

Rowena Cullen
Graham Hassall *Editors*

Achieving Sustainable E-Government in Pacific Island States

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Foreword

I am delighted to be invited to write a Foreword to this very timely volume which is about a subject of considerable importance to the small island states of the Pacific. E-government, the application of information and communications technologies in the public sector in Pacific Island countries, has the potential to make a major contribution to their developing economies and to link our small countries to the global knowledge economy. As the Pacific Regional Digital Strategy of 2010 noted, information and communications technologies (ICTs) are ‘universally acknowledged as powerful tools for development essential to social development and economic growth.’ They are also ‘critical to the development of good governance [and] vital for sustainable development.’

In the Pacific, we face many challenges including lack of economy of scale, lack of resources, tyranny of distance, lack of capacity and expertise, poor connectivity, expensive and centralized services, to name a few. This book demonstrates that ICT is a key enabling and transformational tool essential to addressing these challenges. Due to the lack of resources, there are competing interests when allocating these. Do we use resources to build roads, climate proof schools or promote e-government? For this reason, the knowledge and insights presented in the volume are important to us as Pacific leaders. The book gives us an overview of what has been achieved to date, and reminds us of the important role of leadership and good public policy in bringing technological change into our countries, in seeing policy through to implementation, and ensuring that such change is sustainable, and leads to good governance. So it is valuable to read of some of the exciting initiatives that have been taking place in both our regional organizations, and in individual countries and the real gains that have come from them. It is even more valuable to have them all brought together in one place, and to be able to get such a comprehensive overview of e-government in Pacific Island countries and the benefits it brings. In fact this book localizes e-government, making it more e-government for SIDS. In addition, the book offers some valuable analysis of what works and doesn’t work, and what makes for sustainable change, applying relevant theoretical approaches to help us see the bigger picture.

Most Pacific countries consist of widely dispersed islands that are poorly served by airline and shipping services. The poor transportation services are further compounded by lack of connectivity in these outer islands. The connectivity options which are discussed in the book, especially the provision of services using mobile phones, afford the most promising solution to mitigate the lack of accessible services in these remote communities. Government services that can be provided on a mobile phone, mobile and online banking promoting financial inclusion that can enable government officials and customers to manage their financial affairs online, online tutorials that can supplement the lack of teachers, e-health systems that can improve health services, and early warning systems that can provide life saving information; are all part of a range of e-government services that can be provided to the comfort of your beautiful Fale in your remote island.

But these services can only be provided through better and more affordable connectivity, both internationally and domestically. Since 2010 we have made great progress. We are building infrastructure and capacity, and learning how to make the most of these new technologies for growth and prosperity. Despite the small size of Pacific countries, collaborations with development partners, reductions in technology costs and increased demand for capacity have made it possible to improve levels of connectivity through the use of fibre optic cables and satellites to reduce the isolation of remote communities. Who would have believed that countries with about 100,000 people could justify connecting up using these technologies. But more than 70% of Pacific SIDs are either connected or in the process of connecting up via fibre optic cables. With increased affordability, communication services are more accessible and are making the lives of our people better and providing access to global knowledge and global partnerships. E-government applications, such as e-procurement, e-business registration, and information portals, are starting to transform our governments, making them more efficient, relevant and accountable to citizens. The use of new communications technologies such as the world wide web, mobile technology and social media is enabling Pacific governments to reach more citizens and helping them become more informed and aware about the roles and responsibilities of government and citizens.

At the same time I am very proud of the achievements of our regional organizations in leading e-government in the region—the Pacific Islands Forum, the University of the South Pacific, the establishment of Japan Pacific ICT Centre at USP and development of new ICT programmes, and the Pacific Community (SPC). The role of the Forum in setting regional policy and assisting member countries to develop good cross-cutting policy and practice, and the role of the SPC with its focus on scientific and technical expertise, its regional databases and support for national e-government initiatives are rightfully acknowledged by the authors. Indeed, the fact that Pacific Leaders in 2015 identified ICT as a regional priority is a testimony to the regional organizations' recognition and advocacy of the key role of ICT in development. From my personal experience in ICT in both Tonga and at the SPC, I have learned what it takes to ensure that projects succeed and are sustainable. E-government is a critical issue for us and we need to exploit the opportunities it presents but be mindful that we do not have the resources to become a testing

ground for ideas or ambitious agendas. We need national champions to drive its implementation but we still need to build carefully, reflecting on what works within our own cultures and meets our particular needs, selecting carefully from the opportunities that present themselves, building capacity and learning from our own as well as others' experience.

The editors, Graham Hassall and Rowena Cullen, have done an excellent job in ensuring that so many perspectives on e-government have been covered, from global and regional policy, to infrastructural and regulatory issues, to key government sectors that have been transformed by ICTs. The book's emphasis on having the right legislative and policy framework and the importance of educating the lawmakers and policy makers is crucial as Pacific leaders can't, or shouldn't, regulate what they don't understand. The authors have integrated their extensive knowledge and experience of governance, their insight and knowledge of the region, to ensure that issues are considered within the Pacific context. The book also identifies many of the factors that are important for successful and sustainable e-government, and the importance of local ownership. There is no silver bullet to a successful e-government programme. Each Pacific country should identify where it is in developing e-government, focus on its priorities, then develop its own e-government roadmap that can include legislative review to enable e-government services, establishing an independent regulator, ICT capacity building, defining data architecture, improving international and local connectivity, using ICT for climate change and disaster risk reduction, or implementing e-procurement.

I hope that politicians, policy makers, administrators, technical advisors and development partners will all read this book; I am sure all will learn something of value.

Let's celebrate these successes while we take note of the challenges we face as small isolated island nations, and the magnitude of the task that lies ahead. We are ready for it, and we embrace it—we have come a long way, but ahead lies an even more exciting e-Pacific Island country journey.

