

# Regional development and country groupings performance

## 6.1. Introduction

The swift evolution and subsequent diffusion of technology are bringing about significant changes in the way people interact with each other and their immediate environments. Governments around the world are using the advancement in infrastructure and information and communication technologies (ICTs) to promote innovation of and sustainable development in their economies. This chapter presents an overview of e-government development initiatives at regional levels. It features important trends and analyses of regional e-government development performance, including by specific country groups such as the small island developing States (SIDS), least developed countries (LDCs) and least developed landlocked countries (LLDCs).

## 6.2. Regional rankings

Figure 6.1. below highlights the breakdown of the EGDI and its sub-indices per region. As was the case in previous editions, Europe continues to lead e-government development as indicated by the highest EGDI (0.7730) it enjoys, followed by Americas (0.5900), Asia (0.5780), Oceania (0.4610), and Africa (0.3420) respectively. The Human Capital Index (HCI) is the highest contributing sub-index in all regions while the Telecommunication Infrastructure Index (TII) is the lowest. This implies that the major impediments to the further growth of e-government development worldwide are still the lack of infrastructure and the digital divide. Africa has the lowest HCI and Online Service Index (OSI), but its OSI at 0.3630 is relatively close to Oceania's OSI, at 0.3930. While Asia's OSI at 0.6220 is better than the Americas' at 0.6100, it still ranks behind the Americas in terms of EGDI due to Asia's lower HCI and TII rating.

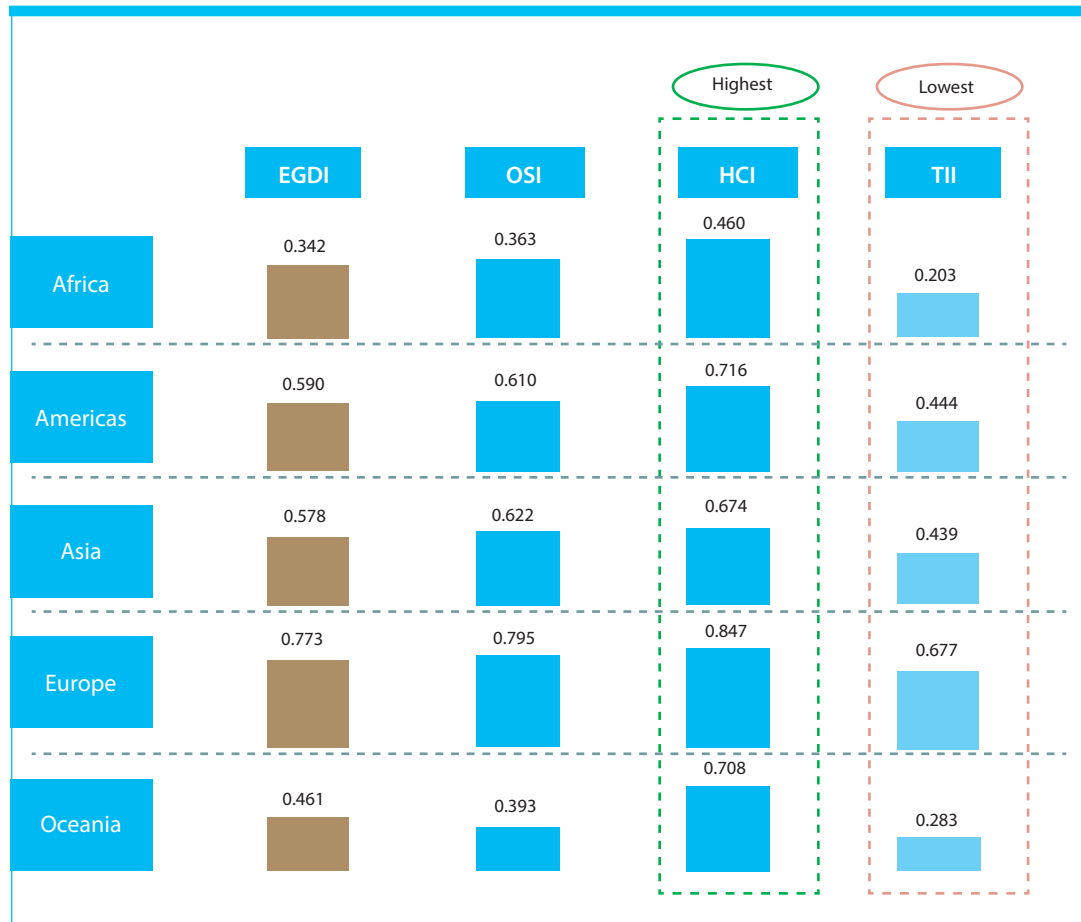


Photo credit: pixabay.com

In this chapter:

6.1. Introduction	127
6.2. Regional rankings	127
6.2.1 Africa	133
6.2.2 Americas	135
6.2.3 Asia	137
6.2.4 Europe	140
6.2.5 Oceania	142
6.3 The situation in the Least Developed Countries (LDCs)	142
6.4 Landlocked Developing Countries (LLDCs)	143
6.5 The situation in Small Island Developing States (SIDS)	144
6.5.1 Comparing EGDI Levels of LDCs, LLDCs, and SIDS	146
6.6 Conclusion	148
References	149

Figure 6.1. Breakdown of E-Government Development Index (EGDI) per geographical region



As Figure 6.1 indicates, Africa has the least developed technical infrastructure and is less connected to the Internet than other regions. According to a recent report by the Economic Commission for Africa, while there is an impressive growth in mobile broadband access across much of the continent, there remains very limited access to fixed broadband. In many African countries, fixed broadband does not even exist.

Figure 6.2 highlights an overall improvement in worldwide EGDI ratings since 2014. The box on the right explains the contribution of each of the three sub-indices indicating that the largest component of the rise in EGDI comes from improvements in OSI. This shows that investment in OSI is the fastest means of improving a country's EGDI rankings. However, the graph also shows the importance of investing in infrastructure and human capital in the long term. While improvements in both infrastructure and human capital have been slower, they are equally important for a healthy and functioning e-government system.

