

World e-government rankings

1.1. Introduction

It has been over a decade since the United Nations started assessing the global e-government development through the initiative¹ “Benchmarking E-government: Assessing the United Nations Member States” in 2001. Since then, there has been increasing evidence through public policy formulation and implementation that e-government, among others, has played an effective enabling role in advancing national development. At the same time, the *United Nations E-Government Survey* has gained wide acceptance as a global authoritative measure of how public administrations provide electronic and mobile public services. The biennial edition of the *United Nations E-Government Survey* aims to exemplify successful e-government strategies, pioneering practices with a view towards administrative reform and sustainable development.

The conceptual framework of the E-Government Development Index (EGDI)² remains unchanged since its inception in 2001. Based on a holistic view of e-government development, the methodological framework has remained consistent across *Survey* periods, while at the same time its components are carefully adjusted to reflect evolving knowledge of best practices in e-government and changes in the underlying supporting ICT infrastructure, human capacity development and online service advancement, among other factors. The EGDI is a composite measure of three important dimensions of e-government, namely: provision of online services, telecommunication connectivity and human capacity, as illustrated in Figure 1.1. Each one of these sets of indices is in itself a composite measure that can be extracted and analyzed independently (see section on Survey Methodology). The global e-government ranking, as derived from the EGDI, is not designed to capture e-government development in an absolute sense; rather, it aims to give a performance rating of national governments relative to one another.



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Figure 1.1. The three components of the E-Government Development Index (EGDI)



Chapter 1 presents an overview and broad analysis of the 2014 *United Nations E-Government Survey* data. It presents e-government development at the global and regional levels. It also analyzes the relationships of the EGDI in the Small Island Developing States (SIDS), the Landlocked Developing States (LLDS) and the Least Developed Countries (LDC) and explores the correlation of e-government with other indicators like national income.

1.2. Progress at a glance

The e-government story may not be new but it is entering a new episode. Lowering costs is still an important consideration in service delivery, but adding public value is gradually taking over as the primary goal of e-government. The view of an “e-government maturity model” no longer holds as e-government goals are constantly evolving to meet emerging challenges and increase public value. Emphasis is now being placed on deploying a portfolio of e-services that spans functions, business units and geographies, at varying local or municipal levels, thus increasing the value of service offerings to citizens by effectively adopting disruptive technologies in an adaptive and scalable manner.

In many countries, a new governance contract is emerging to support and manage the service delivery model. Collaborative service delivery is now pervasive, where governments, citizens, civil society and the private sector often work together to innovate processes and leverage new technologies. In meeting multi-faceted sustainability challenges, governments are, for example, increasingly using open data and data analytics to improve accuracy in forecasting citizens’ demand of public utilities or to screen for irregularities in public procurement to lower its risks. Predictive analysis is also used to identify issues before problematic scenarios develop, and sentiment analysis is deployed in engaging citizens in public consultation and decision-making processes. This shift is observed in both developed and developing countries, with the focus on adding public value to people’s lives in an inclusive manner.

1.2.1. Highlights of 2014 e-government rankings

Twenty-five countries have a “very high EGDI” with index values in the range of 0.75 to 1.00 (see Table 1.1). Following trends from past *Surveys*, 20 out of these 25 countries were also ranked among the top 25 in the 2012 *Survey*. In addition, the regional representation mirrors those of past *Surveys*, with a majority of 64 per cent (16 countries) from Europe, 20 per cent (5 countries) from Asia, 8 per cent (2 countries) from Americas and 8 per cent (2 countries) from Oceania. All top 25 are high-income nations, as defined by the 2012 World Bank Country Classification (see section on Survey Methodology).

The Republic of Korea has retained the top spot in 2014 with its continued leadership and focus on e-government innovation. Australia (2nd) and Singapore (3rd) have both improved their rankings considerably over their 2012 performance.

Table 1.1. World e-government leaders (Very High EGDI) in 2014

Country	Region	2014 EGDI	2014 Rank	2012 Rank	Change in Rank (2012–2014)
Republic of Korea	Asia	0.9462	1	1	-
Australia	Oceania	0.9103	2	12	↑ 10
Singapore	Asia	0.9076	3	10	↑ 7
France	Europe	0.8938	4	6	↑ 2
Netherlands	Europe	0.8897	5	2	↓ 3
Japan	Asia	0.8874	6	18	↑ 12
United States of America	Americas	0.8748	7	5	↓ 2
United Kingdom	Europe	0.8695	8	3	↓ 5
New Zealand	Oceania	0.8644	9	13	↑ 4
Finland	Europe	0.8449	10	9	↓ 1
Canada	Americas	0.8418	11	11	-
Spain	Europe	0.8410	12	23	↑ 11
Norway	Europe	0.8357	13	8	↓ 5
Sweden	Europe	0.8225	14	7	↓ 7
Estonia	Europe	0.8180	15	20	↑ 5
Denmark	Europe	0.8162	16	4	↓ 12
Israel	Asia	0.8162	17	16	↓ 1
Bahrain	Asia	0.8089	18	36	↑ 18
Iceland	Europe	0.7970	19	22	↑ 3
Austria	Europe	0.7912	20	21	↑ 1
Germany	Europe	0.7864	21	17	↓ 4
Ireland	Europe	0.7810	22	34	↑ 12
Italy	Europe	0.7593	23	32	↑ 9
Luxembourg	Europe	0.7591	24	19	↓ 5
Belgium	Europe	0.7564	25	24	↓ 1
Very High EGDI Average		0.8368			
World Average		0.4712			

With an average of 0.8368, the top 25 countries are far ahead of the rest of the world (world average of 0.4721). One of the primary factors contributing to a high level of e-government development is concurrent past and present investment in telecommunication, human capital and provision of online services.

Figure 1.2. Percentage of countries grouped by EGDI

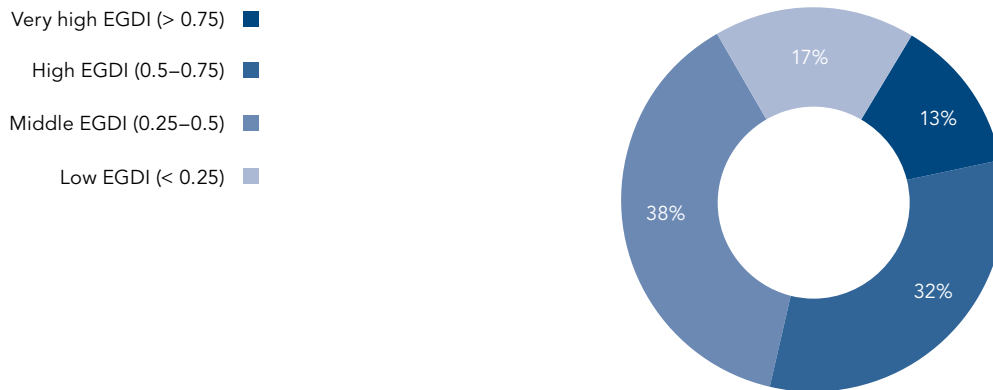


Figure 1.2 shows the breakdown of countries grouped by EGDI. While there are only 25 countries (13 per cent) ranked as very-high-EGDI (more than 0.75), the majority falls in the middle range, with 62 countries (32 per cent) ranked as high-EGDI (between 0.5 and 0.75) and 74 countries (38 per cent) ranked as middle-EGDI (between 0.25 and 0.5). The lowest performing group, ranked as low-EGDI (less than 0.25), consists of 32 countries (17 per cent). Table 1.2 shows the breakdown of each EGDI group. Some observations are:

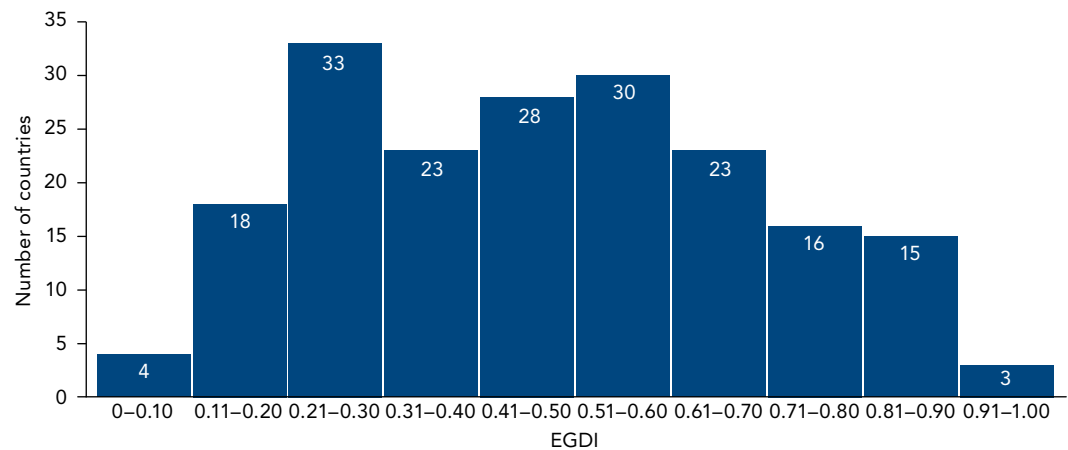
- There is a considerable opportunity for countries with high-EGDI and middle-EGDI to continue to advance their e-government development. With clear strategies, smart investment in ICT infrastructure, continued investment in primary, secondary and tertiary education, as well as through radical transformation in offering online public services, governments can achieve more to follow the upward trend.
- Among middle-EGDI countries, e-government services are increasingly delivered through mobile devices.
- Limitations in ICT infrastructure and human capacity pose the greatest challenge, particularly in low-EGDI countries with constraints of public resources. In low-EGDI countries, there is a shift towards intermediary channels, such as kiosks and postal offices, having bigger roles in facilitating access and driving usage of e-government services to disadvantaged and vulnerable groups.
- Low adult literacy rates in some middle-EGDI and low-EGDI countries, coupled with little education or low average years of schooling, pose a challenge that will prevent these countries from making significant advancements in e-government development.

