3. Regional E-Government Development and the Performance of Country Groupings

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3.1 Introduction

The present chapter provides a comprehensive overview of global e-government development from a regional perspective. It analyses regional performance and identifies major trends using the E-Government Development Index (EGDI). The successive sections detail key findings from responses to the Member States Questionnaire (MSQ), examining digital progress across different countries and highlighting specific trends among country groupings. The chapter incorporates contributions from various United Nations regional commissions and other international organizations, as well as insights from two expert group meetings on the preparatory process for the United Nations E-Government Survey, conducted by the United Nations Department of Economic and Social Affairs (UN DESA) in Guimarães, Portugal,[1] and in New York.[2]

3.2 Megatrends at the regional level

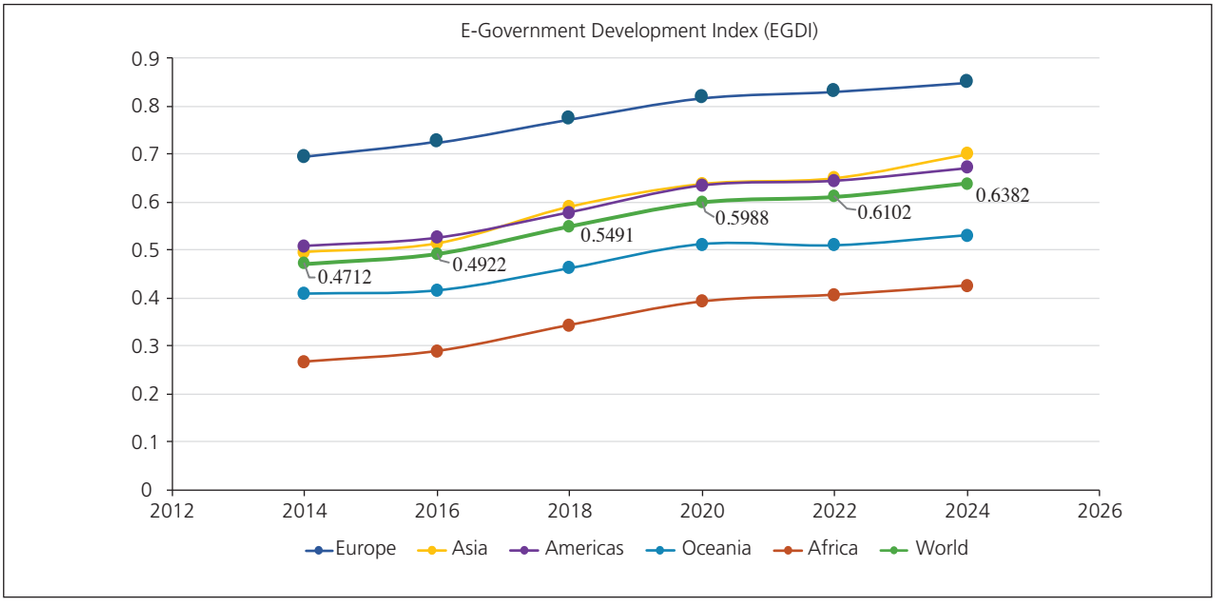
Overall, e-government development has gained significant momentum over the past two years. The global average EGDI value has risen by 4.59 per cent since 2022 (from 0.6102 to 0.6382), compared with an increase of 1.90 per cent during the preceding assessment period (see Figure 3.1).

The development of digital government has seen a worldwide upward trend, with regions leveraging technology to enhance government services and improve citizen engagement. The shift towards digital technologies accelerated during the post-pandemic recovery period, fueled by increased investment in resilient infrastructures and advanced solutions such as cloud computing and broadband. This shift is also driven by increased computing power, decreased costs, and the explosion of data due to mobile device proliferation.

Global megatrends include the rapid digitalization of services, the integration of generative and predictive AI, a growing focus on digital identity and data management, the shift towards remote work, and the increasing reliance on data and emerging technologies for policymaking. A key trend is the emphasis on viewing digital development through an equity lens, prioritizing inclusiveness, safety, accessibility, transparency, accountability, and openness. This approach ensures that all voices are heard, and the impact of digital advancements on all groups is thoroughly considered, monitored, and evaluated. This transformation has catalyzed innovation in the private sector, particularly for micro-, small-, and medium-sized enterprises, aligning with government platforms and standards. Venture capital investment in AI has surged, with $22.3 billion

In this chapter:

Figure 3.1 EGDI global and regional trends



invested in the fourth quarter of 2023 and $90.9 billion for the year, compared to ~$700 million a decade earlier.[3] Public sector digitalization has also driven improvements in infrastructure, broadband access, and cybersecurity measures.

This digital transformation extends into sectors like education, employment, social protection, healthcare, justice, and the environment, prioritizing digital skills and contributing to a workforce equipped for a digital-first economy. The public sector's example has stimulated demand for new digital services, promoting digital entrepreneurship and creating technology-driven job opportunities. These transformations have collectively contributed to more robust, sustainable, and resilient economies better prepared for current challenges and future uncertainties.

Average EGDI values have improved in all regions since 2022. Europe remains the leader in e-government development, with an average EGDI value of 0.8493, followed by Asia (0.6990), the Americas (0.6701), Oceania (0.5289) and Africa (0.4247). Asia has made the most notable progress, with a 7.65 per cent increase in its average EGDI value, followed by Africa (4.76 per cent), Oceania and the Americas (4.09 per cent) and Europe (2.26 per cent). Despite the significant progress achieved in Oceania and Africa, the EGDI average for these two regions remains below the global average of 0.6382.

In the Americas, the proportion of countries in the very high EGDI group increased from 23 per cent in 2022 to 31 per cent in 2024, while the proportion in the high EGDI group fell from 69 per cent to 57 per cent, signifying steady improvement in e-government development. This positive trend has been driven by countries in Latin America and the Caribbean, which have shown a growing commitment to enhancing online services delivery, improving digital infrastructure, and expanding Internet access. Initiatives to improve e-participation and digital inclusion have also played a pivotal role in fostering greater civic engagement and narrowing the digital divide. Regional collaborations and international partnerships have further accelerated digital advancement.

In Asia, the very high EGDI group accounts for the largest proportion of countries (43 per cent). Strong upward trends have largely been driven by significant advancements in digital transformation and digital government in countries that are part of the Cooperation Council for the Arab States of the

Gulf (GCC), China, and countries in Western and Central Asia These countries have invested heavily in innovative digital solutions and infrastructure, leading to enhanced efficiency and transparency. As a result of these dynamics, the proportions of Asian countries in the high and middle EGDI groups declined sharply between 2022 and 2024, with their respective shares in these groups dropping from 47 to 30 per cent and from 21 to 11 per cent.

In Oceania, the digital landscape is characterized by much greater variation; 57 per cent of the 14 countries surveyed fall into the middle EGDI group and 28 per cent into the high EGDI group, while Australia and New Zealand, comprising 14 per cent, stand out in the very high EGDI group. Australia and New Zealand are regional and global leaders due to their robust performance in digital transformation and government services. In contrast, the small island developing States (SIDS) in Oceania face substantial challenges, including inadequate technological infrastructure, susceptibility to cyber threats, and the effects of geographic isolation.

In Africa, digital trends reflect a wide spectrum of development. Most of the region's countries (52 per cent) are in the middle EGDI group, 31 per cent are part of the high EGDI group, and 13 per cent belong to the low EGDI group. South Africa and Mauritius, accounting for 4 per cent of the regional total, have moved up to the very high EGDI group and are the first African countries to have reached the highest EGDI tier, having effectively harnessed digital innovations to enhance public services and stimulate economic growth. However, many countries in Middle, Eastern, and Western Africa face challenges such as inadequate digital infrastructure, limited access to technology and a dearth of digital leadership and skilled information technology (IT) professionals, hindering their capacity to implement effective digital government and exacerbating the digital divide.

3.3 Crossing the digital divide: progress, challenges and disparities

Although digital government trends are broadly positive, levels of development and specific trends vary considerably across the five regions assessed. Both within and between regions, significant challenges persist, including securing adequate financing for digital development, bridging the digital divide, bolstering cybersecurity and privacy protections, and aligning digital strategies with effective implementation. These ongoing challenges continue to undermine the development efforts of countries in special situations, in particular least developed countries (LDCs), landlocked developing countries (LLDCs), and SIDS.

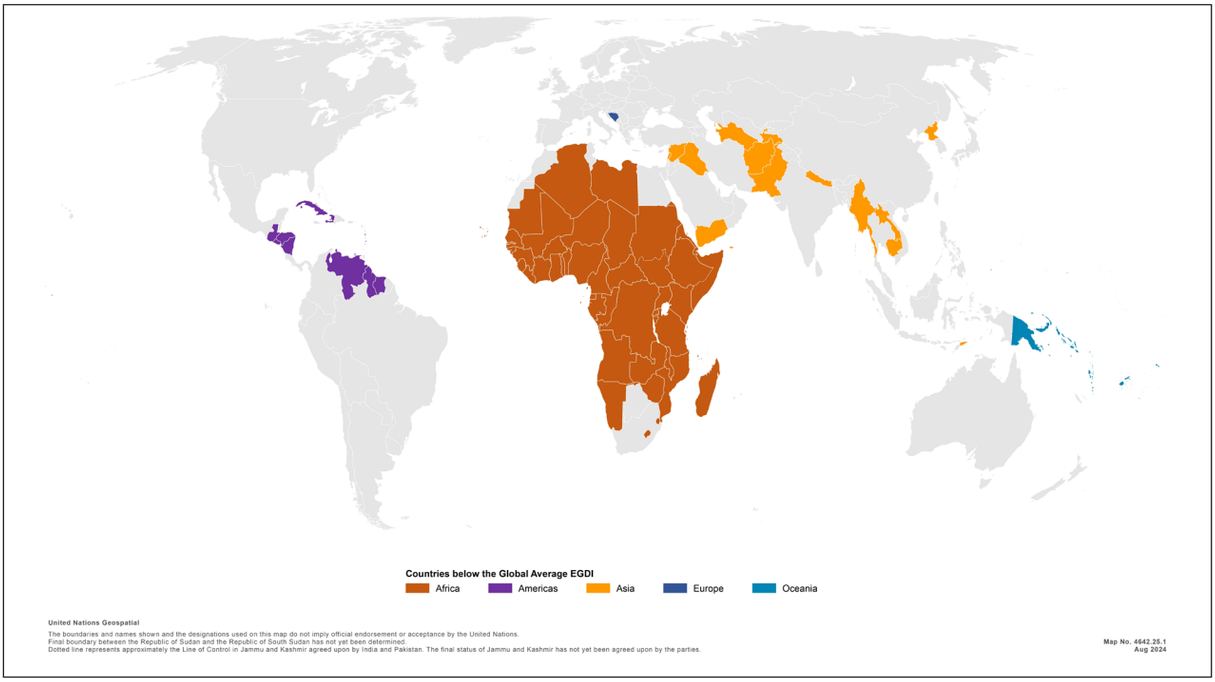
The global average EGDI value as a proxy for measuring the digital divide points to substantial improvement over the past two years. Among the 193 Member States, the proportion of the population lagging behind fell from 45.0 per cent in 2022 to 23.7 per cent in 2024. This improved ratio primarily derives from the positive performance of Asia, in particular the positioning of India and Bangladesh above the global EGDI average. Although progress has been impressive, it is important to note that there are still 1.9 billion people on the wrong side of the digital divide.

Figure 3.2 illustrates which areas of the world are most vulnerable to the digital divide.

Progress in bridging the digital divide through e-government development varies from one region to another. In Africa, 84.4 per cent of the population lag behind, down from 94.6 per cent in 2022, as 6 of the region's 54 countries (South Africa, Mauritius, Tunisia, Morocco, Seychelles and Egypt) now have EGDI values above the world average, up from 4 countries in 2022. This small improvement is due primarily to the gains achieved in Morocco and Egypt, both of which have EGDI values above the global average in 2024. No significant improvement has been observed in Oceania, where the same 11 out of 12 SIDS still have EGDI values below the global average. Excluding Australia and New Zealand, this leaves 92 per cent of the region's population at a disadvantage in terms of the digital divide.

In the Americas, e-government development is progressing. The number of countries with EGDI values below the global average dropped from 14 (out of 35) in 2022 to 13 in 2024, and the proportion of the regional population lagging behind decreased from 10.7 per cent to just under 9.2 per cent (though the latter share is calculated at 14.5 per cent when Canada and the United States of America are excluded). This slight improvement is due primarily to the strong performance of Jamaica, which has moved up one rating class (from H2 to H3) in 2024 with an EGDI value higher than the world average.*

Figure 3.2 Geographical distribution of countries with EGDI values below the global average, 2024



In Europe, only Bosnia and Herzegovina has dropped below the world average, moving down one rating class within the high EGDI group (from H3 to H2) in 2024.

Table 3.1 shows the population of countries with EGDI values below the world average as a share of the total population of each region for 2024.

Table 3.1 Proportion of the regional population living in countries with EGDI values below the global average, 2024

Geographical distribution of the population	Population (in thousands)	Population of countries with EGDI values below the world average	Percentage
All 193 Member States	8,009,865	1,897,077	23.7%
Africa	1,461,864	1,234,487	84.4%
Asia	4,726,615	552,626	11.7%
Americas	1,033,176	94,723	9.2%
Americas (excluding Canada and the United States)	651,641	94,723	14.5%
Europe	743,769	155,223	20.8%
Oceania	44,441	12,047	27.1%
Oceania (excluding Australia and New Zealand)	12,969	12,047	92.9%

* Additional information on the rating-class-based division of data is provided in the Appendix of the present publication.

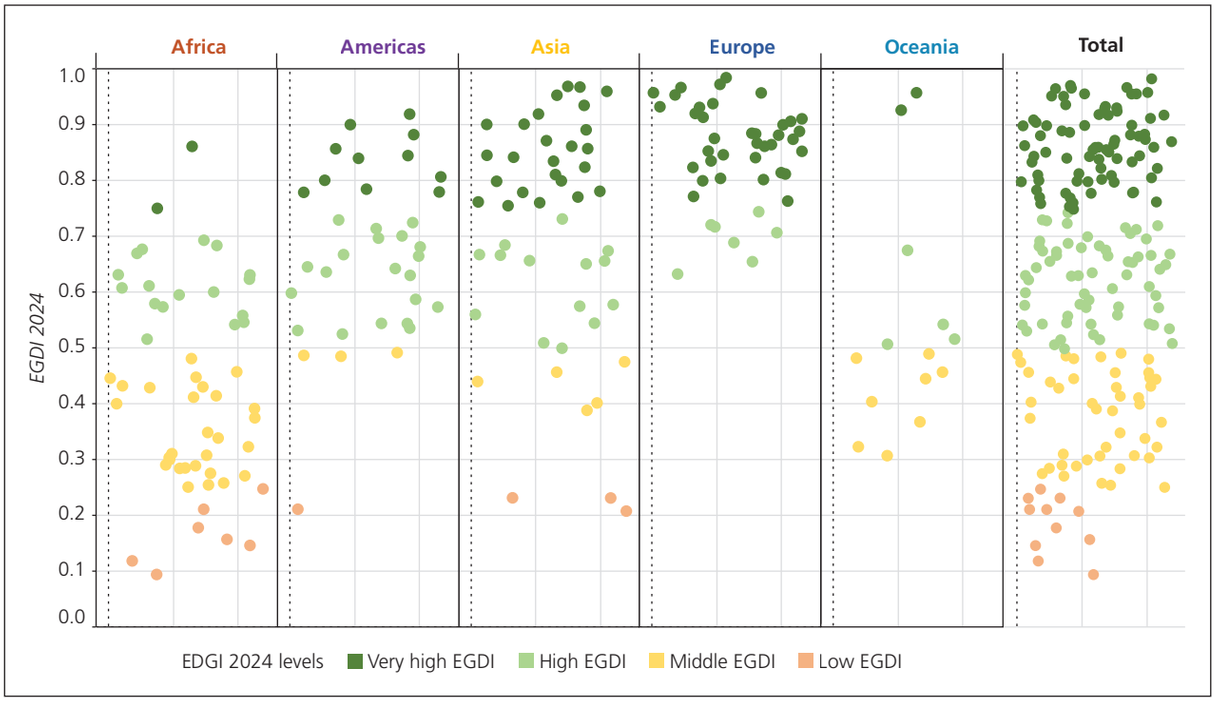
Uneven access to technology and information creates disparities among countries and communities in the same region. Because socioeconomic development and business opportunities may be limited in digitally underserved areas, youth and others of working age sometimes migrate to more advanced and affluent neighbouring countries with better prospects and economic stability. This outflow of the workforce can harm local economies, hinder growth and development, and lead to brain drain and the loss of talent and expertise.

Country-level EGDI values are used to measure the digital divide within each region. A narrow range of EGDI values points to similar levels of digital development, while a wide range of values indicates that there is significant variation in levels of digital development among countries (see figure 3.3).

Europe has the lowest dispersion and diversity of country EGDI values. All but one of the countries assessed are above the world average, which suggests that this region is moving more rapidly than other regions towards convergence in the level of e-government development.

