

4. Leaving no one behind in the hybrid digital society

4.1 Introduction

The principle of leaving no one behind has its origins in the Latin phrase *nemo resideo*, used in warfare to manifest the dependence of people's lives on their ability to function as a single entity—which meant never abandoning anyone injured or incapacitated on the battlefield. This military ethic has since influenced other fields of endeavour. It is no coincidence that the principle of leaving no one behind has emerged as the central axis of the 2030 Agenda for Sustainable Development, cutting across its 17 Sustainable Development Goals (SDGs). The common vision shared by all countries and stakeholders is that sustainable development is for all and that the Goals, indicators and targets will not be considered fulfilled unless they are met for every person on Earth. Sustainable development is therefore not possible if vulnerable segments of society are excluded and left behind.

While the principle of Goals being met only if they are met for everyone is well established in the rhetoric surrounding the SDGs, the reality remains far removed from the ideal, and what leaving no one behind means in practice is still unclear. The world continues to wrestle with translating the pledge of leaving no one behind into pragmatic policies and actions on the ground. An important first step is identifying gaps and areas of need. In the context of the present report, this means exploring the disconnect within the digital government ecosystem — the fact that most of the gains and advancements in e-government target and benefit the higher-income, more literate, and other advantaged segments of society, while efforts to meaningfully serve the lower-income and more vulnerable populations are often limited or futile.

4.1.1 Leaving no one behind is one of the 11 principles of effective governance for sustainable development

Leaving no one behind in the evolving hybrid digital society is a challenge for both developed and developing countries. Although social equity is a considered a priority among public administrators, challenges often arise in finding a balance between social equity, economy and efficiency.¹ For instance, the development objective behind the establishment of a personal identification system is inclusive in nature, but in cases where the approach is not well designed or where the legal framework is weak and fails to take into account factors such as cost and access, discriminatory practices can emerge that will have the greatest impact on the most vulnerable, including those living in poverty, women, older people, and persons with disabilities. Box 4.1 illustrates “leaving no one behind” as one of the 11 principles of effective governance for sustainable development, as endorsed by the United Nations Economic and Social Council.



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Box 4.1 Leaving no one behind is one of the 11 principles of effective governance for sustainable development, endorsed by the United Nations Economic and Social Council



The United Nations Economic and Social Council endorsed “leaving no one behind” as one of the 11 principles of effective governance for sustainable development. Five of the eleven principles developed by the Committee of Experts on Public Administration, a subsidiary body of the Council, focus on inclusiveness; one explicitly addresses leaving no one behind, and the others relate to non-discrimination, participation, subsidiarity and intergenerational equity. The Committee outlines specific expectations attached to the principle of leaving no one behind, maintaining that, “to ensure that all human beings can fulfil their potential in dignity and equality, public policies are to take into account the needs and aspirations of all segments of society, including the poorest and most vulnerable and those subject to discrimination”.²

4.1.2 The new face of inequality is digital

Millions of connected individuals can leapfrog traditional barriers to enjoy the services and benefits of a digital government and economy, with faster communication, streamlined transactions and a multitude of services at their fingertips. Digital technology is playing an increasingly critical role in the way the world lives, learns, works, and participates in the economy and society — which means that vulnerable populations without digital access are effectively placed at an even greater disadvantage and are being left even further behind. To achieve equitable participation in the digital society and bridge the widening digital divide, Governments must make meaningful digital opportunities available for all – beyond basic connectivity, in particular the poorest members of society, women and girls, older people, persons with disabilities, youth, migrants, refugees, and other marginalized groups.

During the COVID-19 pandemic, the world has witnessed an unprecedented, accelerated digital transformation that, while enormously beneficial in many respects, has prompted the emergence or exacerbation of various forms of digital inequality. The pandemic has provided the opportunity for countries to demonstrate how e-government can help fight the spread of the virus, sustain daily life, support business continuity and keep people socially connected,³ but it has also shown that those who are excluded from the digital transformation are at increased risk of being permanently left behind in all countries, whether rich or poor. In many ways, digital access, affordability and ability are now collectively the primary determinants of digital divides or “digital poverty”, which can be viewed as another dimension of multidimensional poverty.⁴ Those without digital connectivity have reduced access to the public services and economic opportunities that are increasingly moving online. The divides between the digitally connected and digitally disconnected continue to widen. The pandemic has deepened socioeconomic and digital disparities, reinforcing the vicious cycle of inequality, including intergenerational inequity especially of older people.

During the pandemic, countries more advanced in e-government development have fared better than countries lagging behind in their digital government development⁵. As public services and systems rely increasingly on digital connectivity, those countries and communities lacking the necessary digital access, tools or skills will find it progressively more difficult to take advantage of the benefits and opportunities the digital society offers.