Table 1.2. Countries grouped by EGDI in alphabetical order

<i>Very High EGDI (More than 0.75)</i>	<i>High EGDI (Between 0.50 and 0.75)</i>		<i>Middle EGDI (Between 0.25 and 0.50)</i>		<i>Low EGDI (Less than 0.25)</i>
Australia	Albania	Malaysia	Algeria	Marshall Islands	Afghanistan
Austria	Andorra	Malta	Angola	Micronesia	Benin
Bahrain	Antigua and Barbuda	Mauritius	Bahamas	Namibia	Burkina Faso
Belgium	Argentina	Mexico	Bangladesh	Nauru	Burundi
Canada	Armenia	Monaco	Belize	Nicaragua	Central African Republic
Denmark	Azerbaijan	Mongolia	Bhutan	Nigeria	Chad
Estonia	Barbados	Montenegro	Bolivia	Pakistan	Comoros
Finland	Belarus	Morocco	Bosnia and Herzegovina	Palau	Côte d'Ivoire
France	Brazil	Oman	Botswana	Paraguay	Congo
Germany	Brunei	Panama	Cambodia	Philippines	Djibouti
Iceland	Bulgaria	Peru	Cameroon	Rwanda	Equatorial Guinea
Ireland	Chile	Poland	Cape Verde	Saint Kitts and Nevis	Eritrea
Israel	China	Portugal	Congo	Saint Lucia	Gambia
Italy	Colombia	Qatar	Cuba	St Vincent and the Grenadines	Guinea
Japan	Costa Rica	Moldova	DPR of Korea	Samoa	Guinea-Bissau
Luxembourg	Croatia	Romania	Dominica	Senegal	Haiti
Netherlands	Cyprus	Russian Federation	Dominican Republic	South Africa	Liberia
New Zealand	Czech Republic	San Marino	El Salvador	Sudan	Malawi
Norway	Ecuador	Saudi Arabia	Ethiopia	Suriname	Mali
Republic of Korea	Egypt	Serbia	Gabon	Swaziland	Mauritania
Singapore	Fiji	Seychelles	Ghana	Syria	Mozambique
Spain	Georgia	Slovakia	Guatemala	Tajikistan	Myanmar
Sweden	Greece	Slovenia	Guyana	Thailand	Nepal
United Kingdom	Grenada	Sri Lanka	Honduras	TFYR of Macedonia	Niger
United States of America	Hungary	Switzerland	India	Timor-Leste	Papua New Guinea
	Jordan	Tunisia	Indonesia	Tonga	Sao Tome and Principe
	Kazakhstan	Turkey	Iran	Trinidad and Tobago	Sierra Leone
	Kuwait	Ukraine	Iraq	Turkmenistan	Solomon Islands
	Latvia	United Arab Emirates	Jamaica	Tuvalu	Somalia
	Liechtenstein	Uruguay	Kenya	Uganda	South Sudan
	Lithuania	Venezuela	Kiribati	Tanzania	Togo
			Kyrgyzstan	Uzbekistan	Zambia
			Laos	Vanuatu	
			Lebanon	Viet Nam	
			Lesotho	Yemen	
			Libya	Zimbabwe	
			Madagascar		
			Maldives		

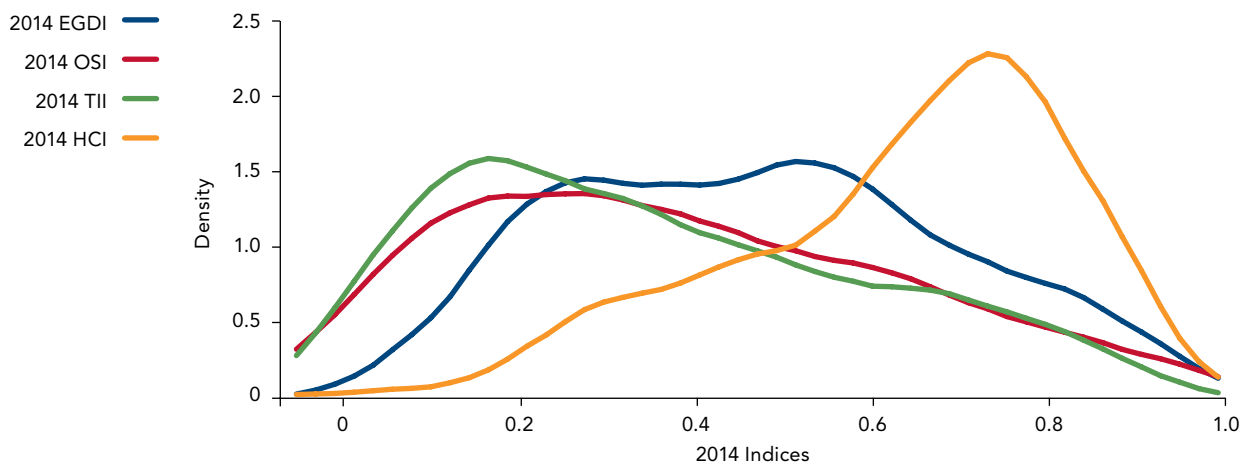
Despite global trends towards increased ICT connectivity and the increasing focus on deploying e-services for national development purposes, there remains a disparate distribution of e-government development among the 193 Member States. As illustrated in the histogram in Figure 1.3, among the countries with EGDI values lower than 0.5, the statistical distribution displays that the highest number of countries (33) fall between 0.21 and 0.30 EGDI.

Figure 1.3. Distribution of countries by EGDI, 2014



The disparities in the levels of EGDI among countries not only reflect the low levels of online services, infrastructure and human capital resources in several regions and countries of the world; they also highlight the magnitude of the existing gaps. Taking a closer look at the three components of EGDI, human capital scores are higher compared to the other two components, as shown in Figure 1.4. The lowest performing component is the Telecommunication Infrastructure Index (TII) which drags down the overall EGDI; while the Online Service Index (OSI) also trails in performance compared to the average value. One observation is that countries, in general, are putting more investment in human capital as compared to ICT infrastructure, perhaps because the former is also featured as a dominant factor in achieving the Millennium Development Goals and alleviating poverty.

Figure 1.4. Distribution of EGDI and its three components, 2014

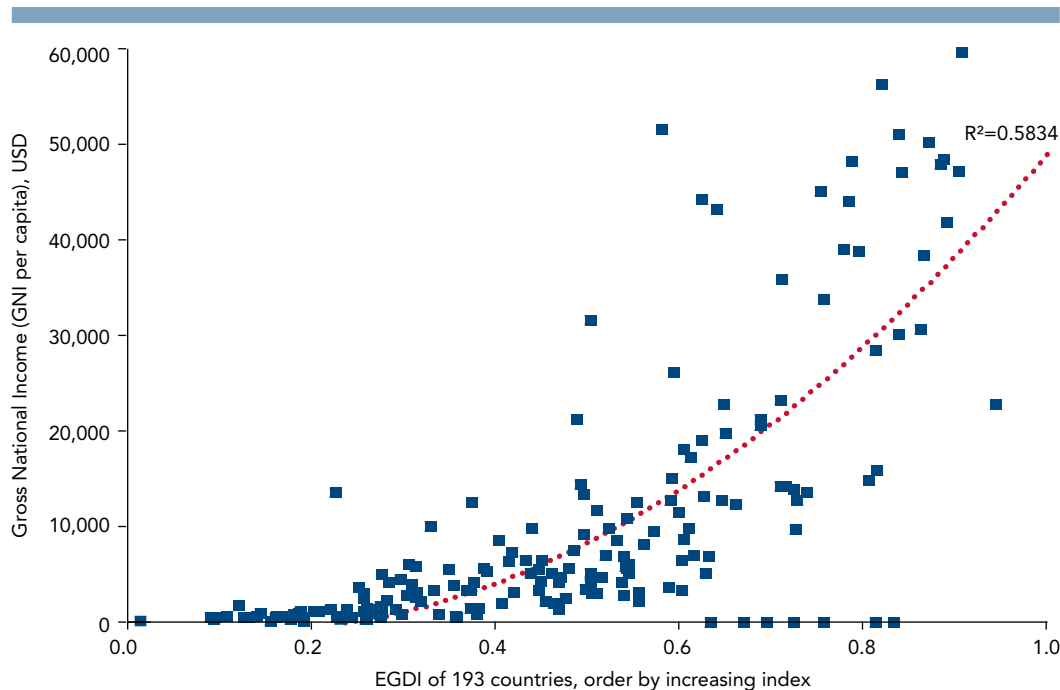


1.2.2. National income and e-government development

The income level of a country is a general indicator of economic capacity and progress, and thus has a strong influence on national e-government development. Access to ICT infrastructure and the provision of education, including ICT literacy, are highly related to the income level of a nation. The lack of these enabling factors places strong constraints on implementing e-government initiatives, even if sound policies and national strategies are in place. As a result, and despite efforts in some countries to offer online services, the full potential of e-government is far from being fully realized, particularly among the lower-middle income and low income countries, as evidenced by their poor EGDI performance.

However, it is clear that national income certainly does not, by itself, constitute or guarantee advanced e-government development, as evidenced by many outliers highlighted in Figure 1.5 and Figure 1.6. Some countries have significantly advanced their e-government development ranking despite their relatively low national income, just as there are many countries which are lagging despite their relatively high income and thereby have good opportunities for future improvement. The main enabler of good e-government progress is often putting in place an effective governance framework to support and manage a citizen-centric service delivery model, including a national ICT policy and e-government strategy, as well as strengthening institutions and building the capacities of public servants.