Malo 'aupito
Hon. Siaosi 'Ofakivahafolau Sovaleni
Deputy Prime Minister of Tonga and Minister for Meteorological
Services, Energy, Information, Disaster Risk Management
Environment, Climate Change, and Communication (MEIDEC)

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Wellington, October 2016

Rowena Cullen
Graham Hassall

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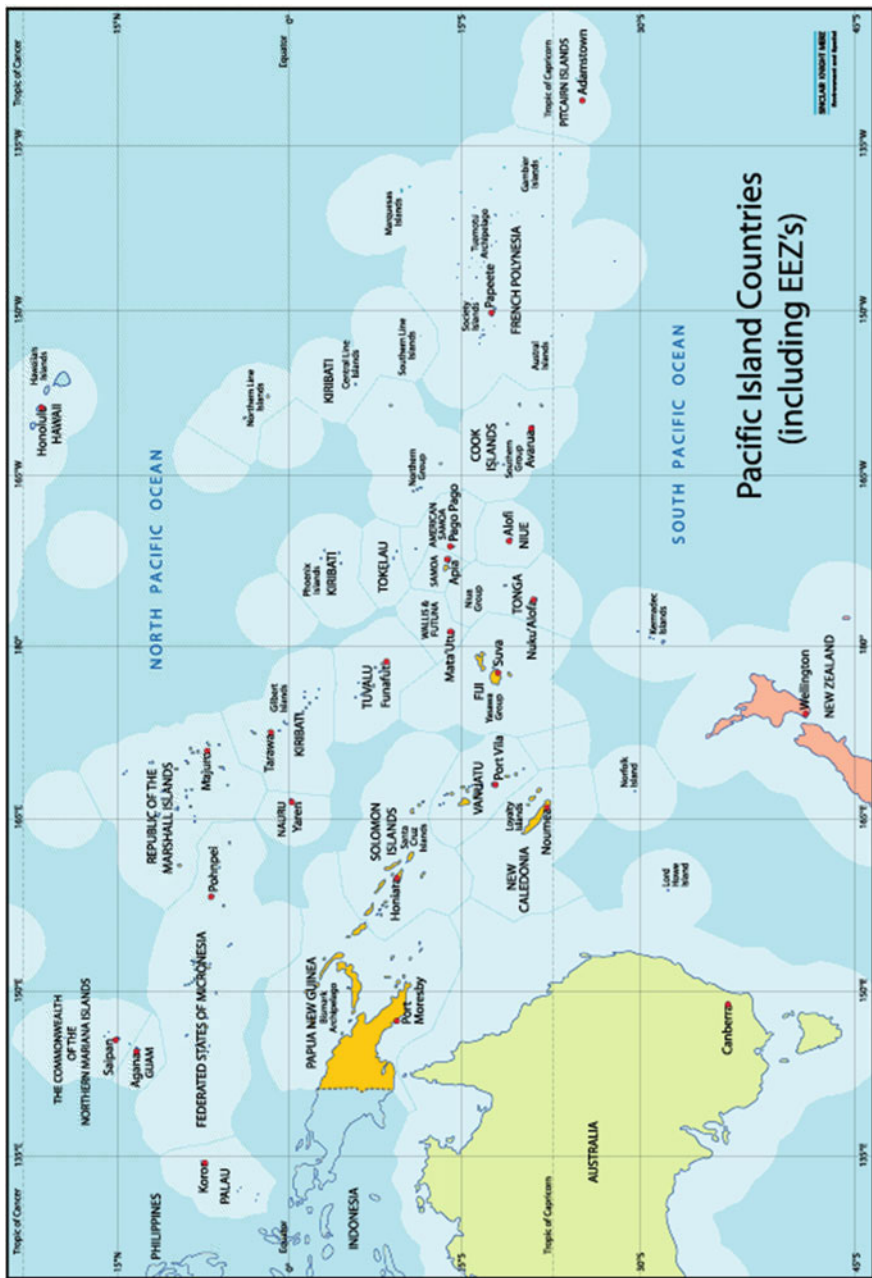
Ian has 10 years' experience working in the region, starting at SPC as the inaugural ICT Outreach coordinator. He helped develop and review the regional ICT and ICT for Education Frameworks and has led many initiatives, including the OLPC and Rural Satellite connection projects and more recently has been involved in OER and MOOC developments in the region. He is currently working with five Pacific ministries of education and developing regional approaches that will assist many more. His engineering background and Pacific experience help him develop ICT solutions appropriate for Pacific education systems based on his research into the latest international developments.

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Acronyms

ADB	Asian Development Bank
CC	Climate change
CCA	Climate change adaptation
COP	Conference of the Parties
CROP	Council of Regional Organizations of the Pacific
DM	Disaster management
DM	Disaster risk management
DRR	Disaster risk reduction
ESCAP	Economic and Social Commission for Asia and the Pacific (ch.1)
FAIDP	Framework for Action on ICT for Development in the Pacific
FAO	Food and Agriculture Organization
FEMM	Forum Economic Ministers Meeting
FFA	Forum Fisheries Association
GDP	Gross domestic product
ICT	Information and Communication Technologies
ICT4D	Information and Communication Technologies for Development
ISP	Institutional Strengthening Project
ITU	International Telecommunication Union
M4D	Mobile phones in Development
MDGs	Millennium development goals
MfR	Ministry for Revenue (Samoa)
NDMO	National Disaster Managers Office
OECD	Organization for Co-operation and Development
PCCR	Pacific Climate Change Roundtable
PCRAI	Pacific Catastrophe Risk Assessment and Financing Initiative
PFTAC	Pacific Financial Technical Assistance Centre
PIANGO	Pacific Islands Association of Non-Governmental Organisations
PIC	Pacific Island country
PICISOC	Pacific Internet Society
PICTs	Pacific Island countries and territories

PIFACC	Pacific Islands Framework for Action on Climate Change
PIFS	Pacific Islands Forum Secretariat
PITA	Pacific Islands Telecommunications Association
PNG	Papua New Guinea
SDGs	Sustainable development goals
SIDs	Small Island Developing States
SOPAC	South Pacific Applied Geoscience Commission, In 2011 it was replaced by the Geoscience Division of the SPC
SPBEA	South Pacific Board of Educational Assessment. Formerly a CROP agency, later integrated into SPC
SPC	Secretariat of the Pacific Community (SPC)
SPREP	Secretariat of the Pacific Regional Environment Programme
SPTO	South Pacific Tourism Organization
SRDP	Strategy for Disaster and Climate Resilient Development in the Pacific
UNDP	United Nations Development Programme
UNCTAD	United Nations Conference on Trade and Development
UN DESA	United Nations Department of Economic and Social Affairs
UNESCO	Education and Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations Office for Disaster Risk Reduction
UNPAN	United Nations Public Administration Network
USP	University of the South Pacific
WHO	World Health Organization
WSIS	World Summit for the Information Society