The new face of inequality is digital – a fundamentally important, additional facet in connection to underlying existing socio-economic inequalities. The digital divide is now characterized by a higher degree of complexity; it is no longer just about connectivity but is also a measure of the extent to which one can benefit from online information and digital services. In the hybrid digital society that exists today, the lack of access to digital services among those who are living in poverty or vulnerable situations—referred to in this chapter as the digital poor—may be either intentional (the result of exclusionary policies and laws) or unintentional (the result of societal power dynamics or one-size-fits-all policies).⁶ The digital gaps in institutional coverage can also be attributed to a lack of access to engagement opportunities and consultative processes for vulnerable populations, coupled with a lack of awareness about the needs of these groups on the part of Governments.⁷ Achieving digital equity for all is more urgent now than ever before.

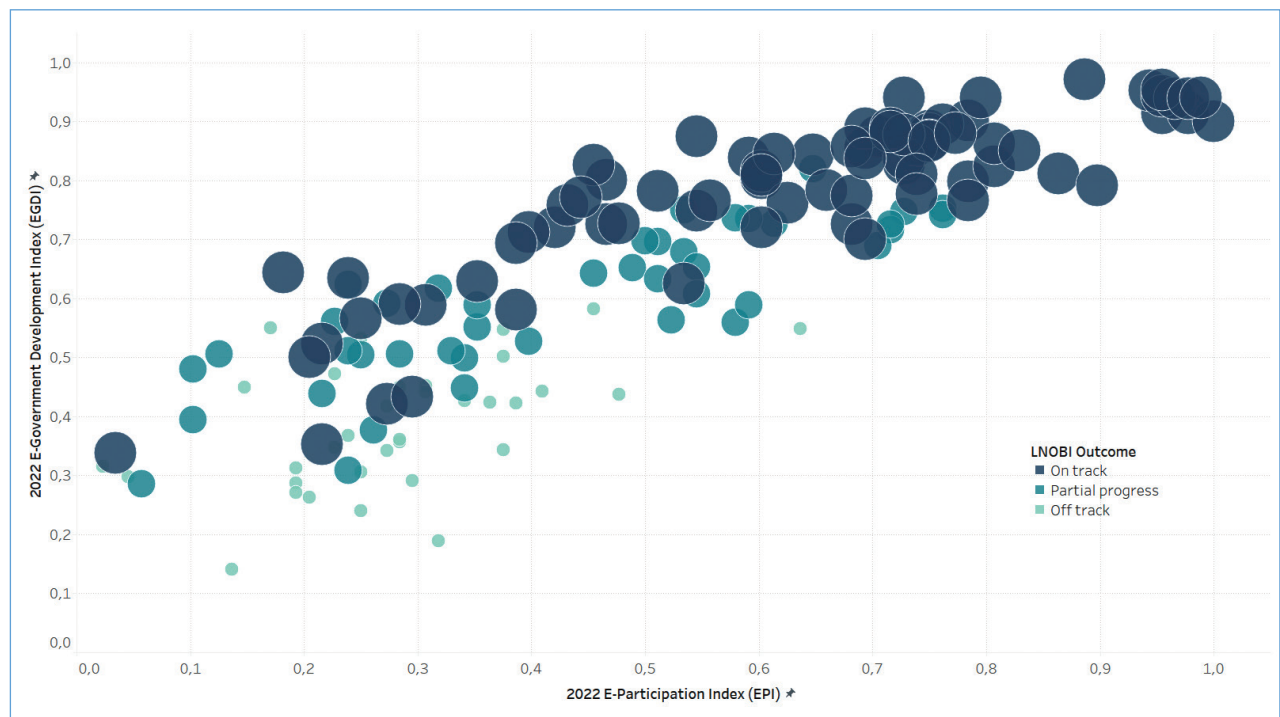
4.1.3 The double-edged sword of e-government in leaving no one behind

Remarkable progress has been achieved in e-government development over the past two decades, as reflected in the steadily rising E-Government Development Index (EGDI) values during this period;⁸ however, certain segments of the population have not been able to take full advantage of the advances made. Gender, age, income, race, ethnicity, language and geographical locations (rural/urban) are among the factors that lead to systemic exclusion that can in turn jeopardize the realization of e-government for all. Those benefiting most from what e-government has to offer are digitally connected young urban males in the upper-middle-income bracket, while those benefiting least are vulnerable and marginalized populations.