Figure 6.2 Contributors to the EGDI improvements

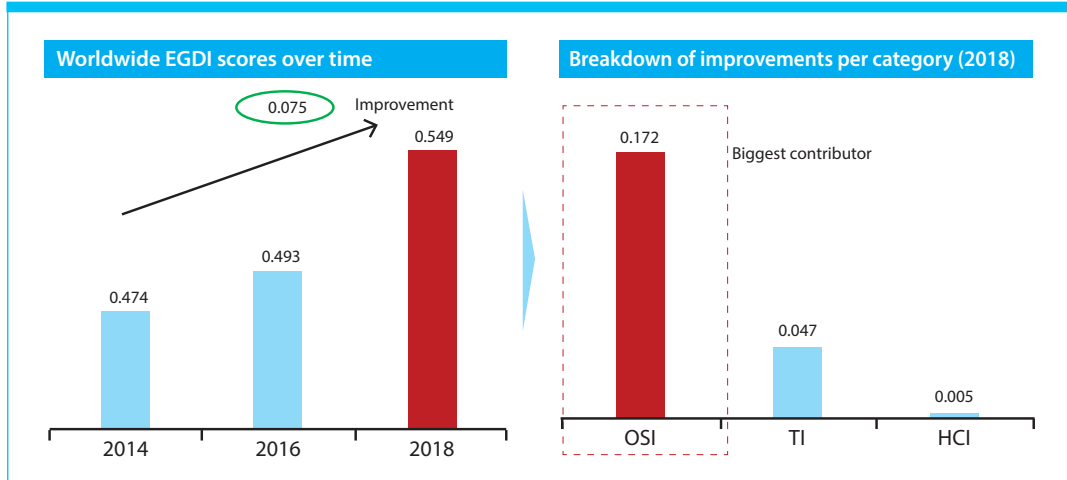


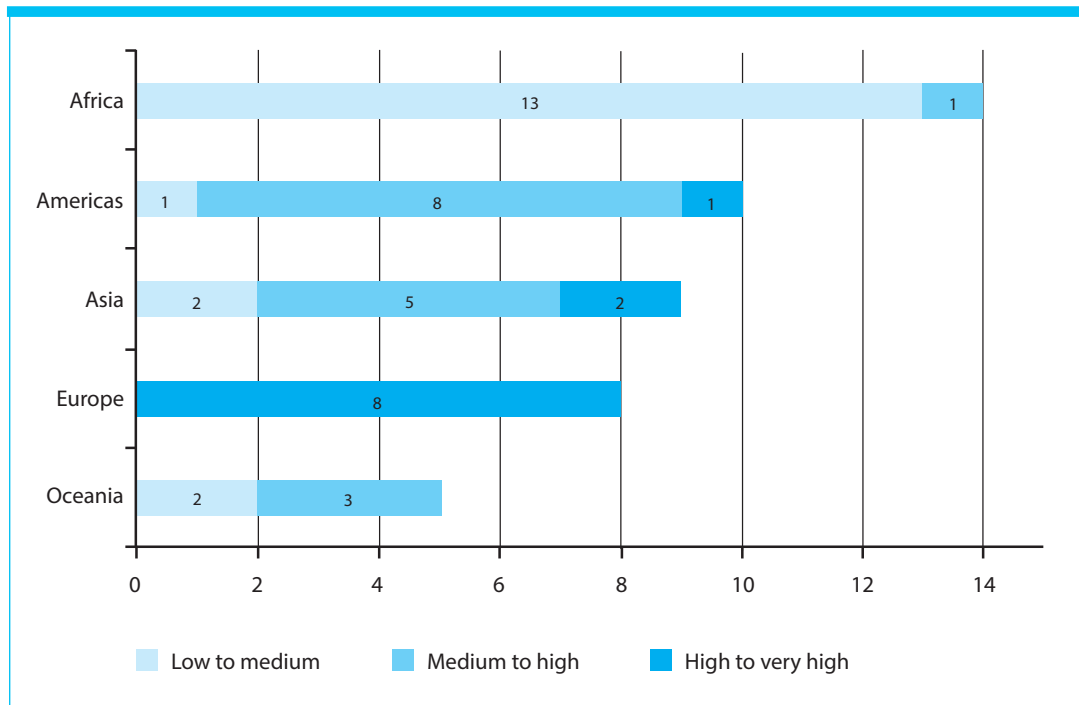
Figure 6.3 shows the comparison of the standard deviation for each region indicating intra-regional gaps in development. Europe, due to the relative homogeneity in the level of development across countries, has the lowest dispersion in EGDI and its sub-indices. On the other hand, Asia has the highest levels of asymmetry in OSI and TII rankings because the region comprises both highly advanced countries such as Japan, Singapore and Republic of Korea as well as developing countries like Afghanistan, Bangladesh, Myanmar and others. Similarly, Oceania has the highest level of dispersion in its EGDI and the second highest level of dispersion across the other three sub-indices due to the inclusion of Australia and New Zealand which boosted the indices of Oceania, a region composed mostly of small island developing States. Among the EGDI sub-components, OSI has the highest level of dispersion across all regions, which confirms that availability and accessibility to online government services are uneven throughout all the regions.

Figure 6.3 Comparison of the standard deviation of EGDI, OSI, HCI and TII



Figure 6.4 highlights the absolute improvements in EGDI levels for each region. The largest gains come from 18 countries<sup>1</sup> across the regions improving from Low-EGDI level to Medium-EGDI level. This is followed by 17 countries<sup>2</sup> that moved from Medium-EGDI level to High-EGDI level and 11<sup>3</sup> moving from High-EGDI level to Very-High-EGDI level. Africa has the largest improvement with 14 countries increasing their EGDI levels between 2016 and 2018 followed by the Americas (10), Asia (9) Europe (8) and Oceania (5). Thirteen African countries moved from Low-EGDI to Medium-EGDI level and one country moved from Medium-EGDI level to High-EGDI level. In the Americas, either countries moved from Medium-EGDI level to High-EGDI level, followed by Asia (5) and Oceania (3). At the same time, eight European countries improved from High-EGDI level to Very-High-EGDI level followed by Asia (2) and the Americas (1).

Figure 6.4 Breakdown of change in countries' EGDI categories per geographical region from 2016 to 2018



Each region contains differing percentages of EGDI levels in their respective countries. Figure 6.5 highlights asymmetries and distributional impacts of e-government development within these regions. Only two regions currently have Low-EGDI level countries; Africa with 26 per cent and Asia with 4 per cent of their respective countries. Africa has no countries represented within the Very-High-EGDI level. On the other hand, 63 per cent of European countries have Very-High-EGDI level followed by Asia (17 per cent), Oceania (14 per cent) and the Americas (9 per cent) respectively. Finally, most of the Oceanian (64 per cent) and African (63 per cent) countries are represented within the Medium-EGDI levels, whereas American (63 per cent) and Asian (51 per cent) countries are mostly within the High-EGDI category.

Figure 6.5 Percentage of countries grouped by E-Government Development Index (EGDI) level and geographical regions

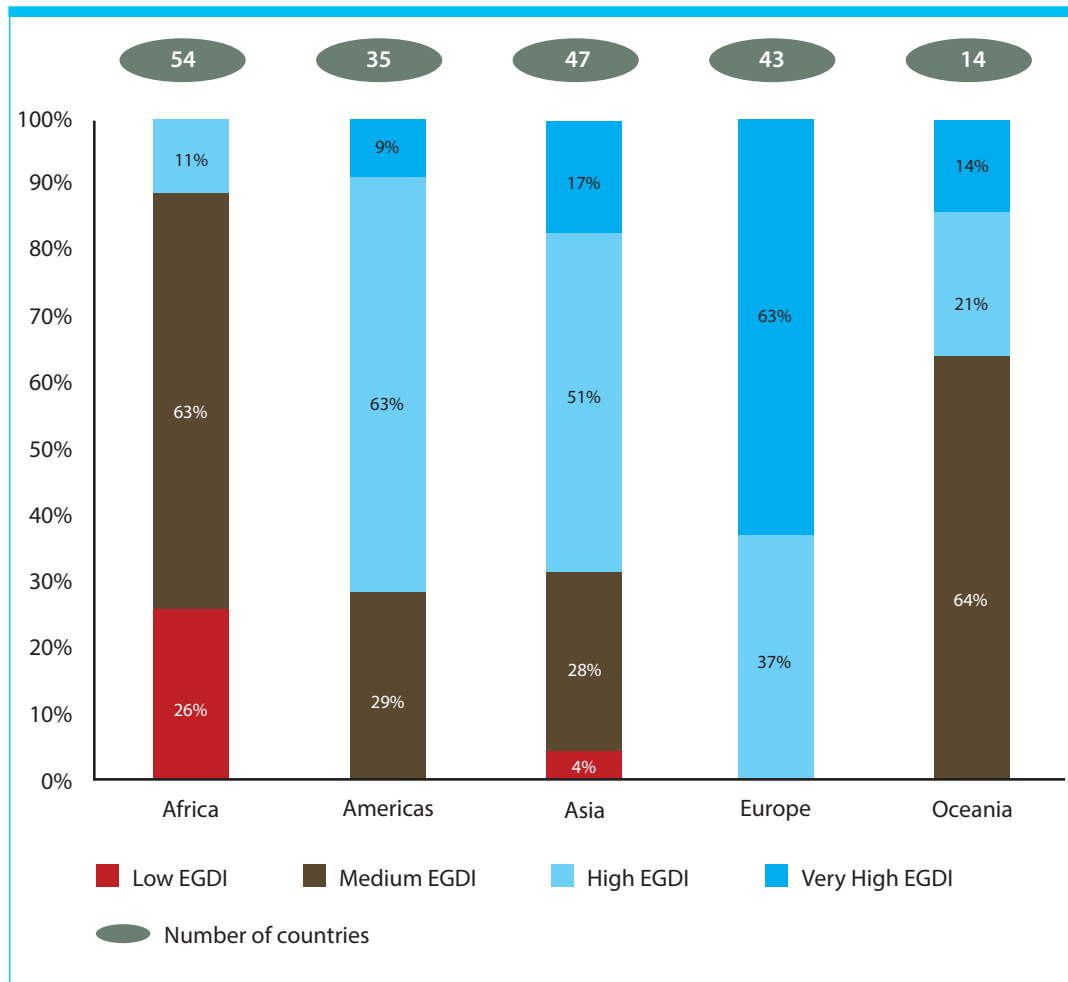
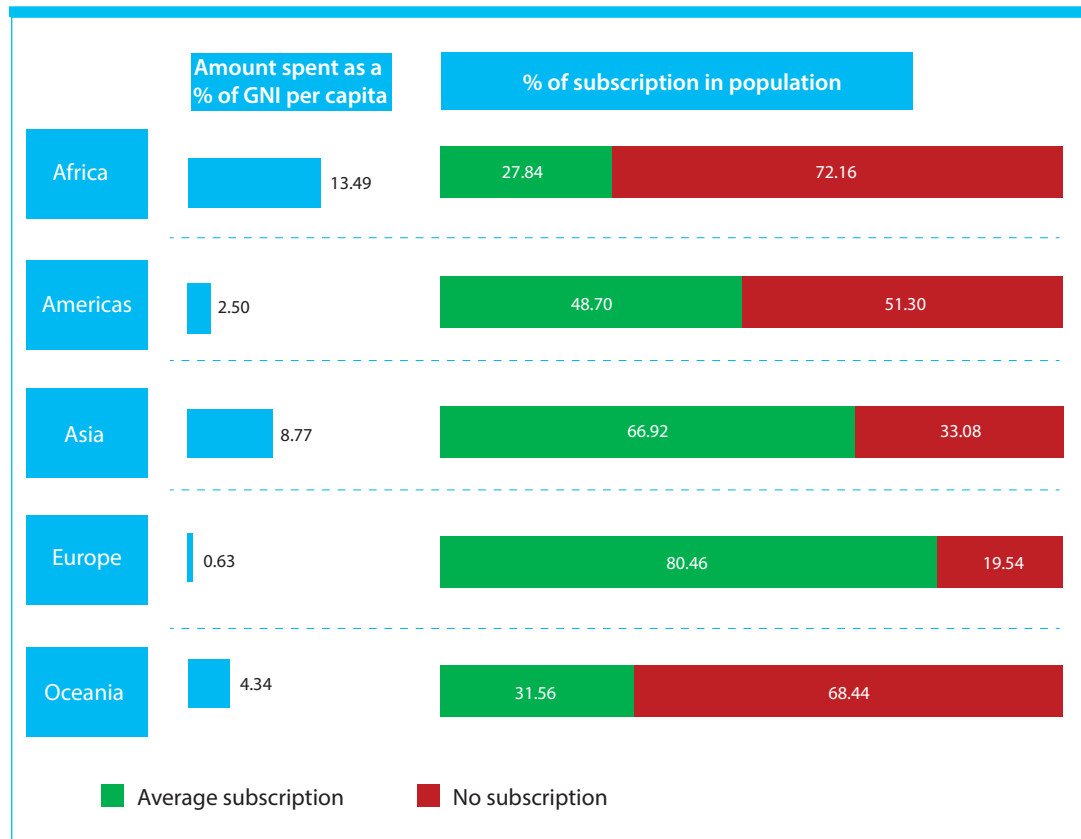