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Part I
E-Government in Pacific Island States

Chapter 1

E-Government in Pacific Island Countries

Rowena Cullen and Graham Hassall

Abstract This chapter explains the purpose of the book, which is to examine the state of e-government in the Pacific Islands, and how information and communication technology is changing the practice of government in the region. It outlines the structure and scope of the book, which covers the Pacific Island countries and territories which are members of the Pacific Community, and provides some background for later chapters by describing the dominant cultural groups (Melanesian, Micronesian and Polynesian) and the role of traditional forms of governance in the Pacific. It also describes the characteristics of Pacific small island developing states and how their geographical and economic environment impacts on their development. The role of telecommunications and the development potential of affordable and reliable telecommunications is also outlined. The concept of e-government, how it is appropriately defined in small island developing states and how Pacific Island countries can benefit from e-government is discussed. Their limited resources and dependence on development partners and international investment are also discussed as factors affecting the adoption of e-government. Finally, some conceptual frameworks that have been found useful in exploring e-government in the small island developing states of the Pacific are outlined: Bekkers and Homberg's 'information ecology' approach; Heeks' ICT4 2.0 Manifesto; and elements of public policy that can usefully be applied. Factors in the ongoing sustainability of e-government projects, including the role of leadership, are identified along with questions and issues that will be raised in the chapters included in the volume and addressed further in the conclusion.

1.1 Introduction

This book is concerned with the ways information and communication technology (ICT) is changing the practice of government in the Pacific Island countries and territories. These countries are seeking, to varying degrees, to use ICTs to create

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more efficient processes in government and deliver information and services to citizens and the business community online—an endeavor usually referred to as e-government. In the global development discourse Pacific Island countries (PICs) are also identified as small island developing states (SIDs), a group of countries that share similar environments and development problems. Although all countries are confronting the challenges of adopting e-government, one of the principal tenets of this book is that implementing e-government is especially challenging for these small states which have the same roles and responsibilities as larger states, but far fewer resources and capacity.

The book has two parts. In Part I, this chapter explains the geographic, demographic, economic and political circumstances that make the Pacific region unique; introduces key ideas about e-government; discusses the use of ICTs in government in the developing country context; describes the challenges that SIDs face in implementing ICTs in government; and provides some conceptual frameworks that are helpful when analyzing the state of e-government in the region, such as Heeks' conceptualization of appropriate technology use. Chapters 2 and 3 examine global policies for e-government in SIDs; their impact and effectiveness in the Pacific Islands context; how regional institutions and policies contribute to the use of ICTs by Pacific governments; and the importance of national ICT and e-government policies. Part I concludes with Chaps. 4 and 5. Chapter 4 looks at telecommunications in the region as a part of the essential infrastructure of e-government, the role of competitive telecommunications markets and of independent regulation bodies in them as factors in e-government success; Chap. 5 explores the consequent expansion of mobile technology across the region, and the potential for mobile technology (or m-government) as a subset of e-government.

Part II looks at how ICTs are used by government, starting with central financial and administrative agencies, the institutions of democracy (such as parliamentary and electoral processes and the justice sector), the role of ICTs in official statistics and in other key areas of government activity such as agriculture, forestry and fisheries, climate change and disaster management, health, and education. Each chapter asks pertinent questions: What benefits are ICTs bringing? What challenges do countries face in implementing them? How well are e-government initiatives aligned with local contexts and local needs? How sustainable are they? Who is driving these initiatives and how are they funded? We ask these questions in order to identify factors critical to the successful implementation of e-government in Pacific Island states or that lead to failure. Chapter 13 explores the role of civil society in promoting e-government in SIDs, and the last chapter adds some final reflections on these questions as well as some comment on the value of the conceptual frameworks applied, the factors that have been most influential in promoting effective e-government, and further defines the dimensions that are critical to e-government sustainability.

1.2 The Small Island Developing States (SIDs) of Oceania

Twenty-two Pacific islands and territories (PICTs) are members of the Pacific Community (see the SPC (Secretariat for the Pacific Community) website)¹ and are considered to be within the scope of this volume. They are: American Samoa, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Pitcairn Islands, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna (See map, Fig. 1.1). Not all are independent states: Cook Islands and Niue are self-governing countries 'in free association with New Zealand', which means that they control all government functions except defense and foreign affairs, while American Samoa, Guam, Wallis and Futuna, French Polynesia, New Caledonia, Pitcairn Islands, and Tokelau are non-self-governing overseas territories of the United States, France, the United Kingdom and New Zealand respectively.

The twelve independent states in this group (Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu) face the challenges of not only administering their domestic affairs on tight budgets, but representing their own interests on an increasingly crowded global stage. However, irrespective of their size or degree of sovereignty, PICs face similar challenges and frequently cooperate in shared solutions. Although not all of these countries are considered in equal detail in this book, examples and case studies are drawn from many of them, and most of the research and initiatives described in this volume, include lessons that can be of benefit to them all.

Although they are also Pacific countries, to include New Zealand and Australia in this study would suggest that solutions which work in developed, highly connected, predominantly urban societies are appropriate for SIDs, some of which fall into the United Nations' category of Least Developed Countries which inhabit a completely different environment and which face a very different set of challenges. To argue against such assumptions is one of the main themes of this volume. As this chapter and many later chapters show, the resources, environment and political context of these countries are very different from their neighbors and development partners, Australia and New Zealand, as they are from the rest of the industrialized world. Different challenges face them, different solutions apply. What works elsewhere is not necessarily appropriate for PICs. This volume is focused on identifying what does work, and how ICTs and e-government can bring promised benefits to government in the Pacific Island states.

¹The former Secretariat of the Pacific Community was recently renamed the Pacific Community (SPC), a form used throughout the volume. Australia, New Zealand, France, and the United States of America, are four of the 'founding members' of the Pacific Community, although as industrialized countries, development partners and colonial powers in the region are not actively served by the SPC.