There are, however, some positive trends in digital and e-government development that are facilitating efforts to leave no one behind. E-services delivery to vulnerable populations is improving because the production, collection, storage, analysis and dissemination of data are easier and cheaper, new digital devices are more affordable and easier to access, and mobile cellular and mobile broadband coverage and subscription costs have improved. There are many opportunities to enhance social services support and digital inclusion through e-government; digital social cash transfers are but one example. The real opportunity for digital government to deliver the SDGs lies in offering affordable services tailored to the needs of vulnerable segments of the population. According to an assessment that measures the extent to which national systems, institutions and practices across countries are set up and are ready to meet commitments enshrined in the 2030 Agenda for Sustainable Development, in 2020, only 75 countries are ready to meet their commitment to leaving no one behind.⁹ Figure 4.1 illustrates the clear correlation between higher EGDI and E-Participation Index (EPI) values and better performance in the LNOB index.

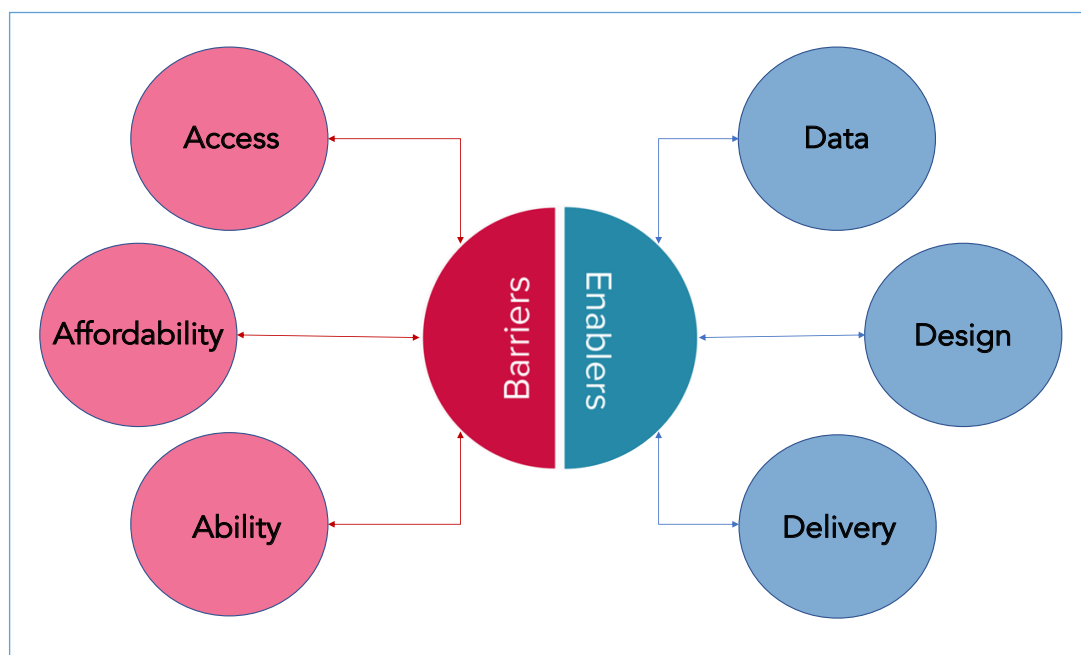
Acknowledging the complexity of leaving no one behind as a multidisciplinary concept with important policy implications for development and e-governance, the present chapter strives to offer a cross-cutting definitional framework that establishes this concept as the undergirding basis for inclusive e-government. In this chapter, leaving no one behind largely centres around leaving no one offline. The chapter has thus far explored some of the realities surrounding digital exclusion; the remaining sections identify which groups are most affected, explore barriers relating to access, affordability and ability – and the intersectionality of these barriers and propose an integrated framework for leaving no one behind that is grounded in data, design and delivery optimization. (See Figure 4.2) The chapter concludes with a set of policy messages. Sources for the information presented include both primary and secondary data. Primary sources include EGDI Online Services Index (OSI) data from 193 United Nations Member States, completed Member States Questionnaires (MSQs) from 129 countries (based on a call for submission), and a related review of national e-government portals.¹⁰ Secondary sources include both desk research and qualitative/interpretive research.

Figure 4.1 Positive correlation between the leave no one behind indices, E-Government Development Index and E-Participation Index



Note: The 'leave no one behind' (LNOB) indices is developed by the Overseas Development Institute (ODI).