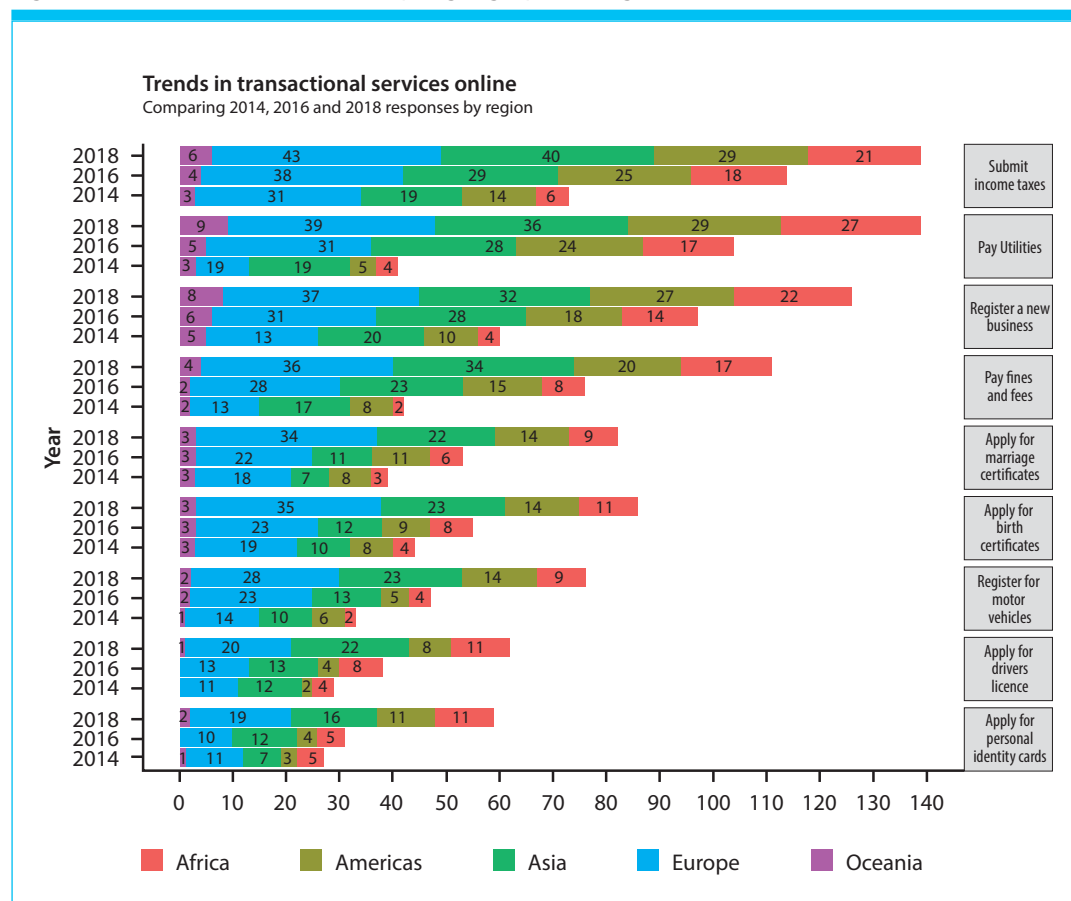
Figure 6.6 shows the percentage of GNI per capita spent by citizens to access broadband, and the percentage of broadband subscriptions for each region. While Europeans spend the least on mobile broadband, at 0.63 percent of their income, they have the largest mobile broadband subscription at 80.46 per cent. In contrast, Africa has the lowest level of mobile broadband subscription with 27.84 per cent, while African citizens need to spend 13.49 per cent of their income on mobile broadband. Clearly, there is a need to lower the cost of access to technology so that it could be utilized to serve a wider segment of the population. According to ITU data in 2018, 156 countries have National Broadband Plan implemented.<sup>4</sup> These countries indicate their intent to improve access and affordability through various measures.<sup>5</sup>

Figure 6.6 Amount spent on mobile broadband as percentage of GNI per capita against the percentage of subscriptions per geographical region



While efficiency gains do not come automatically with e-government, savings are possible both on the government and citizen sides with the implementation of transactional services. As seen in Figure 6.7, all regions made progress in their implementation. “Submitting income taxes” and “paying for utilities” are the most used transactional services across all regions. Africa made significant progress in all transactions between 2014 and 2016. However, there is still room for improvement.

Figure 6.7 Transactional services per geographical region



### 6.2.1 Africa

Africa has large gaps in infrastructure, including broadband infrastructure and access to broadband services, where it exists, is very expensive. This is evident in the region's low TII score of 0.2030. Progress with respect to the EGDI across the whole region remains positive albeit uneven. The average 2018 EGDI is 0.3420 compared to 0.2880 in 2016, which represents the third highest regional improvement in EGDI largely driven by a 0.1060 increase in the provision of online services.

In an effort to contribute to the advancement of e-government development in Africa, the Economic Commission for Africa (ECA), among others, plays an active role in strengthening the environment for adopting effective ICT policies in the region and developing a greater collaboration between all relevant stakeholders within the Internet community, including African Union Commission, ITU, ICANN, Smart Africa Secretariat, IGF, etc.).

### Box 6.1 UN Economic Commission for Africa (ECA) work on selected areas in ICT



In 1996 the Economic Commission for Africa (ECA) had launched The African Information Society Initiative (AISII), and since then assisted the UN Member States in adopting evidence-based ICT, science, technology and innovation policies to transform their economies. With support of the ECA, 48 UN Member States in Africa adopted national e-strategies complementing their development efforts and are harnessing their ICT sectors to play a greater role in achieving the 2030 Agenda for Sustainable Development Goals (SDGs), the African Union 2063 Agenda and other internationally agreed development goals.

Building on its experience from the AISII, rigorous analytical and policy-research work was conducted on many emerging and frontier technologies, including cybersecurity, geo-blocking & future of e-commerce, Internet of Things (IoT) and Smart Cities, financial technology, big data & analytics, transition to IPV6, Internet governance & net neutrality, and analog to digital broadcasting migration, Blockchain technologies, and digital economy.

ECA also undertook various activities to measure the economic, social, political, and security impact of technologies and innovation process. Within the Partnership on Measuring Information and Communications Technology for Development which was launched in 2004 to improve the availability of internationally comparable information and communications technology (ICT) statistics, ECA has been leading the taskforce for e-government indicators and has been instrumental in the development of the core list of e-government indicators and its implementation by developing a manual for using the core list of e-government indicators and producing a training manual for implementers. ECA continues to contribute also to data gathering and dissemination including an annual follow up and review of the implementation of the WSIS outcomes in Africa.

ECA has been working with the African Union Commission to develop the African Union Convention on Cyber security and personal data protection adopted by the 23rd Assembly of Heads of States and Governments of the African Union. UNECA is coordinating along with other UN Agencies effective implementation of the United Nations Group on the Information Society (UNGIS). UNGIS serve as an interagency mechanism to coordinate substantive policy issues facing the UN's system in the implementation of the WSIS outcomes for leveraging ICTs to Build Information and Knowledge Societies for Achieving the Sustainable Development Goals.