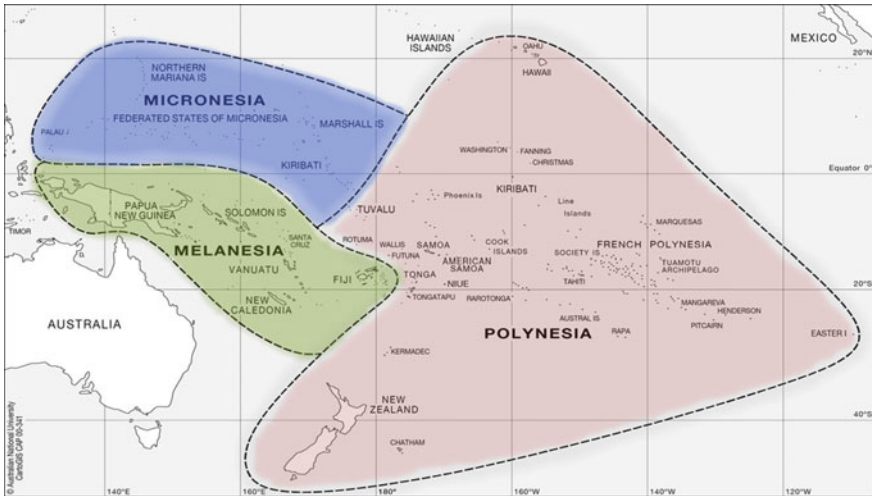


Fig. 1.1 The Islands of Micronesia, Melanesia and Polynesia. Used with the permission of CartoGIS, Australian National University

1.2.1 Cultural Groupings Among Pacific Island States

Each country and territory listed above traditionally belongs to one of three cultural regions: Melanesia, Micronesia, and Polynesia. Melaneseans make up 89% of the indigenous populations of the region, Polynesians account for about 6%, and Micronesians for 5%.² While the origin of the Micronesians³ is uncertain, they are believed to have settled in the region some 5000 years ago from the Philippines and Indonesia. They are regarded as ethnically and culturally separate from the Polynesian and Melanesian populations who originated from the indigenous Austronesian people of Taiwan, and who are believed to have migrated eastward across the Pacific between 5000 and 2000 years ago (and to New Zealand from east Polynesia 800–900 years ago), using highly developed navigational skills (Croccombe 2001). Elements of traditional culture remain significant in contemporary Pacific societies and systems of government, although these differ from country to country. Polynesian societies with hereditary systems of chiefly authority, for instance, are inherently more hierarchical than Melanesian societies in which chiefly offices exist but are filled competitively rather than by birth (Sahlins 1963).

All of these countries have considerable internal cultural and linguistic diversity. Papua New Guinea, for instance, has over 850 indigenous languages, and many of its villages, situated either in the lowland rain forests or the populous highlands, are

²http://prism.spc.int/images/downloads/Pacific_Population_Poster_StatisticsFINAL.pdf.

³The inhabitants of islands lying between the Philippines and Hawai'i, which includes Guam, the Federated States of Micronesia, the Gilbert Islands, the Marshall Islands and Palau.

as isolated by rugged terrain as the Pacific atolls are by distance across the sea. Vanuatu has the highest number of languages per capita in the world (Crowley 2000). A form of Creole or pidgin is the lingua franca in countries that have such linguistic diversity, but literacy levels in pidgin, English or French are low, and the local language often has no written form. Education is a challenge, especially in those countries made up of many small islands and those with a dispersed largely rural population, because of the difficulty of training and retaining teachers and the lack of educational materials.

Although inter-governmental organizations exist at regional levels, the diversity of the Pacific states and peoples has up to this point in time generated what has been described as a ‘soft multilateralism’ (Strickland 2015), examined in more detail in Chap. 3, based more on shared identity than on firm power-sharing arrangements (Graham 2007).

1.2.2 The Vulnerabilities of SIDs and their Impact on Development

Small island developing states have certain vulnerabilities, some related to economic ‘shocks’ and natural hazards and others as a consequence of their geography; these vulnerabilities are often articulated by the states themselves as well as by development partners in order to clarify priorities for national, regional and global development agendas. Most Pacific SIDs are archipelagos of isolated islands and atolls⁴ situated in tropical regions with limited land suitable for cultivation of crops. Exceptions include Papua New Guinea (which comprises 183 islands and atolls in addition to half of the island of New Guinea, has a land mass almost as large as California and considerable unexploited deposits of minerals), and Samoa (which has two main islands, surrounded by reefs and a few smaller islands). (See Table 1.1)

The fourteen PICs that gained independence in the second half of the twentieth century still suffer the after-effects of colonial rule (such as the territorial boundaries determined by Germany and Great Britain, and neglect of social, economic and political development suffered at the hands of the colonizers). Their economies are limited by remoteness from major markets and by their small internal markets and limited resources (although their marine resources should, if well managed, compensate for some of these disadvantages, a point discussed in Chap. 9). Governance in Pacific Island societies is shifting from rural, village-based traditional life-styles and governance structures based on chiefly authority to urbanized, mostly elected, town, provincial or regional authorities and national parliaments. A number of countries, in addition to having national Parliaments, retain some form of chiefly

⁴Atolls, which are ring-shaped coral reefs surrounding a lagoon, have little soil and no minerals.

Table 1.1 Characteristics of Pacific Island countries

Country/Territory	General characteristics				
	Last population census	Population count at last census	Land area (km ²)	Density (persons/km ²)	Urban population (%)
<i>Melanesia</i>					
Fiji	2007	837,271	18,333	47	51
New Caledonia	2009	245,580	18,576	14	67
Papua New Guinea (PNG)	2011	7,059,653	462,840	16	13
Solomon Islands	2009	515,870	28,000	22	20
Vanuatu	2009	234,023	12,281	22	24
<i>Micronesia</i>					
Federated States of Micronesia (FSM)	2010	102,843	701	147	22
Guam	2010	159,358	541	323	94
Kiribati	2010	103,058	811	134	54
Marshall Islands	2011	53,158	181	299	74
Nauru	2011	10,084	21	499	100
Northern Mariana Islands (CNMI)	2010	53,883	457	122	90
Palau	2012	17,445	444	40	77
<i>Polynesia</i>					
American Samoa	2010	55,519	199	284	50
Cook Islands	2011	14,974	237	64	74
French Polynesia	2012	268,270	3521	74	51
Niue	2011	1611	259	6	na
Pitcairn Islands	2012	57	47	na	na
Samoa	2011	187,820	2934	64	20
Tokelau	2011	1205	12	98	0
Tonga	2011	103,252	749	138	23
Tuvalu	2011	10,564	26	420	47
Wallis and Futuna	2008	13,445	142	85	0

Source http://prism.spc.int/images/downloads/Pacific_Population_Poster_StatisticsFINAL.pdf

system exercising power over traditional or ‘custom-based’ land tenure systems; local chiefly roles may also involve dispensing justice and settling civil disputes.