Asia and the Americas are roughly comparable in their levels of e-government development, with most of their countries above the world average and a growing number of countries trending upward. At the same time, both regions are characterized by the extensive dispersion and diversity of country EGDI values, highlighting gaps in e-government development and suggesting the persistence of internal digital divides within these two regions.

Figure 3.3 Regional snapshot of countries by EGDI level, 2024



A similar high dispersion and diversity situation prevails in Africa, though in this region the majority of countries are plotted below the EGDI global average and most of the values are significantly lower, highlighting substantive gaps in e-government development and an alarming digital divide.

In Oceania, EGDI values are largely below the world average but vary from 0.3076 to 0.9577, suggesting highly uneven e-government development. The high diversity in Oceania is explained by the fact that while Australia and New Zealand are top performers, most of the remaining countries

(11 out of 14) have EGDI values below the global average. SIDS are in a particularly critical situation with regard to the digital divide, given their limited Internet infrastructure and human resource capabilities and the dearth of online services.

The megatrends in digital government development are promising across the regions assessed; however, addressing the remaining challenges is crucial for realizing the full potential of technology in transforming government operations and enhancing public services.

3.4 Africa: country grouping analysis

South Africa and Mauritius are the leaders in e-government development in Africa. For the first time, these countries are part of the very high EGDI group – a reflection of the advancements achieved in digital government skills, services and infrastructure. They are followed closely by 17 countries in the high EGDI group that have made significant progress in enhancing their digital government capabilities. Table 3.2 presents the key Survey results for these top performers in 2024.

Table 3.2 Countries leading e-government development in Africa, 2024

Country	Rating class	EGDI rank	Subregion	OSI	HCI	TII	EGDI (2024)	EGDI (2022)
South Africa*	V2	40	Southern Africa	0.8872	0.8026	0.8951	0.8616	0.7357
Mauritius*	V1	76	Eastern Africa	0.5903	0.7456	0.9159	0.7506	0.7201
Tunisia	HV	87	Northern Africa	0.5951	0.6497	0.8357	0.6935	0.6530
Morocco	HV	90	Northern Africa	0.5618	0.6078	0.8827	0.6841	0.5915
Seychelles	H3	92	Eastern Africa	0.4638	0.6769	0.8913	0.6773	0.6793
Egypt	H3	95	Northern Africa	0.7002	0.6150	0.6946	0.6699	0.5895
Ghana	H2	108	Western Africa	0.6084	0.5586	0.7281	0.6317	0.5824
Kenya	H2	109	Eastern Africa	0.7770	0.5271	0.5901	0.6314	0.5589
Cabo Verde	H2	111	Western Africa	0.6892	0.5694	0.6128	0.6238	0.5660
Botswana	H2	112	Southern Africa	0.3985	0.5719	0.8649	0.6118	0.5495
Eswatini	H2	113	Southern Africa	0.4557	0.5836	0.7851	0.6081	0.4498
Namibia	H2	114	Southern Africa	0.4996	0.5738	0.7288	0.6007	0.5322
Algeria	H2	116	Northern Africa	0.3320	0.6418	0.8129	0.5956	0.5611
Rwanda	H2	118	Eastern Africa	0.8207	0.5467	0.3724	0.5799	0.5489
Gabon	H2	121	Middle Africa	0.3187	0.5772	0.8263	0.5741	0.5521
Côte d'Ivoire	H1	124	Western Africa	0.5219	0.4848	0.6693	0.5587	0.5467
Libya	H1	125	Northern Africa	0.0808	0.5951	0.9639	0.5466	0.3375
Zambia	H1	130	Eastern Africa	0.4958	0.6225	0.5088	0.5424	0.5022
Senegal	H1	135	Western Africa	0.4779	0.3380	0.7328	0.5162	0.4479

Notes: Italicized countries are least developed countries, landlocked developing countries or small island developing States. An asterisk denotes countries that have moved up from the high to the very high EGDI group in 2024.

The countries in the table are organized into six descending rating classes (V2, V1, HV, H3, H2 and H1) within the very high and high EGDI groups. This list of relatively high performers underscores the region's growing commitment to implementing digital government initiatives aimed at enhancing services delivery, increasing transparency, encouraging e-participation, and strengthening both digital infrastructure and human capital. Six countries – South Africa, Mauritius, Morocco, Seychelles, Tunisia and Egypt – are among the top 100 performers worldwide, with EGDI values higher than the global average. Among those six, South Africa and Mauritius are leading the regional charge in e-government development, having advanced to the very high EGDI group with respective ratings of

V2 and V1. Morocco and Egypt have also made significant strides, joining the top 100 countries for the first time. Morocco has joined Tunisia in the HV rating class, while Egypt now has an H3 rating, the same as Seychelles. These 19 countries are well-positioned to further enhance their e-government development if they continue to invest and engage in digital transformation.

There are 28 African countries in the middle EGDI group, indicating steady growth in digital integration despite various challenges. Seven countries (Burundi, Niger, Chad, Eritrea, Somalia, South Sudan and the Central African Republic) are still part of the low EGDI group, reflecting substantial gaps in digital infrastructure, online services and human capital development that require urgent attention. The lack of digital progress in the countries with low EGDI values can primarily be attributed to the effects of ongoing conflict and post-conflict situations.

Survey results for all of the African countries assessed are available in section 12 of the Technical Appendix.

3.4.1 Regional development and cooperation

While e-government development in Africa is generally trending upward, it has yet to gain significant momentum. It is widely recognized within the region that digitalization is critical for sustainable development, and the Digital Transformation Strategy for Africa (2020-2030) has been formulated by the African Union to unleash the transformative power of digital technologies. The Strategy, aimed at accelerating economic growth, fostering social inclusion, and achieving sustainable development throughout the region, envisions "an integrated and inclusive digital society and economy in Africa" and is aligned with Agenda 2063: The Africa We Want and the Sustainable Development Goals (SDGs).[4]

The Digital Transformation Strategy is based on four pillars: enabling environment, policy and regulation; digital infrastructure; digital skills and human capacity; and digital innovation and entrepreneurship. The Information Society Division of the African Union Commission is coordinating the implementation of the Strategy in cooperation with international and regional stakeholders, overseeing progress using a regional monitoring, evaluation and learning framework.

Box 3.1 Information Society Division of the African Union Commission

The Information Society Division of the African Union Commission is dedicated to driving digital transformation across Africa, enhancing digital integration through the harmonization of policies and regulations and creating an enabling environment for digital transformation to promote sustainable and inclusive socioeconomic development in alignment with Agenda 2063 goals and aspirations and the Sustainable Development Goals. To achieve these objectives, the Division has undertaken several initiatives in recent years, including the implementation of the Digital Transformation Strategy for Africa (2020-2030), the promotion of digital ID interoperability in line with the relevant African Union policy framework, the fostering of data-driven economies, the development of strategies for a digital single market, and the formulation and adoption of effective regulations governing cybersecurity and artificial intelligence. In addition to these efforts, the Division continues to promote the region's digital agenda globally, contributing to policy development in broader United Nations forums and processes, including the Global Digital Compact proposed by the Secretary-General, the Open-ended Working Group on security of and in the use of information and communications technologies, and the Group of Governmental Experts on advancing responsible State behaviour in cyberspace in the context of international security.

Source: African Union, "About the African Union", available at https://au.int/en/overview#:~:text=The%20African%20Union%20(AU)%20is,OAU%2C%201963-1999).

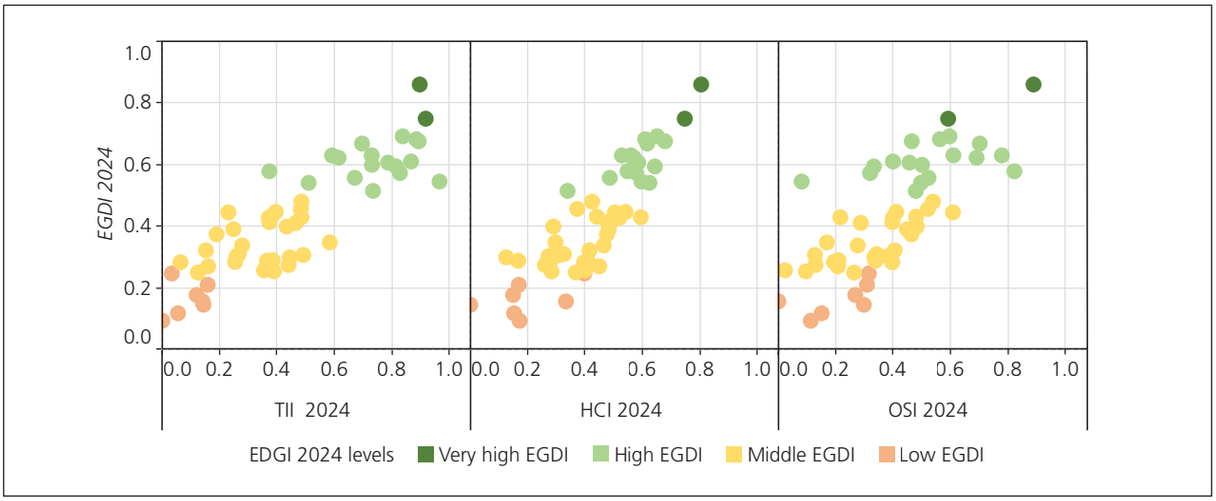
The United Nations Economic Commission for Africa (ECA) supports member states in developing national digital transformation strategies aligned with the broader Digital Transformation Strategy. Countries receiving support include Benin, Gambia, Botswana, Ghana, Zambia, Namibia, and Côte d'Ivoire. However, many countries, particularly LDCs, lack capacity and resources. Significant barriers to widespread digital transformation and e-government development include challenges with Internet connectivity and affordability, digital inclusion and services provision, digital literacy, and cybersecurity.

Significant disparities persist across the continent, particularly in terms of digital infrastructure, meaningful, universal, and affordable connectivity, digital skills, the gender digital divide, and e-government readiness and implementation. Many African nations do not have dedicated strategic frameworks for the advancement of e-government, though they do maintain sectoral strategies for digital transformation. As illustrated in figure 3.4, the EGDI composite and component values for African countries are broadly dispersed, reflecting widely varying levels of online services, human capital, and telecommunications infrastructure development across the region.

These disparities underscore the urgent need to enhance digital transformation and digital governance efforts across the continent. An early priority in this regard is the adoption of digital identity systems that enable businesses and government entities to provide better services. Digital identification enhances the efficiency, security and accessibility of government services while also protecting the privacy of individuals and promoting trust. Digital identity is not just about convenience; it also plays a crucial role in maintaining accurate records and reducing errors in government databases. More importantly, it is a powerful tool in the fight against identity theft and fraudulent activities. Digital identity systems help ensure the authenticity, validity and legality of online transactions, including submitting forms, signing contracts and participating in e-government processes.

ECA, through its Digital Center of Excellence on Digital Identity, Trade and Economy, is involved in several national projects aimed at enhancing digital identification and e-government development. In Nigeria, collaboration with Kaduna State has resulted in the development of a digital identification system for the pension bureau, which has streamlined services and reduced fraud.[5] In Gambia, the national digital identity system has facilitated access to various services while cutting transaction costs.[6] In Ethiopia, ECA has partnered with the Government to launch the National Identity Program

Figure 3.4 Distribution of EGDI values relative to OSI, HCI and TII values for Africa, 2024



(Fayda), designed to improve access to services and administrative efficiency. The Inclusive Identity Project in Ethiopia, developed in partnership with the Office of the United Nations High Commissioner for Refugees and Mastercard, uses inclusive digital technology to verify the identity of refugees and ensure access to entitlements.[7]

To address the gender digital divide, ECA leads the Connected African Girls programme, providing science, technology, engineering, arts and math (STEAM) training to more than 40,000 girls aged 12-25 across Africa. In collaboration with Rwanda and Congo, ECA has established the African STEAM Centre of Excellence and the African Research Centre for Artificial Intelligence to advance education and research in STEAM and AI. Initiatives such as the Digital Green platform and regional workshops further reflect the ECA commitment to supporting the use of digital technologies for inclusive economic development and regional integration.

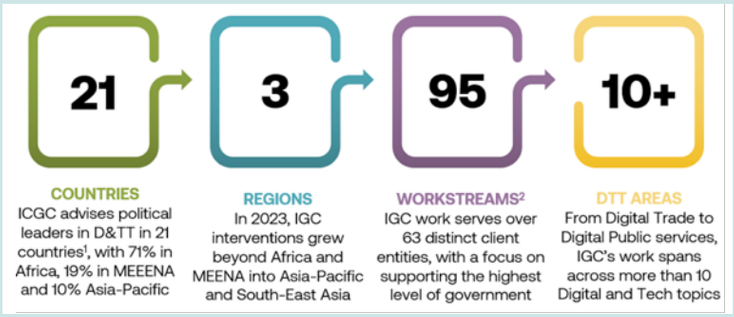
Headquartered in Beirut, the Economic and Social Commission for Western Asia (ESCWA) is one of five United Nations regional commissions. It plays a vital role in advancing regional integration, developing norms and standards, and fostering intergovernmental cooperation among its 21 member States, which include Egypt, Libya, Mauritania, Morocco, Somalia, Sudan, Tunisia, and (as of 2023) Djibouti in Africa. ESCWA leverages its convening power to promote dialogue and knowledge-sharing at various levels and foster intraregional and interregional cooperation and vibrant South-South partnerships. As the voice of the region, ESCWA brings people together for deliberation and advocacy. As the think tank of the region, it supports quality data collection and analysis for forward-looking, evidence-based policymaking. ESCWA also provides capacity-building and technical advisory services. As the primary source of regional support for the 2030 Agenda, it guides member States in their efforts to implement the SDGs.

ESCWA provides ongoing technical support to member States in the development, application and revision of national plans for digital transformation. The Commission has worked with relevant ministries and public agencies in Libya and Somalia to develop national digital transformation strategies and has helped draft e-participation policies in the Syrian Arab Republic and Mauritania. It has also suggested a quality framework for digital services in Libya and the Syrian Arab Republic. ESCWA conducted several national capacity-building activities during the period 2022-2024 to raise awareness in member States about the importance of digital transformation and digital government. These workshops concentrated on digital transformation strategies (Libya and Somalia), digital technologies (Sudan and Somalia), open data (Morocco), and information and communications technology (ICT) indicators (Mauritania).

International organizations such as the Tony Blair Institute for Global Change (TBI) have also been actively involved in supporting digital transformation across Africa, facilitating technological advancements and collaborating with government leaders and policymakers on the development of policy frameworks and the implementation of effective digital strategies to foster sustainable development. TBI efforts are aimed at creating a robust digital ecosystem to drive economic growth, improve public services, and strengthen inclusion – and more broadly at helping African nations position themselves as leaders in global digital innovation. Key initiatives include advising on digital infrastructure deployment, enhancing government services delivery through digitalization, and developing digital skills within the workforce. In Ghana, Malawi and Senegal,[8] the TBI Digital Academy is strengthening the digital technology skills of government staff and helping shape future leaders in public sector digital transformation. TBI is collaborating with Ethiopia, Ghana, Rwanda, Senegal and Zambia on the #TomorrowPartnership initiative, which focuses on closing digital skills gaps, expanding digital access, investing in infrastructure, and leveraging technology and data to improve policymaking.

Box 3.2 Mauritius, Rwanda, Seychelles and South Africa

The Tony Blair Institute for Global Change (TBI) works with senior political leaders, helping them leverage opportunities within the government machinery to drive positive change. Executive political authority is needed to operationalize a whole-of-government approach to digital transformation and to support scaling and the ongoing adoption and integration of new innovations. TBI currently works with almost 40 countries worldwide and is engaged in joint activities with international, intergovernmental and institutional partners. For example, the Institute is working with the UN DESA Division for Public Institutions and Digital Government to ensure that EGDI findings lead to concrete strategy, policy, delivery, technology, and digital partnership decisions by Governments as they strive to improve access to basic public services. The Institute helps political leaders establish the digital foundations needed to transform the way government innovates, operates and delivers, with support provided in the areas of strategy, policy and delivery. The figure offers a snapshot of the progress achieved in recent years.



Source: Tony Blair Institute for Global Change, available at https://www.institute.global/.

3.4.2 Key recommendations for accelerating digital development in Africa

Africa is at a pivotal juncture in its digital transformation journey. With a rapidly expanding youth population and the increasing penetration of mobile technology, the continent is uniquely positioned to leapfrog traditional developmental pathways and embrace a digital future. However, the path to digital inclusion and sustainable development in Africa remains fraught with obstacles and uncertainties. An analysis of past and present EGDI indicators for the region confirms that even with the most optimistic projections on future development trends, Africa will not be able to bridge the gap with other regions over the next six years to achieve the SDGs. This reality highlights the urgent need for accelerated efforts and innovative solutions to address digital disparities.

Advancements in AI are expected to further widen the gap between Africa and the rest of the world, underscoring the critical need for strategic investments and capacity-building initiatives to ensure the meaningful participation of Africa in an AI-driven global economy. Bridging this gap by 2030 will require significant investment in infrastructure development, affordability initiatives, and digital literacy programmes to ensure equitable access and participation in the digital economy. Funding and education disparities and regulatory obstacles may hinder efforts to narrow the divide within this time frame.

