. Tribal warfare, loss of life from accident, especially at sea, deaths from violence and infected wounds, and periodic droughts and natural disasters would also have slowed rates of population increase. Where land areas were limited, deliberate family size limitation may have been practiced, including abortion and infanticide (Cleland and Singh 1980:969). With a few exceptions, such as the 900 AD pre-industrial civilisation of Nan Madol on Pohnpei in the Pacific Region most states in the three main island regions had no significant urban settlements until they were drawn into the global economy by colonial powers.

Maritime locations that make islands attractive places to live also made them vulnerable to invasion from the sea, and European powers generally found it easier to colonise islands than continental lands (Caldwell et al 1980:960). The Caribbean was the first island region to be extensively occupied by colonial powers, while the process of colonisation tended to be less uniform in the more scattered island groups in the Indian and Pacific Oceans. Until ships were mechanised, prevailing winds determined which islands were most likely to be visited, so islands away from the main routes could remain undiscovered for many years (Feyrer and Sacerdote 2009). More accessible islands were more likely to experience both conquest and devastating epidemics of diseases to which European populations had some immunity. Soon after the explorer Christopher Columbus reached the Caribbean in 1492 massive depopulation from both disease and violence occurred on Hispaniola and neighbouring islands. Eventually the indigenous population of the Caribbean was decimated or marginalised by European sugar farmers who drove them from their lands, established plantations and imported African slave labour.

In the Indian Ocean, Comoros became part of a Portuguese trade route from 1499 onward (Newitt 1983:144) and its population was subsequently devastated by slave traders. From around 1700 labour imported to work on the sugar plantations displaced the indigenous population of Mauritius (Trade Chakra 2010). Maldives and

Seychelles were said to be uninhabited until they were settled by migrants from the Indian subcontinent and France respectively (Indian Ocean 2018a and b).

The Pacific Ocean was visited by explorers, pirates, sealers and whalers from around 1500 onward, and most islands were subsequently colonised by European powers. Following Captain James Cook's first visit to French Polynesia in 1769, the indigenous population was almost extinguished by disease, infanticide and murder resulting from the clash of cultures (Moorhead 1966:88). Slave traders also raided some Pacific islands, including Tuvalu in 1790 and Cook Islands in the 1860s. In 1874 Fiji voluntarily surrendered its sovereignty to Great Britain because it sought protection from slave traders and violent attacks, but, as described in the Epidemics chapter, increased contact with Europeans brought devastating epidemics of disease. Around 20% of indigenous Fijians died in the 1875 influenza epidemic, but the impact on Indian, Chinese and European residents was slight because they had more resistance to this disease (McArthur 1968:29). In Western Samoa (now Samoa) during the 1918 influenza epidemic, mortality reached levels comparable with those of Fiji in 1875 (McArthur 1968:125).

STATISTICAL LIMITATIONS IN SMALL ISLAND DEVELOPING STATES

Although island populations tend to be relatively small, population data for SIDS often has limitations, even in the contemporary world. There are several reasons for this. First are logistical challenges. According to the World Bank Statistical Capacity Score, the average statistical capacity of small island developing countries is below that of developing countries as a whole (Cangiano and Torre 2017:1). There is, however, great variation, with countries like Mauritius and some Caribbean islands having above average statistical capacity while in other island nations statistical capacity is very limited. Civil registration is often non-existent or incomplete, so demographic estimates tend to be derived from surveys and national censuses. Censuses may be infrequent and/or collected by enumerators with limited skills, while the results may not be available until several years after census night. The collection of data from outer islands is likely to be an expensive logistical challenge, but possible data limitations may not become apparent until after a subsequent census has been analysed.

A second set of challenges relates to the estimation of reliable demographic indicators. Fluctuating and/or infrequent vital events mean that rates may need to be averaged over several years. Where the number of vital events is very small these fluctuations, along with possible misclassification of events such as maternal mortality and stillbirths, can have an exaggerated impact on indicators.

A third source of data limitations is the typically high population mobility of islanders, especially labour mobility. Births and deaths may take place away from residents' usual homes, while it is not always clear whether population movements are temporary or permanent. Data on international movements are often insufficient for reliable demographic analysis because limited questions are asked on arrival and departure forms, because forms are misunderstood or only partially completed or

because migrants do not know how long they intend to remain abroad. These challenges may be compounded by limited technology and/or expertise for collecting and managing data, while application of recognised techniques for adjusting for data limitations may be constrained by lack of comparative data and/or the subjective judgements of analysts.