More than half of all Pacific Islanders continue to live in villages, observe customary law and land ownership and continue to rely on subsistence agriculture in addition to some cropping, fishing or forestry for export markets. Tensions between the traditional and introduced systems of governance often impact on the effectiveness of both.

In addition to these factors Pacific SIDs are prone to natural disasters: cyclones, volcanic activity, earthquakes and tsunamis may cause severe damage that can take

several years to repair. Climate change, which is intensifying in the 21st century, is leading to more violent tropical cyclones as well rising sea levels, loss of coastal arable land and increased salinity of inland water supplies, affecting small islands disproportionately to the extent that these consequences can be considered more potential causes of economic ‘shock’ (Haskins 2012). As Lino Briguglio, Director of the Islands and Small States Institute at the University of Malta and Chair of the Board of Trustees of the Small States Network for Economic Development,⁵ has observed, “small size, insularity, remoteness, and proneness to natural disasters ... render the economies of these states very vulnerable to forces outside their control—a condition which sometimes threatens their economic viability” (Briguglio 1995, p. 1615). Moreover, as he also notes, vulnerabilities other than size and environmental fragility that affect SIDs include dependence on foreign sources of finance and demographic changes. In the Pacific, such demographic changes would include an altered profile (e.g. either dramatically reduced or increased fertility, internal and international migration), departure of educated youth for better jobs in Australia and New Zealand or elsewhere and dependence on remittances from migrant Pacific Island workers undertaking seasonal work as agricultural laborers or in extractive industries in Australia or New Zealand (UNFPA 2014; Haberkorn 2008).

The vulnerabilities of island developing states were raised during a meeting of the United Nations Conference on Trade and Development, UNCTAD III, in 1972. Concern about their insularity and remoteness was subsequently documented in a manifesto prepared for an expert-group meeting on island developing states held in Malta in 1988 (UNCTAD 1988), and these concerns continue to be reiterated by the United Nations and UNCTAD. In 2014, the International Year of Small Island Developing States, the third UN Conference on SIDs held in Samoa focused on sustainable development, especially in the context of the commencement of the Global Development Agenda. This “post-2015 development agenda” otherwise known as the Sustainable Development Goals (SDGs) comprises 17 goals to be reached by 2030 (United Nations 2014a). Adopted by the 193 UN member states at the General Assembly in September 2015 to supersede the Millennium Development Goals of 2000–2015, the SDGs address such political and socio-economic issues as inequality, poverty, hunger, gender equality, industrialization, sustainable development, full employment, human rights, quality education, climate change and sustainable energy for all (United Nations 2015). They are discussed in more detail in Chaps. 2 and 7 and in other chapters when they are relevant to issues being considered.

1.2.3 *ICT in Pacific SIDs*

The basic conditions of life in most Pacific Island countries—a warm humid environment that is damaging to the equipment needed to support ICT, low levels of

⁵Funded by the World Bank.

English language, computer literacy and technical training, economies based on the export of one or two commodities and on subsistence agriculture—militate against wide and effective use of ICT. But a growing community of professionals educated overseas, foreign technical advisors and a burgeoning tourism industry have created demand for access to the Internet in national and provincial capitals, and to a large extent this has been met with services available for business and domestic use, Wi-Fi in hotels and cafés, and 3G and 4G mobile telephone networks in most towns. (The rapid growth of mobile technology and its impact on e-government is discussed in Chap. 5.) Businesses, government agencies and urban residents now expect to be able to use standard office ICTs and have access to the Internet for a range of purposes, supported by a variety of local computer companies, Internet providers, and telecommunications providers (see Chap. 4).

But Internet access remains costly, and reliable bandwidth and Internet service is patchy. Retaining skilled staff, maintaining equipment, negotiating access to networks and building capacity is an on-going challenge for the telecommunications industry and for Pacific governments. Nevertheless, information and communication technologies are having considerable impact in reducing the effects of some of the vulnerabilities outlined above and are making a major contribution to local economies. This impact was noted in a recent report commissioned by the Pacific Region Infrastructure Facility (Minges and Stork 2015), which observes that liberalization of the telecommunications industry, increased competition and increased global bandwidth has had both a direct impact on Pacific economies through growth in the industry itself, as well as indirect impacts through deployment of government networks (although less so on citizen and business-oriented services), and mobile services such as text alerts for severe weather, ferry schedules, voting locations and the status of pension fund accounts. In addition, important sectors such as tourism and remittances, which contribute significantly to GDP, are making use of ICTs. One specific impact of tourism is the number of tourists purchasing SIM cards for their phones on arrival or using locally based roaming services (p.2).

As well as helping build the internal economy, ICTs are also becoming an essential tool for participation in the global economy. An UNCTAD report (2004) commented: “globalization offers small island developing states (SIDs) valuable economic opportunities in the same way as it does with other countries.” But the report also notes that, “because of their intrinsic disadvantages, most SIDs will be unable to seize these opportunities unless certain special measures to compensate their disadvantages are granted to them by their development partners.” These measures, initially conceived as trade preferences, lower tariffs, non-tariff barriers and soft loans, some of which have proved difficult to sustain in the face of global trade partnerships (United Nations 2013, p. 6), are now focused in an increasingly globalized and interdependent world on assisting SIDs to actively participate in the knowledge economy and to increase connectivity (p. 9).