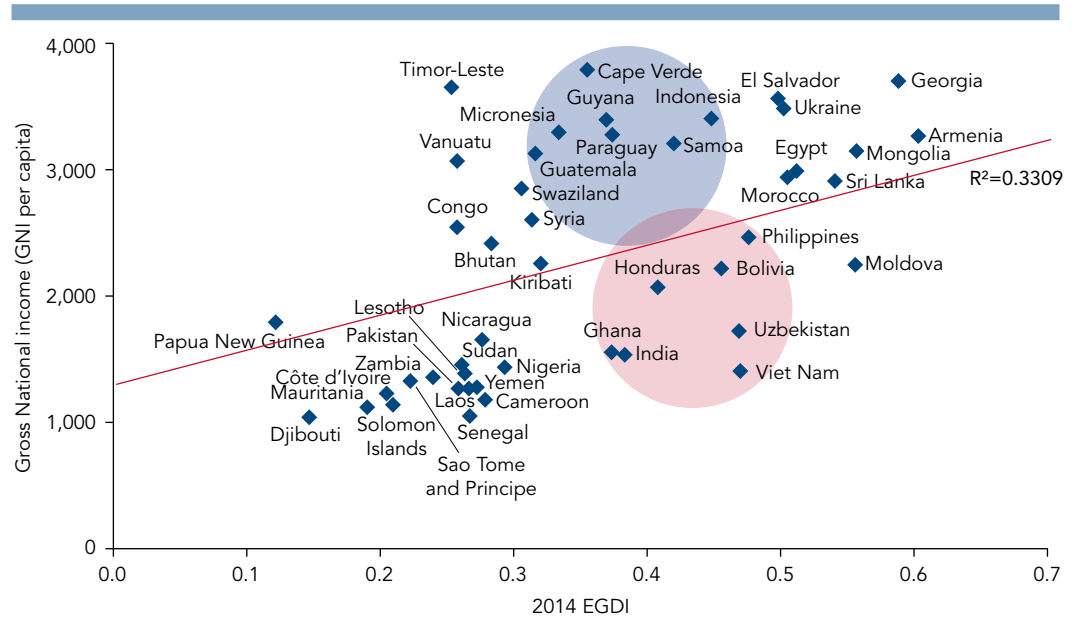
Figure 1.5. Relation between EGDI and national income (GNI per capita)



These trends reveal opportunities for countries that have not reached the level of e-government development, as have other countries in the same income group. For instance, among the lower-middle income countries, there is potential for quick advancement of countries like Cape Verde, Guatemala, Guyana, Micronesia, Paraguay, Samoa and Indonesia, as highlighted in Figure 1.6. At the same

time, some countries have clearly advanced their e-government despite their relatively lower national income. These countries include Bolivia, Ghana, Honduras, India, Philippines, Vietnam and Uzbekistan. Chapter 2 also looks at the relationship between income and online service delivery.

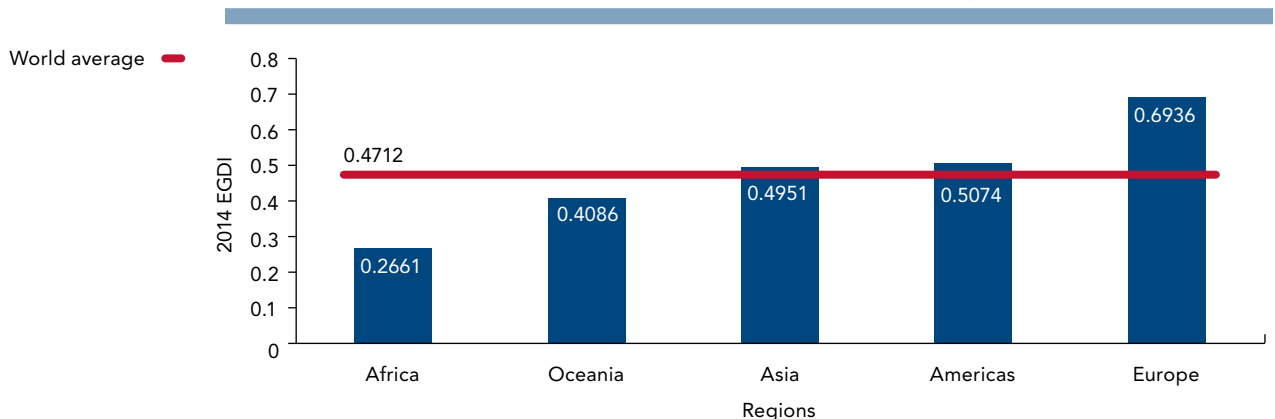
Figure 1.6. Relation between EGDI and national income (GNI per capita), lower-middle income countries



1.3. Regional development

Figure 1.7 illustrates the regional averages as compared to the world median of 0.4712 in 2014. In 2014, Europe (0.6936) continues to lead with the highest regional EGDI, followed by the Americas (0.5074), Asia (0.4951), Oceania (0.4086) and finally Africa (0.2661). Examining previous trends, there has been no change in regional positions since 2003.³

Figure 1.7. 2014 regional averages of e-government development



1.3.1. Africa

Progress in Africa remains relatively slow and uneven. The regional EGDI average in Africa is 0.2661. Six countries (Tunisia, Mauritius, Egypt, Seychelles, Morocco and South Africa) have EGDI values above the world average of 0.4712, placing them among the top 50 per cent of the world. On the other hand, about 30 per cent (16 countries) of the 54 African countries are at the bottom 10 per cent of the world ranking.

To reverse this trend, countries in the region need to focus on building human capital, including ICT literacy and on bridging infrastructure gaps to provide an enabling environment for e-government development. Visionary strategies and practical implementation plans should follow for effective deployment of sustainable online services.

Tunisia and Mauritius are the two highest-ranked countries in Africa, with Egypt, Seychelles, Morocco and South Africa following closely behind and showing progress as compared with the 2012 *Survey*. However, Africa as a whole exhibits a regional digital divide with most Internet activity and infrastructure concentrated in South Africa, Morocco, Egypt, Mauritius and Seychelles.

Table 1.3 shows the top 20 countries in the African region based on e-government development. Tunisia climbed 28 places to the 75th global position. Mauritius and Seychelles remain in the regional top 5, improving their world rankings from 93rd in 2012 to 76th in 2014 and from 84th to 81st respectively. Egypt improved its ranking significantly and is now ranked third in the region and 80th globally. Morocco improved its rank by 38 places, which is clearly the biggest jump in the region; it has emerged as a trailblazer in certain areas with particularly impressive mobile broadband take-up. Morocco was one of the first countries in the Middle East and North Africa to institutionalize a regulatory environment for promoting competition in the telecommunications sector; and as such, made great strides in levelling the playing field for private operators to enter and succeed in the market. As early as 1999, a national strategy was developed to lay out the country's ICT vision which later became the foundation for subsequent plans such as e-Morocco and now Digital Morocco (see Boxes 1.1 and 1.2 for case studies on Morocco and Mauritius).

The telecommunication sector has been an important driver of Africa's economic growth in recent years. ICT revenues have increased at a compound annual growth rate of 40 per cent in Africa and the number of mobile subscribers exceeded 400 million in 2011. To meet the increased demand, investment in telecommunication infrastructure—about \$15 billion a year—has also grown considerably, with a 33 per cent compound annual growth rate from 2003 to 2008.⁴ The increase in revenue generation in Africa has mostly been due to the exponential usage increase of mobile technologies and related services. Africa's average annual growth rate in mobile subscriptions was estimated in 2012 at 65 per cent or higher, making it the highest in the world.⁵ Mobile value-added services have also been launched by both public and private sectors throughout the continent to enable and support a broad range of sectors, including food security, agriculture, banking, a broad range of education and healthcare, among others.

Table 1.3. Top 20 countries in Africa

Country	Level of Income	EGDI	2014 Rank	2012 Rank	Change in Rank
High EGDI					
Tunisia	Upper Middle	0.5390	75	103	↑ 28
Mauritius	Upper Middle	0.5338	76	93	↑ 17
Egypt	Lower Middle	0.5129	80	107	↑ 27
Seychelles	Upper Middle	0.5113	81	84	↑ 3
Morocco	Lower Middle	0.5060	82	120	↑ 38
Middle EGDI					
South Africa	Upper Middle	0.4869	93	101	↑ 8
Botswana	Upper Middle	0.4198	112	121	↑ 9
Namibia	Upper Middle	0.3880	117	123	↑ 6
Kenya	Low	0.3805	119	119	-
Libya	Upper Middle	0.3753	121	191	↑ 70
Ghana	Lower Middle	0.3735	123	145	↑ 22
Rwanda	Low	0.3589	125	140	↑ 15
Zimbabwe	Low	0.3585	126	133	↑ 7
Cape Verde	Lower Middle	0.3551	127	118	↓ 9
Gabon	Upper Middle	0.3294	131	129	↓ 2
Algeria	Upper Middle	0.3106	136	132	↓ 4
Swaziland	Lower Middle	0.3056	138	144	↑ 6
Angola	Upper Middle	0.2970	140	142	↑ 2
Nigeria	Lower Middle	0.2929	141	162	↑ 21
Cameroon	Lower Middle	0.2782	144	147	↑ 3
Regional Average		0.2661			
World Average		0.4712			

Despite this phenomenal growth, there are challenges for strategic e-government development. Governments may need to play a greater role in navigating effective policies to reduce access costs for mobile broadband; support private collaboration; encourage innovative business models that drive employment such as micro-work and outsourcing; and support ICT entrepreneurship. Connectivity and digital divide issues should also be given more attention in the region, given the fact that in rural locations, where 65 to 70 per cent of Sub-Saharan Africa's population currently resides, connectivity is still nearly non-existent.⁶ Regional cooperation mechanisms could be strengthened to facilitate national development goals, particularly among those countries with no direct sea access (see section on Landlocked Developing Countries).

While the general e-government trends in Africa seem to be inclined toward mobile government initiatives and social media strategies, it is also advisable for policymakers to explore e-government on a more fundamental level through adjusting legislation and policies to encompass technology in national development strategies and welcoming new ideas and ways of connecting with citizens.

Box 1.1. Case study on citizen consultation in Morocco

Morocco's regional leadership can be attributed to its comprehensive government portal. As part of the government's effort to bring state of the art e-services to its citizens and include them in the decision making process, the government developed an e-consultation platform through the website of the *Secrétariat Général du Gouvernement*, where citizens can access legislative texts online, read and download them and post their comments and concerns. In this way, the government presents to its citizens a transparent, inclusive and easy channel through which they can share their concerns and make their voices heard; hence enriching democratic governance processes in the country.

The government also presents its responses to citizens' comments and provides feedback; showing that they track the concerns and remarks of citizens, take them into consideration and deliver a response.



Source: <http://www.sgg.gov.ma>

Box 1.2. Case study on the Small Island Developing State of Mauritius

The government of Mauritius has put effort into developing their online portal and their telecommunication infrastructure. Their website www.gov.mu offers citizens an exhaustive list of e-services segmented by target persons (139 services), by domain (59 services), by ministry (53 services), by department (13 services) and parastatally (14 services).