Demographic data for small island states are often omitted from tables prepared by the United Nations and other international agencies, yet much data exists, and studying the demography of SIDS can be a fascinating and rewarding activity for the persistent researcher.

DETERMINANTS OF POPULATION SIZE

Fertility and mortality

The importation of culturally and racially heterogeneous labour to plantations in some States in the Caribbean Region and to, Mauritius and Fiji led them to commence demographic transition before neighbouring island states (Cleland and Singh 1980). By the 1920s there was massive emigration of young working age cohorts from the Caribbean Region. This reduced fertility and population growth in the sending societies, while the reverse occurred in the receiving societies (McElroy and de Albuquerque 1990:789). Selective migration also produced age-sex imbalances that impacted family formation and increased dependency ratios and poverty in the Caribbean societies with the highest rates of emigration (McElroy 2011). By 1970 most Caribbean SIDS had Total Fertility Rates (TFRs) of 2-3 children per woman.

Demographic Transition began later in the Pacific Region and Indian Ocean Region than in the Caribbean Region. Improved health services in the post-World War II years reduced Pacific mortality but increased fertility, while there was often considerable resistance to modern methods of family planning. The TFR of Solomon Islands peaked at 7.3 in the period 1971-76 (Solomon Islands 1989), while the TFR of Marshall Islands reached 8.4 in 1973. Both declined gradually in succeeding decades (UNFPA 2010).

By 1990 declines in fertility and mortality in most Pacific SIDS led Pirie to conclude '*that Pacific islands eventually will complete these transitions is now clearand the rate of decline is likely to intensify rather than diminish*' (Pirie 1994: 70). More than 20 years later, however, the classic Demographic Transition model no longer seems to apply in the Pacific. As discussed below, most Pacific island States still have TFRs above replacement fertility, and, while Infant Mortality Rates (IMRs) have declined substantially, life expectancy generally remains below that of the most advanced Western countries (see Table 1).

Cleland and Singh (1980:991) concluded that high levels of emigration from Western Samoa (now Samoa) and Cook Islands was a way of avoiding fertility control. Above replacement fertility continues to be sustained by traditional subsistence or semi-subsistence lifestyles that persist even in urban areas, by low participation in paid work and by migration to countries on the Pacific Rim (McMurray

2003:45). Although increasing percentages residing in Pacific urban areas are now choosing to live in nuclear families and/or have smaller families so they can enjoy higher living standards, they still tend to be a minority.

Island life with fresh air and plenty of opportunity to take exercise is potentially healthier than life in some inland areas, but islanders do not always benefit. The trend away from total subsistence tends to be associated with more sedentary lifestyles and higher intakes of sugar, salt, fat and alcohol. This has contributed to an increasing prevalence of obesity and other non-communicable diseases. The persistence of infectious diseases, including TB and respiratory infections, in less developed small island states is also hindering mortality decline.

Migration

Islanders have always had a high propensity to undertake long sea journeys between islands. The first permanent emigration from Caribbean islands was probably a survival strategy forced on emancipated slaves who were denied access to land. Later, international circulation became a strategy to supplement incomes without severing ties to homelands (Conway 1989). Before Montserrat was devastated by volcanic eruptions, remittances accounted for more than 20% of its GNP (Samuel 2000:19). Puerto Rico, Dominican Republic and Cuba are among other Caribbean states that continue to receive substantial remittances, mostly from the United States (Duany 2011).

Bertram and Watters (1984) recognised that the economies of Samoa, Tonga, Cook Islands, Niue and Tokelau depend on 'MIRAB' - migration, remittances, aid (i.e. development assistance) and bureaucracy (i.e. service sector employment). Migrants from these countries, as well as some Micronesians, may spend many years living and earning income overseas, with all but the very poorest migrant households continuing to send remittances to families in their home countries. In 2004, 87% of surveyed Fijian households and 98% of surveyed Tongan households with at least one migrant received remittances (World Bank 2006:60). Several Pacific states, including Kiribati, receive substantial income from seafarers trained in their home countries specifically to work on overseas shipping lines (Borovnik 2005).

While export of labour can bring remittances, inflows of contract migrant labour may have negative impacts. Immigrants from India, Bangladesh, and Sri Lanka working in the Maldivian tourism and construction industries have contributed to one of the world's highest urban population densities on Malé, straining urban facilities and impacting living standards (May and Riyaza 2017:1). Immigration to Réunion from elsewhere in the Indian Ocean Region has been balanced by migration to mainland France, but this has tended to be a 'brain drain' of the most educated Réunion nationals, while youth unemployment in Réunion remains high (Marie and Rallu 2012a:6-7). In Palau and Commonwealth of North Marianas Islands, two of the highest income Pacific states, unemployment of indigenous youth has become a concern because most of the available jobs in the tourist and manufacturing industries are occupied by contracted migrant workers.