Source: UN ECA

### Box 6.2 Case study on Mauritius' Vision 2030 Blueprint



The Government of Mauritius has developed "Vision 2030 Blueprint", which aims to provide the country with a high-income, sustainable and innovative economy. In line with the UN 2030 Agenda, the Government, through its Ministry of Technology, Communication and Innovation and Central Informatics Bureau, is developing "Digital Mauritius 2030 Strategy" and "Digital Government Strategy for 2018-2022".<sup>6</sup> These strategies, closely aligned with the "Vision 2030 Blueprint", will address legal, regulatory, security, and institutional frameworks. The digital strategies are intended to address the gap between academia and industry, to ensure that the right skills are developed to meet the increasingly growing digital economy and the IT requirements of the future.<sup>7</sup> The government aims to implement these strategies by strengthening the information, technology and communications sector by focusing on software development and big data analytics.<sup>8</sup>

Source: <http://www.govmu.org>



In Africa, only four countries (Mauritius, South Africa, Tunisia and Seychelles) are in the top fiftieth percentile along with countries that have EGDIs above the world average of 0.549. Mauritius (66th) and South Africa (68th) the two highest ranking countries from the region closely followed by Tunisia (80) and Seychelles (83) are the only countries in the top 100. The average rank of countries in the African region is 150th. It is worth mentioning that Algeria and Burkina Faso have made great strides in e-government development, climbing 20 places from 2016 to 2018. Algeria rose from 150th to 130th, while Burkina Faso climbed from 185th to 165th. Cameroon rose by 19 places from 155th to 136th and Ghana from 120th to 101st. These movements, even if they originate from very low levels, highlight regional efforts to keep pace with worldwide technological development trends. Upward movements in EGD across the region were driven by significant improvements in OSI (0.106 increase) and TII (0.031 increase). This is an encouraging trend given that 13 African countries have low EGD and require major leaps to improve their EGD levels.

**Table 6.1 Top 10 countries for e-government in Africa**

Country	Sub-region	OSI	HCI	TII	EGDI	EGDI Level	2018 Rank
Mauritius	Eastern Africa	0.7292	0.7308	0.5435	0.6678	High	66
South Africa	Southern Africa	0.8333	0.7291	0.4231	0.6618	High	68
Tunisia	Northern Africa	0.8056	0.6640	0.4066	0.6254	High	80
Seychelles	Eastern Africa	0.6181	0.7299	0.5008	0.6163	High	83
Ghana	Western Africa	0.6944	0.5669	0.3558	0.5390	High	101
Morocco	Northern Africa	0.6667	0.5278	0.3697	0.5214	High	110
Cabo Verde	Western Africa	0.4861	0.6152	0.3926	0.4980	Medium	112
Egypt	Northern Africa	0.5347	0.6072	0.3222	0.4880	Medium	114
Rwanda	Eastern Africa	0.7222	0.4815	0.1733	0.4590	Medium	120
Namibia	Southern Africa	0.4514	0.5850	0.3299	0.4554	Medium	121

## 6.2.2 Americas

The Americas is continuing its improvement in e-government development into 2018. The region is no longer represented in the low-EGDI and low-OSI levels. Uruguay has moved from a High-EGDI to a Very-High-EGDI level country in 2018, followed closely by Chile and Argentina just below the Very-High-EGDI threshold. Since 2016, eight countries (Panama, Antigua and Barbuda, Dominica, Dominican Republic, El Salvador, Bolivia, Saint Vincent and the Grenadines and Paraguay) have improved their EGD level from Medium- to High-range. Fifty-seven per cent of the region comprising 20 countries are in the top 50th percentile. These positive developments have allowed the Americas to maintain its position as the second most developed region in e-government development, worldwide.

The average regional EGD in the Americas has risen from 0.5250 in 2016 to 0.5900 in 2018, an improvement of 0.0650 representing the largest regional improvement in 2018. The top performing country in the Americas region remains the United States, one of the world leaders in e-government

(11th), followed by Canada (23rd) and Uruguay (34th), both among the countries with Very-High-EGDI.

### Box 6.3 Case Study on Agenda Uruguay Digital 2020



Source: <http://uruguaydigital.gub.uy>

In addition to developing “Digital Government Plan 2020”, the Government of Uruguay has created “Agenda Uruguay Digital 2020”, a plan built on four key pillars: i) social policy and inclusion, ii) sustainable economic development, iii) government management, and iv) governance for the information society. Objective VI of the Agenda, on “Proximity government”, aims to improve transparency, accountability, citizen participation and services through increased focus on citizens’ interaction with the Government. Specific goals include the establishment of “Citizen Response Centres” and portals, which will allow citizens to complete all transactions related to select services online.<sup>9</sup>

Table 6.2 Top 10 countries in e-government in the Americas

Country	Sub-region	OSI	HCI	TII	EGDI	EGDI Level	2018 Rank
United States of America	Northern America	0.9861	0.8883	0.7564	0.8769	Very High	11
Canada	Northern America	0.9306	0.8744	0.6724	0.8258	Very High	23
Uruguay	South America	0.8889	0.7719	0.6967	0.7858	Very High	34
Chile	South America	0.8333	0.8339	0.5377	0.7350	High	42
Argentina	South America	0.7500	0.8579	0.5927	0.7335	High	43
Brazil	South America	0.9236	0.7525	0.5220	0.7327	High	44
Barbados	Caribbean	0.6667	0.8301	0.6719	0.7229	High	46
Costa Rica	Central America	0.6736	0.7933	0.6343	0.7004	High	56
Colombia	South America	0.8819	0.7382	0.4412	0.6871	High	61
Mexico	Central America	0.9236	0.7044	0.4173	0.6818	High	64

Saint Kitts and Nevis leapt by 23 places from 94th to 71st, the most improved ranking in the region, followed closely by the Bahamas and Dominica, whose rankings increased by 21 and 16 respectively. Haiti has improved its ranking from 178th to 163rd, but remains the lowest ranking country in the region, owing mostly to difficulties that it has been experiencing such as natural disasters, which hinder its e-government development, particularly, the development of its telecommunications infrastructure.

**Box 6.4 Economic Commission for Latin America and the Caribbean (ECLAC)**

In line with Goal 16 of the 2030 Agenda for Sustainable Development, ECLAC and The Latin American and Caribbean Institute for Economic and Social Planning (ILPES) continue to work with countries in the region to democratize public management, accountability, access to information and participation in order to respond to the expectations of citizens who demand accessible and higher quality public services through the formulation of open government policies. For instance, in Costa Rica, ECLAC, through ILPES, collaborated in the design of a Policy on Open Justice. The Costa Rican government generated this policy as an innovative form of administration of justice and its subsidiary bodies.

The Judicial Power is aware that the implementation of the Open Justice Policy demands a change of paradigm that includes a citizen-centered cultural change. It includes changes in the processes seeking efficiency and effectiveness in the delivery of justice, employing information technology for simplification, traceability and predictability. It also includes organisational changes, giving priority to coordination and team work under a results-based network model.

In addition to this technical assistance, since 2011, more than 1,000 professionals from 19 countries in Latin America and the Caribbean have been trained in open government and digital government. Participants come mainly from government agencies at the national, regional, state and local levels, as well as from universities and other academic and research institutions.



Source: ECLAC

**6.2.3 Asia**

Asia is not only the most populous region, but it is also the largest continent in terms of land mass. The e-government development trend is highly diverse across the countries in the region. The Republic of Korea (third), Singapore (seventh) and Japan (tenth) are ranked among the top 10 in the world, while in the low-EGDI spectrum are the Democratic People's Republic of Korea (185th) and Yemen (186th). Such vast differences in the availability of e-government services were highlighted in Figure 6.4 depicting high levels of dispersion across the region. Despite this, Asia's strong performance in e-government development from 2016 to 2018 is a continuing challenge to the America's position as the second best performing region. The average regional EGDI has risen from 0.5130 in 2016 to 0.5780 in 2018, an improvement of 0.0650 representing the second highest leap across all of the regions. Moreover, the average ranking for the region is 90th, while the Americas' average is 87th.

**Box 6.5 Case Study on the Republic of Korea's e-Government Master Plan 2020**

The Republic of Korea indicated in its MSQ response that it has developed the "e-Government Master Plan 2020" to address the challenges that come from a constantly evolving e-government environment. The plan consists of five strategies that include: developing all-digital government service, reforming public administration based on intelligent information, creating more digital friendly industries, building a e-government platform and solidifying a position in the global e-government as a major e-government exporter. The Government develops a master plan every five years to ensure that the e-government services it offers incorporate the latest available technologies and take into consideration the evolving needs of its citizenry.