Even though Mauritius is one of the Small Island Developing States with a small land area and population, its economy has developed since independence from a small-scale focus based on agriculture, to a diversified middle-income economy. This increased the government's potential to invest in infrastructure, communications and education, which raised the Human Capital Index of Mauritius and in turn raised its ranking in the regional EGDI.

The government portal also offers citizens a platform for e-participation through chat rooms, a media library, blogs and discussion forums.



Sources: <http://www.gov.mu/English/Pages/Media.aspx>, <https://www.gov.mu/English/E-Services/Pages/default.aspx>

1.3.2. Americas

The top performing countries in the Americas region are the United States and Canada, both of which are also among the world leaders. Table 1.4 displays the top 20 countries in the Americas region. As in the recent past, the regional EGDI for the Americas is above the world average score, with most of its countries concentrated in the first 100 positions of the ranking. Central American and Caribbean countries are still located in the lower half of the ranking, however, reflecting the clear divide between these subregions and the rest of the Americas (see also Box 1.8 in the Small Island Developing States section.)

Since 2012, the United States of America has taken important steps to drive technology towards sustainable growth and quality jobs through policies that support

innovation and education. It has also customized its digital agenda to fit the new tendencies and needs of its citizens, such as cloud computing, smart mobile devices, tablets and high speed networks. Uruguay, widely recognized as the country in the South with the largest per capita export of software,⁷ has demonstrated great progress in EGDl and its components between 2012 and 2014, with online services increasing by 55 per cent and telecommunication infrastructure improving by 27 per cent. Even though the country is recognized by the high quality of its tertiary education system in the areas of technology and computing, its Human Capital Index has decreased by 10 per cent. Haiti is still at the bottom of the ranking, but is demonstrating some improvements. In 2012, the EGDl was 0.337 points lower than the world average, whilst in 2014 the country has slightly reduced the gap with a difference of 0.2903. Haiti has faced major difficulties in the past which hinder its development, including the major earthquake in 2010.

Table 1.4. Top 20 countries in the Americas

Country	Level of Income	EGDI	2014 Rank	2012 Rank	Change in Rank
Very High EGDl					
United States of America	High	0.8748	7	5	↓ 2
Canada	High	0.8418	11	11	-
High EGDl					
Uruguay	High	0.7420	26	50	↑ 24
Chile	High	0.7122	33	39	↑ 6
Argentina	Upper Middle	0.6306	46	56	↑ 10
Colombia	Upper Middle	0.6173	50	43	↓ 7
Costa Rica	Upper Middle	0.6061	54	77	↑ 23
Brazil	Upper Middle	0.6008	57	59	↑ 2
Barbados	High	0.5933	59	44	↓ 15
Antigua and Barbuda	High	0.5927	60	49	↓ 11
Mexico	Upper Middle	0.5733	63	55	↓ 8
Venezuela (Bolivarian Republic of)	Upper Middle	0.5564	67	71	↑ 4
Peru	Upper Middle	0.5435	72	82	↑ 10
Panama	Upper Middle	0.5242	77	66	↓ 11
Grenada	Upper Middle	0.5220	78	75	↓ 3
Ecuador	Upper Middle	0.5053	83	102	↑ 19
Middle EGDl					
El Salvador	Lower Middle	0.4989	88	74	↓ 14
Saint Kitts and Nevis	High	0.4980	90	81	↓ 9
Trinidad and Tobago	High	0.4932	91	67	↓ 24
Bahamas	High	0.4900	92	65	↓ 27
Regional Average		0.5074			
World Average		0.4712			

Despite rapid improvement, South America, Central America and the Caribbean face some challenges regarding their online service delivery. Firstly, the infrastructure gap and broadband quality at the national level constrain access to online service. Countries like Costa Rica, El Salvador, Honduras and Belize have their Telecom Infrastructure Index pulling down their overall EGD values. Mexico's TII is very low relative to its other components, a decrease which might be partially explained by the new subcomponent (wireless broadband) added to the index. In Mexico only 9.83 inhabitants out of 100 have wireless broadband subscriptions, compared to the world average of 23.57 subscriptions per 100 inhabitants. Second, a gap in complementary assets, like IT education or computer literacy, creates deficits in human resources, business management and research and development for the telecommunications sector. The Human Capital Index for North America is much higher than the HCI for all the other sub regions: Canada and the United States of America have an average Human Capital Index of 0.9170 while in the rest of the continent this index oscillates around 0.70.

In general, institutional weaknesses in the design of policies, the organization of programs and stakeholder coordination jeopardize the long term development of e-government practices. The countries with higher rankings have already overcome the process of providing clarity about the institutional setting for e-Government. The Online Service Index of Central America (0.4006) is lower than the rest of the region, however, it is still higher than the world OSI average (0.3919).

Furthermore, the region, especially South America and the Caribbean, has shown vast improvement in most economic and social indicators since the debt crisis of the early 1980s. This progress echoed a significant improvement in the living conditions of the population. However, the region now faces uncertainties of sustainable growth while overcoming constraints that characterize its productive structure.⁸ ICT, like other general purpose technologies before it, can help modernize and revitalize traditional productive activities. Thus, governments in the region are now paying greater attention to the concept of e-government and its benefits for national sustainable development.

New ICT networks and platforms being developed by both public and private sectors are dramatically changing business models and public service delivery. Countries in the region can now take advantage of the new and growing demand for ICT goods and services in the public and private sectors to leverage the consolidation and emergence of better governance. In South America and the Caribbean the total ICT goods imported during the period of 2010 to 2012 grew by 3 per cent, whilst these imports grew only by 1.9 per cent for the entire world.⁹ Faced with sustainability issues and fast growing markets, the region may leverage the ICT sectors to provide better solutions and efficient services. The government of Trinidad and Tobago, for instance, has introduced a new online portal to facilitate business and trade, transforming national industries, business dynamism and competitiveness.¹⁰

The e-government development in the region has also benefited from Small and Medium Enterprises (SMEs) that represent the majority of private enterprises, accounting for 99 per cent of businesses and employing 67 per cent of employees

in 2013.¹¹ E-procurement opens up new opportunities for micro and small businesses, and provision of open government data can greatly facilitate urban services, as the Americas region has a fast growing population with large concentrations in urban areas. For example, Rio de Janeiro is developing an e-government and open data project to forecast natural disasters in the city and undertake surveillance in preparation for global events such as FIFA World Cup and Olympic Games.

Collectively as a region, benefits can be reaped through e-government to enhance inclusion, transparency, accountability and cross-jurisdictional efficiency and contribute to its sustainable development (see Box 1.3).

Box 1.3. The potential of e-Government development in Latin America



Source: DPADM, <http://www.unpan.org/>



Source: http://www.agesic.gub.uy/innovaportal/v/1454/1/agesic/guia_de_uso_de_la_plataforma_de_ge_del_estado_uruguayo.html; http://agesic.gub.uy/innovaportal/v/387/1/agesic/areas_de_la_agencia.html

a) Center for Innovation on e-Government Development in Colombia

The Centre for Innovation on e-Government Development was established by the Government of Colombia together with UNDESA and UNDP in 2013. The Center promotes an e-government implementation framework that goes well beyond technology. It aims at the creation of a knowledge base, identification of trends and best practices in e-government to improve the performance of public institutions at international, regional, national and local levels. The project also aims at the development and promotion of a sustainable model to be extended to broad audiences, including innovation services not only as part of an institution, but also on the web through the virtual innovation centre.

b) Agency for e-Government development in Uruguay

The Agency for e-Government development of Uruguay promotes wide access to ICT; the acquisition of skills and knowledge to achieve greater social integration and better-equipped young people for the future; provides innovative solutions to improve services and quality of care that is given to society, simplifies procedures and processes; and provides user support regarding consultations and initiatives related to the areas of competence of the Agency. It also strengthens links with academia, civil society and international organizations with similar purposes; issues and proposes policies, rules and standards; enhances the synergy between state and businesses; and promotes the development of national software.

The Uruguayan E-Government Platform has the general goal of enabling and promoting the development of e-government services in Uruguay. The platform, which follows a two-pronged approach, consists of an Interoperability Platform and a set of Crosscutting Services. It implements a service-oriented architecture, leveraging the Web Services technology, to expose, use and combine government functionality implemented by public agencies. The platform is a key enabler for developing a joined-up e-government approach in Uruguay.

1.3.3. Asia

Comprising 30 per cent of the world's land area, with approximately 4.3 billion people, Asia is the largest continent and the most populous. With such diversity, the countries in Asia also exhibit varying levels of online presence and development; with the Republic of Korea leading the world ranking at number one in the 2014 *Survey*, and other countries like Afghanistan, Myanmar, Timor-Leste and Pakistan trailing among the bottom 30 countries globally.

As illustrated in Table 1.5, the Republic of Korea, with its developed telecommunications infrastructure, strong national education policy and high GDP per capita of \$22,590 US dollars in 2012,¹² took the lead globally in e-government ranking for the first time in 2010 and is again the top performer in 2014 ahead of many other developed nations. The government started implementing its Advancement of e-Government Strategy in 2007, reaching a fully digitized public administration with advanced Government-to-Citizen (G2C) and Government-to-Business (G2B) service delivery and multi-channel communication and transactions. By having an adequate and necessary infrastructure for IT development and sustainability, the Republic of Korea established a world-class transparent and efficient online presence and an equally impressive e-mobile presence, both of which serve to maintain its vanguard position and help develop more citizen-centric strategies and projects in e-governance in the future.

Singapore, which ranked second in Asia, has shown significant improvement over the last two years, jumping from 10th place globally to 3rd, followed by Japan with improvement from 18th to 6th ranking globally. Bahrain, Kazakhstan, Saudi Arabia and Oman improved in the global rankings with 18th, 28th, 36th and 48th places respectively. Six out of the top 10 countries in the Asian region itself are in Western Asia where most of the improvements have been witnessed; two of the top 10 countries are in Eastern Asia, one in South-Eastern Asia and one in Central Asia as Kazakhstan remained that sub-region's leader in e-government.