High population mobility and the greater propensity of younger people of working age to migrate can contribute to age structure imbalances that affect the Life Course. For example, excesses of secondary school and working age population in urban areas and increasing percentages of elderly in rural areas. Guadeloupe, Martinique and Réunion are experiencing increasingly unfavourable dependency ratios as populations age and there is continuing emigration of working age populations (Marie and Rallu 2012b:6-7). On smaller islands, including Tokelau and Rapanui, very small numbers and/or wide kinship networks and restrictions on marrying kin have contributed to a 'marriage squeeze', i.e. a scarcity of eligible partners. While Tokelauan youth are likely to seek partners in New Zealand, young Rapanui women tend to look to visitors to the island (McCall 2009:251).

Lowenthal and Lambros (1962) argued that the smaller a political region, social unit or community, the more likely it is to be losing population for economic reasons, but this may no longer be true in the contemporary world where developed countries are increasing restrictions on both temporary and permanent migration. The imposition of such restrictions is particularly significant for SIDS where population mobility has become an integral part of their economic strategy.

URBANISATION

Potter (1995:334) described urbanisation as a process related to economic development and globalisation, and this is certainly true for SIDS. The colonial origins of urban development in the Caribbean Region, Indian Ocean Region and Pacific Region saw the best harbours in each colony developed as administrative and commercial centres to facilitate the export of resources. Like the great colonial primate cities of Asia described by McGee (1967), the colonial towns established in small island states became parasitic, supporting themselves by drawing people and resources from their surrounds and outer islands, even in the absence of industrial employment (Lowenthal and Lambros 1962:199). The few island states that were not colonised, such as Tonga, generally adopted colonial patterns of development to facilitate trade.

The dominance of one or two main urban centres continues to be a feature of most SIDS, especially those with many outlying islands (Connell and Lea 2002). Capital investment concentrates in these centres, while the inland and other islands remain underdeveloped. The radial pattern of roads and domestic shipping routes inherited from colonial times facilitates movement of resources to the main centre, but rarely connects one outlying area to another. Many people still rely on small boats to travel between one rural area and another because there are no connecting roads, while island states that cannot afford to operate their own air and/or shipping lines may be poorly served by the profit-optimising schedules of foreign operators (Strategy and Program Management Division 2011:7).

The main phase of rapid urbanisation in the Caribbean began soon after World War II. Although a few Caribbean states, including Trinidad and Tobago and St Lucia, still have very low levels of urbanisation, by 2015 most were describing 50-80% of their populations as urban residents (UN-Habitat 2015:41-42). Until recently,

the Indian Ocean has generally experienced slower rates of urbanisation, with only Seychelles exceeding 50% by 2015. Rapid urbanisation in the Pacific began in the 1960s and has continued into the present, but, as described above, in a more *ad hoc* manner as a consequence of internal migration and natural increase, and without substantial government or private investment.

In Melanesia, circulation (i.e. short-term migration) from rural to urban areas as a way of supplementing rural incomes is more common than international migration. Even when their expectations are unrealistic because of high levels of urban unemployment, many rural parents in Fiji, Papua New Guinea, Solomon Islands and Vanuatu encourage their older children to seek work in urban areas. As some children are also needed at home to work the family land, migration and circulation help to support above-replacement fertility, with 3 or 4 children the preferred family size.

The relatively higher costs of setting up business enterprises and maintaining services outside the main commercial centres in the Pacific almost guarantees that rural and outer island populations will continue to experience disadvantage. This is intensifying over time as the prospect of possible employment along with better education and health services in the main centres continue to attract more and more people from outlying areas. In Solomon Islands, for example, where electricity and communication services are very limited outside the capital, Honiara is more than fifteen times the size of the next two largest towns, Auki and Gizo (Solomon Islands Statistics Office 2012). In Fiji, the most developed of the independent Pacific Island states, almost half of the total population of just under a million lives in Greater Suva, while other towns are all less than 100,000 (Fiji Bureau of Statistics 2007). Port Moresby, the capital of Papua New Guinea, is approaching 500,000 people and could reach a million by 2030 (Connell 2017:5).

POPULATION PLANNING

From around the 1960s onward, national and international concerns about sustained high fertility in some SIDS led to promotion of family planning and other population limitation strategies. Mauldin and Berelson (1978) concluded that island states were more likely than continental countries to strongly pursue strategies to reduce fertility, although the 94 countries in their sample included only 14 island-states of which only Fiji, Mauritius and Barbados had less than a million people.