The urgent need for collective action and innovative solutions

Swift action is needed to accelerate digital transformation in Africa and foster a more inclusive ecosystem. Collective action and innovative solutions are needed to harness technology for sustainable development and equitable growth. A multifaceted approach, including comprehensive development strategies and strengthened North-South, South-South, and triangular cooperation, is essential. Initiatives like the African Continental Free Trade Area (AfCFTA) are exploring e-commerce technologies such as blockchain to enhance cross-border trade transparency and efficiency. (see box 3.3).

Box 3.3 African Continental Free Trade Area

The African Continental Free Trade Area (AfCFTA) is one of the flagship initiatives of Agenda 2063: The Africa We Want. It constitutes the region's largest free trade area in terms of the number of participating member States. This ambitious, comprehensive trade initiative addresses critical economic priorities in Africa, including digital trade and investment protection. By eliminating regional barriers to trade, AfCFTA aims to significantly boost intraregional trade across all sectors of the economy, in particular trade in value-added production. Signed by 54 African Union member States (all except Eritrea), the Agreement Establishing the African Continental Free Trade Area aims to create a single market for goods and services and to facilitate the free movement of people and investment across the African continent. Key AfCFTA goals include the following:

- *Eliminating tariffs and trade barriers*. AfCFTA members are committed to eliminating tariffs on most goods and services over a period of 5, 10 or 13 years, depending on each country's level of development and the nature of the trade products. The intention is to boost intra-African trade by reducing barriers and facilitating the free flow of goods, services, capital and people across the continent.
- *Establishing a single market*. The overall aim of the AfCFTA is to create a single, liberalized market for goods and services in Africa. Priorities include developing regional infrastructure and establishing a continental customs union to further integrate African economies.
- *Boosting economic development*. The AfCFTA is expected to lift 30 million Africans out of extreme poverty and boost income for nearly 68 million others. It is projected to raise income in Africa by $450 billion by 2035 – a 7 per cent gain.
- *Ensuring effective governance and implementation*. AfCFTA negotiations and implementation are overseen by a permanent secretariat based in Accra.

Trading under the AfCFTA began in January 2021, with an initial pilot programme involving eight countries implemented in 2022.

Source: African Continental Free Trade Area, available at https://au-afcfta.org/; see also the Agreement Establishing the African Continental Free Trade Area, available at https://au.int/sites/default/files/treaties/36437-treaty-consolidated_text_on_cfta_-_en.pdf.

International and regional collaboration – which offers network effects and opportunities to generate economies of scale – is essential for digital firms in Africa to compete globally. Eliminating barriers such as broadband coverage gaps, digital illiteracy, and red tape at borders can help people and businesses across Africa access larger markets and lead to job creation. However, significant gaps in digital infrastructure and regulatory barriers still stand in the way of seamless intra-African trade. Expanding broadband access, especially in rural and underserved areas, is crucial for making digital services available to all and for accelerating Africa's digital development.

Strengthening digital public infrastructure and connectivity

Strengthening telecommunications networks and data centers will improve connectivity and ensure digital systems' resilience. Establishing regional digital hubs can spur research, development, innovation, and create clusters of technological advancement. The United Nations Development Programme (UNDP) and International Telecommunication Union (ITU) are leading an initiative to support and strengthen digital public infrastructure (DPI)[9] in 100 countries by 2030. This initiative focuses on developing people-centered, interoperable digital systems to promote inclusive digital transformation and accelerate progress towards the SDGs.

A critical component of the DPI initiative is creating a universal safeguard framework that recognizes human rights and ensures safe, inclusive, and sustainable DPI adoption globally. UNDP provides tailored support to national governments, assisting with digital transformation stages, from readiness assessments to strategy design and implementation. The initiative supports developing inclusive digital identity systems to help Africans without basic identity credentials access digital services.

The DPI initiative also focuses on mobilizing financing, leveraging the Joint SDG Fund Window on Digital Transformation to address funding gaps for robust digital infrastructures in Africa. It aims to use partnerships with the private sector and community-based organizations to strengthen last-mile connectivity and inclusion, ensuring digital public infrastructure benefits reach everyone, including those in remote regions. Overall, the UNDP/ITU initiative represents a significant effort to support African countries in building inclusive, rights-based, and sustainable digital public infrastructures, driving substantial progress towards achieving the SDGs.

Creating a Single Digital Market and Harmonizing Regulations

Establishing a single digital market across Africa will lower trade and communication barriers and make the Internet faster and more accessible. Harmonizing data protection and privacy regulations at the regional level, as per the AU Data Policy Framework, is crucial for enabling free data flow while safeguarding rights. Promoting open data and creating digital commons will make digital technologies more accessible and affordable.

Developing digital literacy and skills and supporting startup ecosystems and innovation

Africa's young demographic presents a unique opportunity for rapid digital transformation. Investing in digital skills development and STEM education for the youth can accelerate technological and economic progress, leveraging the continent's demographic dividend. Integrating digital skills training into education at all levels and establishing vocational training centres are essential steps. This will build a workforce for a digital society, laying the foundation for an innovative and globally competitive digital economy. Governments must support youth as they transition from consumers to creators and innovators, bolstering the startup ecosystem and nurturing technological entrepreneurship and economic growth.

Establishing a favourable policy and regulatory environment is essential for achieving these goals. The Policy and Regulation Initiative for Digital Africa, a collaborative effort between the African Union, the European Union and ITU, exemplifies this aim, addressing critical policy, regulatory and capacity-building needs and paving the way for a digitally inclusive future across Africa (see box 3.4).

Box 3.4 Policy and Regulation Initiative for Digital Africa

The Policy and Regulation Initiative for Digital Africa (PRIDA) is a joint undertaking of the African Union, European Union and International Telecommunication Union (ITU). Supported by the Pan-African Programme funded by the European Union, the Initiative is designed to enable the African continent to reap the benefits of digitalization by addressing various dimensions of broadband supply and demand and building the capacities of African Union member States in the Internet governance space. PRIDA has three tracks: ITU is responsible for ensuring efficient and harmonized spectrum utilization across the continent (track 1), and the African Union Commission is responsible for harmonizing ICT/telecommunications policy, legal and regulatory frameworks (track 2) and for promoting the active participation of African stakeholders in the global Internet governance debate (track 3). More than 1,500 young Africans have received training through courses designed by PRIDA, and about 150 African trainers have been equipped to train young Africans on topics relating to digital policy. Among other things, the PRIDA courses, available in both online and offline formats, are designed to help strengthen the African voice in the global Internet/digital governance arena. To sustain capacity development beyond PRIDA, the Pan African Virtual and E-University has started offering the Internet governance course as an elective master's degree course.

Source: Largely excerpted from Policy and Regulation Initiative for Digital Africa, "About us", available at https://prida.africa/about-us/#:~:text=The%20%22Policy%20and%20Regulation%20Initiative,various%20dimensions%20of%20broadband%20demand.

3.5 The Americas: country grouping analysis

Significant progress has been made in digital government across the Americas, encompassing Northern America, Latin America, and the Caribbean. Key initiatives have enhanced service delivery, strengthened infrastructure, improved digital skills, increased transparency, and fostered greater citizen engagement through technology.

The United States and Canada in Northern America, and Uruguay, Chile, Argentina, and Brazil in Latin America and the Caribbean, lead digital government development. The top countries in the Americas by EGDI values are listed in Table 3.3. The 11 countries in the very high EGDI group include the United States, Uruguay, and Chile in the V3 rating class, followed by Argentina, Canada, and Brazil in the V2 class, and Peru, Costa Rica, Mexico, Ecuador, and Colombia in the V1 class. Notably, Ecuador, Mexico, and Colombia moved from the high to the very high EGDI group for the first time in 2024.

Most countries in the region (20 in total) fall into the middle EGDI category, indicating steady growth in digital integration despite challenges. Belize, Cuba, and Honduras, at a relatively low level within the middle EGDI group, still face substantial gaps in digital infrastructure, online services, and human capital requiring urgent attention. As in 2022, Haiti remains at the lowest EGDI level in the region, with ongoing political crises and conflicts severely undermining efforts to create a stable and effective digital infrastructure.

Table 3.3 Countries leading e-government in the Americas

Country	Rating class	EGDI rank	Subregion	OSI	HCI	TII	EGDI 2024)	EGDI (2022)
United States of America	V3	19	Northern America	0.9136	0.8842	0.9605	0.9194	0.9151
Uruguay	V3	25	South America	0.8832	0.8749	0.9437	0.9006	0.8388
Chile	V3	31	South America	0.8612	0.8413	0.9455	0.8827	0.8377
Argentina	V2	42	South America	0.7965	0.9330	0.8425	0.8573	0.8198
Canada	V2	47	Northern America	0.8552	0.8725	0.8078	0.8452	0.8511
Brazil	V2	50	South America	0.9063	0.8077	0.8068	0.8403	0.7910
Peru	V1	58	South America	0.8377	0.7469	0.8364	0.8070	0.7524
Costa Rica	V1	61	Central America	0.7217	0.7877	0.8933	0.8009	0.7659
Mexico*	V1	65	Central America	0.7637	0.7603	0.8310	0.7850	0.7473
Ecuador*	V1	67	South America	0.8851	0.7715	0.6833	0.7800	0.6889
Colombia*	V1	68	South America	0.7521	0.7793	0.8065	0.7793	0.7261

Note: An asterisk denotes countries that have moved from the high to the very high EGDI group in 2024.

A complete list of assessed countries in the Americas is available in section 12 of the Technical Appendix.

3.5.1 Regional development and cooperation

Northern America

The United States and Canada, both federal democracies, are actively pursuing digital transformation at national, state/provincial, and local levels. Federal governments establish overarching policies, while state and provincial governments implement localized strategies and initiatives like digital identity programs. Dedicated agencies, policies, and initiatives in both countries aim to drive digital transformation, enhance citizen experiences, and build a digitally skilled public workforce. However, the federal structure leads to variations in digital service quality and quantity across different regions.

The COVID-19 pandemic highlighted the critical role of digital government, prompting rapid deployment of digital solutions in both countries to meet urgent public needs. This period saw investments in resilient and advanced technologies, emphasizing the importance of digital infrastructure. Post-pandemic, digital transformation remains a key component of recovery strategies, focusing on digital inclusion, public health system upgrades, and economic recovery through digital platforms. Efforts include expanding broadband access to underserved communities, launching digital identity solutions, and enhancing online educational resources.

In **the United States**, several innovative initiatives have been implemented post-pandemic, including Executive Order 14058 on Transforming Federal Customer Experience and Service Delivery to Rebuild Trust in Government[10] and the updated United States International Cyberspace & Digital Policy Strategy.

Box 3.5 Building digital solidarity: the United States International Cyberspace & Digital Policy Strategy

The updated United States International Cyberspace & Digital Policy Strategy, released in May 2024, outlines a new approach to international cooperation and engagement on digital and cyber issues. The key focus is on building digital solidarity through collaboration with partners and allies. The Strategy has three guiding principles:

- The pursuit of an affirmative vision for a secure and inclusive cyberspace grounded in international law and human rights;
- The integration of cybersecurity, sustainable development and technological innovation;
- The implementation of a comprehensive policy approach utilizing the tools of diplomacy across the digital ecosystem.

The Strategy identifies four main action areas:

- Promote, build and maintain an open, inclusive, secure and resilient digital ecosystem.
- Align rights-respecting approaches to digital and data governance with international partners.
- Advance responsible State behaviour in cyberspace and counter threats to cyberspace and critical infrastructure by building coalitions and engaging partners.
- Strengthen and build international partner digital policy and cyber capacity.

Key aspects of the Strategy include pursuing collaboration and capacity-building with partners rather than embracing digital sovereignty; promoting a multi-stakeholder approach that involves the private sector in digital governance; securing critical infrastructure and supporting the development of resilient technology ecosystems; balancing innovation rather than protecting certain sensitive technologies (the small yard, high fence approach); and integrating human rights, development goals and technological progress.

This "affirmative and proactive" Strategy aims to mobilize United States resources to connect people through digital solidarity and thereby contribute to an inclusive, secure and equitable digital future. This marks a shift towards greater international cooperation, capacity-building and rights-based digital governance as core tenets of United States cyber and digital policy on the global stage.

Source: United States, Department of State, United States International Cyberspace & Digital Policy Strategy: Towards an Innovative, Secure, and Rights-Respecting Digital Future, available at https://www.state.gov/wp-content/uploads/2024/06/United-States-International-Cyberspace-and-Digital-Strategy.pdf. The four main action areas are excerpted from the source.

Executive Order 14058 mandates a comprehensive, government-wide approach to enhancing customer experience, with agencies committing to service improvements linked to important life events. Significant progress has been made in aligning government services with digital expectations, ensuring interactions are simple, seamless, and secure.

The 2024 United States International Cyberspace & Digital Policy Strategy introduces the concept of digital solidarity (see box 3.5), emphasizing collaboration to achieve shared goals, build capacities, and provide mutual support. This strategy aims to promote an open, secure, and resilient digital ecosystem, align digital governance with international human rights standards, advance responsible behavior in cyberspace, and strengthen international partners' ability to counter cyberthreats and cybercrime. This multifaceted approach seeks to forge a robust digital future, highlighting the United States' aspirations to lead in cyberdiplomacy and digital technology governance.[11]

Canada has its own digital government strategies and initiatives, including the Canadian Digital Operations Strategic Plan: 2021-2024,[12] Digital Ambition, and Beyond2020. These initiatives aim to modernize government operations, enhance digital services, and build a capable digital workforce.

The Canadian Digital Operations Strategic Plan: 2021-2024 directs the integrated management of services, information, data, IT, and cybersecurity across the federal government. Its objectives include modernizing legacy IT systems, improving digital services for citizens and businesses, and implementing comprehensive data management and cybersecurity approaches. A key initiative within the plan is developing a trusted digital identity framework using open standards for secure online service access. The plan supports the broader Digital Government Strategy and the Policy on Service and Digital[13] and prioritizes adopting modern technologies such as cloud computing, consolidating networks, phasing out obsolete systems, and focusing on user-centric service design. It aims to strengthen digital skills within the public sector, enable data-driven decision-making, and improve cybersecurity and operational efficiency. Regular progress reviews ensure the plan adapts to new priorities, providing a roadmap for digital transformation in the public sector.

Digital Ambition[14] and Beyond2020[15] focus on transforming government operations and public services for the digital age. Digital Ambition aims to build a digital workforce and modernize online services for Canadians, setting priorities for federal departments to transition to a digital-first approach. Objectives include enhancing digital skills within the public sector, adopting advanced technologies like cloud computing, and redesigning services to be user-centric and accessible online. It aligns with the broader Digital Operations Strategic Plan by prioritizing data use, cybersecurity management, and comprehensive IT solutions to increase efficiency.

Beyond2020 complements these efforts by fostering an inclusive, digital-ready public service sector. It prepares public servants for future challenges by equipping them with necessary skills and mindsets and supporting modern, adaptive work environments. It promotes continuous learning, modernizing workplaces, adopting new working methods, and creating an innovative, inclusive workforce. Activities include reskilling and upskilling staff, updating human resource policies, integrating digital collaboration tools, and driving cultural change to attract diverse talent and adapt to new technologies.

Together, Digital Ambition and Beyond2020 provide a comprehensive approach to transforming the Canadian public sector into a modern digital entity with a capable workforce ready to meet present and future demands.

Latin America and the Caribbean

Since the start of the 21st century, Latin America and the Caribbean have embarked on ambitious digital transformation processes. The most recent Digital Agenda for Latin America and the Caribbean (eLAC2024), adopted at the Eighth Ministerial Conference on the Information Society in Montevideo

in November 2022, establishes a regional policy framework for digital transformation for 2023 and 2024. Approved by delegates from 14 countries, eLAC2024 focuses on enhancing infrastructure and connectivity, promoting sustainable digital practices in business, improving well-being through digital transformation, and fostering new digital partnerships for prosperity. It integrates a gender perspective and covers a wide range of areas, including the digital economy, government, inclusion, skills, emerging technologies, cybersecurity, and regional market integration. Prepared by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and the Government of Uruguay, eLAC2024 represents a concerted effort to drive inclusive and sustainable digital advancement. Progress and challenges will be reviewed at the Ninth Ministerial Conference on the Information Society in November 2024, under the Government of Chile.