Countries in Eastern Asia in general rank higher than the world average for various reasons such as e-government leadership, inclusive e-participation policies, broad-ranging e-services and extensive open government data portals. The Republic of Korea and Japan have exhibited an upward trend in e-government, enabled primarily by their developed infrastructure, their high literacy rates—especially IT literacy—and their developed economies. The Government of Japan established the New IT Reform Strategy with the goal of reducing the percentage of national and local government paperwork, such as applications and form submissions performed online, to at least 50 per cent by 2010. Thus, this initiative allowed almost all applications and other forms used by the national government to be submitted online, accompanied by a dissemination strategy to inform the public about such e-services. The Japanese government also expanded this strategy to include transactions between the local and national governments and businesses.¹³

Ranked 6th in Asia in general and first in Central Asia, Kazakhstan is the only country in Central Asia to show improvements between 2012 and 2014; jumping from a global ranking of 38th in 2012, to 28th in 2014. Uzbekistan came in second

place but dropped from 91st place to 100th globally. This decline in ranking in all Central Asian countries, with the exception of Kazakhstan, has been a trend in the sub-region since 2008; it could be attributed to insufficient development of telecommunication infrastructure and online presence.

Table 1.5. Top 20 countries in Asia

Country	Level of Income	EGDI	2014 Rank	2012 Rank	Change in Rank
Very High EGDI					
Republic of Korea	High	0.9462	1	1	-
Singapore	High	0.9076	3	10	↑ 7
Japan	High	0.8874	6	18	↑ 12
Israel	High	0.8162	17	16	↓ 1
Bahrain	High	0.8089	18	36	↑ 18
High EGDI					
Kazakhstan	Upper Middle	0.7283	28	38	↑ 10
United Arab Emirates	High	0.7136	32	28	↓ 4
Saudi Arabia	High	0.6900	36	41	↑ 5
Qatar	High	0.6362	44	48	↑ 4
Oman	High	0.6273	48	64	↑ 16
Kuwait	High	0.6268	49	63	↑ 14
Malaysia	Upper Middle	0.6115	52	40	↓ 12
Georgia	Lower Middle	0.6047	56	72	↑ 16
Cyprus	High	0.5958	58	45	↓ 13
Armenia	Lower Middle	0.5897	61	94	↑ 33
Mongolia	Lower Middle	0.5581	65	76	↑ 11
Azerbaijan	Upper Middle	0.5472	68	96	↑ 28
China	Upper Middle	0.5450	70	78	↑ 8
Turkey	Upper Middle	0.5443	71	80	↑ 9
Sri Lanka	Lower Middle	0.5418	74	115	↑ 41
Regional Average		0.4951			
World Average		0.4712			

Sri Lanka ranks first in Southern Asia, with the Maldives ranking in second position. The Sri Lankan government has made a substantial effort to develop its online portal which now ranks 74th in the world. The online portal offers A-Z government web indexes, 108 e-services for citizens, 51 e-services for businesses and 10 non-residence related e-services. The portal also offers extensive mobile and SMS services, an e-participation portal, government forms easily accessible online, a developed open data portal with data available in various formats, as well as a whole-of-government strategy (see Box 1.4).

Box 1.4. Sri Lanka's One for All

Sri Lanka's e-government policies have been geared towards including all segments of the population and offering services to everyone, regardless of their IT literacy levels or access to the internet. With mobile usage rates in the country exceeding 100 per cent and even the poorest people today having cell phones, albeit basic, Sri Lanka offers many m-government services.

The Government Information Center (GIC) is now providing more than 65 online services through basic phones calls, such as train schedules, job opportunities abroad, flight schedules, exam results, economic indicators, medical services and contact details.

Even though the IT literacy rates jumped from 9.7 per cent in 2004 to 40 per cent in 2012, the numbers are still not high enough to allow maximum utilization of the e-services the government provides. With the GIC, all-inclusive e-services can be delivered to the rich and poor alike and hence everyone can become a beneficiary of the digital advancement in government.

This new policy of inclusiveness and outreach towards the general population helped Sri Lanka improve in e-government service delivery and to jump from 115th rank in EGDI in 2012 to 74th in 2014.



Source: <http://www.gic.gov.lk/>

The e-government leader in South-Eastern Asia remains Singapore. Singapore's small population and land area, accompanied by a very high HDI of 0.895¹⁴ and high GNI per capita (U.S. \$47,210)¹⁵—allow the government sufficient resources to develop its online portal and offer its citizens, businesses and visitors, advanced e-services and extensive information; thus creating a one-stop-shop service delivery portal. Additionally, the high mobile and smartphone penetration rate in Singapore enables the government to provide e-access to citizens through a seamless "mGovernment" application, allowing faster, easier and more convenient use of available online resources; especially accessing forms and conducting G2C and G2B transactions.

Singapore has also developed a multi-agency programme led by the Ministry of Finance called ACE (Alliance for Corporate Excellence), grouping together systems and operation environments for human resources, finance and procurement into a common shared system. This enables government entities to share knowledge, data and best practices in a more straightforward and timely way, thus creating a cost-efficient G2G interactive flow that produces economic benefits. The financial and human cost savings of the ACE programme will not only benefit the government, but also citizens, by providing time-efficient and cost-saving services that are only possible with appropriate IT development.

Israel ranks 17th globally and 1st in Western Asia. The Israeli government portal offers services geared towards citizens, the private sector and tourists wishing to visit the country, as well as students and members of the Jewish Diaspora. The portal also offers online forms and a forum for G2C and C2G interaction and discussions; many online payments can be made through the portal and a section teaching simple Hebrew phrases can be found on the main page.

Within the Gulf Cooperation Council (GCC) countries, Bahrain ranks 18th globally, followed by the United Arab Emirates, Saudi Arabia, Qatar and Oman. Bahrain has set-up a Supreme Committee for Information and Communication Technology (SCICT) and the e-Government Authority was established to provide direction in developing and implementing a comprehensive e-Government strategy.¹⁶ The country also held the Bahrain International e-Government Forum in Manama in April 2013, dealing with innovation and open data, mobile trends, cloud computing and shared services, social networks and e-Government.¹⁷

All six GCC countries rank within the top 10 in Western Asia, due to their high GDP, high literacy rates, small populations and a keen desire by their respective governments to invest in and develop their online national portals, and subsequently offer their citizens advanced e-services and information accessible in an effortless way. All members of the GCC have their online portals linked to one another, allowing their citizens easier navigation and access. This new initiative will stimulate the public sector to deliver more transparent and high-efficiency services, hence adopting a citizen-centric approach with the needs of the citizen, as a client, in the forefront.

The six GCC countries have established a GCC e-Government committee and organized the GCC e-Government Conference, providing a platform for the leaders to discuss the various aspects of the e-Government programmes in their countries, to share and benefit from each other's experience and enhance their respective e-Transformation processes. Their common goal is to enhance their e-Services, increase the productivity and efficiency of government and improve their ranking in the global e-Government Surveys¹⁸ (see Table 1.6).

Table 1.6. E-government development of Gulf Cooperation Council (GCC)

Country Name	Organization	EGDI 2014	2014 Rank	2012 Rank	Change in Rank
Very High EGDI					
Bahrain	GCC Member	0.8089	18	36	↑ 18
High EGDI					
United Arab Emirates	GCC Member	0.7136	32	28	↓ 4
Saudi Arabia	GCC Member	0.6900	36	41	↑ 5
Qatar	GCC Member	0.6362	44	48	↑ 4
Oman	GCC Member	0.6273	48	64	↑ 16
Kuwait	GCC Member	0.6268	49	63	↑ 14
Regional Average		0.6838			
World Average		0.4712			

1.3.4. Europe

Europe continues to be the global leader in e-government development. However, in the previous ranking seven out of top ten countries were European, this time four European countries are in the top ten (see Table 1.7). Nevertheless, 11 out of the top 20 countries and 26 out of the top 40 countries are European. The on-going financial crisis, low growth, unemployment and aging population has led Europe to actively seek innovative solutions in order to remain competitive, restore growth and to be able to continue to offer a wide-range of public services to citizens. Despite the challenging times, the majority of the governments in the region report that the crisis has not had an impact on their level of e-government spending with some like Estonia, Germany, the Netherlands, Slovakia, Slovenia and Switzerland having even increased their e-government investments. This can be attributed to their support for e-government implementation as a key strategic tool to achieve wider public governance goals that support economic recovery and serve citizens.

Table 1.7. Top 20 countries in Europe

Country	Level of Income	EGDI	2014 Rank	2012 Rank	Change in Rank
Very High EGDI					
France	High	0.8938	4	6	↑ 2
Netherlands	High	0.8897	5	2	↓ 3
United Kingdom	High	0.8695	8	3	↓ 5
Finland	High	0.8449	10	9	↓ 1
Spain	High	0.8410	12	23	↑ 11
Norway	High	0.8357	13	8	↓ 5
Sweden	High	0.8225	14	7	↓ 7
Estonia	High	0.8180	15	20	↑ 5
Denmark	High	0.8162	16	4	↓ 12
Iceland	High	0.7970	19	22	↑ 3
Austria	High	0.7912	20	21	↑ 1
Germany	High	0.7864	21	17	↓ 4
Ireland	High	0.7810	22	34	↑ 12
Italy	High	0.7593	23	32	↑ 9
Luxembourg	High	0.7591	24	19	↓ 5
Belgium	High	0.7564	25	24	↓ 1
High EGDI					
Russian Federation	High	0.7296	27	27	-
Lithuania	High	0.7271	29	29	-
Switzerland	High	0.7267	30	15	↓ 15
Latvia	High	0.7178	31	42	↑ 11
Regional Average		0.6936			
World Average		0.4712			

E-government and online service delivery are increasingly seen in the region as a means to reduce costs while providing better and more user-friendly services to citizens and businesses, as well as being a part of the governments' efforts to go green. There is a renewed focus on the impact and cost-effectiveness of e-government in the region with countries such as the United Kingdom, the Netherlands and Denmark having implemented ambitious e-government efficiency and effectiveness programmes. The United Kingdom has embarked on a number of high profile initiatives to reduce the upfront expenditure on e-government whilst increasing its impact. The country makes 'digital efficiency' calculations and has established a Government Digital Service, a new team within the Cabinet Office tasked with transforming government digital services through an investment of US \$113 million per year to be offset by multiple savings, such as saving US \$5.9 billion by cutting the costs of paying work and pension benefits online. The Netherlands has already met the ambitious goal it set in 2004 to reduce the country's overall administrative costs by 25 per cent and is aiming for a further overall government saving of US \$1.8 billion by 2018 through an e-government enabled whole-of-government approach. An important element of the e-government programme of the Netherlands is the Digital by Default strategy designed to move as many services to citizens and businesses as possible online. The Digital by Default approach was also adopted by the United Kingdom in its Government Digital Strategy 2012 and is guided by the principle of redesigning online services to make them more direct and convenient for all citizens.¹⁹