Early strategies to slow population growth in the Pacific were more often promoted by multi-national agencies such as The International Planned Parenthood Federation (IPPF) and the United Nations Population Fund (UNFPA) than by national governments. Their strategies tended to emphasise family planning, and to be developed mainly under the auspices of health ministries. While this may seem logical, it tended to foster a narrow view of population planning rather than recognition that population is an important concern for almost all ministries. For example, when the present writer invited economic planners to attend a population

policy workshop in a SIDS, some assumed a mistake had been made and passed their invitations on to health officials.

Although Pacific states have always been generally aware of potential population pressure, there were cultural obstacles to population planning. Early efforts to promote family planning were often perceived as undermining morality, or as attempts by foreigners to weaken a nation. For example, these attitudes led Solomon Islands to adopt a pro-natalist policy in the 1980s, despite having a TFR of 7.3 children per woman at that time (McMurray 1989:45).

Multi-national agencies subsequently adopted a more balanced approach to population assistance. UNFPA established special Country Support Teams to help countries develop comprehensive population plans to address social services, employment and planning for future prosperity as well as fertility, and by the 1990s most had population policies of some sort (House 1994:12). Even so, resistance to population planning still surfaces occasionally. For example, the powerful Kiribati Protestant Church supported and encouraged the use of family planning during the 1970s, but was reluctant to renew this support when a new population policy was developed in 2008. Their rationale was that since the Kiribati Catholic Church had continued to oppose family planning, Catholic congregations had increased more than Protestant congregations (McMurray 2006).

In most of the Caribbean Region, where fertility and mortality declined relatively early, population policies also tended to focus on reproductive health. Low rates of population increase and economic success led UNFPA, IPPF and World Bank to scale back funding for Caribbean population activities after 2000, prompting concerns that Caribbean states would lack support for emerging problems of HIV/AIDS and population ageing (Achanfuo-Yeboah 2002).

Contemporary population planning in SIDS tends to prioritise issues such as employment opportunities for youth, STIs and HIV/AIDS, living standards and urban growth centres rather than population growth rates *per se*. A typical example is The Maldives *Strategic Action Plan 2009-2013*, which aims to regroup scattered atoll populations into economically viable entities, with the objective of reducing the cost of providing services and promoting youth employment (May and Riyaza 2017:3).

CONTEMPORARY PATTERNS OF FERTILITY, MORTALITY AND MIGRATION

Table 1 shows comparative fertility, mortality, migration and population growth rates data for most island states in the three regions for the periods 1950-55 and 2010-15. Although located on the periphery of Asia, Timor Leste is included because it is increasingly recognised by Pacific regional agencies as part of the Pacific Region

Table 1 shows a generally negative association between levels of development and fertility. Fertility transition occurred earlier in the Caribbean as compared to the two other regions, with only Haiti having a TFR of more than 3 children per woman in 2010-2015. Fertility transition occurred a little later in the Indian Ocean Region, but four of its six states are now approaching replacement

fertility, with only the two least-developed, Comoros and Mayotte, still having TFRs of 4 or more in 2010-2015. In contrast, Timor Leste, one of the world's poorest countries, appears to be still in the first phase of Demographic Transition with the highest TFR of the island states considered here (see Box 1).

BOX 1: Timor Leste

The eastern half of the island of Timor (Timor Leste) was colonised by Portugal in the 16th century while the Dutch occupied the western half (Timor Barat). During WW II Japan occupied Timor and around 60,000 Timor Leste volunteers died in the struggle to defeat the Japanese. When Dutch rule ended in 1945 Timor Barat became part of Indonesia, but Timor Leste remained a Portuguese colony until 1975. Almost immediately after independence had been declared, Indonesia occupied Timor Leste and a long and violent struggle ensued until Indonesia withdrew in 1999.

Timor Leste is still rebuilding after this conflict and it would be expected that fertility levels will decline as health, education and basic services improve and opportunities for employment increase.

See <https://www.bbc.com/news/world-asia-pacific-14952883> for a full chronology

The negative association between levels of development and fertility is less consistent in the Pacific Region than in the Caribbean and Indian Ocean Regions. In Melanesia, where PNG accounts for around 80% of the total population, only the most developed states, Fiji and New Caledonia, have TFRs below 3, while TFRs remain above 3 across most of Micronesia. In Polynesia where living conditions are generally good, several states still have TFRs of around 4.