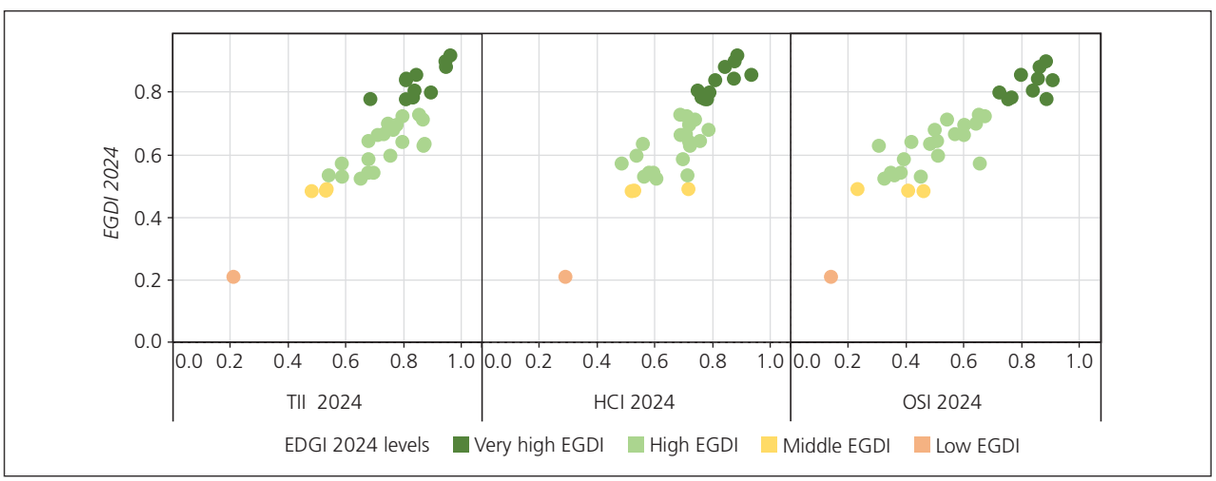
Significant progress in digital government and development has been made across the region. Countries such as Uruguay, Chile, Argentina, Brazil, Peru, Costa Rica, Mexico, Ecuador, and Colombia are now in the very high EGDI group in 2024, reflecting their efforts in integrating digital technologies to enhance public services and government efficiency.

Uruguay a regional leader in digital government development, exemplifies this with initiatives led by the Agency for Electronic Government and the Information and Knowledge Society (AGESIC). The Agenda Uruguay Digital 2025, supported by the AGESIC Honorary Board of Directors and Honorary Advisory Council for the Information Society.[16] and aligned with the SDGs, focuses on the digital transformation of public services, aiming to deliver efficient and personalized services by enhancing citizen-government interaction and implementing a standardized, multichannel services model.

Mexico, **Ecuador**, and **Colombia** have moved to the very high EGDI group for the first time, marking significant progress in e-government development. Their achievements showcase the considerable efforts made in overhauling digital infrastructures, implementing comprehensive national digital strategies, and improving citizen engagement through digital platforms.

In the Caribbean, 13 Small Island Developing States (except Cuba and Haiti) have shown commendable progress, placing them in the high EGDI group. **The Dominican Republic** and **Trinidad** and **Tobago** have demonstrated exceptional growth, investing heavily in telecommunications infrastructure and expanding digital services, which have streamlined government processes and increased digital accessibility. These efforts position them close to **the Bahamas** as leaders in digital advancement in the Caribbean, reflecting their commitment to leveraging digital technologies for sustainable development and improved public services delivery.

Figure 3.5 Distribution of EGDI values relative to TII, HCI and OSI values for the Americas, 2024

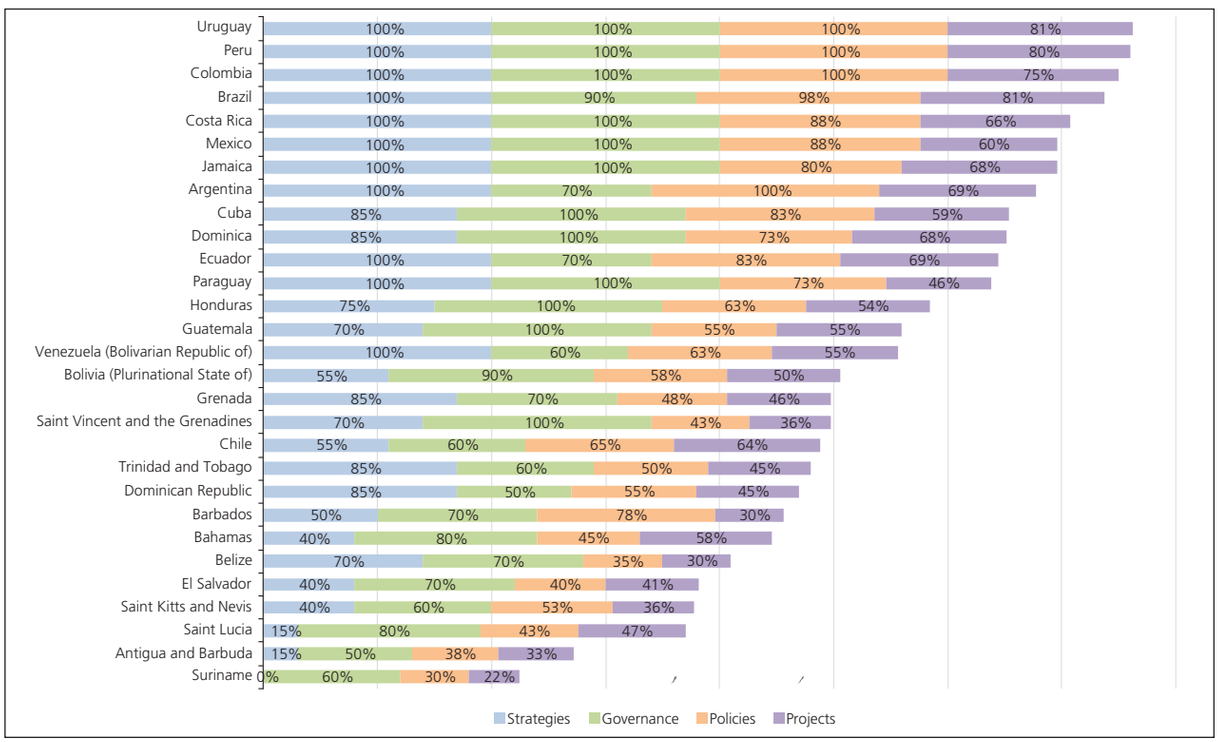


The achievements described above highlight the growing importance of leveraging digital transformation in the region to foster government transparency, increase public sector efficiency, and enhance services delivery and digital infrastructure. The clustering shown in figure 3.5 indicates that countries in the Americas generally exhibit consistent levels of development across the three key EGDI subcomponents – the Online Services Index (OSI), the Human Capital Index (HCI) and the Telecommunications Infrastructure Index (TII). Haiti is the only outlier, an indication of the significant challenges it still faces in digital development.

In 2021, the Latin American and Caribbean Institute for Economic and Social Planning (within ECLAC) surveyed digital government policymakers to assess progress in digital governance. The survey evaluated four areas: strategies (national development snapshots and promotion of digital transformation), governance (institutional setups for achieving objectives), policies (normative frameworks guiding development), and projects (digital governance initiatives). Results showed countries were more likely to have strategies and governance structures in place than supporting policies and projects (see figure 3.6).[17]

Capacity-building and digital cooperation between international organizations and Latin American and Caribbean countries have been crucial in advancing digital development. This collaboration allows for the sharing of resources and expertise and facilitates technology transfer, accelerating the region's digital transformation and ensuring effective implementation of the latest digital solutions.

Figure 3.6 Results of the ECLAC survey on digital governance in Latin America and the Caribbean



Source: ECLAC, based on the results of a survey conducted by the Latin American and Caribbean Institute for Economic and Social Planning.

ECLAC has been instrumental in institutional capacity-building and training for civil servants in Latin America and the Caribbean, preparing governments for digital government strategies. In 2023, 55 participants attended an international course organized by the Latin American and Caribbean Institute for Economic and Social Planning titled "From Digital Government to Smart Government"[18].

Box 3.6 Cooperation between ECLAC and the Ministry of Science, Innovation, Technology and Telecommunications in Costa Rica

Between 2019 and 2023, ECLAC provided technical support to the Ministry of Science, Innovation, Technology and Telecommunications in Costa Rica with the aim of strengthening interoperability, digital governance and data governance. Technical assistance and training were provided to personnel from 12 State institutions – a group collectively referred to as the digital identity and implementation of national interoperability team. In-depth feedback from participants informed the preparation of a road map to guide interoperability development and integration at the country level and to help define and support the development of an effective interoperability model, with an assessment of needs at the organizational, legal/regulatory, semantic and technological levels. ECLAC contributed to efforts resulting in the adoption of a decree relating to the promotion of digital services and the development of digital identity and national interoperability in Costa Rica. It also provided technical assistance to support the creation of a national agency that would act as the governing body for digital government. All of these actions support a governance model that allows broad inter-institutional coordination, political articulation, and technical standardization for the integration of services within a harmonized system encompassing all sectors and institutions. The overarching aim is to improve the integration and utilization of digital technologies to address the needs of citizens, companies and public administration. The outcome of the first phase of this technical assistance is reviewed in a publication on digital governance and government interoperability. This implementation guide provides information on diagnostic tools, the value proposition, interoperability services, and the digital governance model for national interoperability. Its recommendations are useful for any country requiring support in these areas.

Source: ECLAC, "Gobernanza digital e interoperabilidad gubernamental: una guía para su implementación", July 2021, available at Gobernanza digital e interoperabilidad gubernamental: una guía para su implementación | CEPAL; see also Costa Rica, Ministry of Science, Innovation, Technology and Telecommunications.

Additionally, a panel discussion on governance for digital transformation was held during the nineteenth meeting of the Regional Council for Planning in Santo Domingo in November 2023. Representatives from the Bahamas, Chile, Costa Rica, the Dominican Republic, and Ecuador discussed evolving digital government into smart government through inclusive, accountable institutions and data-driven public policy.

In the Caribbean, capacity-building has focused on creating and measuring indicators reflecting the unique situation in SIDS. In March 2023, ECLAC and the Caribbean Telecommunications Union hosted the Workshop on Measuring the Digital Society for Digital Inclusion, proposing a draft set of Caribbean ICT indicators to assess digital development based on on the nuanced realities prevailing in these island States.[19]

ECLAC's research agenda for the Caribbean emphasizes digital inclusion. A 2023 study of 11 Caribbean countries and territories found varying stages of digital transformation, with most national frameworks lacking specific provisions for digital inclusion. A January 2023 policy brief examined how improving broadband quality and affordability could advance digital inclusion in the Caribbean.[20]

In October 2023, during the twenty-first meeting of the Monitoring Committee of the Caribbean Development and Cooperation Committee, ECLAC convened a two-day seminar titled "Positioning the Caribbean in the Knowledge Economy: The Role of Data".[21] Panel discussion topics included "artificial intelligence and the Caribbean data revolution" and "advancing digital inclusion through data and measurement". The panels assessed the readiness of the subregion to embark on a Caribbean data revolution that promotes sustainable development and facilitates digital inclusion across the Caribbean.

ECLAC has also collaborated with Costa Rica's government, supporting digital governance, data governance, and interoperability. This partnership aims to enhance the effectiveness and efficiency of digital services, ensuring well-integrated digital systems and high standards of data security and transparency (see box 3.6).

3.5.2 Key recommendations for accelerating digital development in the Americas

Importance of regional collaboration and integration

Regional collaboration and integration are essential for effective digital transformation in Latin America and the Caribbean. A unified digital market requires the standardization of digital regulations, in particular the harmonization of laws on digital commerce, data protection and cross-border data flows. Information on the importance of signature validation in cross-border transactions is provided in box 3.7.

Box 3.7 A regional solution for cross-border signature validation

Uruguay has set up firma.gub.uy to promote and facilitate the use of advanced electronic signature options offered by a range of providers registered with the Electronic Certification Unit. This web interface was designed so that individuals and firms could easily use or validate electronic signatures. This is the first regional solution that guarantees the safe, reliable, transparent and efficient cross-border exchange and validation of cross-border signatures. The system is currently being utilized in Uruguay, Argentina, Brazil and Paraguay, where its legal validity is recognized. The availability of reliable cross-border digital signature options enables people and organizations in different countries to conduct transactions completely online, which can save users time and money, cut down on administrative procedures, reduce transaction-related barriers, and increase business productivity and competitiveness.

Source: Uruguay, Agency for Electronic Government and the Information and Knowledge Society, "firma.gub.uy", available at https://firma.gub.uy/es/pp/inicio.

The Inter-American Network on Digital Government Authorities (Red GEALC) is pivotal in Latin America and the Caribbean's digital transformation, promoting cooperation and best practices. Red GEALC advances digital tools in public administration, enhances transparency and efficiency, and implements cybersecurity measures. It also promotes regional integration of digital standards and policies, essential for the digital economy's growth. Red GEALC's priorities align with eLAC2024, adopted in 2022, which outlines regional digital transformation objectives through 2024. Red GEALC organizes ministerial meetings and high-level discussions on citizen-centric digital services, data governance, and emerging technologies like AI, facilitating policy dialogue and regional cooperation strategies.

Countries must continue promoting regional collaboration, strengthening networks like Red GEALC, and enhancing North-South, South-South, and triangular cooperation, supported by capacity-building initiatives from ECLAC and other UN entities. These efforts ensure sustained digital transformation progress across the region.

Investment in broadband infrastructure, digital literacy and digital skills

A comprehensive digital transformation approach is essential for inclusion, requiring significant broadband infrastructure investment, especially in SIDS, rural, and underserved areas. This should include traditional connectivity solutions and innovative technologies like satellite and 5G networks. Promoting digital literacy and skills development is critical, empowering individuals in rural and marginalized communities and preparing the workforce for the digital economy.

Strong cybersecurity is crucial for protecting infrastructure and personal data, maintaining the integrity and trustworthiness of digital transactions. Public-private partnerships are also essential, leveraging strengths from both sectors and reducing the financial burden on public resources. These collaborations facilitate large-scale digital infrastructure projects and service delivery innovations.

Inclusive digital policies are vital. Policymakers must consider the needs of all society segments, including women, indigenous peoples, and marginalized groups. An inclusive policy framework aims to narrow the digital divide and promote equitable access to technology, ensuring digital benefits are shared across all socioeconomic groups.

Ensuring funding and resources for digital transformation

To advance e-government and broader sustainable development objectives, Latin American and Caribbean countries must invest heavily in digital transformation. Supporting innovation and startups through incentives like tax breaks, seed funding, and technology parks is vital for economic growth and technological advancement. Allocating funds and resources from national budgets and securing international financing are critical. The United Nations, development banks, and other international institutions offer funding support to bolster digital development. By leveraging these resources, the region can accelerate digital transformation efforts, bridge the digital divide, and meet evolving challenges, ultimately improving economic and social outcomes.

3.6 Asia: country grouping analysis

Asian countries have demonstrated remarkable performance in e-government development, as reflected in the 2024 EGDI results. Among the five global regions assessed, Asia has achieved the most rapid advancement in digital development, driven by both established and emerging digital leaders.

Singapore, the Republic of Korea and Japan have long been recognized as frontrunners in digital governance, consistently earning the highest EGDI rankings due to their advanced digital infrastructures, widespread adoption of cutting-edge technologies, innovative public services solutions, and strong regulatory frameworks and digital development strategies. These nations have set high standards in digital government, offering seamless, secure and efficient services that enhance citizen engagement and promote inclusion.

The GCC countries, along with Kazakhstan, Türkiye and China, have also made impressive strides in their digital transformation journeys. These nations have invested heavily in digital infrastructure, embracing new technologies such as AI, blockchain and the Internet of Things (IoT) to revolutionize public administration and services delivery. Their commitment to digitalization has been further accelerated by national strategies that prioritize ICT development and digital literacy.

The rapid progress in these countries has had a cascade effect on their neighbours, driving regional growth in digital transformation. Governments across Asia are recognizing the importance of digital governance as a cornerstone of economic and social development. Following the lead of the frontrunners, they are implementing their own digital initiatives, which are increasingly tailored to the unique needs of their populations and local contexts.

This collective push for enhanced digital capabilities is not only improving government services but also fostering a positive competitive environment that encourages continuous improvement and innovation. The success of digital transformation in Asia has served as a compelling blueprint for other regions aiming to leverage technology to enhance governance and drive development.

The countries with the highest EGDI values in Asia are listed in table 3.4.

Twenty-five countries in the region (the majority of those assessed) are in the very high EGDI group. At the forefront of this group, Singapore, the Republic of Korea, Saudi Arabia, the United Arab Emirates, Japan and Bahrain are in the highest (VH) rating class, identifying them as global leaders in e-government development and services provision. They are followed closely by Israel, Kazakhstan, Türkiye and China in the V3 rating class.

Twenty-five countries in the region are in the very high EGDI group, with Singapore, the Republic of Korea, Saudi Arabia, the UAE, Japan, and Bahrain at the forefront in the highest (VH) rating class. They are followed by Israel, Kazakhstan, Türkiye, and China in the V3 rating class.

Notably, six Asian countries, including Mongolia, Armenia, and Qatar, have moved up to the V2 rating class, joining the very high EGDI group for the first time in 2024, showcasing substantial improvements in digital government capabilities. The V1 rating class within the very high EGDI category includes nine countries, with seven (Uzbekistan, Indonesia, Kuwait, Viet Nam, the Philippines, Azerbaijan, and Brunei Darussalam) advancing from high to very high EGDI groups. This movement highlights the region's leading position in positive transitions and underscores the trend toward digital evolution and enhancement across Asia.

Fifteen countries in Asia are in the high EGDI group, reflecting consistent progress in digital integration despite challenges. Pakistan and Myanmar have moved up from the middle to the high EGDI group for the first time, indicating significant advancements in their digital government capabilities.