At the regional level, Europe focuses its e-government efforts to tackle the financial crisis through the European Commission's Digital Agenda for Europe (DAE) and the eGovernment Action Plan 2015. The e-government strategies of the 28 European Union (EU) Member States, as well as to some extent those of non-Member States in the region, are influenced by the DAE pillars of the digital single market, interoperability and standards, trust and security, fast and ultra-fast Internet access, research and innovation, enhancing digital literacy, skills and inclusion and ICT-enabled benefits for EU society, as well as seven additional key areas unveiled at the end of 2012. The success of the DAE and the Action Plan (see Box 1.5) can be attributed to a long-term approach to e-government development, embedding it into wider socio-economic development frameworks and not seeing e-government as a stand-alone nor primarily technical activity. Also important is the voluntary commitment of the EU countries to work together in a mutually supportive form of cooperative competition in moving towards common goals through the Open Method of Coordination approach. With their focused e-government efforts through the DAE and the Action Plan, the EU countries rank high in the e-Government Development Index with 15 countries out of the 28 EU countries being in the global top 30 (see Table 1.8).

As a pioneer of e-government, the usage of online services in the EU is relatively high. The target for the EU as set out in the DAE is that 50 per cent of the adult population will be using e-government services by 2015. This goal is well on its way to being achieved with 46 per cent of EU citizens reporting their use of online public services, citing flexibility, saving time and money and simplification as the main benefits.

Box 1.5. Digital Agenda for Europe and the European e-Government Action Plan



In 2010 the two main pillars of Europe's e-government strategy were launched with the Digital Agenda for Europe (DAE) and the 2011–2015 eGovernment Action Plan. The DAE is an integral part of the Europe 2020 Strategy to achieve smart, sustainable and inclusive growth. The aim of the DAE is to help reboot Europe's economy and to ensure that citizens and businesses get the most out of digital technologies. One of the priority areas of the DAE is ICT-enabled benefits for society including e-government. The DAE also provides a Digital Agenda Scoreboard for progress assessment at EU and national levels in achieving the 78 Digital Agenda actions set for the European Commission and 23 actions for the countries. The closely linked eGovernment Action Plan identifies four priorities that e-government should support, namely empowerment of citizens and businesses, further construction of Europe's digital single market, efficiency and effectiveness of government and implementation of the above through key enablers and the necessary legal and technical preconditions including interoperability. The impact of the DAE and the Action Plan has been significant with the majority of the over thirty countries participating -EU Member States as well as other European countries—having achieved success in meeting the requirements and goals and with strong support for the overall process. It is estimated that the full implementation of the DAE would increase GDP in Europe by 5 per cent, or by 1500€ per person over the next eight years by increasing investment in ICT, improving eSkills levels of the labour force, enabling public sector innovation and by reforming the framework conditions for the internet economy. In terms of jobs, up to one million digital jobs risk going unfilled by 2015 without pan-European action while 1.2 million jobs could be created through infrastructure construction.

Source: European Commission, Digital Agenda for Europe
<http://ec.europa.eu/digital-agenda/>

The concerted and holistic efforts of Europe at both regional and national levels have helped to consolidate the position of Europe as the global leader in e-government. While there is some shifting in the ranking within the region, Northern and Western Europe continue to take the lead with seven countries out of the global top 20 being from Northern Europe and two out of the global top five being from Western Europe, while countries in other sub-regions have also made significant improvements. All the five Nordic countries (Finland, Sweden, Norway, Denmark and Iceland) are in the global top 20 and seven out of the top ten regional performers are from Northern Europe. Spain has made significant gains, improving its position from 23rd to 12th in the global ranking and from 15th to 5th in the European ranking. This improvement is the result of long-term e-government planning. In 2005, the country unveiled the Plan Avanza, its first information society strategy and in 2010 Plan Avanza 2 was launched aimed at positioning Spain as a leader in the use of advanced ICT products and services.²⁰ Other countries that made significant progress include Ireland that went up from 34th to 22nd in the global ranking, Italy from 32nd to 23rd (see Box 1.6), Latvia from 42nd to 31st, Montenegro from 57th to 45th and Belarus from 61st to 55th.

Table 1.8. E-government development in the European Union (EU) Member States

Country	Sub-Region	EGDI	2014 Rank	2012 Rank	Change in Rank
Very High EGDI					
France	Western Europe	0.8938	4	6	↑ 2
Netherlands	Western Europe	0.8897	5	2	↓ 3
United Kingdom	Northern Europe	0.8695	8	3	↓ 5
Finland	Northern Europe	0.8449	10	9	↓ 1
Spain	Southern Europe	0.8410	12	23	↑ 11
Sweden	Northern Europe	0.8225	14	7	↓ 7
Estonia	Northern Europe	0.8180	15	20	↑ 5
Denmark	Northern Europe	0.8162	16	4	↓ 12
Austria	Western Europe	0.7912	20	21	↑ 1
Germany	Western Europe	0.7864	21	17	↓ 4
Ireland	Northern Europe	0.7810	22	34	↑ 12
Italy	Southern Europe	0.7593	23	32	↑ 9
Luxembourg	Western Europe	0.7591	24	19	↓ 5
Belgium	Western Europe	0.7564	25	24	↓ 1
High EGDI					
Lithuania	Northern Europe	0.7271	29	29	-
Latvia	Northern Europe	0.7178	31	42	↑ 11
Greece	Southern Europe	0.7118	34	37	↑ 3
Portugal	Southern Europe	0.6900	37	33	↓ 4
Hungary	Eastern Europe	0.6637	39	31	↓ 8
Malta	Southern Europe	0.6518	40	35	↓ 5
Slovenia	Southern Europe	0.6506	41	25	↓ 16
Poland	Eastern Europe	0.6482	42	47	↑ 5
Croatia	Southern Europe	0.6282	47	30	↓ 17
Slovakia	Eastern Europe	0.6148	51	53	↑ 2
Czech Republic	Eastern Europe	0.6070	53	46	↓ 7
Cyprus	Western Asia	0.5958	58	45	↓ 13
Romania	Eastern Europe	0.5632	64	62	↓ 2
Bulgaria	Eastern Europe	0.5421	73	60	↓ 13
EU Average		0.7300			
Regional Average		0.6936			
World Average		0.4712			

Ireland launched its Public Service Reform Plan in 2011. The Plan highlights the role of ICT as a key enabler in delivering better public services and with a strong e-government element. Its eGovernment 2012–2015 policy document sets out a vision that places the user at the centre of eGovernment policy and introduces a new approach to transform how citizens and businesses engage with the state and reduces the costs of public service delivery.²¹ As with many other countries in the region that have improved their ranking significantly, Montenegro has also directed its efforts to e-government. At the end of 2011, the country launched its Strategy for the Development of the Information Society 2012–2016 and has inaugurated several e-government initiatives, including a business licensing e-registry portal.

Box 1.6. Italy: Compass of Transparency

The demand for transparency in public administration has been growing exponentially in Italy. Under new laws introduced since 2009, the website of every public administration is now the main vehicle of transparency. To date there are 42 typologies of different information and data that should be present by law on public administration websites (e.g. balance sheets, consultants, data about executives, performance plans, complete information about the organizational structure and the services provided to citizens). The 'Compass of Transparency' (*La Bussola della Trasparenza*), launched in 2012, is an online portal that gives the citizens the possibility to automatically analyze and monitor, in real time, the implementation of all the data and information requirements imposed by Italian law on the websites of public administrations. The core of the system is an engine that, through many software sensors and mathematic algorithms, automatically analyzes the websites in real-time or periodically. The engine verifies the presence of the contents that must be legally published on the homepage and on the internal pages of more than 10,000 administration websites.



Source: Government of Italy, Ministry of Public Administration and Simplification, <http://www.magellanopa.it/bussola/page/overview.html>

A typical feature of European e-government strategies is to provide distinct portals on government information and on online services for citizens. Increasingly, countries in the region are also providing portals on open government data and e-participation as well as for businesses. This increases the number of 'core' e-government websites per country to a handful, moving beyond the idea of single 'one-stop-shop' portals. This approach helps to provide more targeted, while connected and user-friendly portals to different users, with the amount of information and services made available by governments increasing continuously.

Europe should continue its efforts to make online services ever more user-centric, while ensuring that those who cannot use online services are not excluded and also fully embrace the opportunities of e-participation. The experience of some of the top performing countries in the region, as well as the countries that have improved their ranking significantly, shows that long-term and holistic strategic planning in e-government brings about tangible results. The lesson that can be learnt from the region as a whole is that embedding e-government in wider socio-economic development frameworks is crucial to successful e-government.

1.3.5. Oceania

Australia and New Zealand still lead the region with high EGDI scores of 0.9103 and 0.8644 respectively. Australia and New Zealand also are more economically advanced as developed countries; whereas the rest of the islands in the region have smaller economies, populations and land mass; and thus have fewer resources. The majority of the other countries in the region, with the exception of Fiji and Tonga, are in the range of 108th (Palau) to 188th (Papua New Guinea) in global ranking. Australia and New Zealand also scored very high on the TII and HCI, both approaching the maximum normalized score of 1 (see Table 1.9).