The Pacific now experiences fewer deaths from vaccine-preventable infectious diseases, but TB, malaria and pneumonia continue to be a concern, especially in Melanesia. The most startling change in Pacific mortality patterns, however, has been a dramatic increase in lifestyle-related non-communicable disease since the 1960s, as noted above. Table 1 also shows that most states in the three regions have negative migration rates, with immigrants out numbering emigrants only where there is most development, including development of tourism. New Caledonia, which is an overseas territory of France, offers substantial economic incentives to encourage French citizens to migrate from continental France.

CONTEMPORARY ISSUES AND IMPACTS ON ISLAND POPULATIONS

Climate change, sea level rise, natural disasters and pollution

The sea plays a major role in life in most SIDS. The majority of people tend to live near the coast and coastal fisheries are a major food source, while boat travel is often crucial to transport and communications. Climate change and sea level rise

that impact marine environments are therefore of particular concern in small island states. Some atoll nations, such as Maldives, Seychelles, Kiribati, Tuvalu and Republic of the Marshall Islands, have only a few hectares of land more than a few metres above sea level. Projected sea level rises of a metre by 2100 would mean their entire populations would have to be resettled in other countries. Already some communities in Kiribati have been obliged to relocate because of incursions of the sea (Bowers 2017).

Other island states with substantial uplands, such as Solomon Islands and Haiti, still face losing some of their most habitable lands. At the time of writing, Kiribati and Tuvalu were exploring options to purchase land in other countries and/or attempting to negotiate resettlement options with countries on the Pacific Rim. Population relocation brings many challenges of adaptation, including different climates, different lifestyles and different economies, while islanders typically have strong cultural ties to their traditional lands and may be very reluctant to move. Moreover, people whose lifestyles are largely traditional with limited engagement with modern economy and society are likely to be ill-equipped to deal with the challenges of relocation.

Increasing climate instability and increases in average sea temperatures are resulting in more frequent and more severe extreme weather events (King 2017). Cyclone Irma, which struck the Caribbean Region in 2017, was the strongest cyclone ever recorded in the Atlantic, occurring only a few weeks after Cyclone Harvey, which had been rated as the strongest cyclone ever to hit the Western Caribbean. Irma destroyed 90% of the houses on the island of Barbuda, and devastated Haiti. Less than two weeks after Cyclone Irma, Puerto Rico experienced major devastation from Cyclone Maria (Harrington 2017). The Pacific Region is also experiencing more frequent and more severe and damaging cyclones, as well as El Niño events that bring protracted droughts.

Many small islands are volcanic and/or situated on major fault lines, making them particularly vulnerable to earthquakes, landslides and tsunamis. The impact of these events is particularly severe in SIDS, which tend to have many people living on coastal lowlands in basic housing but have limited capacity and resources to protect populations and recover from disasters.

Even island communities that are not immediately threatened by sea level rise or extreme weather events may find their marine resources degraded by pollution from plastics and other contaminants. Dense island populations such as on Tarawa (Kiribati) generate substantial amounts of garbage and sewage that pollute the surrounding beaches and lagoons. Other less remote island groups such as Seychelles' Aldabra Atoll may be polluted by garbage from other parts of the world (Bonnellame 2018). Pollution can have a major impact on stocks of fish and other marine creatures that are important food sources for island people.

Urban congestion

The skewed and uneven urban development inherited from the colonial era plus the high levels of internal mobility it promoted has made SIDS especially likely to experience urban overcrowding and lagging provision of services. In recent years rapidly increasing urban populations in the Caribbean Region have exceeded the capacity of governments and private sector housing programs. In 2014 it was estimated that 5 million people in the 12 member countries of the Caribbean Association of Housing Finance Institutions live in informal settlements, and in Jamaica around 20% lived in slum conditions (Donovan 2014).

At the time of writing Malé in Maldives has been the only urban area in the Indian Ocean Region to exhibit severe congestion problems, and has been able to address them because of its substantial revenues from tourism. There has generally been less funding available for urban development in Pacific states. Urban areas in Polynesia still tend to be small, with most residents still enjoying reasonable living conditions, but urbanisation in Melanesia and Micronesia is increasingly associated with 'unemployment, crime, poverty, environmental degradation, traffic congestion, heightened inequality, the rise of the informal sector (and repressions of it), and pressures on education, housing, health and other services such as water and garbage disposal' (Connell 2017:5). In almost every Pacific urban area the presence of more school leavers than new job opportunities has resulted in a 'youth bulge' comprising unemployed youth with little prospect of urban employment, but no wish for village life and rural work (Connell 2017:6).