Source: <http://www.mois.go.kr>

Compared to 2016, the region has made significant improvements to its OSI (0.1100) and TII (0.0660). This is evident when analyzing Cyprus, which has made the biggest improvement in this year's Survey. In 2018, the country's ranking rose to 36th from 64th in 2016 representing an improvement of 28 spots, the highest in the region. Similarly, the Maldives (97th), Timor-Leste (142nd) and Brunei (59th) have improved their rankings by 20 or more places.

United Arab Emirates has the highest EGD I among Gulf Cooperation Council (GCC) countries followed by Bahrain, Kuwait and Qatar. GCC countries managed to achieve a series of substantial accomplishments related to improving e-government systems and making it easier for citizens to access government portals of other GCC Member States. During the Fifth GCC eGovernment Ministerial Committee, which took place in Bahrain, the proposal of a virtual academy for e-Government training was discussed. Such an institution would contribute towards the development of e-government by providing qualified specialists for GCC comprehensive e-government strategy.

### Box 6.6 The World Government Summit

The World Government Summit is hosted in United Arab Emirates on an annual basis since 2013. This event allows government leaders to take part in the global dialogue and outline strategies regarding the usage of technology and innovation. It also functions as a platform and networking hub for policymakers, business and civil society in human development.<sup>10</sup> This event also gives opportunities to showcase innovative solutions in e-government and analyze best practices in 150 participating countries with the aim of addressing future challenges using and improve already existing e-government policies.

Source: <http://www.worldgovernmentsummit.org>

Table 6.3 Top 10 countries for e-government in Asia

Country	Sub-region	OSI	HCI	TII	EGDI	EGDI Level	2018 Rank
Republic of Korea	Eastern Asia	0.9792	0.8743	0.8496	0.9010	Very High	3
Singapore	South-Eastern Asia	0.9861	0.8557	0.8019	0.8812	Very High	7
Japan	Eastern Asia	0.9514	0.8428	0.8406	0.8783	Very High	10
United Arab Emirates	Western Asia	0.9444	0.6877	0.8564	0.8295	Very High	21
Bahrain	Western Asia	0.7986	0.7897	0.8466	0.8116	Very High	26
Israel	Western Asia	0.8264	0.8635	0.7095	0.7998	Very High	31
Cyprus	Western Asia	0.7847	0.8083	0.7279	0.7736	Very High	36
Kazakhstan	Central Asia	0.8681	0.8388	0.5723	0.7597	Very High	39
Kuwait	Western Asia	0.7917	0.6852	0.7394	0.7388	High	41
Malaysia	South-Eastern Asia	0.8889	0.6987	0.5647	0.7174	High	48

Table 6.4 Level of e-government development in Gulf Cooperation Council member states

Country	Level of Income	EGDI	2018 Rank	2016 Rank	Change in Rank*
United Arab Emirates	High income	Very High EGD I	21	29	+8
Bahrain	High income	Very High EGD I	26	24	-2
Kuwait	High income	High EGD I	41	40	-1
Qatar	High income	High EGD I	51	48	-3
Saudi Arabia	High income	High EGD I	52	44	-8
Oman	High income	High EGD I	63	66	+3

\* A plus sign (+) implies rank improvement, while minus (-) sign implies rank drop.

**Box 6.7 UN-ESCWA and E-Government in the Arab Region**

e-Government is one of the most important Action Lines of the World Summit on Information Society (WSIS) Tunis Agenda. ESCWA conducted several activities related to the WSIS and SDGs one of which was Arab High-level Forum on WSIS and 2030 Agenda for Sustainable Development<sup>11</sup> (AHLF 2017), which was the first, to link the WSIS action lines and targets with the 17 SDGs at the Arab region's level.

During 2017, ESCWA conducted a report on Smart Digital Transformation in Government<sup>12</sup> provided conceptual frameworks of transition from government applications to government services; and highlighted the role of technology and the smart paradigm in the transformation from e-government to smart government. It proposed linkages of the SDGs with smart government and highlighted the top 10 technologies for smart government. The study considered that smart governments are those which score high on the e-Government Development Index (EGDI). Committed to continue working on the WSIS and SDG processes and linkages, ESCWA conducted a study (also in 2017) entitled "Arab Horizon 2030: Digital Technologies for Development<sup>13</sup>" which provided a preliminary vision on how the Arab region can achieve an appropriate status in seven major policy areas by 2030, that include Bridging Divide, Digital Strategies, Infrastructure, Cybersecurity, ICT Sector, e-Government and e-Applications.

As a continuation of this effort ESCWA is currently in the process of conducting a new study "Arab Digital Technologies for Development Report(2019): Towards Empowering People and Ensuring Inclusiveness", which is considered to be a continuation to 2017th study giving more emphasis to the assessment of the current status of the Arab Region in the different policy areas, and linking the role of ICTs to sustainable development in its three dimensions to the theme of empowering people and ensuring inclusiveness of societies; and thus leaving no one behind in sustainable development, derived from the theme of the High Level Political Forum (HLPF) of the year 2019.

Furthermore, ESCWA led an initiative to develop a Government Electronic and Mobile Services (GEMS) maturity index that can be applicable across countries, while taking into consideration regional specificities. GEMS index is an assessment tool for policy makers to measure the level of digitization and sophistication in delivering Government services to the public. GEMS index enables multi-dimensional benchmarking. On the national level, it allows for comparing government entities, and comparing them to their peers in the Arab region. In addition, it allows for services comparison on the regional level, and thus it supports identifying the need for developing common services among Arab countries, therefore allowing for joining regional efforts to enhance these services. The GEMS index is currently dedicated to serve the whole Arab region in the first stage and then probably the World in a later stage.

ESCWA has given high priority to innovation due to its importance for sustainable social, and economic development in the Arab region. In innovation efforts are focused on improved national innovation policies and systems for economic growth, industrial optimization, social welfare and environmental protection.

In 2017, ESCWA published a study entitled "Innovation Policy for Inclusive the Sustainable Development in the Arab region<sup>14</sup>". It provides a framework for the development of national innovation policies as well as its adaptation to specific sectors, including youth employment and climate change to help Arab countries in their efforts to achieve inclusive sustainable development.

With the aim of supporting Arab countries in building stronger public institutions, ESCWA launched a project in 2016 entitled "Institutional development for better service delivery towards the achievement of the sustainable development goals in Western Asia". One of the components of this project focus on the employment of emerging technologies and embracing the concept of openness, specifically open government.<sup>15</sup>



Source: ESCWA

## 6.2.4 Europe

Since the first edition of the UN E-Government Survey in 2003, Europe has always had the highest EGDI among the regions. In 2018, this dominance continues at both country and regional levels. Five of the top 10 countries come from Europe. Fourteen of the top 20 ranked countries are in this region and no European country ranks below the high-level EGDI category.

**Table 6.5** Level of e-government development in European Union member states

Country	Level of Income	EGDI	2018 Rank	2016 Rank	Change in Rank
Denmark	High income	0.9150	1	9	+8
United Kingdom	High income	0.8999	4	1	-3
Sweden	High income	0.8882	5	6	+1
Finland	High income	0.8815	6	5	-1
France	High income	0.8790	9	10	+1
Germany	High income	0.8765	12	15	+3
Netherlands	High income	0.8757	13	7	-6
Switzerland	High income	0.8520	15	28	+13
Estonia	High income	0.8486	16	13	-3
Spain	High income	0.8415	17	17	0
Luxembourg	High income	0.8334	18	25	+7
Austria	High income	0.8301	20	16	-4
Ireland	High income	0.8287	22	26	+4
Italy	High income	0.8209	24	22	-2
Belgium	High income	0.8080	27	19	-8
Portugal	High income	0.8031	29	38	+9
Malta	High income	0.8011	30	30	0
Poland	High income	0.7926	33	36	+3
Greece	High income	0.7833	35	43	+8
Slovenia	High income	0.7714	37	21	-16
Lithuania	High income	0.7534	40	23	-17
Hungary	High income	0.7265	45	46	+1
Bulgaria	Upper middle income	0.7177	47	52	+5
Slovakia	Upper middle income	0.7155	49	67	+18
Czech Republic	High income	0.7084	54	50	-4
Croatia	Upper middle income	0.7018	55	37	-18
Latvia	High income	0.6996	57	45	-12
Romania	Upper middle income	0.6671	67	75	+8

\* A plus sign (+) implies rank improvement, while minus (-) sign implies rank drop.

Challenges brought about by an aging workforce, subdued growth and high levels of youth unemployment have stimulated the region to seek innovative e-government solutions to improve competitiveness. This has resulted in the region improving its EGDI from 0.7240 in 2016 to 0.7730 in 2018. Slovakia (49th) showed the best improvement in the region with an increase of 18 rankings, followed by Switzerland (15th) and Portugal (29th) whose rankings rose 13 and 9 spots respectively. Forty-two countries, or 97 per cent of the region, are in the top 50th percentile for EGDI.