Table 1.9. Countries in Oceania sorted by EGDI ranking

Country	Level of Income	EGDI	2014 Rank	2012 Rank	Change in Rank
Very High EGDI					
Australia	High	0.9103	2	12	↑ 10
New Zealand	High	0.8644	9	13	↑ 4
High EGDI					
Fiji	Upper Middle	0.5044	85	105	↑ 20
Middle EGDI					
Tonga	Upper Middle	0.4706	98	111	↑ 13
Palau	Upper Middle	0.4415	108	113	↑ 5
Samoa	Upper Middle	0.4204	111	114	↑ 3
Micronesia (Federated States of)	Upper Middle	0.3337	130	127	↓ 3
Kiribati	Upper Middle	0.3201	132	149	↑ 17
Tuvalu	Upper Middle	0.3059	137	134	↓ 3
Marshall Islands	Upper Middle	0.2851	142	146	↑ 4
Nauru	Upper Middle	0.2776	145	141	↓ 4
Vanuatu	Lower Middle	0.2571	159	135	↓ 24
Low EGDI					
Solomon Islands	Lower Middle	0.2087	170	168	↓ 2
Papua New Guinea	Lower Middle	0.1203	188	177	↓ 11
Regional Average		0.4086			
World Average		0.4712			

The Australian e-government portal offers an extensive A to Z list of e-services and forms, both at the federal and local levels, as well as connections to national, local and regional government websites. The portal also offers a section for starting a career or looking for a job online; as well as information on starting a business in Australia.

The portal of New Zealand is a one-stop-shop offering the same connected services as Australia, as well as an up to date e-participation section where citizens can send inquiries, issues of concern, or a submission on a bill to the government. Additionally, the portal offers citizens an e-consultation page on issues such as transport planning and development, workplace safety, educational matters, the environment, health and business.

1.4. Country groups

Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Land Locked Developing Countries (LLDCs) face many common economic, social and environmental challenges, including special vulnerability to economic crisis and natural disasters. E-government can help to address many of these challenges, including providing greater access to public services, especially for the most disadvantaged and vulnerable groups, by enhancing disaster risk reduction

and enabling greater government efficiency and transparency to ensure more effective use of limited resources.

In general, the countries in these groups are among the lowest in the global e-government ranking, with each group's average falling far below the global EGD I average of 0.4712. Out of the total of 92 countries in the three groups, 16 countries are both Least Developed and Land-Locked Developing Countries, and 9 are both Least Developed and Small Island Developing States. Mostly, SIDS rank highest within the three groups, with the average EGD I score of SIDS being 0.4069 compared to 0.3368 for LLDCs and just 0.2139 for LDCs.

The countries of these three groups stand to benefit from the good practices and lessons learnt from other more established e-government practices, with the possibility to avoid possible costly pitfalls and to leap frog in e-government development. In order to ensure the full benefits of e-government in these three groups of countries it is essential to work towards enhanced literacy skills, a comprehensive government online presence and—most importantly—improved access, especially to broadband, through both national efforts and international cooperation.

1.4.1. Small Island Developing States (SIDS)

There are 38 Small Island Developing States (SIDS) among United Nations Member States,²² in Asia, the Caribbean and Oceania. The SIDS face several unique economic, social and environmental challenges due to their small size and economy, isolation and high cost of providing goods, services and infrastructure—including telecommunications—associated with small populations and geographic dispersion. Small island states are typically comprised of several islands scattered over a wide geographic area (for example the Federal States of Micronesia are comprised of 607 islands and the Seychelles of 115 islands) which poses unique challenges for governments in coordinating and delivering services. In addition, SIDS are especially vulnerable to economic crisis because of their narrow resource and export base and dependence on unreliable sectors such as tourism. They are also more exposed to the effects of climate change, such as sea-level rise and natural disasters.²³ 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.

As a group, the SIDS rank low in the global EGD I. Only 13 out of the 38 SIDS rank in the global top 100. The biggest improvers in this group are Fiji (from 105th to 85th), Kiribati (from 149th to 132nd), Bahrain (from 36th to 18th) and Mauritius (from 93rd to 76th). None of the ten Least Developed Countries among the SIDS rank in the top 10 of this group (see Table 1.10).

E-government holds the potential to address several of the issues faced by SIDS, for example in relation to Disaster Risk Reduction (DRR) and improved data availability. E-government—taking advantage of mobile technology, Internet, social media and space-based technologies such as Geographic Information Systems (GIS)—can be used effectively especially in the preparedness and

response phases²⁴ of DRR.²⁵ The use of e-government and ICT-tools for DRR can be divided into two broad categories. The first category (phase), deals with forecasting, mapping and minimization of risks during a disaster, by raising awareness and giving access to information beforehand. The second category (phase), tackles risk and disaster management, during and after the emergency, by coordinating the response and rescue operations²⁶ as was the case in Haiti after the 2010 earthquake (see Box 1.7). Through the use of satellite communications, e-government can play an important role for those who are not reached by more traditional disaster preparedness programmes, such as older persons, people living in poverty and rural populations, which is especially important in SIDS where populations are widely dispersed.

Table 1.10. Top 10 Small Island Developing States

Country	Sub-Region	2014 EGD I	2014 Rank	2012 Rank	Change in Rank
Very High EGD I					
Singapore	South-Eastern Asia	0.9076	3	10	↑ 7
Bahrain	Western Asia	0.8089	18	36	↑ 18
High EGD I					
Barbados	Caribbean	0.5933	59	44	↓ 15
Antigua and Barbuda	Caribbean	0.5927	60	49	↓ 11
Mauritius	Eastern Africa	0.5338	76	93	↑ 17
Grenada	Caribbean	0.5220	78	75	↓ 3
Seychelles	Eastern Africa	0.5113	81	84	↑ 3
Fiji	Oceania	0.5044	85	105	↑ 20
Middle EGD I					
Saint Kitts and Nevis	Caribbean	0.4980	90	81	↓ 9
Trinidad and Tobago	Caribbean	0.4932	91	67	↓ 24
SIDS Average		0.4069			
World Average		0.4712			

Furthermore, mobile phones have proven to be effective for early warning systems in SIDS due to portability, high penetration and relatively low-cost. Mobile apps can provide critical information on natural disasters quickly to first responders, disaster victims and the population at large through text messages and allow citizens to submit reports of natural hazards online.²⁷ In addition to mobile phones, it is important to employ other means such as libraries and kiosks with internet connections to reach remote islands and rural populations.

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 (see Box 1.8). Governments should ensure that authorities and agencies at all levels have adequate knowledge and skills to support small-scale fisheries and other trades in order to guarantee successful co-management arrangements.

Box 1.7. Haiti: Response and recovery with Sahana free and open disaster management system

The Sahana Disaster Management System, which provides modular, web-based disaster management applications, was developed by the open source community in the aftermath of the 2004 tsunami in Sri Lanka. Since then, Sahana has been deployed in several natural disasters around the world, including the Haiti earthquake in 2010. The Sahana volunteer community responded immediately to the earthquake and set up the Sahana Haiti 2010 Earthquake Disaster Response Portal to provide and share information needed for the relief operation. These included an organization registry to track the agencies' relief efforts and to avoid duplication; a request management system where requests such as 'bring water' were made visible to the relief organizations and contained ticketing and tracking systems; an SMS service through which citizens could request assistance and information developed in partnership with the US State Department; a hospital management system; a food request portal developed in response to a request from the World Food Programme; a disaster victim identification registry; a shelter registry; a translation service; and situation mapping as well as missing persons and victim identification registries developed in partnership with Google and Yahoo. The quick response and collaboration between the Sahana volunteer community, governments, international organizations, civil society and the private sector, is a good practice of different actors coming together swiftly to help those in urgent need, and where the national government structures and capacities to respond to the disaster, were badly damaged.²⁸



Source: http://wiki.sahana-foundation.org/_media/iscram_2010_sahana_haiti.pdf

Box 1.8. Trinidad and Tobago: m-fisheries

The fishery sector is vital to the economy of SIDS such as Trinidad and Tobago, both in providing employment, particularly in rural communities and in enhancing the local food supply. The government of Trinidad and Tobago has prioritized development of the fishing industry due to its economic and social importance for the country with the target of making it not only competitive, profitable and sustainable but also equitable, inclusive and supportive of the local fishing communities. Barriers to fishing industry development include lack of training in natural resources management and in sea safety. Due to high mobile phone penetration in the country (86 per cent among the poor), the use of mobiles is identified as a highly effective tool to address the problems especially in the small scale fishing industry. Through the mFISHERIES mobile app users can see 'Got Fish' posts by local fishermen, make a request via the 'Need Fish', get quick access to wholesale market prices, access a compass and GPS enabled location, improve their safety through the 'Info Zone' with sea safety information and a SOS button for emergencies that automatically alerts the coast guard about one's position when help is needed.



Source: mFISHERIES <http://cirp.org.tt/mfisheries/>

Due to the coastal zone concentration in a limited land area in some of the most vulnerable regions of the world, the effects of climate change and sea-level rising, put the economic, social and environmental development efforts of SIDS at risk. The long-term effects of climate change can even threaten the existence of some SIDS.²⁹ A comprehensive approach is needed to address the challenges, and e-government can play a key role. A holistic e-government strategy with strong DRR, e-participation and e-service components, such as e-health, e-education and e-commerce can enable the governments in SIDS to work and deliver as one and to advance sustainable development in all its dimensions.

1.4.2. Landlocked Developing Countries (LLDCs)

A landlocked country is one that is entirely enclosed by land, or whose only coastline lies on a closed sea. There are 48 landlocked countries among the United Nations Member States, 31 of which are Landlocked Developing Countries (LLDCs).³⁰ They are widely dispersed around the globe: 15 are located in Africa, 12 in Asia, 2 in Europe and 2 in South America. The LLDCs are among the most disadvantaged developing countries, and 16 out of the 31 LLDCs are also Least Developed Countries. The economic performance of LLDCs reflects the disadvantages of their geography with lack of access to major shipping routes, fisheries and other marine resources. The LLDCs are generally the poorest countries in their region, with the weakest growth rates and are the most dependent on export earnings.

Generally, the LLDCs are positioned low in the global ranking with only seven LLDCs in the global top 100. The Asian countries dominate the list of top performers within the group, with Kazakhstan taking the top position and Armenia, Mongolia and Azerbaijan all being in the LLDC top five (see Table 1.11). None of the 16 Least Developed Countries among the LLDCs are in the group top ten, with Rwanda ranking 12th in the group and all the others ranking in the bottom 15 of the group. The biggest improvers among the LLDCs are Armenia (from 94th to 61st), Azerbaijan (from 96th to 68th), Ethiopia (from 172th to 157th) and Rwanda (from 140th to 125th). LLDCs have on average considerably lower e-government development rankings than Small Island Developing States, with EGDl averages of 0.3368 and 0.4069 respectively for these two groups, but higher than the Least Developed Countries which average at 0.2164.