The informal housing of expanding urban populations often spills onto flood-prone areas and marginal public lands where the settlers are themselves vulnerable while also likely to pollute and damage environmentally fragile lands (Jones 2017). Because they are regarded by authorities as illegal, settlements receive few services. For example, settlements only 10 minutes drive from the Honiara town centre obtain drinking water from polluted and/or distant streams and wells; have no electricity, sanitation or provision for garbage disposal; and have no safe pathways for access to homes perched on steep hillsides (Solomon Islands 2017). Extensive investment in central Port Moresby has transformed the appearance of PNG's capital, and citizens with secure wage employment can now enjoy modern city lifestyles, including multi-level shopping malls. Although this has improved security in areas once notorious for urban crime, extreme poverty and crime persist in settlements that have simply been pushed out to the city fringes.

Tourism and 'special services'

Islands with attractive coastlines, abundant beaches and mild climates are among the world's most popular tourist destinations, and tourism has become the economic

mainstay of around half the Caribbean states, Maldives, Seychelles and Fiji. However, tourism can have both advantages and disadvantages. It tends to be seasonal and vulnerable to changes in fashion, so does not necessarily provide secure employment for local populations. Eco-tourism can benefit communities without harming the environment but tends to be less popular than large-scale capital-intensive tourist developments. Constructing hotels and other infrastructure often requires external funding and the importation of skilled labour, leading to most of the profits being remitted to other countries. In addition, hotel chains on less developed islands typically import most of their food and other necessities for tourists, so may do little to stimulate the demand for local products and services.

The tourist potential of many islands is limited by inadequate water supplies, while strategies to augment any readily available water supply can cause environmental problems such as increased salinity. Rapanui's annual influx of around 70,000 visitors is taxing the island's water and sanitary capacity as well as disrupting life in other ways (Economist 2009). On some Caribbean islands extensive reclamation and construction of hotels, roads, sea walls and marinas have damaged sensitive mangrove areas and accelerated coastal erosion (Holdschlag and Ratter 2016).

Cruise ship tourism tends to have less environmental impact than conventional tourism and has increased from around 500,000 berths in total in 1970 to more than 22 million in 2015. Since cruise ships are actually floating hotels that stop only a day or two at each port, any scenic island that can offer a safe deep-water harbour with mooring facilities and a few buses for local transport is a potential cruise ship destination, and being 'off-the-beaten-track' is not necessarily a disadvantage. Local businesses can profit from selling meals and souvenirs and escorting tourists to local attractions, as well as supplying water, fresh food and other services to ships.

A few island states, including Belize, Cayman Islands, Nauru and Vanuatu, have augmented their economies by offering special financial services and/or tax havens, sometimes in addition to tourism. However, increased restrictions on the movement of international currencies in recent years mean that only islands with sophisticated financial and legal structures can continue to take advantage of this economic opportunity. Other island state strategies to generate revenue include Tuvalu's sale of its allocated internet domain name '.tv', the Tongan government's sale of 'protected citizen' passports to non-Tongan citizens, and registration of foreign ships under 'flags of convenience' in Republic of Marshall Islands. Islands 'that have used their isolation as a resource' (Royle 1989:112) include Nauru and Papua New Guinea, which permitted Australia to construct detention centres for asylum seekers on their territory in return for increased development assistance.

The strategic importance of islands

The remoteness of some mid-ocean locations that can limit island development can also give them strategic value in the contemporary world. The people of the Marshallese islands of Enewatak and Bikini Atolls were relocated so the US could carry out a series of nuclear tests in the 1950s and 60s, while Christmas Island was

used as a nuclear test site by Britain before it became part of independent Kiribati in 1979. Other islands such as Diego Garcia and Johnson Atoll (an outer island of Hawaii) have been used as military bases (see Box 2).

SIDS have also acquired importance as part of global political strategies. Of the 193 members of the United Nations, 33 are SIDS (United Nations 2019). There are numerous well-known instances of larger states offering inducements to SIDS in return for their United Nations vote on sometimes controversial matters, and at the time of writing the Pacific is receiving renewed attention from several large developed countries for political and strategic reasons.

BOX 2: Strategic importance: the example of Diego Garcia

The tiny Chagos Archipelago, in the mid Indian Ocean, was thought to have no indigenous inhabitants when first settled by French colonists in the late 18th century. Modest coconut and *beche-de-mer* industries were established with imported labour and continued after 1814, when the archipelago became a British territory administered by Mauritius. Except when the main island, Diego Garcia, was a British base during WWII, the Chagos Archipelago generally attracted little attention on the world stage. This changed in 1965 when it was purchased from Mauritius by Britain for £3 million, and the British Indian Ocean Territory (BIOT) was created. In the following years the plantations were closed and more than 1000 Chagossians were pressured to leave the islands so that Britain could meet its treaty agreement to provide the United States with an uninhabited island in the Indian Ocean. In the mid 1970s the United States constructed a secret military base on Diego Garcia.