Table 3.4 Countries leading e-government development in Asia, 2024

Country	Rating class	EGDI rank	Subregion	OSI	HCI	TII	EGDI (2024)	EGDI (2022)
Singapore	VH	3	South-eastern Asia	0.9831	0.9362	0.9881	0.9691	0.9133
Republic of Korea	VH	4	Eastern Asia	1.0000	0.9120	0.9917	0.9679	0.9529
Saudi Arabia	VH	6	Western Asia	0.9899	0.9067	0.9841	0.9602	0.8539
United Arab Emirates	VH	11	Western Asia	0.9163	0.9436	1.0000	0.9533	0.9010
Japan	VH	13	Eastern Asia	0.9427	0.9117	0.9509	0.9351	0.9002
Bahrain	VH	18	Western Asia	0.9030	0.8680	0.9877	0.9196	0.7707
Israel	V3	23	Western Asia	0.8541	0.8739	0.9763	0.9014	0.8885
Kazakhstan	V3	24	Central Asia	0.9390	0.8403	0.9235	0.9009	0.8628
Türkiye	V3	27	Western Asia	0.9225	0.9192	0.8322	0.8913	0.7983
China	V3	35	Eastern Asia	0.9258	0.7902	0.8995	0.8718	0.8119
Cyprus	V2	38	Western Asia	0.8217	0.8698	0.8941	0.8619	0.8660
Oman	V2	41	Western Asia	0.8077	0.7977	0.9674	0.8576	0.7834
Mongolia*	V2	46	Eastern Asia	0.8222	0.7775	0.9374	0.8457	0.7209
Armenia*	V2	48	Western Asia	0.7922	0.8561	0.8782	0.8422	0.7364
Thailand	V2	52	South-eastern Asia	0.7611	0.8032	0.9410	0.8351	0.7660
Qatar*	V2	53	Western Asia	0.7655	0.7114	0.9963	0.8244	0.7149
Malaysia	V1	57	South-eastern Asia	0.7280	0.7192	0.9862	0.8111	0.7740
Uzbekistan*	V1	63	Central Asia	0.7648	0.7580	0.8769	0.7999	0.7265
Indonesia*	V1	64	South-eastern Asia	0.8035	0.7293	0.8645	0.7991	0.7160
Kuwait*	V1	66	Western Asia	0.6365	0.7083	0.9988	0.7812	0.7484
Georgia	V1	69	Western Asia	0.5652	0.8654	0.9071	0.7792	0.7501
Viet Nam*	V1	71	South-eastern Asia	0.7081	0.7267	0.8780	0.7709	0.6787
Philippines*	V1	73	South-eastern Asia	0.8054	0.7256	0.7554	0.7621	0.6523
Azerbaijan*	V1	74	Western Asia	0.7386	0.7233	0.8203	0.7607	0.6937
Brunei Darussalam*	V1	75	South-eastern Asia	0.5802	0.6991	0.9868	0.7554	0.7270

Notes: Italicized countries are least developed countries, landlocked developing countries or small island developing States. An asterisk denotes countries that have moved up from the high to the very high EGDI group in 2024.

Five countries—Turkmenistan, Iraq, Lao People's Democratic Republic, Timor-Leste, and the Syrian Arab Republic—are in the middle EGDI group, requiring focused efforts to enhance digital development. The Democratic People's Republic of Korea, Yemen, and Afghanistan have the lowest EGDI levels in Asia, attributed to lack of national data access and serious technological challenges due to ongoing political crises and conflicts. Countries in enduring crises struggle to develop digital technologies, highlighting the need for targeted international support and strategic interventions. For a complete list of Asian countries assessed, see section 12 of the Technical Appendix.

3.6.1 Digital development and cooperation

The impressive EGDI results in Asia highlight the region's leadership in digital development. The advancements made by the two frontrunners and by those countries making the most rapid progress underscore the critical importance of a strategic commitment to digital transformation. The success stories shared below offer valuable insights and inspiration for other countries striving to enhance their digital governance and harness the benefits of digital technology for sustainable development.

Singapore's significant increase in EGDI value highlights its success in digital transformation. The Smart Nation initiative, launched in 2014, prioritizes public services innovation and economic competitiveness. The Digital Government Blueprint and key performance indicators have propelled Singapore to the top tier of the Smart City Index since 2019. The 2021 national AI strategy has enhanced AI application in public services, including the AI Accelerated Masters Programme to develop local AI talent. Projects like smart analytics systems for healthcare and transportation have improved service efficiency. With 99% of government services fully digital, Singapore Digital Access (Singpass) provides access to over 2,700 services from 800+ agencies and businesses. The Research, Innovation, and Enterprise Plan for 2025 focuses on fostering technology leadership, enhancing digital infrastructure, and maintaining cybersecurity and data protection standards.

The **Republic of Korea**, a global leader in digital government, has maintained a high EGDI ranking through its long-term commitment to integrating advanced technologies in public administration, formally articulated in the Electronic Government Law of 2001. Key to its strategy is a national policy framework that emphasizes technological innovation, seamless services delivery, and extensive digital literacy programming. The Government's adoption of AI, blockchain, and cloud computing has streamlined operations and enhanced citizen engagement, achieving a 98.1% public satisfaction rating and a digital services utilization rate of 88.9 per cent.[22] In September 2022, Government promotes collaboration between the public sector, citizens, and businesses on a digital platform where all data are connected. The strategy focuses on providing all government services digitally, making them available before users seek them, using AI and big data to guide policymaking and services provision, and opening them up to the private sector.[23]

Japan's digital transformation accelerated during the COVID-19 pandemic, leading to decisive government action. The Digital Agency, operational since September 2021, aims to dismantle bureaucratic inefficiencies, standardize processes, and improve governance. The Digital Garden City Nation Initiative[24], launched with a $42 billion budget, addresses local social challenges through digital technology, doubling digital investment in local areas. It focuses on expanding 5G networks, developing regional data centers, and enhancing services such as digital healthcare and smart agriculture, with the "super city" concept initiative aiming for fully interconnected city services and systems by 2030.

Kazakhstan's e-Gov platform provides thousands of online services, increasing government transparency through online access to public budgets and digital initiatives like E-License and Smart Data Ukimet. The 2023-2029 digital transformation concept focuses on improving public services, accelerating public administration transformation, and developing the economic sector. The goal is to create a digitally advanced and inclusive society by leveraging technology and focusing on citizen-centered services.

Armenia aims to build an efficient, transparent, and accessible e-government ecosystem through innovative digital strategies. The Government Programme for 2017-2022 prioritized digital transformation, and the Digitalization Strategy 2021-2025 established a national data governance framework. The Government Programme for 2021-2026 emphasizes digital authentication infrastructure to ensure transaction security. Key projects include a unified e-government services platform, a cybersecurity excellence center, an electronic tax filing system, and an e-health portal.

Uzbekistan is committed to enhancing government services efficiency and transparency through digital transformation. The Digital Uzbekistan 2030 Strategy, launched in 2019, prioritizes digitizing regional industries, implementing national information systems, and promoting digital technology use. Recent initiatives include the merger of online payment platforms Uzum and Click and the introduction of a unified digital community platform. The International Digital Technology Center aims to boost IT services exports, and revised laws promote e-government and the digital economy.

China's notable increase in EGDI value is attributed to strategic policies, substantial investments in digital infrastructure, and innovative initiatives. Policies like Internet Plus[25] integrate Internet technologies in traditional industries, enhancing services delivery and public administration. Investments in high-speed broadband, 5G networks, and cloud computing ensure seamless connectivity. The Action Plan for the Integration and Development of Virtual Reality and Industry Applications (2022-2026) and the Guiding Opinions on Promoting the High-Quality Development of Cross-Border E-Commerce (2023) demonstrate China's commitment to digital advancement. The Cybersecurity Review Measures and the white paper "Jointly Build a Community with a Shared Future in Cyberspace" emphasize cybersecurity and international cooperation in cyberspace.

China focuses on the digital transformation of its manufacturing sector to foster new productive forces and strengthen economic momentum. The rapid adoption of AI, big data, and blockchain has improved efficiency, transparency, and responsiveness in government services. Public-private partnerships with major tech companies like Alibaba, Tencent, and Huawei have been crucial in developing and implementing digital solutions in public administration. Inclusive policies aim to bridge the digital divide and provide access to underserved and rural populations. Supportive regulatory frameworks foster innovation while ensuring data security and privacy, building public trust in digital services. These approaches have collectively contributed to China's remarkable progress in digital transformation.

Progress made by GCC countries in digital government development

The GCC countries have achieved remarkable progress in digital government transformation. These nations have embraced the digital revolution as part of their broader economic diversification strategies, with significant investments in digital infrastructure, e-services and smart technologies. A key element of their success has been the strategic importance assigned to digital cooperation among GCC countries, as this approach has facilitated the sharing of advancements and regional integration in digital governance. Collectively, the GCC countries have set benchmarks for digital governance, leveraging technology to enhance public sector performance and citizen engagement. Their success stories, presented below, provide valuable insights into the effective implementation of digital strategies, highlighting the importance of visionary leadership, strategic planning, and the integration of new technologies in public administration. Through their forward-looking policies and initiatives, the Gulf countries have collectively evolved into a hub of digital innovation in the region.

Saudi Arabia's digital transformation has been guided by the Saudi Vision 2030 initiative, launched in 2016. The country has made significant strides in e-government, integrating advanced technologies such as AI and blockchain into public services. With a 99% Internet penetration rate and 98% of government services available online, Saudi Arabia continuously improves its digital infrastructure. Initiatives like the carbon-free 5G network using 3D-printed towers powered by solar

panels and the "doctor for every family" program showcase its innovative approach. The Sehhaty platform offers online medical services to over 30 million users, while the National Platform for Health and Insurance Exchange Services connects more than 24 million beneficiaries. Investments from companies like Microsoft, Oracle, and Huawei, alongside the $160 million Generative Artificial Intelligence Accelerator (GAIA) project, have further propelled Saudi Arabia's digital advancement

The **United Arab Emirates** (UAE) is a leader in digital transformation, focusing on revolutionizing governance and public services. The U-Ask initiative uses generative AI to provide seamless access to government services. The Federal Digital Network (FedNet) enhances efficiency through AI solutions and pre-trained machine learning models.[26] The UAE's leadership in global standards, such as PAS2009:2024,[27] and the national Design Language System (DLS),[28] ensure consistency and accessibility across federal government websites. UAE PASS, the national identity platform, promotes unified access to all government services. The UAE continues to set new standards for digital government worldwide.

Bahrain has established itself as a digital development leader through inclusive and multifaceted approaches. The country has implemented agile processes and advanced technologies, enhancing its digital infrastructure and fostering a vibrant digital ecosystem. Initiatives like hackathons, fintech hubs, and the Regulatory Sandbox demonstrate Bahrain's commitment to accountable governance and sustainable development. The adoption of a cloud-first approach has reduced infrastructure costs and improved public services efficiency. Platforms like Sijilat streamline business registration, promoting entrepreneurship and economic growth.

Qatar's digital transformation accelerated with the 2022 FIFA World Cup, leading to extensive infrastructure upgrades, including 5G network expansions. Smart stadiums introduced for the World Cup used IoT solutions for crowd management, security, and energy efficiency. The rapid digitalization of government platforms improved efficiency in handling visitors and streamlined visa processing. These advancements support the broader Digital Agenda 2030, aiming to repurpose digital infrastructure for broader economic activities and sustainable growth. Qatar's commitment to building a robust digital economy is evident in its ongoing initiatives.

Oman Vision 2040 emphasizes sustainable digital development through comprehensive programs addressing digital transformation, AI, cybersecurity, and more. The National Program for Digital Economy aims to build a sustainable digital society and enhance public sector efficiency. With robust ICT infrastructure and widespread Internet access, Oman ranks among the top 50 countries in the Government AI Readiness Index. The digitization of the 2020 census improved data accuracy, and the fully digitized electoral process in recent Consultative Assembly elections showcased Oman's progress.

Kuwait's digital development is part of its broader vision to diversify the economy and enhance public services. Heavy investments in ICT infrastructure have improved Internet connectivity, moving Kuwait into the very high EGDI group. The Kuwait National Development Plan (New Kuwait 2035) emphasizes digital transformation for economic growth and sustainability. The Kuwait Government Online portal provides residents and businesses access to a wide array of e-government services. By adopting advanced technologies like cloud computing, AI, and blockchain, Kuwait aims to streamline administrative processes and improve citizen engagement.

Progress made by ASEAN members in digital government development

The member countries of the Association of Southeast Asian Nations (ASEAN) have made significant strides in digital development, showcasing a collective commitment to leveraging technology for economic growth, social inclusion, and improved governance. ASEAN nations are focused on streamlining government services, fostering innovation, and boosting overall socioeconomic

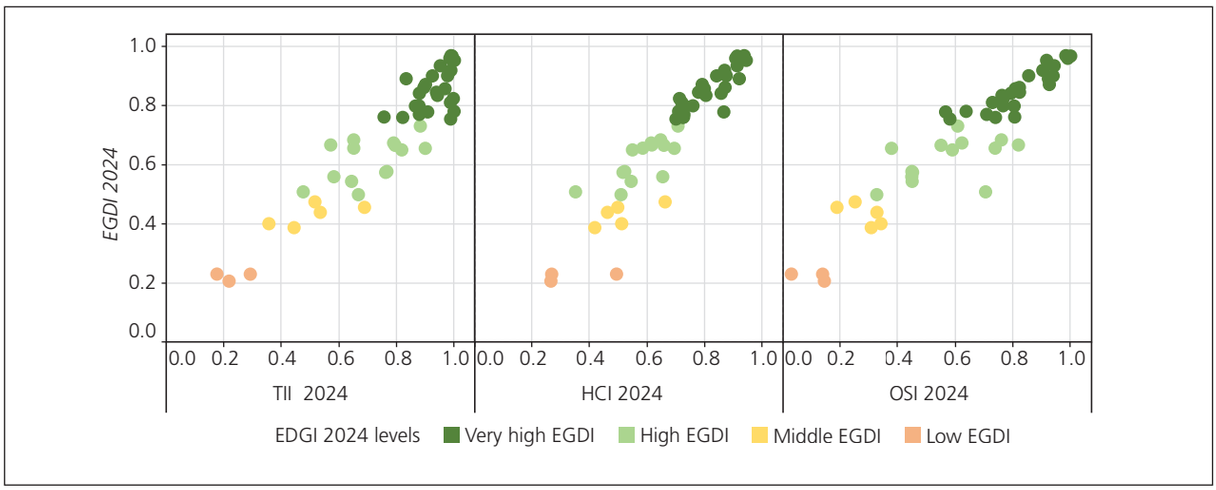
development through digital technologies. In 2024, **Indonesia**, **Viet Nam**, **the Philippines**, and **Brunei Darussalam** moved from the high to the very high EGDI group, reflecting successes in strengthening digital infrastructure, expanding Internet connectivity, and implementing robust digital government frameworks. Indonesia has improved its ICT infrastructure and expanded digital literacy programs to increase access to e-government services. Viet Nam's significant investments in digital public services are reflected in its improved EGDI position. The Philippines has prioritized digital transformation in health, education, and finance, enhancing service delivery and citizen engagement. Brunei Darussalam has leveraged advanced ICT infrastructure to improve government efficiency and public service quality.

Cambodia, still in the high EGDI group, continues to strengthen its digital capabilities and infrastructure. Myanmar's move from the middle to the high EGDI group reflects progress in digital connectivity and government development. **The Lao People's Democratic Republic** remains in the middle EGDI group.

3.6.2 Key recommendations for accelerating digital development in Asia

Asia is a region of vast diversity in terms of digital development; some countries have very high EGDI values and are leaders in digital transformation, others have component values that vary widely, and still others lag behind in digital development or in specific areas such as AI integration or inclusion. Figure 3.7 illustrates the regional distribution of countries based on EGDI and associated OSI, HCI and TII values, providing valuable insight into the varying levels of digital development across the region.

Figure 3.7 Distribution of EGDI values relative to TII, HCI and OSI values for Asia, 2024



Digital divide between high-income and low-income countries

While high-income countries such as the Republic of Korea, Singapore and Saudi Arabia have made great strides in digital development, many low-income countries continue to face challenges in bridging the digital divide and ensuring equal access to digital technologies for all segments of society. Those in the latter group require ongoing regional and international support.

The Advancing Digital Cooperation and Development – Arab States Action Programme, launched by ESCWA in partnership with ITU and the League of Arab States, led to the creation of the Arab Digital Agenda 2023-2033. Adopted in 2022, the Agenda features 35 strategic goals across five key priorities: infrastructure, governance, economy, society, and culture, aiming to accelerate progress towards the SDGs through digital development.

ESCWA organizes annual meetings of Arab e-government programme directors to foster dialogue and share best practices. The eleventh meeting, held in Dubai in February 2024, focused on managing digital government programmes and addressing national challenges. Additionally, ESCWA spearheads the Arab Digital Inclusion Platform, enhancing digital accessibility for individuals with disabilities and the elderly.

From 2022 to 2024, ESCWA supported member states in developing digital transformation strategies, engagement policies, and quality frameworks, including efforts in the Syrian Arab Republic and the State of Palestine. Capacity-building activities focused on digital technologies, accessibility, open data, and ICT indicators. The ENACT project, launched in 2023, aims to accelerate digital innovation and enhance public sector operations in the Arab world, aligning with SDG 16 to strengthen public institutions.