#### Box 6.8 Case Study of Denmark's Digital Strategy 2016-2020

Through the Digital Strategy 2016-2020, Denmark is further evolving towards digital public administration, communication and e-services. Specific focus areas of the Strategy are: a user-friendly and simple digital public sector; better use of data and quicker case processing; more cohesive welfare services; a better framework for the business community; having public-sector data as a growth driver; having an efficient utilities sector; public sector data protection; robust digital infrastructure and digitization for everyone. Initiatives such as mandatory Digital Post and mandatory online self-service for individuals and businesses; telemedicine solutions for people with chronic disorders, digital learning tools and availability of public-sector data online, free of charge for individuals, businesses and authorities alike were recently introduced. The Strategy emphasizes the need for the public sector to work closely with the business community, stakeholder organisations, and others, in establishing the foundation for a "flexible and adaptive society, ready for an ever more digitised world".<sup>16</sup>



Source:  
<https://en.digst.dk>

Europe's commitment to enhancing e-government within the region is evidenced by the *European eGovernment Action Plan 2016-2020*, a result of the successes and lessons learned from monitoring and evaluating previous action plans. The *eGovernment Action Plan 2016-2020* aims to accelerate the digital transformation of Governments, a key factor to ensure the success of the EU Single Market by removing existing digital barriers and preventing fragmentation caused by modernization of the public sector. Priority policies under the action plan include modernizing public administrations using Key Digital Enablers; enabling mobility of citizens and businesses by cross-border interoperability; facilitating digital interaction between Governments and citizens/businesses. Early indicators of the successful implementation of the Action Plan is evident when analyzing the region's improvement in OSI levels (0.2250) from 2014 to 2018, which shows the largest improvement in OSI score worldwide.

#### Box 6.9 European Union Digital Single Market

The Digital Single Market strategy, created among European Union Member States, aims to open up digital opportunities for people and business, and enhance Europe's position as a world leader in the digital economy.<sup>17</sup> Thanks to this strategy, individuals, businesses, researchers and public authorities are exposed to online activities that accelerate various processes by means of digital interactions. There are three main pillars on which Digital Single Market strategy is grounded. The first one addresses the issue of access to digital products and services. The second pillar calls for the creation of appropriate conditions for online services to develop across the EU. The third promotes maximization of digital economy growth.



Source: <https://ec.europa.eu>

### 6.2.5 Oceania

Oceania consists of two developed countries, Australia and New Zealand, juxtaposed within the region, with island-States having smaller populations, economies and, by extension, fewer resources. Table 6.6, which shows Australia and New Zealand in the top 10 countries with very high levels of EGDI, presents this stark contrast vividly. Fiji and Tonga, the 3rd and 4th ranking countries within the region, are outside of the top 100 ranked countries, despite having relatively high EGDI scores. Nonetheless, Oceania improved its average EGDI from 0.415 in 2016 to 0.461 in 2018.

**Table 6.6 Top 10 countries for e-government in Oceania**

Country	Sub-region	OSI	HCI	TII	EGDI	EGDI Level	2018 Rank
Australia	Australia and New Zealand	0.9722	1.0000	0.7436	0.9053	Very High	2
New Zealand	Australia and New Zealand	0.9514	0.9450	0.7455	0.8806	Very High	8
Fiji	Melanesia	0.4583	0.7899	0.3562	0.5348	High	102
Tonga	Polynesia	0.4722	0.8039	0.2951	0.5237	High	109
Palau	Micronesia	0.3264	0.8462	0.3346	0.5024	Medium	111
Samoa	Polynesia	0.3403	0.7241	0.2064	0.4236	Medium	128
Vanuatu	Melanesia	0.4375	0.5675	0.1920	0.3990	Medium	137
Tuvalu	Polynesia	0.2222	0.6422	0.2693	0.3779	Medium	144
Marshall Islands	Micronesia	0.2292	0.7301	0.1037	0.3543	Medium	149
Kiribati	Micronesia	0.2986	0.6591	0.0773	0.3450	Medium	153

Nte: Table 6.6 shows that Oceania does not have any country in the low-EGDI level, with the majority of its countries in the medium-EGDI level. Vanuatu leapt by 12 rankings to 137th, worldwide. Papua New Guinea (171st) and Tuvalu (144th) have improved by 8 and 7 spots respectively.

## 6.3 The situation in the Least Developed Countries (LDCs)

Least Developed Countries (LDCs) are low-income countries with low levels of human capital development and are highly vulnerable to economic structural shocks. The United Nations classifies 47 countries as LDCs. The African region (33) is the most represented nation in the LDC category, followed by Asia (9), Oceania (4) and the Americas (1).

Table 6.7 shows the top 10 LDCs ranked by 2018 EGDI scores.



**Table 6.7 Top 10 countries for e-government - Least Developed Countries (LDC)**

Country	Region	Sub-Region	OSI	HCI	TII	EGDI	EGDI Level	2018 Rank
Bangladesh	Asia	Southern Asia	0.7847	0.4763	0.1976	0.4862	Medium	115
Nepal	Asia	Southern Asia	0.6875	0.4957	0.2413	0.4748	Medium	117
Rwanda	Africa	Eastern Africa	0.7222	0.4815	0.1733	0.4590	Medium	120
Bhutan	Asia	Southern Asia	0.5000	0.4743	0.3080	0.4274	Medium	126
Zambia	Africa	Eastern Africa	0.4792	0.5689	0.1853	0.4111	Medium	133
Uganda	Africa	Eastern Africa	0.5694	0.4906	0.1566	0.4055	Medium	135
Vanuatu	Oceania	Melanesia	0.4375	0.5675	0.1920	0.3990	Medium	137
Togo	Africa	Western Africa	0.5556	0.5058	0.1353	0.3989	Medium	138
United Republic of Tanzania	Africa	Eastern Africa	0.5625	0.4759	0.1403	0.3929	Medium	139
Timor-Leste	Asia	South-Eastern Asia	0.3125	0.5387	0.2937	0.3816	Medium	142

Among LDCs, Bangladesh ranks top in e-government development. In launching the “Digital Bangladesh Initiative”, also known as “Digital Bangladesh by 2021”,<sup>18</sup> Bangladesh aims to emphasize the importance of ICTs in improving efficiency and productivity in all industries. The country is expanding e-government in all possible sectors, including health, agriculture, transportation, education and poverty reduction, to make public services more transparent as stated in its MSQ submission. It is also enhancing accessibility to mobile and online services to better implement a more digitized society.

## 6.4 Landlocked Developing Countries (LLDCs)

Seventeen LDCs are also categorized as Landlocked Developing Countries (LLDCs).<sup>19</sup> LLDCs have the additional impediment of facing significant geographical challenges as countries with no or limited access to the sea. Thus, their access to the international market depends on their neighbouring countries, and they rely on bordering countries for access to important telecommunication infrastructures. This geographical handicap also increases the cost of trading. The United Nations has identified 32 countries that are landlocked developing countries. The African region is, again, the most represented with 16, followed by Asia with 12 and the Americas with 2 and Europe with 2.

Table 6.8 shows the top 10 LLDCs ranked by 2018 EGDI levels.

**Table 6.8 Top 10 countries for e-government - Landlocked Developing Countries**

Country	Region	Sub-Region	OSI	HCI	TII	EGDI	EGDI Level	2018 Rank
Kazakhstan	Asia	Central Asia	0.8681	0.8388	0.5723	0.7597	Very High	39
Republic of Moldova	Europe	Eastern Europe	0.7708	0.7274	0.4787	0.6590	High	69
Azerbaijan	Asia	Western Asia	0.7292	0.7369	0.5062	0.6574	High	70
The former Yugoslav Republic of Macedonia	Europe	Southern Europe	0.7153	0.6924	0.4859	0.6312	High	79
Uzbekistan	Asia	Central Asia	0.7917	0.7396	0.3307	0.6207	High	81
Armenia	Asia	Western Asia	0.5625	0.7547	0.4660	0.5944	High	87
Kyrgyzstan	Asia	Central Asia	0.6458	0.7628	0.3418	0.5835	High	91
Mongolia	Asia	Eastern Asia	0.5972	0.7899	0.3602	0.5824	High	92
Bolivia (Plurinational State of)	Americas	South America	0.5625	0.7148	0.3148	0.5307	High	103
Paraguay	Americas	South America	0.5556	0.6701	0.3507	0.5255	High	108

Kazakhstan has the top EGDI score among the LLDC group, with a very-high-EGDI score of 0.760. In 2013, the country adopted “Information Kazakhstan - 2020”, which aims to create conditions for its transition to an information society. The programme seeks to ensure and optimize the effectiveness of public administration through information technology. It has identified four key areas of focus: ensuring the effectiveness of the government administration system, guaranteeing information availability, forming an information environment for socio-economic and cultural development of the society and developing a national information space. Kazakhstan is creating a more ‘mobile government’ by utilizing ICTs in these areas. The programme also provides ICT awareness opportunities through e-learning to its citizens.<sup>20</sup> It will be supported further through the use of information technologies at all levels of State bodies and through the implementation of ICT projects at the national level.<sup>21</sup>

## 6.5 The situation in Small Island Developing States (SIDS)

Small Island Developing States (SIDS) face similar development struggles as LLDCs, particularly a geographical impediment. SIDS have small economies and limited resources that are geographically dispersed. They are heavily vulnerable to environmental changes and external economic shocks. For example, countries such as the Federated States of Micronesia and Seychelles are small groups of islands that rely heavily on the international system. This implies that these countries are not only susceptible to internal and external shocks, such as natural disasters, but also face the omnipresent challenge of increased costs with respect to the government’s provision of infrastructure and services. There are 37 Small Island Developing States found in the Americas (16), Oceania (12), Africa (6), and Asia (3).