In the Pacific region connectivity currently means international and national access to the Internet through satellite, fiber-optic cables and terrestrial wireless (Wi-Fi/Wimax) systems. In recent years the debate between the comparative

benefits of cable and satellite have become fiercer and more urgent. The World Bank's Pacific Regional Connectivity program has assisted installation of under-water fiber-optic cables linking Tonga with Fiji, (World Bank 2011), and other cables linking Vanuatu and Samoa. New companies (BlueSky and Hawaiki) have recently proposed new cables across the Pacific linking Australia and New Zealand with the continental United States, connecting several smaller Pacific countries on the way.⁶ By contrast, the SIDs Action Development Plan no 2751 "Addressing Connectivity for the Sustainable Development of SIDs", developed after the Third International SIDs Conference (entitled *Island Voices: Global Choices*), is an alliance of the UN and several commercial partners (Intelsat, Inmarsat, Kacific Broadband Satellites, and the International Telecommunications Union). Plan no. 2751 is dedicated to bringing "low cost, reliable, diverse satellite communications capacity for the socio-economic development of the Pacific Islands region utilizing un-used satellite capacity" (United Nations 2014b). These issues are discussed in more detail in the following chapters.

In addition to the crucial need to provide affordable and reliable network configurations for economic development, and their essential role in emergency communication for disasters (see Chap. 10), several proposed initiatives are outlined in the SIDs briefing papers and subsequent SIDs Action Platforms, including the ICT4SIDS Partnership (2016). These projects are intended to take advantage of unused satellite capacity and focus on bundled (and affordable) software packages for community enterprises. They include content management software, security software, ICT applications for telemedicine and healthcare services, online and distance learning, and agriculture support systems, as well as tourism, and the marketing of local products. The projects will also include capacity development through training and outreach programs.⁷ Numerous existing projects using similar applications are discussed throughout this book; examples include tablets used for data collection and transmission, biometric personal identity systems, SMS messaging to warn vulnerable populations when cyclones threaten and GIS systems to record essential data to deal with emergencies. These and many other examples show how ICT, largely put in place as part of, or through government programs, can help overcome the problems that dispersed remote rural populations face, the challenges of geography and remoteness from global commerce. These are innovative small-scale e-government applications, far-removed from common definitions of e-government projects, but they are equally transformational in their context.

The SIDs Action Platform places considerable emphasis on regional cooperation, knowledge sharing and regional partnerships. For example, the Pacific National Sustainable Development Strategy (NSDS) Regional Support Partnership SIDs Action Plan no. 2328 (United Nations 2014c) is an initiative of the Pacific Island Forum leadership that focuses on aligning policies and activities of all Pacific

⁶Construction of the Hawaiki cable (hawaikicable.co.nz) commenced in 2016.

⁷<http://www.sids2014.org/partnerships/>

countries and territories, development partners, the private sector and NGOs. These efforts will be dependent on ICTs for communication and access to knowledge bases. In addition, the role of ICTs and new developments in technology are noted as new opportunities for regional action, the sharing of best practice, a way of diversifying the economy, building capacity and providing opportunities that will help Pacific SIDs counteract some of the vulnerabilities noted above. The link between global and regional policies and the role of ICTs and e-government in achieving the new sustainable development goals is further discussed in Chaps. 2 and 3, and in Part II of the volume.

1.3 E-Government in Pacific SIDs

All the factors outlined above have an impact on the application of ICTs in the operations of government in Pacific SIDs, and on the speed with which they are able to adopt e-government policies and practice. But what form does e-government take in this environment? While many commentators acknowledge the particular circumstances and vulnerabilities of small island developing countries in the Pacific, it is easy to assume that models of e-government appropriate to more industrialized countries also apply in this context or that measures and ways of evaluating e-government readiness, adoption and success applicable elsewhere are equally relevant here. But this is simply not the case. The factors that create the vulnerabilities of SIDs and hinder the adoption of ICTs are the same factors that make it necessary to reconsider what e-government means in the Pacific Islands region, and what are reasonable indicators of success.

This also applies to the concept of sustainability, which is often heralded as one of the most important success criteria for e-government in the development context—a context where failure and waste of exceedingly scarce resources (whether financial, human or political capital) are all too common. One of the core concepts that drove the SDGs was that development goals need to shift from a perspective based on economic growth to one that was informed by ecological economics, a framework in which the focus “must shift from merely growth to ‘development’ in the sense of improvement in sustainable human well-being, recognizing that growth has significant negative by-products” (Le Blanc 2012, p. 16). Similarly, the role of government/governance (see Sect. 1.3.1 below) must change from the neo-liberal model of minimal government intervention and market-driven services to one where “government should play a central role, including new functions as referee, facilitator, and broker in a new suite of common-asset institutions” (p. 16). In terms of these constructs, we propose that a concept of sustainable e-government for Pacific SIDs would depend on a set of criteria that address the constraints that PICS face. These would be:

- adequate resources to continue innovation in the future including staffing commitments and budgetary allocations for hardware and software (from either development partners or the national government);
- attention to capacity building during implementation of a project and ongoing commitment to staff development in annual budgets;
- a critical mass of developers and users who find sufficient value in a project, and changes in business process, outputs and outcomes that its continuation is assured (this does not preclude investment in more efficient or updated software);
- strong local leadership and ownership; and
- a clear contribution to national or local well-being.

1.3.1 Defining E-Government

Taking these criteria for sustainability into account, we have chosen to adopt definitions of e-government that fit this concept. E-government for Development Information Exchange website (EGov4Dev) defines e-government as “... the use of information and communication technologies (ICTs) to improve the activities of public sector organizations” (eGovernment for Development 2015a). The website, coordinated by the University of Manchester’s Institute for Development Policy and Management, authored by Richard Heeks, notes that some people “... restrict e-government to Internet-enabled applications only, or only to interactions between government and outside groups” (Heeks 2008a). On the EGov4D website all digital ICTs and all public-sector activities are included. The site includes three main activities in its definition:

- improving government processes, or eAdministration;
- connecting citizens: eCitizens and eServices; and
- building external interactions: eSociety, which includes “*working better with business*” and “*building partnerships*”.

This provides a useful framework for the purposes of this book, which focuses more on the first activity because that is the reality of the situation in the Pacific, although as we note throughout the book (especially about mobile government in Chap. 5), the transformational value of mobile technologies in regions where technology is expensive, and where electricity supply is irregular or non-existent, the rapid uptake of mobile technology in developing countries⁸ opens up significant opportunities for Pacific Island governments to deliver services to citizens and businesses through mobile technologies. (In many texts on e-government, the three activities above are sometimes referred to as G2G (government to government

⁸ITU-ICT Facts and Figures 2015—online at <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2015.pdf>.

activities), G2C (government to citizen) and G2B (government to business). While the authors of some chapters have occasionally used these terms, we have not used these terms as a framework, preferring the terminology of the EGov4Dev e-government for development framework as more suited to the situation in the Pacific islands.)