Source: Gardner 2012; McQue 2017.

POPULATION PROSPECTS FOR SMALL ISLAND DEVELOPING STATES

Geography, the colonial legacy and globalisation pose particular economic and social challenges for SIDS. As well as narrow resource bases, small domestic markets, high transport, communication and energy costs and high exposure to natural disasters they are likely to experience an imbalance between population and resources and a shortage of formal employment opportunities, especially for young people. (UN-OHRLLS 2011; UN Habitat 2015).

In addition to these challenges, climate change and the continuing concentration of population in urban areas are perhaps the greatest and most difficult to address. The population future of small island states depends on whether they can manage all these challenges well enough to avoid sustained emigration and progressive depopulation.

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POPULATION PATTERNS IN SMALL ISLAND DEVELOPING NATIONS

TABLE 1: KEY DEMOGRAPHIC INDICATORS OF ISLANDS BY GEOGRAPHIC REGION

Region, subregion, country	Total population (000s)		Total fertility (live births per woman)		Infant mortality rate		Life expectancy at birth		Net migration		Population growth rate	
	c1950	c2015	1950-55	2010-15	1950-55	2010-15	1950-55	2010-15	1950-55	2010-15	1950-55	2010-15
CARIBBEAN	17 076	43 310	5.3	2.3	125	27	52	72	-5.1	-2.8	1.9	0.7
Anguilla	5	15	-	-	-	-	-	-	-	-	2.1	1.2
Antigua and Barbuda	46	100	4.5	2.1	93	9	59	76	0.8	-0.1	2.7	1.1
Aruba	38	104	5.7	1.8	69	15	60	75	-7.7	2.4	2.8	0.5
Bahamas	79	387	4.1	1.8	71	9	60	75	-0.5	5.2	2.3	1.4
Barbados	211	284	4.4	1.8	86	10	57	75	-6.2	1.5	1.5	0.3
Caribbean Netherlands	7	25	-	-	-	-	-	-	-	-	1.5	3.2
Cayman Islands	6	60	-	-	-	-	-	-	-	-	0.8	1.5
Cuba	5 920	11 461	4.2	1.7	81	5	59	79	-1.0	-1.3	2.0	0.2
Curaçao	100	158	5.1	2.1	66	10	61	78	4.8	8.9	3.1	1.4
Dominica	51	73	-	-	-	-	-	-	-	-	1.3	0.5
Dominican Republic	2 365	10 528	7.6	2.5	153	25	46	73	-1.5	-3.0	3.2	1.2
Grenada	77	107	5.8	2.2	108	10	56	73	-14.2	-8.1	1.1	0.4
Guadeloupe	210	450	5.6	2.0	81	6	53	81	-2.5	-4.4	2.3	-0.0
Haiti	3 221	10 711	6.3	3.1	221	47	37	62	-1.8	-2.9	1.7	1.4
Jamaica	1 403	2 872	4.2	2.1	90	15	59	75	-4.9	-6.5	1.9	0.4
Martinique	222	386	5.7	2.0	81	6	56	81	-6.8	-8.6	2.0	-0.5
Montserrat	14	5	-	-	-	-	-	-	-	-	1.1	0.7
Puerto Rico	2 218	3 674	5.0	1.5	63	6	64	79	-26.0	-5.6	0.3	-0.2
St Kitts and Nevis	46	54	-	-	-	-	-	-	-	-	1.0	1.1