Limited access to world markets is one of the most pressing constraints faced by LLDCs with high transport costs and dependence on passage through sovereign transit countries hampering their competitiveness. LLDCs also often rely on their neighbours' telecommunication networks as accessing the international submarine fibre networks would incur high administrative and infrastructure costs. Telecommunication networks are especially underdeveloped in rural areas, creating an additional barrier to the promotion of inclusive ICT strategies. Thus, it is not surprising that the Telecommunication Infrastructure Index is the weakest out of the three components of the E-Government Development Index for the majority of LLDCs. There are however some encouraging examples, such as Bolivia which has been successful in detouring its neighbours' transit networks by building a fibre optic network across the country. Today Bolivia is able to take advantage of its central geographic location in South America and will be one of the co-owners of the fibre optic infrastructure mega project of the Union of South American Nations (UNASUR).

Table 1.11. Top 10 Landlocked Developing Countries

Country	Sub-Region	2014 EGDI	2014 Rank	2012 Rank	Change in Rank
High EGDI					
Kazakhstan	Central Asia	0.7283	28	38	↑ 10
Armenia	Western Asia	0.5897	61	94	↑ 33
Mongolia	Eastern Asia	0.5581	65	76	↑ 11
Republic of Moldova	Eastern Europe	0.5571	66	69	↑ 3
Azerbaijan	Western Asia	0.5472	68	96	↑ 28
Middle EGDI					
FYR Macedonia	Southern Europe	0.4720	96	70	↓ 26
Uzbekistan	Central Asia	0.4695	100	91	↓ 9
Kyrgyzstan	Central Asia	0.4657	101	99	↓ 2
Bolivia	South America	0.4562	103	106	↑ 3
Botswana	Southern Africa	0.4198	112	121	↑ 9
LLDCS Average		0.3368			
World Average		0.4712			

Box 1.9. Nepal: On the Road to the Knowledge Based Society

Nepal is a mountainous LLDC which suffered from a long civil war that destroyed the country's telecommunication infrastructure. The country's ranking has plummeted since the first *Survey* from 130th in 2003 to 165th in 2014. The government of Nepal has been working towards a holistic e-government transformation to provide better services to citizens, improve transparency and to work towards the knowledge based society. Eight projects were selected as priority for the e-government transformation: government portal, national ID, e-Education, infrastructure, enterprise architecture, Public Key Infrastructure, Integrated Data and Training Center and groupware. The country's 2006 IT Policy provides a broad framework for e-government transformation with the aim to transform Nepal into a knowledge society that can fully harness the benefits of e-governance to promote good governance and advance socio-economic development and reduce poverty by 2015. The policy is divided into regulatory framework, infrastructure, e-government content and applications, private sector participation, human resource development and organization.



Source: United Nations University, International Institute for Software Technology, Center for Electronic Governance, 2011, e-Government Strategy Draft for Afghanistan, www.egov.iist.unu.edu

Regional infrastructure strategies for integration and administrative coordination are needed to expand LLDCs access to ICT infrastructure. Support is also required to develop large scale public-private, public-public and South-South partnerships to implement strategies for ICT development and to enhance cooperation. Even though infrastructure is the biggest bottleneck for e-government development in LLDCs, governments should not lose sight of the importance of investing in people through education and ICT-literacy programmes, as well as enhancing their online presence by providing improved online services.

In LLDCs, e-government plays an instrumental role in facilitating progress in sectors such as trade and entrepreneurship through e-services, for example simplifying business licensing applications and enhancing services in education and health, as well as promoting socially inclusive growth for all.

1.4.3. Least Developed Countries (LDCs)

There are 48 Least Developed Countries (LDCs) among United Nations Member States³¹ of which 34 are in Africa, 9 in Asia, 4 in Oceania and 1 in the Caribbean. This group of countries comprises more than 880 million people or about 12 per cent of the world population, but accounts for less than 2 per cent of the world GDP and about 1 per cent of global trade in goods.³² The lack of ICT infrastructure and access to modern technologies are among the major challenges facing the LDCs. However significant progress has been made, especially with regard to mobile technology in the LDCs with almost 42 per cent of people having access to a mobile phone in 2011, up from 33 per cent in 2010. In stark contrast, only six out of 100 had access to the Internet in 2011, whilst 79 per cent did not have access to electricity.³³ Due to the much higher access to mobile phones than computers, m-government services such as information and notifications by SMS, m-banking and m-health services are of special importance in the LDCs.

E-government development remains very low in the LDCs, with the LDC EGD average being 0.2121 compared to the world average of 0.4712 and with no countries in the top 100 of the global ranking. Rwanda is the highest ranking in this group at 125th, followed by Kiribati at 132nd (see Table 1.12). The biggest improvers among the group are Kiribati, Cambodia and Yemen (see Box 1.10), improving their respective rankings from 149th to 132nd, from 155th to 139th and from 167th to 150th in the global ranking. Another significant improver is Rwanda going from 140th to 125th which is in line with the overall positive development trend in the country.

Table 1.12. Top Least Developed Countries

Country	Sub-Region	SIDS	LLDC	EGDI	2014 Rank	2012 Rank	Change in Rank
Middle EGD							
Rwanda	Eastern Africa		x	0.3589	125	140	↑ 15
Kiribati	Micronesia	x		0.3201	132	149	↑ 17
Tuvalu	Polynesia	x		0.3059	137	134	↓ 3
Cambodia	South-Eastern Asia			0.2999	139	155	↑ 16
Angola	Middle Africa			0.2970	140	142	↑ 2
Bhutan	Southern Asia		x	0.2829	143	152	↑ 9
Tanzania	Eastern Africa			0.2764	146	139	↓ 7
Bangladesh	Southern Asia			0.2757	148	150	↑ 2
Yemen	Western Asia			0.2720	150	167	↑ 17
LLDCS Average				0.2121			
World Average				0.4712			

Box 1.10. Yemen: Reaping the benefits of long-term planning

In 2002, Yemen launched a 10-year e-government programme with a budget of USD 50 to 60 million which aimed to provide better access to services to disadvantaged groups, increasing access to telephone services and moving to electronic financial transactions. The Internet was introduced in Yemen in 1996 and its usage increased gradually between 2000 and 2010, with a big jump in the number of Internet users from 420,000 in 2010 to 3,691,000 in 2012 representing 14.9 per cent of the total population. Despite big improvement in Yemen's e-services, the awareness and usage among the population is still relatively low. According to a 2013 study, 29.4 per cent of the citizens were not aware of e-government services, 47.6 per cent were aware but not using them and only 22.3 per cent reported using the services. Awareness and usage is also much higher among men than women. Countries such as Yemen that have recently made a significant investment in e-government, also need to focus on providing ICT-literacy training, as well as to raise awareness of the benefits of e-services, including through social media, to ensure high adoption and maximum benefits of e-governments services. As a result of ongoing improvements, Yemen's rank increased from 167 to 150 in the global ranking, between 2012 and 2014.³⁴



The challenge for e-government development in this group is the lack of telecommunication infrastructure. The LDC Telecommunication Infrastructure Index average is 0.0929 compared with the world average of 0.3650. This hampers the ability of governments to implement e-government programmes and e-services as well as the adoption of any online services by citizens, even if available.³⁵ While much remains to be done both in terms of e-government implementation and adoption among the LDCs, it is noteworthy that all the 49 countries have an online presence, whereas in the previous *Survey* two LDCs, Central African Republic and Guinea, had none.

Even though LDCs have improved their basic, or emerging, online presence—in most cases restricted to providing a limited amount of information and links online—they are making little or no progress in moving to the more advanced stages of e-government development, including the provision of e-services, e-participation and open government data. Without significant changes in the LDC's e-government development, the distance of e-government development between the group and the rest of the world will increase further. The LDCs continue to face multiple severe socio-economic challenges and e-government does not top the list of the national development agenda of many of the LDCs. However, with insufficient investment in infrastructure and the lack of long-term e-government planning, these countries will lose out on the crucial benefits of e-government in making public administrations more cost-effective, efficient, citizen-centric, transparent and accountable, which play a key role in poverty elimination and promoting sustainable development. The governments in these countries should consider the benefits of e-government and online service delivery, especially in relation to mobile services and take necessary measures to

establish mid and long-term e-government strategies and to improve their infrastructure. These countries should also have the full support of the international community through partnerships and knowledge sharing.

In conclusion, it is even more critical for the LDCs that face multiple challenges with limited resources, to consider smart investments in ICT infrastructure and e-government services which can bring about substantial returns on investment. This in turn will deliver multiple benefits such as better access to essential services, including to the most disadvantaged and vulnerable groups and create savings by streamlining and simplifying government processes as well as enhancing accountability and transparency.

1.5. Conclusion

Public administration, being the cornerstone of governments' work is essential for improving peoples' lives. As illustrated in this chapter, amidst the economic, social and environmental challenges, e-government has continued to play an important role in enabling the delivery of quality public services that meet citizen needs and goals by transforming how the public sector works.

Considering that the EGDI is a broad relative index, caution should be taken against interpreting positional changes in rankings across similarly ranked countries. 'Higher' rankings do not necessarily mean 'better' or "desirable" outcomes. As such countries must decide the level and extent of their e- government initiatives based on their specific national development context.

Regardless of the complexity and diversity of countries in the world, some general conclusions at the global and regional levels can be made. In addition to effective planning and deployment of e-services, governments may consider enhancing their ICT infrastructure and raise the level of human capital, including improvement of the ICT literacy of citizens, to make use of the new technologies so as to realize the full benefits of online and mobile services. This should go hand in hand with capacity development of leadership in e-government and public servants as facilitators of online public services.

To further increase the scope and extend the use of online services, governments could provide even more citizen-centric and user-friendly services putting the needs of citizens at the core of planning and implementation of online services by engaging them (citizens) in consultative processes. Furthermore, countries may explore avenues to strengthen regional and global cooperation mechanisms with a view to facilitate national development goals, thus encouraging coherence and coordination among countries.

Nevertheless, in all regions there are outstanding stories which show countries overcoming obstacles and resource constraints to achieve improvements in leveraging e-government to achieve national development objectives.