Also relevant is a recent definition of the World Bank, a major donor in the ICT for Development (ICT4D) sector, that reflects the values it seeks to promote through its sponsorship of technology and e-government initiatives:

e-government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions (World Bank 2015).

These terms are not the same as those currently used in the industrialized world which is moving toward the use of the term ‘digital government’ as more relevant in the 21st century. Nor is it the same as ‘e-governance’, which we define as a broader concept referring to the application and relevance of ICTs in relation to the commonly adopted concepts of governance (Bannister and Connolly 2012), although the term is used by UNESCO and by some authors, especially in the Indian sub-continent, to mean something similar to what is understood as e-government in the definitions above.

1.4 Harnessing the Benefits of E-Government for Development in the Pacific

The benefits of e-government for developing countries are not dissimilar to those identified for more developed states, taking into account the nature of government in these different environments and their political and social contexts. Most literature concerning the transformational nature of e-government focuses on developed western nations or industrialized developing nations. The concept of transformation is applied in two key ways: it includes transformation of the processes within government, and the transformation of external processes, which can be identified with either government or governance (Cullen 2010). From an information systems perspective, ICT is seen as both a facilitator and driver of organizational change, leading to efficiency, better and more responsive (or citizen-centric) services, and often aligned with a new business process model (also known as business process reengineering, or BPR.) At the same time, the public administration literature has tended to focus on the capacity of ICT to change the relationship between government and citizens by changing governance processes and transforming

democracy through the use of ICTs for e-consultation, e-participation and crowd-sourcing. Both models are credited with increasing transparency and reducing corruption.

This is emphasized in the Foreword to the United Nations 2014 survey *E-government for the Future We Want*⁹ by Wu Hongbo, Secretary-General for the 2014 Conference on Small Island Developing States, who says:

At the United Nations Conference on Sustainable Development held in Rio de Janeiro in June 2012, a global consensus was reached that to achieve our sustainable development goals we need institutions at all levels that are effective, transparent, accountable and democratic.... e-government holds tremendous potential to improve the way that governments deliver public services and enhance broad stakeholder involvement in public service.

Section 1.4.1 of the report notes that the unique geographical challenges faced by SIDs, that is, their small size, isolation, and geographic dispersion, which results in the very high cost of providing goods, services and infrastructure, including telecommunications, create real problems for governments of SIDs in coordinating and delivering services; it notes that Pacific SIDs rate very poorly in its e-government Development Index, with only Fiji ranking 85th in the top 100 countries.

The challenges faced by SIDs have intensified with the natural disasters associated with climate change and the lasting negative impacts of the global financial crisis. This highlights the structural nature of the constraints of the SIDs and the lack of effective national and international response mechanisms. Several of these difficulties are amplified by the SIDs' limited access to modern technologies. (UN DESA 2014, p. 37)

However, the report also emphasizes the value of e-government to SIDs, not only in disaster management in locations where populations are widely dispersed, but in other ways as well.

e-government is of special importance in SIDs also in relation to citizen engagement and improving the livelihood of people. With e-participation, citizens in even the most remote and far-scattered islands can be connected to their government and be consulted in decision-making processes. In commerce and improving the livelihood of people, ICT enabled tools such as mobile apps for fishers play an important role in reducing poverty. (UN DESA 2014, p. 38)

Even so, many Pacific SIDs have not experienced (or have not been able to measure) the increased efficiency, productivity, accountability or economic growth that e-government promises, nor the greater citizen involvement that e-governance potentially offers. Indeed, the inherent challenges facing Pacific Island countries make it difficult to capitalize on these benefits, and this is at the heart of the question of how Pacific Island countries can benefit from e-government. Moreover, securing the benefits of e-government is also dependent on good governance, even while it helps to ensure it.

⁹The 2016 UN DESA e-government Survey is discussed below.

Fijian economist, public servant, educator and passionate advocate of good governance, Savenaca Siwatibau, was one Pacific leader who quickly identified the potential benefits of e-government for PICs: (Siwatibau 2009, p. 13). In a 2001 paper “EGovernance, Governments and The University of the South Pacific”, Siwatibau noted benefits of early adoption of Internet-based information exchange to the public, the business community and the public sector. These benefits included better communication between government and citizens, better communication between and within government agencies allowing for more collaboration and better planning, efficiencies and transparency in procurement (government purchasing), and improved service to government employees. Siwatibau identified five characteristics of governments that sought to embrace the potential offered by e-government:

- a commitment to invest in IT;
- adoption of appropriate policies;
- collaboration with other organizations;
- re-engineering of business processes; and
- employment of people with the right skills and attitudes.

Siwatibau’s insights regarding successful deployment of new technologies are important, for they deal as much with policy leadership, public sector management and cultivation of capacity, as they do with the technologies available. These are also concerns raised in this volume.

1.5 Government in Pacific SIDs

The small size and economies of most PICs result in limited resources for government, making economies of scale hard to achieve when administrations must reach out to a population spread over many islands. Limited natural resources are stretched when a small and isolated independent state must fulfill all the roles now required of a nation, including raising revenue; employing and remunerating staff; managing finances and the economy; securing and controlling borders; policing territorial waters; managing airports; building transport, water, waste and communications infrastructure; administering the electoral system, the legislature, justice and police; licensing vehicles, drivers, professions and businesses; and providing essential health and education services to its population. In addition, these states must manage their international affairs, participate in regional and global intragovernment organizations, treaties and agreements, and protect their people when the natural hazards of the region result in disasters. Their small economies also mean that government is the biggest employer in most PICs and government expenditure plays a significant part in driving the economy. Government itself is therefore ‘small’ in such jurisdictions (though not in the neo-liberal sense), confining its activity through necessity to essential roles; the ability to go beyond this to provide modern welfare systems and other protections

for citizens is limited. However, while the economies of most PICs remain affected by their reliance on remote rural agricultural subsistence, new emerging industries such as fisheries, pearl culture, forestry, tourism and the extractive industries require engagement with government on an unprecedented scale. In addition, the growth of ICT use by residents and businesses is bringing economic growth, and with it a demand for online services from government; it also impels higher rates of literacy and an increase in ICT skills as the industry develops.