Going forward, ESCWA plans to support the digitalization of a wider range of government services, particularly in Arab countries with early-stage digital maturity, by sharing best practices and implementing a twinning approach for efficient fund deployment.

ESCAP is actively involved in supporting digital development in Asia. During its seventy-ninth session, in May 2023, ESCAP endorsed the Action Plan for the Implementation of the Asia-Pacific Information Superhighway (2022-2026) to bridge the digital divide and accelerate digital transformation. This initiative aims to enhance digital connectivity, technologies and data across the region through coordinated action. The Action Plan is built around three pillars: connectivity for all, digital technologies and applications, and digital data. It includes 25 interrelated actions linked to the SDGs and the outcomes of the World Summit on the Information Society. To implement the Plan, the Asia-Pacific Information Superhighway Steering Committee set up three working groups, each headed by one chair or two co-chairs and up to three vice-chairs from various countries (see table 3.5). During the same session, ESCAP adopted resolution 79/10, which promotes digital cooperation and inclusion through the Action Plan. As called for in the resolution, a ministerial conference on digital inclusion and transformation has been organized and will be held in Astana in early September 2024 to promote the accelerated implementation of the SDGs and regional technology initiatives in the region. During the seventh session of the Asia-Pacific Information Superhighway Steering Committee, held in Armenia in November 2023, priorities for regional cooperation on digital inclusion and transformation were further discussed.

Table 3.5 Leadership of working groups linked to the three pillars of the Action Plan for the Implementation of the Asia-Pacific Information Superhighway (2022-2026)

Action Plan for the Implementation of the Asia-Pacific Information Superhighway (2022-2026)	Working group for pillar 1: connectivity for all	Working group for pillar 2: digital technologies and applications	Working group for pillar 3: digital data
Chairs	• Armenia • United States of America	• Azerbaijan • India	• Kazakhstan • Republic of Korea
Vice-chairs	• Kazakhstan • Sri Lanka • Uzbekistan	• Armenia • China • Russian Federation	• Armenia • Philippines • Sri Lanka

The Action Plan aims to bridge the digital divide and accelerate digital transformation in the Asia-Pacific region through regional cooperation, improved digital infrastructure, and inclusive development. Investments in international digital connectivity, such as undersea fiber-optic cables and cross-border links, foster economic collaboration and information flow. Enhancing digital skills and awareness through educational programs strengthens digital literacy and removes access barriers. These actions catalyze economic growth, digitalize industries, foster innovation, increase productivity, and create opportunities for businesses, especially micro-, small, and medium-sized enterprises, driving sustainable and equitable growth across the region (see Box 3.8).

Box 3.8 Empowering small businesses in Bangladesh through policy experimentation and innovative sandboxing

In Bangladesh, where cottage, micro-, small, and medium-sized enterprises (CMSMEs) form a significant part of the economy, accessing finance and digital services remains a serious challenge. As part of the UN DESA initiative Frontier Technology Policy Experimentation and Digital Sandboxes for Sustainable Development, the Smart Business Profile Platform has been introduced as a data aggregation platform for CMSMEs that links all their business documents through a unique identifier, simplifies loan application and disbursement processes, and facilitates access to other digital services. This innovative digital solution promotes financial inclusion and economic growth. It supports the Sustainable Development Goals relating to decent work and economic growth (SDG 8), industry innovation and resilient infrastructure (SDG 9), and the empowerment of effective, inclusive and accountable institutions (SDG 16). By empowering CMSMEs through improved access to finance and collaborative partnerships (SDG 17), the project aligns with the country's sustainable development objectives and paves the way for a more inclusive and prosperous future.

Source: ESCAP, Frontier Technology Policy Experimentation and Digital Sandboxes for Sustainable Development, 19 February 2024, available at https://www.unescap.org/sites/default/d8files/event-documents/BANGLADESH%20FINAL%20--%20Frontier%20Technology%20Policy%20Experimentation%20and%20Digital%20Sandboxes%20for%20Sustainable%20Development.pdf.

Addressing digital disparities within countries

A significant challenge in Asia is the digital divide within large countries, where urban centres enjoy advanced digital infrastructure and services, while rural and remote areas lack access to reliable Internet, digital skills training, and affordable devices. This disparity hinders economic growth, social development, and exacerbates inequalities. To address this digital divide, targeted policy interventions are needed to expand digital infrastructure in underserved areas, promote digital literacy and skills training for marginalized populations, and foster public-private partnerships for inclusive digital development. By overcoming these challenges, countries in Asia can fully leverage digital technologies to drive sustainable and equitable growth.

India exemplifies these challenges but has proactively sought to address them. The Digital India programme aims to transform the country into a digitally empowered society and knowledge economy by enhancing digital infrastructure, literacy, and government services via digital platforms. However, digital transformation in India faces obstacles due to varying development levels across its States. Cities such as Bengaluru, Mumbai, and Hyderabad lead in digital innovation, benefiting from substantial ICT infrastructure investments, high digital literacy, and robust digital governance frameworks. These regions have implemented advanced e-government services and smart city initiatives, supported by a thriving technology ecosystem. In contrast, many rural areas lag in digital development due to limited ICT infrastructure investment, lower digital literacy, and limited

awareness of digital transformation. The Government of India is working to bridge these gaps through initiatives such as BharatNet, which aims to provide high-speed Internet to rural areas, and programmes focusing on digital skill development and the promotion of digital services nationwide.

Strengthening digital inclusion across Asia: building an equitable digital landscape

Large countries in Asia making significant progress in digital government must address the differing levels of development across their States, provinces, and territories. Targeted efforts include allocating additional budgets for digital development, providing targeted technological, organizational, and human resources support, and initiating cross-border initiatives. International cooperation is crucial for supporting underdeveloped areas. These efforts will help strengthen digital inclusion and ensure that all regions benefit from digital transformation.

Focusing on building digital literacy and capacity in rural and less developed areas, adopting best practices from more digitally advanced areas, and encouraging public-private partnerships to enhance digital infrastructure are essential steps. By doing so, countries can create a more equitable digital landscape, enabling all citizens to access high-quality e-government services and participate fully in the digital economy.

3.7 Europe: country grouping analysis

Europe has established itself as a global leader in digital government transformation, with the majority of the region's countries falling into the very high EGDI group (see table 3.6). This achievement highlights Europe's role in setting global benchmarks for e-government, consistently boasting the highest average EGDI, HCI, and TII values. Since the inception of the E-Government Survey, Europe has topped global charts, showcasing the most advanced and homogeneous e-government development.

Among the 36 European countries in the very high EGDI group, 26 European Union members, (as Cyprus, is in this survey part of the Asian region), are represented. Notably, **Denmark**, **Estonia**, **Iceland**, **the United Kingdom**, **Finland**, **the Netherlands**, **Germany**, **Sweden**, **Norway**, and **Spain** are in the highest (VH) rating class, with Germany, Norway, and Spain achieving this for the first time. Twelve countries are in the V3 rating class, nine in the V2 class, and five in the V1 class, reflecting varying levels of advancement.

Albania and **the Republic of Moldova** have moved from the high to the very high EGDI group, marking significant progress in digital development. Despite this, Europe's digital landscape is not entirely uniform. Seven countries—**Belarus**, **Montenegro**, **Monaco**, **North Macedonia**, **Andorra**, **San Marino**, and **Bosnia and Herzegovina**—are in the high EGDI group, indicating areas needing improvement in services provision and human capital development.

The consistently strong performance of Europe in digital government transformation is a testament to its commitment to leveraging technology for enhanced governance and public services delivery. The region serves as a model for other parts of the world, demonstrating the impact of strategic investments in ICT infrastructure, digital literacy, and innovative public services.

The full list of European countries and their respective EGDI classifications can be found in section 12 of the Technical Appendix.

Table 3.6 Countries leading e-government development in Europe

Country	Rating class	EGDI rank	Subregion	EU group	OSI	HCI	TII	EGDI (2024)	EGDI (2022)
Denmark	VH	1	Northern Europe	Yes	0.9992	0.9584	0.9966	0.9847	0.9717
Estonia	VH	2	Northern Europe	Yes	0.9954	0.9497	0.9731	0.9727	0.9393
Iceland	VH	5	Northern Europe	No	0.9076	0.9953	0.9983	0.9671	0.9410
United Kingdom of Great Britain and Northern Ireland	VH	7	Northern Europe	No	0.9535	0.9450	0.9747	0.9577	0.9138
Finland	VH	9	Northern Europe	Yes	0.9097	0.9836	0.9791	0.9575	0.9533
Netherlands (Kingdom of the)	VH	10	Western Europe	Yes	0.9212	0.9688	0.9715	0.9538	0.9384
Germany	VH	12	Western Europe	Yes	0.9238	0.9672	0.9236	0.9382	0.8770
Sweden	VH	14	Northern Europe	Yes	0.8836	0.9275	0.9868	0.9326	0.9410
Norway	VH	15	Northern Europe	No	0.9117	0.9175	0.9654	0.9315	0.8879
Spain	VH	17	Southern Europe	Yes	0.9054	0.8961	0.9603	0.9206	0.8842
Ireland	V3	20	Northern Europe	Yes	0.8768	0.9046	0.9599	0.9138	0.8567
Lithuania	V3	21	Northern Europe	Yes	0.8839	0.8861	0.9631	0.9110	0.8745
Austria	V3	22	Western Europe	Yes	0.8383	0.9003	0.9810	0.9065	0.8801
Switzerland	V3	26	Western Europe	No	0.8408	0.9026	0.9576	0.9003	0.8752
Malta	V3	28	Southern Europe	Yes	0.8749	0.8162	0.9747	0.8886	0.8943
Latvia	V3	29	Northern Europe	Yes	0.8092	0.8805	0.9660	0.8852	0.8599
Ukraine	V3	30	Eastern Europe	No	0.9854	0.8240	0.8428	0.8841	0.8029
Croatia	V3	32	Southern Europe	Yes	0.8735	0.8538	0.9180	0.8818	0.8106
Slovenia	V3	33	Southern Europe	Yes	0.8640	0.8530	0.9107	0.8759	0.8781
France	V3	34	Western Europe	Yes	0.8440	0.8565	0.9228	0.8744	0.8832
Greece	V3	36	Southern Europe	Yes	0.8145	0.9219	0.8657	0.8674	0.8455
Poland	V3	37	Eastern Europe	Yes	0.8037	0.8304	0.9603	0.8648	0.8437
Serbia	V2	39	Southern Europe	No	0.8540	0.8094	0.9221	0.8618	0.8237
Russian Federation	V2	43	Eastern Europe	No	0.7766	0.8319	0.9512	0.8532	0.8162
Liechtenstein	V2	44	Western Europe	No	0.7416	0.8263	0.9906	0.8528	0.8685
Luxembourg	V2	45	Western Europe	Yes	0.7555	0.7955	0.9888	0.8466	0.8675
Portugal	V2	49	Southern Europe	Yes	0.7878	0.8389	0.8979	0.8415	0.8273
Italy	V2	51	Southern Europe	Yes	0.7624	0.8426	0.9017	0.8356	0.8375
Czechia	V2	54	Eastern Europe	Yes	0.7006	0.8508	0.9204	0.8239	0.8088
Bulgaria	V2	55	Eastern Europe	Yes	0.7727	0.7538	0.9171	0.8145	0.7766
Belgium	V2	56	Western Europe	Yes	0.7224	0.8442	0.8698	0.8121	0.8269
Hungary	V1	59	Eastern Europe	Yes	0.7144	0.8703	0.8282	0.8043	0.7827
Slovakia	V1	60	Eastern Europe	Yes	0.7097	0.7982	0.8985	0.8021	0.8008
Albania*	V1	62	Southern Europe	No	0.8144	0.8106	0.7750	0.8000	0.7413
Republic of Moldova*	V1	70	Eastern Europe	No	0.7264	0.7776	0.8118	0.7719	0.7251
Romania	V1	72	Eastern Europe	Yes	0.6548	0.7439	0.8922	0.7636	0.7619

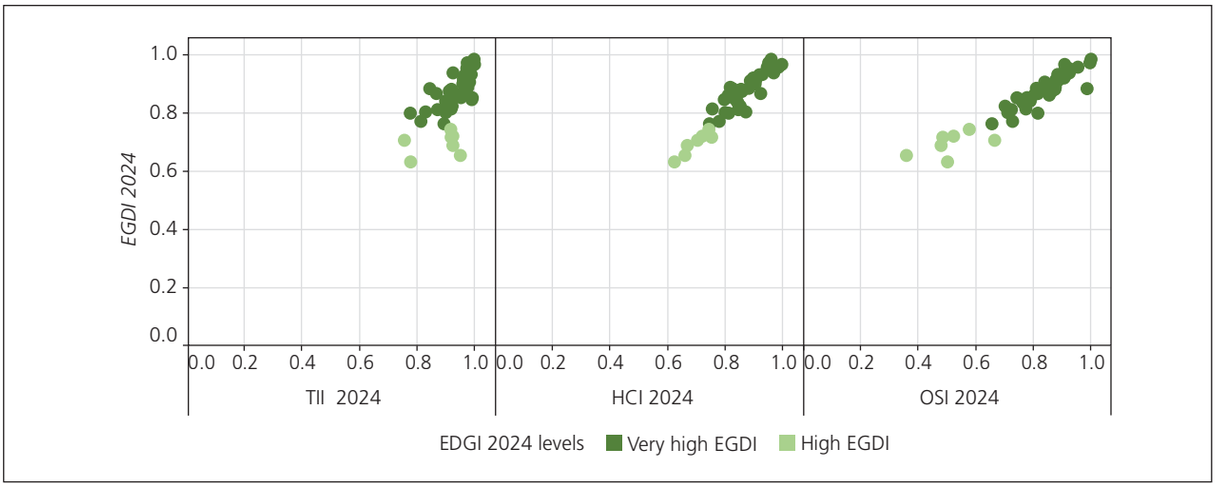
Note: An asterisk denotes countries that have moved up from the high to the very high EGDI group in 2024.

3.7.1 Regional development and cooperation

Europe has maintained its position as a global leader in technological advancement and digital governance, as reflected in the homogeneous level of digital development across the region (see figure 3.8).

To understand the success of the European region, one cannot overlook the pivotal role played by the European Union and its executive arm, the European Commission. Their comprehensive strategies, substantial investments, and collaborative initiatives have not only advanced digital transformation among European Union members but have also acted as catalysts for digital progress in non-member European countries. Their efforts have contributed significantly to positioning Europe as a global leader in digital innovation, ensuring that all of its citizens can benefit from the opportunities created by digital transformation.

Figure 3.8 Distribution of EGDI values relative to TII, HCI and OSI values for Europe, 2024



The **European Union and European Commission** have not only set ambitious goals for digital transformation within the individual member countries but have also contributed to the creation of a comprehensive digital ecosystem that benefits the region as a whole. Top performers such as Denmark, Estonia, Finland, the Kingdom of the Netherlands, Germany, Sweden and Spain have been particularly committed to the adoption and implementation of the European Commission digital strategy and have made effective use of the European budget for national and cross-border digital initiatives. Their efforts showcase the importance of strategic national alignment and investment in driving successful digital transformation. Through their actions, these countries have exemplified how robust digital policies and investments can significantly enhance e-government services and infrastructure while simultaneously setting a benchmark for other nations to follow.

The digital strategy of the European Commission is anchored in several key initiatives aimed at creating a cohesive digital single market, fostering innovation, and ensuring digital inclusion. The Digital Single Market (DSM) strategy, launched in 2015, is a cornerstone of the digital agenda for the European Union.[29] It aims to remove digital barriers and create a unified market for digital goods and services across member countries. The strategy encompasses a broad array of policies linked to priorities such as digital infrastructure, e-commerce, data protection and cybersecurity. One of the most notable achievements under the DSM strategy is the General Data Protection Regulation,[30] which has set a global standard for data privacy and protection. By ensuring stringent data protection standards, the Regulation has not only safeguarded the privacy of European

residents but also boosted trust in digital services by fostering a more secure digital environment. The European Union has also made substantial investments in digital infrastructure through initiatives such as the Connecting Europe Facility.[31] The Facility has funded projects to enhance high-speed broadband connectivity, cross-border digital services, and digital public services. By improving digital infrastructure, the European Union has provided increased access to digital services and supported the growth of the digital economy.

The European Commission has been instrumental in promoting research and innovation through programmes such as Horizon 2020 and its successor, Horizon Europe.[32] These programmes have provided substantial funding for digital research and development, supporting projects in areas such as AI, blockchain and cybersecurity. They have not only driven technological advancements within the European Union but have also positioned Europe as a leader in digital innovation on the global stage.

The year 2020 marked the emergence of COVID-19 and its rapid escalation into a pandemic that had a profound impact on digital development worldwide. Governments had to quickly reorient resources towards the full digitalization of administrative work and public services delivery. This sudden shift revealed limitations in data protection and existing organizational structures, even in the European Union.