Table 6.9 Top 10 countries for e-government - Small Island Developing States

Country	Region	Sub-Region	OSI	HCI	TII	EGDI	EGDI Level	2018 Rank
Singapore	Asia	South-Eastern Asia	0.9861	0.8557	0.8019	0.8812	Very High	7
Barbados	Americas	Caribbean	0.6667	0.8301	0.6719	0.7229	High	46
Mauritius	Africa	Eastern Africa	0.7292	0.7308	0.5435	0.6678	High	66
Saint Kitts and Nevis	Americas	Caribbean	0.5347	0.7491	0.6825	0.6554	High	71
Bahamas	Americas	Caribbean	0.7014	0.7249	0.5393	0.6552	High	72
Trinidad and Tobago	Americas	Caribbean	0.6389	0.7195	0.5735	0.6440	High	78
Seychelles	Africa	Eastern Africa	0.6181	0.7299	0.5008	0.6163	High	83
Grenada	Americas	Caribbean	0.4931	0.8202	0.4658	0.5930	High	89
Antigua and Barbuda	Americas	Caribbean	0.4583	0.7518	0.5617	0.5906	High	90
Dominica	Americas	Caribbean	0.6111	0.6497	0.4775	0.5794	High	93

Among SIDS countries, Singapore has historically had a very-high-EGDI score since the first publication of the United Nations E-Government Survey. According to its MSQ submission, since 1980, long before the Survey, the country was designing and implementing policies to provide its citizenry with an ever-advancing level of e-governance. From 1980-1999, it aimed to have a computer on every desk; in 2000-2006, online services delivery; in 2006-2015, integration of data, processes and systems aimed at creating a collaborative “Gov-with-You” rather than a “Gov-to-You”. Finally, since 2016, Singapore has been providing a digital government to a “smart nation” improving lifestyles, creating more opportunities, and stronger communities by harnessing technology. The country’s strong foundation in its approach to e-governance and ICT development continues to allow Singapore to be among the world leaders in these fields.

#### Box 6.10 Small Island Developing States (SIDS) Symposium, Nassau, Commonwealth of the Bahamas (26-27 February 2017)

Small Island Developing States (SIDS) face geopolitical realities and socio-economic dependencies, along with prevalent development challenges, such as the scarcity of resources, spatial segregation and barriers to major markets. The SIDS Accelerated Modalities of Action [S.A.M.O.A.] Pathway, adopted by the General Assembly in 2014, recognized the enabling role of information communication technologies (ICTs) to sustain high levels of economic and social growth in SIDS. It also highlighted the importance of increasing connectivity and enhancing the use of ICTs through improved infrastructure, training and national legislation, as well as through partnership with the private sector and other stakeholders.

The important role of ICTs was echoed at the Small Island Developing States (SIDS) Symposium, hosted by the Government of the Bahamas and attended by ministers and high-level officials from more than 40 SIDS and other countries from 21 to 23 February 2017[1]. An informal communiqué containing key messages from the Symposium was presented by the Bahamas at the 16<sup>th</sup> Session of the UN Committee of Experts of Public Administration and at the 2017 Session of the UN High Level Political Forum [2].

The communiqué indicated that ICTs, including e-government, can be a very important tool for delivering public services and supporting progress towards the SDGs. Further efforts, however, are needed to put them at the service of the SDGs in SIDS. The communiqué also expressed great concern by the persistent digital divide in SIDS and called on the international community to support the building of ICT infrastructure in SIDS. It also stressed the importance of promoting innovation through education, raising public awareness and stimulating debate about key digital public policy choices. A similar request was made to the private sector and all other actors to develop innovations to ensure that SIDS can benefit from ICTs and Internet access.



[1] Refer to Symposium website: [https://publicadministration.un.org/bahamas\\_symposium](https://publicadministration.un.org/bahamas_symposium)  
 [2] Available at: <http://workspace.unpan.org/sites/Internet/Documents/UNPAN97155.pdf>

### 6.5.1 Comparing EGDI Levels of LDCs, LLDCs, and SIDS

Bangladesh is the highest ranked LDC at 115th. The average EGDI for this group is 0.2980 which is significantly lower than the world average of 0.5490, as seen in Figure 6.8 below. It is important to note that the LDC bloc has seen a significant improvement in e-government development since 2014. LLDCs, however, perform slightly better in their 2018 rankings with the average for the group at 133rd. This is, however, 29 positions better than the LDC average. In 2018, the LLDC countries have an average EGDI of 0.4130, significantly higher than the LDCs' 0.2980 average. Overall, EGDI levels across all three groups have been improving since 2014, but remain behind the world average.

Figure 6.8 World Average v. Average EGDI levels for LDCs, LLDCs, SIDS for 2014-2018

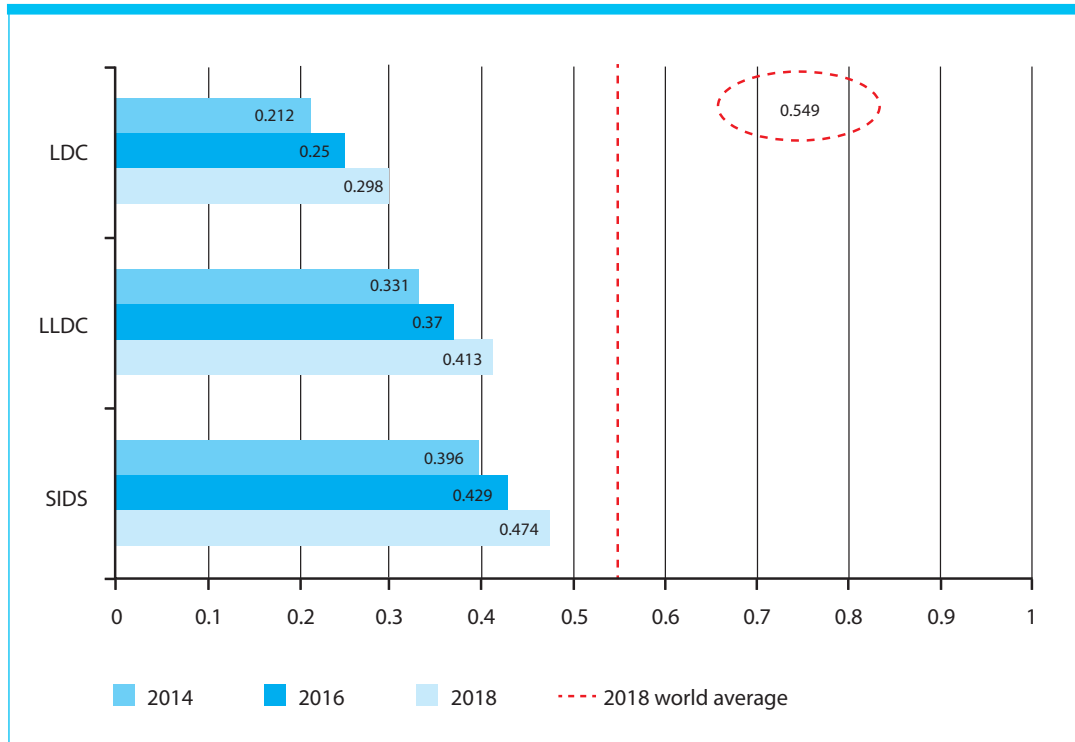
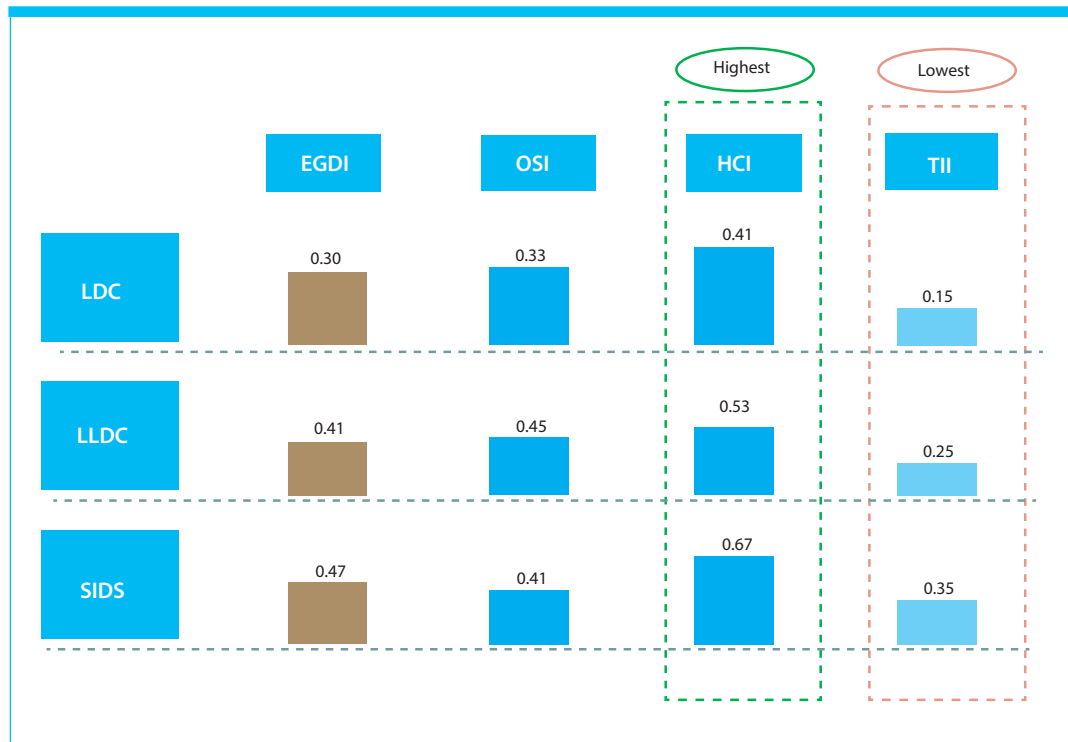