To varying degrees, all Pacific Island governments depend on funding from donors and the aid agencies of wealthier countries. The major regional players are Australia (which provides 46% of regional aid), New Zealand, the United States, France, Japan, and some EU institutions.¹⁰ More targeted aid agencies, usually units of inter-governmental organizations such as the UN (through e.g., the UNDP, UNCTAD, UN Women, FAO, UNFPA), the IMF (which has a Pacific branch PIFTAC), the World Bank (WB), and the Asian Development Bank (ADB) support projects and technical advisors throughout the region, many of which involve e-government initiatives. Aid agencies have their own agendas, and lack of awareness in Pacific countries of the potential of ICTs and how they can help governments achieve their goals can lead to development agendas and priorities for e-government projects being set by their development partners (Boase 2009; Budden 2005; Cullen and Hassall 2013). Several examples in this book describe projects that have been successfully integrated into a country's own development policies and plans; but some projects have languished because they have not been sufficiently grounded in local needs, have ignored contextual factors, or simply have ended when the project's funding ends. These failures mitigate against sustainability of e-government in PICs; they also lead to waste of effort and resources, often characterized as financial, political, opportunity and 'future' costs (the last creating barriers to future development investment (eGovernment for Development 2015a, b)). That is also a frequently-raised concern in the volume.

Moreover, aid dependency itself is a growing concern (Pryke 2013a, b). In the more economically stable Pacific Island states, especially those with abundant natural resources that can be exploited, aid is not as high a proportion of the Gross National Income (GNI) as might be expected. Table 1.2 shows World Bank data reporting net Official Development Aid (ODA) received as a percentage of Gross National Income for Pacific Island countries. Net official development assistance consists of loan disbursements made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the OECD's Development Assistance Committee (DAC), by multilateral institutions (such as the World Bank and the UN), and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of recipients. Such assistance includes loans with a grant element of at least 25% (calculated at a rate of discount of 10%).

¹⁰OECD (2016). Development Aid at a Glance. Statistics by Region. 6. Oceania. Paris, Organization for Economic Cooperation and Development.

Table 1.2 Official development aid (ODA) received as a percentage of gross national income for Pacific Island countries

Country	Percentage of GNI (%)	Trend
Federated States of Micronesia	41.8	Increasing
Fiji	2.2	Declining
Kiribati	23.2	Declining
Marshall Islands	41.5	Increasing
Palau	16	Increasing
Papua New Guinea	4.4	Declining
Samoa	15.5	Stable
Solomon Islands	27.4	Declining (from 49.7% in 2011)
Tonga	18.1	Slight increase
Tuvalu	48.3	Increasing, following a recent sharp decrease from 67.2%
Vanuatu	11.4	Declining sharply ^a

^aThis may have changed in 2015 following the severe impact of cyclone Pam

Source World Bank 2016

1.6 E-Government Readiness in Pacific SIDs

The United Nations uses various metrics to assess the e-government achievements and readiness of its member states (that is, the extent to which they meet a pre-determined set of criteria that purports to measure their potential for successful e-government adoption). Table 1.3 shows the 2016 results of the two-yearly country rankings published in the UN E-government Survey: e-government In Support of Sustainable Development (UN DESA 2016). As the Executive Summary of the 2016 Survey notes, the tools of e-government are being applied to the 2030 Agenda for Sustainable Development Goals, and toward a world free of poverty, hunger, disease and want. E-government can contribute significantly and in practical ways to realizing these goals.

Through advanced electronic and mobile services, e-government aims at improving the relationship between people and their government. It aims to make public services delivery more effective, accessible and responsive to people's needs. It also aims at increasing participation in decision making and making public institutions more transparent and accountable. (UN DESA 2016, p. 1)

New trends include facilitating integrated policies and services, establishing more open data in order to promote effective, accountable and transparent institutions and advancing e-participation to increase possibilities for participatory decision-making and service delivery.

Table 1.3 E-government development in the Oceania region

Rank	Country	EGDI	Online service component	Telecom infrastructure component	Human capital component
2	Australia	0.9143	0.9783	0.7646	1.0000
96	Fiji	0.4989	0.4130	0.3326	0.7509
145	Kiribati	0.3122	0.2101	0.0665	0.6599
156	Marshall Islands	0.2695	0.0290	0.0849	0.6947
146	Federated States of Micronesia	0.3103	0.1449	0.1197	0.6663
152	Nauru	0.2868	0.0942	0.2448	0.5214
8	New Zealand	0.8653	0.9420	0.7136	0.9402
111	Palau	0.4546	0.1087	0.3684	0.8867
179	Papua New Guinea	0.1882	0.1667	0.0739	0.3240
121	Samoa	0.4019	0.3406	0.1576	0.7076
164	Solomon Islands	0.2406	0.1667	0.1150	0.4402
105	Tonga	0.4700	0.3696	0.2302	0.8102
151	Tuvalu	0.2950	0.0217	0.1981	0.6651
149	Vanuatu	0.3078	0.1667	0.1684	0.5884

Source drawn from the United Nations E-government Survey 2016 (UN DESA [2016](#))

The rankings are based on the E-government Development Index (EGDI), a composite score based on measures for online services (e.g. government web sites, portals and functions available), telecommunication infrastructure (which includes fixed telephone lines, mobile subscribers and Internet users as a percentage of population), data obtained from the ITU and human capacity (adult literacy, combined primary, tertiary, and secondary education enrolment per head of population, expected years of schooling and mean years of schooling). The focus in the measures has moved over time from e-government readiness, based on infrastructure and human resource endowments, to “a country’s capacity to engage in the information society, without which e-government development efforts are of limited immediate use” (UN DESA [2016](#), p. 2).

The EGDI by which countries are ranked is therefore impacted by many of the factors outlined in this chapter, including the disadvantages PICs suffer due to distance, small size, vulnerabilities, and their small economies. The fact that the PICs are ranked in the lower half of a global EGDI survey is not a great concern, since small states cannot be expected to compete on the same level as larger and better endowed ones. What such exercises do provide, on the other hand, is feedback on the extent to which a country is improving on its own previous score. The results reported in 2016 indicate that only three PICs (Papua New Guinea, Solomon