The Berlin Declaration on Digital Society and Value-Based Digital Government was adopted on 8 December 2020.[33] This European Union ministerial declaration advances the technical principles outlined in the 2017 Tallinn Declaration on eGovernment. It emphasizes respect for fundamental rights, democratic values, social participation, and digital inclusion as the cornerstones of a resilient and sustainable European digital society. The Berlin Declaration establishes principles for citizen empowerment and digital literacy, placing trust, security, digital sovereignty, interoperability and human-centred development at the core of digital government transformation. The Declaration builds on previous work carried out by the Joint Research Centre of the European Commission highlighting the importance of data ownership, digital sovereignty, and the need to reframe public sector innovation.

In 2021, the European Union digital strategy was enriched by the 2030 Digital Compass: the European Way for the Digital Decade, which articulated goals for the European Union over a 10-year period. The Digital Compass emphasized the need to build cyber resilience in response to the effects of the COVID-19 pandemic and to accelerate the adoption of emerging technologies while also protecting citizens from negative risks and consequences.

Legislation linked to the implementation of the European strategy for data presented in February 2020 includes the Data Governance Act and the Data Act, which respectively entered into force in June 2022 and January 2024, as well as the Digital Services Act and Digital Markets Act, both of which came into force in November 2022. The latter two have been complemented by the European Union Artificial Intelligence Act, adopted by the European Parliament in March 2024. The Artificial Intelligence Act proposes a risk-based approach to AI use (aligned with the "AI package" presented by the European Commission in 2021) that has sparked an international debate on the need for a global digital governance framework which positions the norms, institutions and standards that shape the development and use of digital technologies as opportunities for achieving the SDGs.

To further accelerate the deployment and use of digital technologies across the economy and society, the European Union launched the Digital Europe Programme.[34] This dedicated Programme aims to bridge the gap between digital technology research and market deployment and bring "digital technology to businesses, citizens and public administrations".[35] The Digital Europe Programme further supports the twin European Union objectives of promoting green transition and digital transformation while simultaneously strengthening resilience and digital sovereignty.

Among the key actions promoted by the Digital Europe Programme is the creation of a trusted digital government ecosystem across the European Union. This initiative involves adopting and utilizing key digital technologies, deploying a network of European digital innovation hubs, and reinforcing European blockchain capacities. The Interoperable Europe Act, adopted by the Council of the European Union in March 2024, aims to enhance cooperation between public administrations in the European Union, improve the take-up of interoperable digital government solutions, and foster a government technology (govtech) market and ecosystem.

A broad initiative known as Common European Data Spaces is currently being rolled out to unleash the potential of data-driven innovation. The establishment of common data spaces in multiple fields and sectors is expected to enhance the development of new data-driven products and services that constitute the core of an interconnected and competitive European data economy. The aforementioned European strategy for data outlines the creation of these data spaces in strategic fields such as health, agriculture, manufacturing, energy, and public administration.

At the same time, Europe is increasingly investing in the space economy, recognizing the key contributions of space technologies and geospatial data to digital transformation and the role they play in driving innovation, enhancing connectivity, and supporting the development of advanced digital services (see box 3.9).

Box 3.9 Space Economy Evolution Laboratory at the SDA Bocconi School of Management

The Space Economy Evolution Laboratory (SEE Lab) at the SDA Bocconi School of Management is a premier research centre that recognizes the strategic significance of the space economy and is committed to leveraging its potential. Focusing on both academic and applied research, the SEE Lab offers cross-cutting insights that benefit members, partners and public institutions. The SEE Lab advocates for government investment in space activities and the development of integrated strategies involving the industrial sector. Governments play a pivotal role not only as financiers but also as enablers and facilitators of sectoral development. Under favourable conditions, they can act as technology developers, anchor customers, and catalysts for public-private partnerships. Space-based technologies are vital, impacting over 50 per cent of the Sustainable Development Goals and driving global socioeconomic progress and geopolitical stability.

A cornerstone asset of the SEE Lab is the innovative SEEData data set, which addresses the need for precise and standardized information in the space economy. SEEData includes comprehensive economic and financial metrics, investment data, and macroeconomic indicators for nations engaged in the space industry. These exclusive data enable the SEE Lab to perform thorough analyses and deliver strategic insights. Through its pioneering research and commitment to excellence in space economy education, the SEE Lab plays a crucial role in shaping future innovations and maintaining a secure and sustainable digital environment in outer space. The laboratory's work contributes significantly to national and international space economy strategies, fostering cooperation and development.

Source: SDA Bocconi School of Management, "SEE Lab", available at https://www.sdabocconi.it/en/faculty-research/research/technology-innovation-and-transition-knowledge-platform/see-lab.

Strengthening governance mechanisms is an essential part of a coordinated digital government strategy. The Interoperable Europe Act[36] is a key component of the political commitment made by European Union countries to strengthen cross-border interoperability and cooperation in the public sector across the EU. This law enables public administrations across Europe to cooperate more easily and productively, saving residents and businesses time and money, promoting innovation, and facilitating the exchange of skills and knowledge. The European Union has implemented various projects and strategies to improve digital skills and thereby strengthen the digital economy. As outlined in the Digital Decade policy programme advanced by the European Commission, these efforts address the impact of digital transformation on the labour market and aim to have 20 million ICT professionals in place by 2030.

Top-performing countries in the European Union, such as Denmark, Estonia, Finland, the Netherlands, Germany, Sweden, and Spain, have embedded the principles promoted by European Commission into their national development strategies. By effectively utilizing both national and European funding for digital initiatives, they have demonstrated the critical role that strategic alignment and targeted investment play in achieving digital excellence.

Denmark for example, has been proactive in advancing its digital government strategy, focusing on creating comprehensive digital portals for citizens, businesses, and health services through platforms like borger.dk, virk.dk, and sundhed.dk, while fostering citizen engagement via initiatives like borgerforslag.dk. Its National Digital Strategy (2022-2025) emphasizes cross-sector collaboration, integrating public, private, and civil society efforts. Denmark's National Cyber and Information Security Strategy (2022-2024) focuses on strengthening cybersecurity resilience. The country also incorporates sustainability into public procurement and explores AI, robotics, and 5G infrastructure to enhance public services and promote green transitions. These efforts underscore Denmark's commitment to a secure, inclusive, and sustainable digital future.

Estonia continues to solidify its global leadership in digital government through a robust infrastructure and forward-thinking initiatives. The country emphasizes the importance of proactive services, ensuring digital accessibility and inclusion across all demographic groups by 2030. Estonia has developed a comprehensive digital identity system, enabling seamless online access to public services. With a focus on data-driven governance, the country is also a pioneer in integrating AI, cybersecurity, and next-generation technologies such as 5G. Estonia's national strategy aligns closely with the SDGs and European Union digital strategies, fostering international cooperation and innovation in public service delivery.

Digital development leaders that are not members of the European Union include the United Kingdom, Iceland and Norway.

Prior to its departure from the European Union (Brexit) in 2020, the **United Kingdom** played a key role in digital development in Europe, benefiting from collaborative efforts within the European Union and contributing significantly to the region's technological advancements. Post-Brexit, the UK continues its digital transformation independently, driven by key government bodies like the Government Digital Service (GDS) and the Department for Science, Innovation, and Technology (DSIT). These institutions (recently GDS merged into DSIT) enhance public services' efficiency, accessibility, and innovation.

The UK has established a robust legal framework supporting digital government, including the Data Protection Act 2018 (aligning with GDPR), the Digital Economy Act 2017, the National Data Strategy, and the Data Sharing Governance Framework. These laws promote data privacy, open data, and interoperability across government agencies, fostering a resilient and inclusive digital government.

GOV.UK serves as a single portal for government information and services, simplifying and streamlining public service provision, ensuring ease of use and consistency across departments. The Petitions website allows public participation in government consultations, promoting transparency and citizen involvement. Adhering to the International Open Data Charter principles, the UK promotes open data by default, focusing on quality, usability, and innovation.

The UK is developing a secure digital identity framework, including the Digital Identity and Attributes Trust Framework. Cybersecurity is supported by laws like the Computer Misuse Act 1990, the Security of Network & Information Systems Regulations 2018, and the Data Protection Act 2018, ensuring data protection and secure online transactions.

Public Contracts Regulations 2015 ensure transparency and fair competition in procurement processes. The UK's digital strategies also support emergency response, demonstrated by the agile digital response during the COVID-19 pandemic.

Departments like Education, Health and Social Care, and Work and Pensions implement digital strategies tailored to their specific domains, supported by overarching frameworks to ensure alignment and effective digital transformation.

The UK's National AI Strategy promotes AI development and regulation, integrating technologies like 5G, IoT, and blockchain into public services and the wider economy, maintaining the UK's technological leadership. Established in 2021, the Central Digital and Data Office oversees digital transformation across the government, sets cross-government digital strategies, manages performance, and ensures the delivery of digital initiatives, maintaining a user-centric approach to digital government.

The GDS International Team, established in 2016, collaborates with overseas governments and multilateral organizations to support digital transformation and public administration reforms, contributing to shaping international norms and standards in digital government.

The United Kingdom actively participates in shaping international norms and standards relating to digital government, contributing to best practice repositories and defining good practices through collaborations with multilateral organizations (see box 3.10). To facilitate these efforts, the United Kingdom established the GDS International Team in 2016. The Team proactively collaborates with overseas Governments and multilateral organizations to support digital transformation and public administration reforms.

Box 3.10 The engagement of the United Kingdom in global leadership and collaboration in digital government transformation

Through the Government Digital Service and the Central Digital and Data Office, the United Kingdom actively participates in 20 multilateral and minilateral groups and forums focused on digital data and technology development in government. These groups include Digital Nations (of which the United Kingdom is a founding member), the Digital Government Exchange (hosted by GovTech Singapore), and OECD E-Leaders (officially referred to as the Organisation of Economic Co-operation and Development Working Party for Senior Government Officials). The United Kingdom also engages in OECD thematic groups on open government data and digital democracy and has participated in the World Bank Cloud Computing Working Group and Interoperability Working Group, ultimately earning recognition from the World Bank as a partner in the GovTech Global Partnership.

The reputation of the United Kingdom as a leader in digital government attracts numerous inquiries and delegations interested in its digital transformation journey. The GDS International Team manages the country's responses to global digital government surveys, ensuring accurate representation in United Nations and OECD rankings. The Team coordinates the International Design in Government community, established in 2017, and facilitates collaboration among thousands of international colleagues.

The United Kingdom is a founding member of Agile Nations, which promotes regulatory cooperation to facilitate innovation while also protecting citizens and the environment. The Foreign, Commonwealth and Development Office (FCDO) leads on international development policy and official development assistance to support digital transformation in partner countries through initiatives such as the World Bank Identification for Development programme and the Digital Impact Alliance. The Digital Access Programme, funded by FCDO and the Department for Digital, Culture, Media and Sport, partners with the International Telecommunication Union to enhance digital inclusion and capacity in partner countries. FCDO is also in charge of preparing the country's digital development inputs into submissions for the United Nations Global Digital Compact, emphasizing inclusive and sustainable digital transformation for global development.

Source: United Kingdom, Government Digital Service, available at https://www.gov.uk/government/organisations/government-digital-service.

Thanks to its robust digital infrastructure, comprehensive e-government strategies, and commitment to digital inclusion, **Iceland** has become a leader in digital innovation and public service delivery. The centralized portal Ísland.is provides secure access to personal information and a variety of self-service tools and applications. Digital Iceland, operated by the Ministry of Finance and Economic Affairs, drives digital transformation and oversees e-government services.[37]

Digital Iceland's key initiatives include the Digital Mailbox, My Pages, Straumurinn (X-Road), and the Ísland.is mobile app. My Pages is a user-friendly platform offering secure access to various public services, authentication, digital power of attorney, and a digital inbox, all integrated with Electronic ID and organized around key life events. Straumurinn, developed with Estonia and Finland, is a secure data transfer layer that ensures data security, integrity, and interoperability between government agencies. The Ísland.is mobile app provides direct access to government services, featuring a digital mailbox, digital identification, notifications, application status monitoring, and secure digital identity login.[38] These services aim to make digital interaction the primary means through which government agencies and citizens communicate and engage in public sector transactions.

Iceland has proactively developed technological expertise by adopting best practices from other nations and building its own cloud-based, open-source technology framework.[39] The Government supports digital innovation in education and other sectors through competitive grants and subsidies. This strategic approach has made Iceland a model for other nations seeking to enhance their e-government frameworks.

Norway's impressive digital government development is driven by its comprehensive digital strategy, robust infrastructure, effective governance, and commitment to innovation and inclusion. The "One Digital Public Sector: Digital Strategy for the Public Sector 2019-2025" outlines the national ICT policy, focusing on enhancing productivity and efficiency through digitalization. Key priorities include leveraging ICT for innovation, strengthening digital competence and inclusion, ensuring robust data protection, and promoting effective public sector digitalization.

Norway has high rates of Internet access and daily utilization, with notable progress in digitalizing public services. Digital platforms like the eID Gateway and Altinn are widely used. The Norwegian Digitalization Agency supports digital projects through co-financing schemes, focusing on expanding the digital economy, developing the digital regulatory framework, facilitating data-driven innovation, and building digital competencies.

To meet future data processing requirements, Norway is investing in research, innovation, and digital competencies, particularly in AI and emerging technologies. In 2024, Norway allocated around €90 million to accelerate digital and AI transformation, with 12% dedicated to researching emerging technologies and their societal impacts. Key research areas include optimizing digitalization in business and the public sector, utilizing AI across industries, and assessing AI's long-term implications on trust, democracy, ethics, privacy, education, arts, culture, economy, and law.

Despite the ongoing conflict with the Russian Federation, **Ukraine** has made impressive progress in digital development. The Government moved all public data assets and services to public cloud platforms abroad, ensuring the safety and accessibility of critical information and digital resilience. Satellite connections have maintained uninterrupted Internet connectivity.

Public-private partnerships have been crucial in the country's digital transformation. Collaborations with major digital providers such as Microsoft, Amazon Web Services, SpaceX and Palantir Technologies have enabled Ukraine to leverage cutting-edge technology and infrastructure. These partnerships also support reconstruction efforts, such as developing AI solutions for landmine clearance and prosecuting war crimes.[40] Ukraine's strategic approach safeguards digital assets and supports economic activities and public services amidst the conflict, positioning the country as a resilient and forward-thinking digital leader.

3.7.2 Key recommendations for accelerating digital development in Europe

Importance of international cooperation and cross-border collaboration, especially outside the European Union

A strategic approach emphasizing international cooperation, cross-border collaboration, and digital inclusion is essential for accelerating digital development across Europe, especially in countries outside the European Union.

International cooperation and engagement in cross-border digital initiatives can enhance connectivity and interoperability between neighboring countries. Establishing robust frameworks for international collaboration can facilitate knowledge-sharing and participation in joint digital development projects. Forming partnerships with European Union countries can enable non-members to leverage their experience and expertise in digital transformation. Coordinated cross-border initiatives can streamline regulations, reduce barriers, and ensure seamless digital services across borders.

Strengthening digital public infrastructure

Strengthening digital public infrastructure is another key area of focus. Priority should be given to expanding high-speed broadband infrastructure, particularly in rural and underserved areas. Investing in reliable and affordable Internet access is crucial to ensure that all citizens can participate in the digital economy. The accelerated deployment of 5G networks will support rapid advancements in digital services and innovations in various sectors, including health care, education, and industry.

Promoting sustainable digital development involves integrating environmental sustainability into the digital transformation process. Ensuring that the expansion of digital infrastructure does not adversely impact the environment is crucial for long-term sustainability.

Governments need to prioritize investments in digital infrastructure in rural districts, areas not considered profitable by the private sector. Engaging local communities in planning and implementing digital initiatives will ensure that these areas' specific needs are met. Public-private partnerships can be leveraged to mobilize resources and expertise for rural digitalization projects.

Enhancing cybersecurity and data protection

Strengthening cybersecurity and data protection at the regional level is essential. Implementing robust cybersecurity frameworks and data protection regulations will safeguard individuals' and businesses' data and build trust in digital services. Aligning national cybersecurity measures with international standards will help establish a cohesive and secure digital ecosystem.

Targeted assistance for specific countries

For countries such as Belarus, Montenegro, North Macedonia, and Bosnia and Herzegovina, targeted assistance is crucial. Aligning their policies with EU digital standards will facilitate smoother digital integration and cooperation. Investing in capacity-building programs can enhance the skills of public officials and private sector stakeholders, ensuring effective implementation and management of digital projects.

Addressing digital inequality within and among European countries

As highlighted in Our Common Agenda, a visionary report of the Secretary-General of the United Nations,[41] digital inequality is emerging as a significant global challenge that requires urgent attention. While Europe is relatively advanced in technology development, it is not immune to the digital divide. As emphasized in the Road map for digital cooperation, another report of the Secretary-General, "digital divides reflect and amplify existing social, cultural, and economic inequalities".[42] Our Common Agenda cites the gender gap in Internet use and mentions other groups affected by digital

divides, including migrants, refugees, older persons, young people, persons with disabilities, rural populations, and Indigenous Peoples. Addressing these divides is essential to prevent the emergence of a "digital Berlin Wall" that separates the world into digital haves and have-nots.

Targeted programs must be developed to improve digital connectivity in underserved areas and address urban-rural disparities in digital access and opportunities. Inclusive policies must be formulated to facilitate digital inclusion for all populations, ensuring marginalized and vulnerable groups are not left behind in the digital transformation process.