Figure 6.9 below shows the 2018 breakdown and comparison of the EGDI, OSI, HCI and TII levels across least developed countries, landlocked developing countries and small island developing states. Similar to the findings found in Figure 6.1, the Human Capital Index (HCI) is the highest contributing sub-index for each group. In contrast, the TII sub-index has the lowest contribution to e-government development, which highlights the urgent need for major investment in technology infrastructure in these countries.

Figure 6.9. Granular breakdown of 2018 e-Government Development Index (EGDI) and its components per grouping

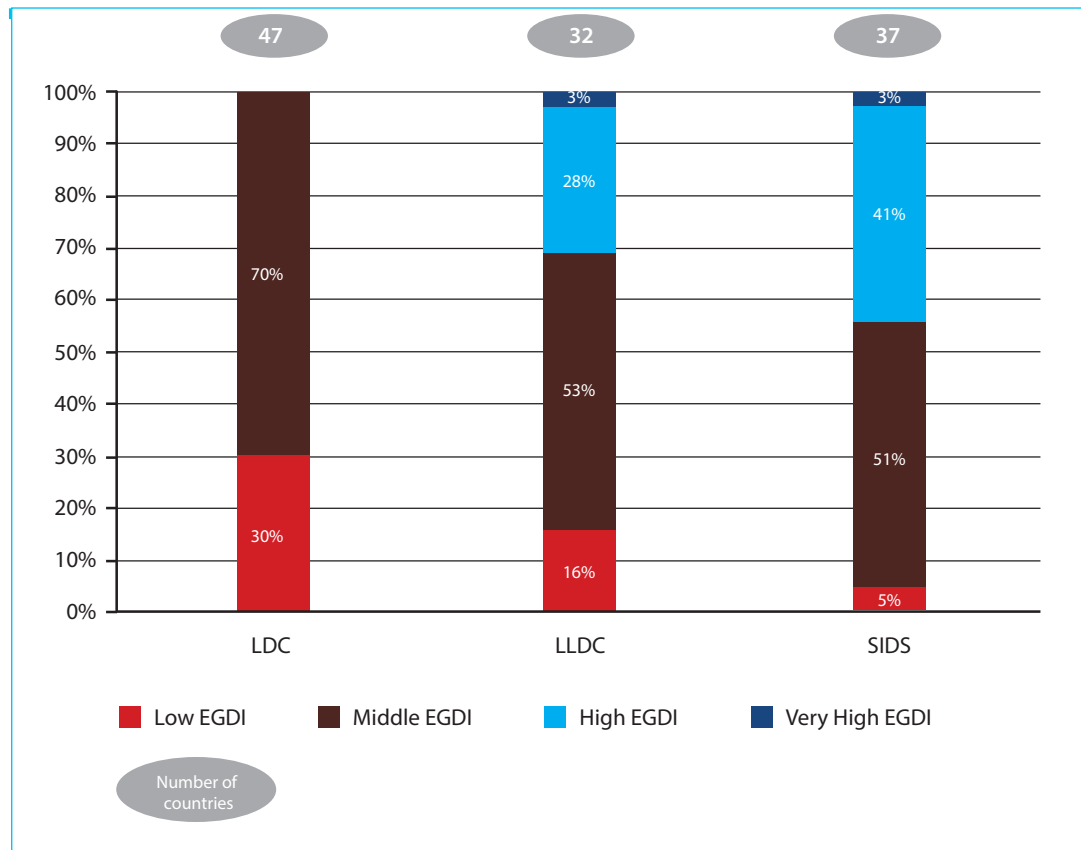


The LDC and LLDC countries generally perform poorly in all three sub-indices of the EGDI when compared to the world average. However, there have been improvements since 2016. E-government allows these countries to utilize technology in providing more efficient and innovative public services such as improving access to the most vulnerable, accelerating Government's ability to handle economic and environmental shocks and improving accountability and transparency. E-government has the potential to improve the allocation of scarce resources and enable long-term sustainable development. It can provide the impetus to boost resilience to the underlying conditions within LDC and LLDC countries. However, good infrastructure is an essential component of e-government, and insufficient spending on infrastructure coupled with lack of planning negate potential benefits. Investing in improving mobile and online services should be done in tandem with forging partnerships among stakeholders, including in the private sector.

Figure 6.10 depicts the dispersion of EGDI levels across LDCs, LLDCs and SIDS which complements the previous analysis on EGDI levels. LDCs have a higher percentage of low-EGDI and middle-EGDI levels compared to LLDCs and SIDS. And while LLDCs and SIDS have the same percentage in very-high-EGDI levels, there are more SIDS among high-EGDI level countries and the lowest among middle- and low-EGDI level countries.

E-government development is strongest in SIDS and weakest in the LDC group, possibly owing to the fact that the majority of the LDCs are African countries, where most have very low levels of e-government development. On the other hand, Singapore, along with many high-EGDI level countries from the Americas and Oceania, are part of the SIDS group.

Figure 6.10. Percentage of Countries Represented per bloc based on E-Government Development Index (EGDI) levels



## 6.6 Conclusion

The lessons learned from this chapter are as follows:

There has been an overall increase in e-government development across the regions, driven largely by improvements in OSI. Improvements in HCI and TII increased relatively less between 2014 and 2018, which require more strategic investments given the far-reaching outcomes.

The regional rankings have not changed since 2003. Europe remains the highest performing region in e-government, owing to its leveraging of its existing high levels of TII and HCI and using that advantage to drive its policies towards significant improvements in OSI.

The biggest EGDI improvement from 2016 to 2018 has been in the Americas, followed closely by Asia and Africa.

The majority of African countries and LDCs are still in low-EGDI levels due to their poor performance in HCI and TII. Many people in these countries are unable to benefit from ICTs because of poor connectivity, high costs of access and lack of necessary skills. These disadvantages are likely to affect further development of e-government as the pace of innovation in technology intensifies. In order to build a well-functioning e-government, countries need to intensify investments in their human capital and telecommunication infrastructure.

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- 1 Note: Afghanistan, Benin, Burkina Faso, Burundi, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Gambia, Haiti, Liberia, Madagascar, Malawi, Mozambique, Myanmar, Papua New Guinea, Sao Tome and Principe, Sierra Leone, Solomon Islands
- 2 Note: Antigua and Barbuda, Bolivia, Dominica, Dominican Republic, El Salvador, Fiji, Ghana, India, Indonesia, Iran (Islamic Republic of), Kyrgyzstan, Maldives, Palau, Panama, Paraguay, Saint Vincent and the Grenadines, Tonga
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