BEGINNING POPULATION STUDIES

Region, subregion, country	Total population (000s)		Total fertility (live births per woman)		Infant mortality rate		Life expectancy at birth		Net migration		Population growth rate	
	c1950	c2015	1950-55	2010-15	1950-55	2010-15	1950-55	2010-15	1950-55	2010-2015	1950-55	2010-15
CARIBBEAN (Continued)	17 076	43 310	5.3	2.3	125	27	52	72	-5.1	-2.8	1.9	0.7
St Lucia	83	177	6.0	1.5	148	11	53	75	-21.5	0.0	0.9	0.5
Sint Maarten (Dutch)	67	109	-	-	-	-	-	-	-	-	1.9	0.0
St Vincent and Grenadines	1	39	7.3	2.0	122	17	51	73	-14.0	-9.1	6.9	3.1
Trinidad and Tobago	646	1 360	5.3	1.8	83	25	58	70	-0.8	-0.7	2.7	0.5
Turks and Caicos	5	34	-	-	-	-	-	-	-	-	0.6	2.1
Virgin Islands (UK)	7	30	-	-	-	-	-	-	-	-	0.6	2.0
Virgin Islands (US)	27	105	5.3	2.3	58	9	63	79	-2.1	-8.5	2.0	-0.2
INDIAN OCEAN												
Comoros	159	777	6.0	4.6	192	58	39	63	0.0	-2.7	2.2	2.8
Maldives	74	418	6.0	2.2	268	9	34	76	-0.1	11.2	2.0	2.4
Mauritius	493	1 259	5.9	1.5	103	12	50	74	1.0	-1.9	1.6	2.8
Mayotte	15	240	7.9	4.1	142	4	47	79	30.7	-1.3	2.9	0.2
Réunion	248	863	6.9	2.4	142	4	48	80	1.9	-3.3	4.5	2.8
Seychelles	36	94	5.0	2.4	85	10	58	73	-10.0	-4.8	3.2	0.8
PACIFIC AND TIMOR LESTE												
Timor-Leste	433	1 241	6.4	5.9	264	44	30	68	0.2	-8.5	1.3	2.2
Melanesia	2 165	9 933	6.3	3.7	137	44	40	66	-0.6	-0.7	1.9	2.0
Fiji	289	892	6.6	2.6	64	16	52	70	-2.1	-6.6	3.0	0.7
New Caledonia	65	269	5.2	2.2	117	13	51	76	-10.4	4.4	0.9	1.4
Papua New Guinea	1 674	7 920	6.2	3.8	150	49	38	65	-0.2	0.0	1.7	2.2
Solomon Islands	90	587	6.4	4.1	146	30	45	70	3.7	-4.3	2.6	2.1
Vanuatu	48	265	7.6	3.4	170	24	42	71	-0.4	0.5	2.8	2.3

POPULATION PATTERNS IN SMALL ISLAND DEVELOPING NATIONS

Region, subregion, country	Total population (000s)		Total fertility (live births per woman)		Infant mortality rate		Life expectancy at birth		Net migration		Population growth rate	
	c1950	c2015	1950-55	2010-15	1950-55	2010-15	1950-55	2010-15	1950-55	2010-2015	1950-55	2010-15
PACIFIC AND TIMOR LESTE												
Micronesia	155	519	6.3	3.0	103	28	53	73	-7.3	-9.3	1.9	0.6
Guam	60	162	5.5	2.4	83	10	57	79	-12.6	-9.5	1.0	0.3
Fed. States of Micronesia	32	104	7.2	3.3	97	33	55	69	0.0	-15.8	3.4	0.2
Kiribati	33	112	6.1	3.8	142	47	46	66	-6.2	-4.0	2.0	1.8
*Marshall Islands	13	53	8.0	4.1	97	26	55	70	-	-17.1	1.3	0.2
*Nauru	3	11	4.5	4.3	58	33	59	61	-	-9.4	4.1	2.3
*North Marianas (Cwlth)	7	55	5.7	2.2	130	5	56	75	-	0	2.7	0.1
*Palau	7	21	6.2	1.7	97	12	55	69	-	0	2.1	0.8
Polynesia	242	677	6.8	3.0	98	15	50	75	-8.1	-10.5	2.5	0.5
*American Samoa	19	56	6.0	3.1	56	15	63	72	-	-15.5	0.8	-0.0
*Cook Islands	15	17	6.2	2.8	94	7	49	76	-	-5.2	1.6	-1.2
French Polynesia	60	278	6.0	2.1	130	7	49	76	-4.0	-3.7	2.7	0.7
*Niue	5	2	5.8	2.2	76	10	59	69	-	-25.0	0.1	-0.1
Samoa	82	194	7.6	4.2	107	18	46	74	-6.3	-13.4	2.8	0.8
*Tokelau	2	1	5.0	2.1	41	-	59	-	-	-16.6	0.5	1.9
Tonga	47	106	7.3	3.8	59	21	59	73	-6.3	-15.4	3.2	0.4
*Tuvalu	5	11	4.2	3.7	118	23	44	66	-	0	1.5	0.9
*Wallis and Futuna	7	12	7.2	2.0	107	5	46	74	-	-8.3	2.1	-2.1

Main sources: UN World Population Prospects 2017;

* = From SPC Population Data Sheet 2017 (2015 Male and female E0 averaged) with 1950 TFR, IMR and E0 from Rallu, 2010