Global efforts to create digital public goods, such as open-source software and open data, are crucial for achieving the SDGs. Universal connectivity by 2030 is a necessity, as is implementing robust digital literacy programs to empower users to understand digital platforms, manage their data, and combat misinformation. Comprehensive digital literacy programs must target all segments of the population, with a special focus on vulnerable groups such as the elderly, low-income families, and people with disabilities. Providing subsidies or incentives for acquiring digital devices and tools will ensure all residents can engage in digital activities. Establishing innovation hubs and technology incubators will help foster local talent development and support the growth of startups and small businesses in the digital sector. Monitoring and evaluating digital inclusion initiatives are essential to ensure continuous improvement and adaptation to changing needs.

Digital inclusion by design: ensuring comprehensive digital inclusion

The E-Government Survey 2022 introduced the concept of digital inclusion by design[43] highlighting its importance as a key principle and policy goal for ensuring no one is left behind in a hybrid digital society where electronic technologies and human interactions coexist and should be complementary. Governments must ensure that technological and e-government advancements serve sustainable human development and inclusion. Digital services should complement rather than replace human interaction, and policy decisions should remain human-driven to ensure accountability in e-government.

Activating digital-inclusion-by-design and leaving-no-one-behind strategies requires that inclusive policy choices be made before digitalization to ensure these approaches are successful and do not "remain in the realm of rhetoric." Digital inclusion by design should be the foundation and starting point for all digital transformation efforts and technology-related planning and decision-making.

By focusing on these strategic recommendations, European countries both within and outside the European Union can accelerate digital development and build inclusive, resilient and sustainable digital societies.

3.8 Oceania: country grouping analysis

Australia and New Zealand are the leaders in digital development in Oceania; positioned in the very high EGDI group and VH rating class, they rank among the top countries in the world. This achievement is attributed to their advanced digital government services, robust infrastructure, and advanced digital skills. In the high EGDI group are Fiji, Vanuatu, Tonga, and Palau, which have demonstrated significant progress in strengthening their digital government capabilities. The strides made by Vanuatu have been particularly impressive; this island nation graduated from LDC status in 2020 and has moved from the middle to the high EGDI group in 2024. Eight of the region's fourteen countries fall into the middle EGDI category, reflecting steady growth in digital integration despite various challenges.

Excluding Australia and New Zealand, the region's countries have an average EGDI value of 0.4600 – less than half the EGDI values of the regional frontrunners and substantially lower than the global average of 0.6344. These 12 countries are all SIDS, and three of them (Kiribati, Solomon Islands, and Tuvalu) are also LDCs.

Table 3.7 presents the key 2024 Survey results for all countries in Oceania.

Table 3.7 E-government development in Oceania, 2024

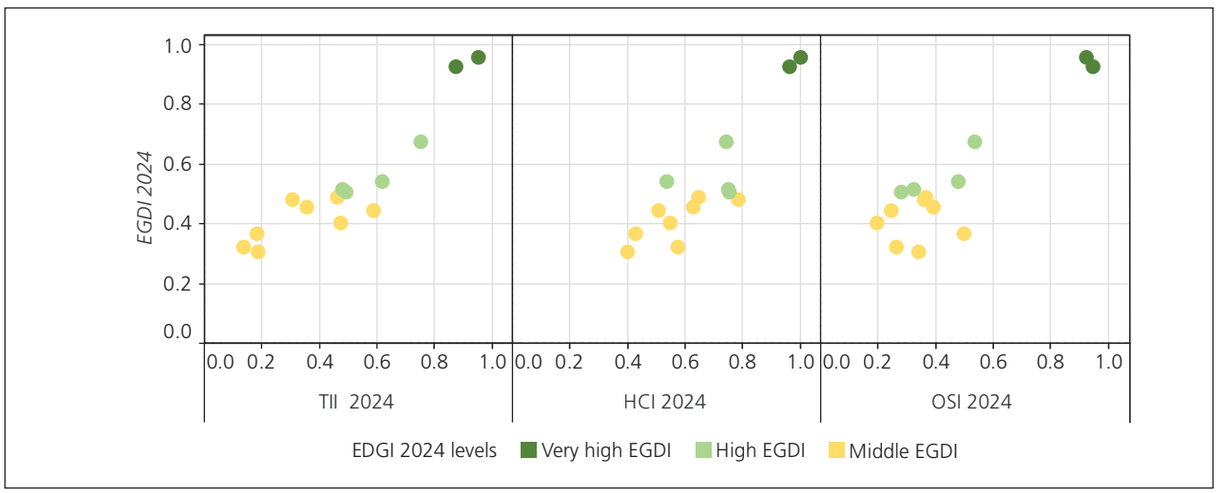
Country	Rating class	EGDI rank	Subregion	OSI	HCI	TII	EGDI (2024)	EGDI (2022)
Australia	VH	8	Australia and New Zealand	0.9222	1.0000	0.9509	0.9577	0.9405
New Zealand	VH	16	Australia and New Zealand	0.9453	0.9615	0.8728	0.9265	0.9432
Fiji	H3	93	Melanesia	0.5343	0.7413	0.7507	0.6754	0.6235
Vanuatu*	H1	129	Melanesia	0.4769	0.5347	0.6165	0.5427	0.4988
Tonga	H1	134	Polynesia	0.3220	0.7488	0.4784	0.5164	0.5155
Palau	H1	137	Micronesia	0.2787	0.7520	0.4910	0.5072	0.5018
Samoa	MH	140	Polynesia	0.3638	0.6453	0.4606	0.4899	0.4207
Marshall Islands	MH	143	Micronesia	0.3586	0.7836	0.3047	0.4823	0.3714
Kiribati	MH	147	Micronesia	0.3904	0.6269	0.3544	0.4572	0.4334
Nauru	M3	151	Micronesia	0.2439	0.5061	0.5863	0.4454	0.4548
Tuvalu	M3	158	Polynesia	0.1944	0.5463	0.4720	0.4042	0.3788
Solomon Islands	M2	164	Melanesia	0.4970	0.4262	0.1811	0.3681	0.3530
Micronesia (Federated States of)	M2	167	Micronesia	0.2621	0.5735	0.1350	0.3235	0.3550
Papua New Guinea	M1	171	Melanesia	0.3392	0.3984	0.1851	0.3076	0.3230

Note: Italicized countries are the digital leaders in Oceania. An asterisk denotes countries that have moved up from the middle to the high EGDI group in 2024.

3.8.1 Regional development and cooperation

The Oceania region showcases vast diversity in terms of digital development. At one end, Australia and New Zealand stand out as top leaders in digital transformation, boasting very high EGDI values. In contrast, the other countries in the region, nearly all of which are Small Island Developing States (SIDS), continue to lag behind in digital development and their relative subcomponents. This disparity showed in figure 3.9 highlights the challenges and opportunities within Oceania's digital landscape.

Figure 3.9 Distribution of EGDI values relative to TII, HCI and OSI values for Oceania, 2024



In **Australia**, a strategic approach, robust infrastructure, and a strong commitment to inclusion and accessibility have driven impressive digital development. Effective coordination between government agencies, substantial investments, and comprehensive strategies and legal frameworks have positioned Australia as a leader in digital government and innovation.

The Digital Transformation Agency (DTA) leads these efforts, providing forward-looking policy leadership on government technology investments and digital service delivery. The DTA is responsible for establishing and monitoring government strategies, policies, and standards for digital and ICT development, ensuring a strategic, coordinated approach to digital transformation across federal, state, and territory levels. Key initiatives include the Data and Digital Government Strategy and the updated Digital Service Standard, which aim to improve the efficiency and user-friendliness of digital services. The myGov platform allows Australian residents to access a wide range of digital government services through a single, secure portal. In 2023, myGov supported more than 25 million accounts, demonstrating its critical role in the national digital landscape. The platform has facilitated the provision of essential services during natural disasters and public health emergencies, including the COVID-19 pandemic, showcasing the government's ability to adapt to emerging realities and activate a digitally driven crisis response.

Australia's digital government capabilities have been recognized internationally, with the country ranking fifth out of 38 in the 2023 OECD Digital Government Index. This high ranking reflects Australia's strengths in digital project evaluation, collaborative strategy development, service design, cybersecurity, and digital workforce development.

The government prioritizes digital inclusion and accessibility, ensuring all citizens, including those in rural and remote areas, benefit from digital services. The Digital Inclusion Blueprint for Western Australia and various accessibility standards form part of this commitment.

Digitalization efforts in Australia are supported by substantial government funding. The Federal Budget 2024-25 allocates $1.7 billion over ten years for investments in innovation, scientific research and development, and strengthening digital capabilities. Additional funding is earmarked for the expansion of the Digital ID system, responsible AI development, and regulatory updates to combat online fraud and enhance consumer protections.

Australia's comprehensive legal and regulatory framework supports digital transformation, including laws on data privacy, cybersecurity, digital identity, and electronic transactions. The Data Availability and Transparency Act 2022 addresses open government data and interoperability across agencies.

New Zealand, ranked among the top 20 countries globally in the very high EGDI group, stands as a world leader in digital development alongside Australia. The country has streamlined digital service delivery through integrated platforms like RealMe, which simplifies administrative processes with a single login. The Government's comprehensive digital strategy focuses on building trust, improving digital literacy, and fostering innovation. Initiatives such as the Digital Inclusion Blueprint ensure all residents can participate in and benefit from the digital economy.

The Digital Public Service branch of the Department of Internal Affairs (Te Tari Taiwhenua) supports digital transformation, enhancing efficiency and service provision. Integrated services like SmartStart provide a single gateway to information for parents and caregivers, while Te Hokinga ā Wairua (End of Life Service) and Whetūrangatia offer support for families experiencing the death of a baby or child.

Aligned with the Digital Strategy for Aotearoa, New Zealand aims to create an inclusive and accessible digital society, strengthening digital skills, improving connectivity, and facilitating inclusion for all residents, especially underrepresented groups. The Data and Statistics Act 2022 supports a well-functioning data system while ensuring privacy and security. These initiatives underscore New Zealand's commitment to digital excellence and its proactive approach to leveraging technology for societal benefit.

Several SIDS in Oceania, despite facing unique challenges, have made notable progress in digital development. **Fiji**, **Vanuatu**, **Tonga**, and **Palau** have moved into the high EGDI group, reflecting significant advancements in e-government. Limited resources, geographic isolation, and vulnerability to natural disasters present ongoing challenges, but these nations are steadily improving their digital government services, particularly in terms of accessibility and efficiency. Strengthening digital infrastructure and enhancing digital literacy remain essential for sustained growth.

International cooperation and support, including financial resources, technical assistance, and capacity-building programs, have been crucial for these nations. Collaborations with organizations like the Pacific Islands Forum and partnerships with developed nations have helped address digital gaps. ESCAP has played a significant role, collaborating with subregional partners to assist Fiji and Samoa, with support from New Zealand, in fortifying Internet traffic management through the adoption of a Pacific Internet exchange point (Pacific-IXP). IXPs have proven effective in reducing operational costs, promoting local traffic use, diminishing latency, enhancing efficiency, and improving the stability and resilience of local networks. These efforts highlight the importance of regional cooperation in building robust and efficient digital infrastructures.

Many SIDS in the region remain in the middle EGDI group, indicating a need for ongoing development support. The Pacific Islands Digital Ecosystem Country Assessment, released by USAID in April 2024,[44] examines the digital ecosystems of 12 Pacific Island countries, including the Federated States of Micronesia, Fiji, Kiribati, Nauru, Palau, Papua New Guinea, the Marshall Islands, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu. This Assessment is part of the USAID Digital Strategy 2020-2024, which "seeks to achieve and sustain open, secure and inclusive digital ecosystems that contribute to broad-based, measurable development and humanitarian assistance outcomes".[45] The Assessment highlights significant advancements and challenges in the digital landscapes of these countries and is informed by the USAID 2022-2027 Strategic Framework for the Pacific Islands, which focuses on community resilience, resilient economic growth, and strengthened democratic governance. While highlighting progress in the development of connectivity infrastructure, the report also notes that advancements in first- and middle-mile connectivity across the Pacific Islands, last-mile connectivity, and resilience remain significant challenges, and that emerging technologies present opportunities to address existing gaps.

The Assessment notes that while e-commerce and digital platforms offer new opportunities for businesses and consumers, the potential benefits of digital trade are not being fully realized owing to infrastructure constraints. Digital financial services are seen as transformative for inclusion and economic growth, but there is presently a supply-and-demand imbalance in the digital talent pool due to outmigration. With the limited success of imported incubator and accelerator models, the technology startup ecosystem has exhibited restrained growth.

The Assessment emphasizes affordability, digital literacy, and locally relevant content as critical to bridging the mobile usage gap and mitigating digital divides, especially for marginalized and vulnerable communities. It also highlights the constraints in digital media development, the need for comprehensive legal frameworks to protect human rights online, and the importance of regulations governing data privacy and freedom of information. Despite these challenges, civil society efforts to combat corruption and fragmented initiatives to advance Internet governance are emerging. Digital government systems and cybersecurity policies are in early stages of development.

International cooperation and cross-border initiatives are vital for securing technological, financial, and infrastructural support. Strengthening digital inclusion ensures that all segments of the population, including the most vulnerable, have access to digital services. Embedding inclusiveness in all digital initiatives from the outset, as highlighted in the digital-inclusion-by-design approach, is imperative.

SIDS should focus on building robust digital infrastructures, investing in digital literacy programs, and fostering public-private partnerships. Establishing secure and resilient digital environments will help mitigate the impact of cyberattacks and natural disasters. Efforts to narrow digital divides and promote inclusive digital transformation will be pivotal in advancing the countries of Oceania towards achieving the SDGs.

3.8.2 Key recommendations for accelerating digital development in Oceania

Strengthening regional cooperation and international partnerships

Accelerating digital development in Oceania requires a comprehensive approach focused on strengthening regional cooperation, infrastructure investment, digital inclusion, cybersecurity, and innovation. Targeted support for SIDS is essential.

Bolstering regional cooperation and international partnerships is crucial. Countries in Oceania should utilize platforms such as the Pacific Islands Forum to pool resources, exchange best practices, and collaborate on achieving shared digital goals. Enhanced cooperation with international bodies such as the United Nations, the World Bank, and ITU will increase access to technical assistance, financial support, and capacity-building programs. This collaboration is particularly important for SIDS, which face unique challenges due to their size and geographic isolation. By leveraging international support and adopting innovative solutions, SIDS can tackle their unique challenges and achieve sustainable digital growth.

Investing in digital infrastructure is essential for robust digital development. Expanding high-speed broadband connectivity to rural, remote, and underserved areas is a priority. Governments should focus on building resilient infrastructure capable of withstanding natural disasters. Public-private partnerships can play a pivotal role in these efforts by facilitating access to cutting-edge technologies and expertise from leading global digital providers. Investments should lay the foundation for developing a comprehensive digital ecosystem, fostering economic growth, and improving public services delivery.

Improving E-government services

Improving e-government services is a critical component of digital development. Governments in Oceania should work towards providing seamless, user-friendly digital services that enhance citizen engagement and streamline administrative processes. Developing integrated service delivery platforms, ensuring the interoperability of government systems, and adopting a citizen-centric approach to service design are essential steps. Simplifying regulatory procedures and reducing bureaucratic barriers are also needed to make it easier for citizens and businesses to interact with the Government.

Addressing challenges in rural and remote areas is vital for balanced digital growth. Governments should implement targeted initiatives to ensure that these areas and their residents are not left behind. Providing subsidies for Internet access, deploying satellite technology for connectivity, and supporting community-based digital literacy programs represent effective strategies. These efforts should be adapted to meet the unique needs of rural and remote populations, including those in SIDS.

Ensuring digital Inclusion and equity

Ensuring digital inclusion and equity makes it possible for all members of society, including the most vulnerable, to benefit from digital advancements. Policies and programs should aim to close the digital divide by addressing the needs of marginalized groups such as women, youth, the elderly, persons with disabilities, and Indigenous communities. Initiatives should focus on providing

affordable access to digital devices and Internet services, strengthening digital literacy, and creating inclusive digital platforms that cater to diverse needs. Digital inclusion by design should be a guiding principle in these efforts.

Strengthening cybersecurity and data protection

Strengthening cybersecurity and data protection is becoming increasingly critical as digital services expand. Countries in Oceania must develop robust legal and regulatory frameworks to safeguard digital assets and personal information. Measures should include implementing national cybersecurity strategies, establishing data protection laws, and promoting best practices for secure digital transactions. Collaboration with international cybersecurity organizations can help build local capacities and enhance resilience against cyber threats.

Fostering innovation and digital skills

Innovation and digital skills development are key drivers of digital transformation. Countries in Oceania should foster an environment that encourages technological innovation and entrepreneurship by providing targeted funding for research and development, offering tax incentives for technology startups, and establishing innovation hubs. Educational programs should be set up to equip the workforce with the digital skills needed to enable both current and future generations to thrive in a digital economy.

Accelerating digital development in Oceania requires a coordinated and inclusive approach that addresses the diverse needs of the region. By implementing these recommendations, Oceania can harness the full potential of digital technologies to drive economic growth and improve the quality of life for all.

Endnotes

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