Figure 4.2 An integrated framework for e-government: strengthening data, design and delivery (enablers) to address barriers relating to access, affordability and ability



4.2 Identifying those being left behind in e-government

In the context of e-government, a vulnerable or disadvantaged person may be broadly defined as one who is unable or at risk of being unable to access the online information or e-service(s) he or she requires, or for whom such access requires a disproportionate level of effort, with this lack of access placing that individual at a disadvantage.¹¹ The marginalization of certain segments of society may be intentional or unintentional, and very often, intersectionality adds another layer of complexity. Being left behind might result from high connectivity costs or the inability to access services or participate in consultative processes. Vulnerable populations may be overlooked when countries engaged in e-government development adopt a one-size-fits-all approach (such as a digital-by-default policy) or fail to consider societal power dynamics. Socioeconomically disadvantaged individuals and groups are most susceptible to digital exclusion. In some cases, such exclusion may be deliberate in the sense that it results from discrimination, injustice, the denial of services, the absence of legal status (including the lack of a digital identity), or exclusionary policies.

Every individual — regardless of age, race, gender, ethnicity, legal status, place of residence, or socioeconomic status — is entitled to basic rights and services, including e-government services. The digital divide reflects and exacerbates longstanding structural inequalities, so while vulnerable populations may stand to benefit most from digital and learning technologies, they are also the most likely to be digitally excluded. Public institutions can play a key role in identifying those who are marginalized or disadvantaged and in ensuring that policies, funding and resources are directed towards addressing any gaps identified.

In this chapter, the “digital poor” are identified as those who are left behind because they possess certain inherent or perceived characteristics or are in situations that effectively prevent them from accessing the digital opportunities enjoyed by others. The subsections below identify specific groups among the digital poor that have been left behind in e-government, not to mention the ingrained intersectionality.

4.2.1 Those living near or below the poverty line

Poverty is multidimensional and takes many forms but is almost always associated with a lack of access to basic public services; digital poverty is an added dimension that can leave already disadvantaged groups even further behind. With the integration of digital poverty into the poverty paradigm, the implications of poverty extend beyond income measurements and the lack of access to health, education, housing, social security and other services to include the lack of integration in the digital world. Public administrations need to ensure that social protection, healthcare, education, employment, water and sanitation services are of adequate quality and are available, accessible and culturally acceptable to all groups in society—and as many of these services move online, extra steps need to be taken to ensure that those living in poverty are able to access essential e-services.^{12,13}

Both within and between countries, lower income usually correlates with a lower rate of Internet penetration and e-government implementation.¹⁴ Even if economically disadvantaged populations are able to gain digital access, relatively few countries are offering the services they need online. Only 48 countries (24.9 per cent) allow people to apply or file for unemployment benefits online, and only 58 countries (30.1 per cent) provide a digital option for those needing to apply for social protection programmes such as maternity care, child subsidies, pensions, housing or food allowances (see table 4.1).

Poverty may also be associated with factors or conditions that can lead to discrimination or deepen disadvantage, such as being a woman with a disability.¹⁵ The barriers preventing vulnerable populations from accessing microcredit or obtaining employment can contribute to the perpetuation of a vicious intergenerational cycle of poverty that is difficult to escape. (See Box 4.2) The individuals

Table 4.1 Inadequacy of online access to unemployment benefits and social protection programmes

	Number of countries	Percentage
Users can apply or file for unemployment benefits (transactional services) online.	48	24.9
Users can apply online for social protection programmes such as maternity care, child subsidies, pensions, housing, and food allowances.	58	30.1

Box 4.2 Financial inclusion in Bangladesh: Making Digital Financial Services Work for the Poor

Bangladesh has shown tremendous growth in terms of digital financial account access through the proliferation of branchless banking, which has taken full-service retail banking to the doorsteps of rural citizens across the country, and soaring mobile financial services (MFS), which have reached a client base of over 100 million. Combining these channels, and in collaboration with the Ministries of Social Welfare, Finance, and Bangladesh Bank, the a2i Programme of the Government of Bangladesh, with support from UNDP, the Gates Foundation and the Consultative Group to Assist the Poor, developed the 'Citizen's Choice Architecture' for digital payments of social safety net programs – such as elderly allowance, allowance for widowed, deserted, and destitute women, allowance for financially-insolvent disabled people. Guided by the 'AIM Principle' (Account + Identity = Mobility), it allows for the disbursement of allowances at accessible cash-out points at the union level (the lowest administrative tier comprising 9 villages), or even at the homes of the elderly or persons with disability. Over 12 million citizen-beneficiaries can now simply walk a short distance to the nearest Digital Centre or agent banking booth and using biometrics under the supervision of the local entrepreneur or, business correspondent appointed by an agent bank, cash out their allowance from their own full-service bank account that is tied to their unique national ID number. The whole technology setup requires only an active mobile data connection in order to function.

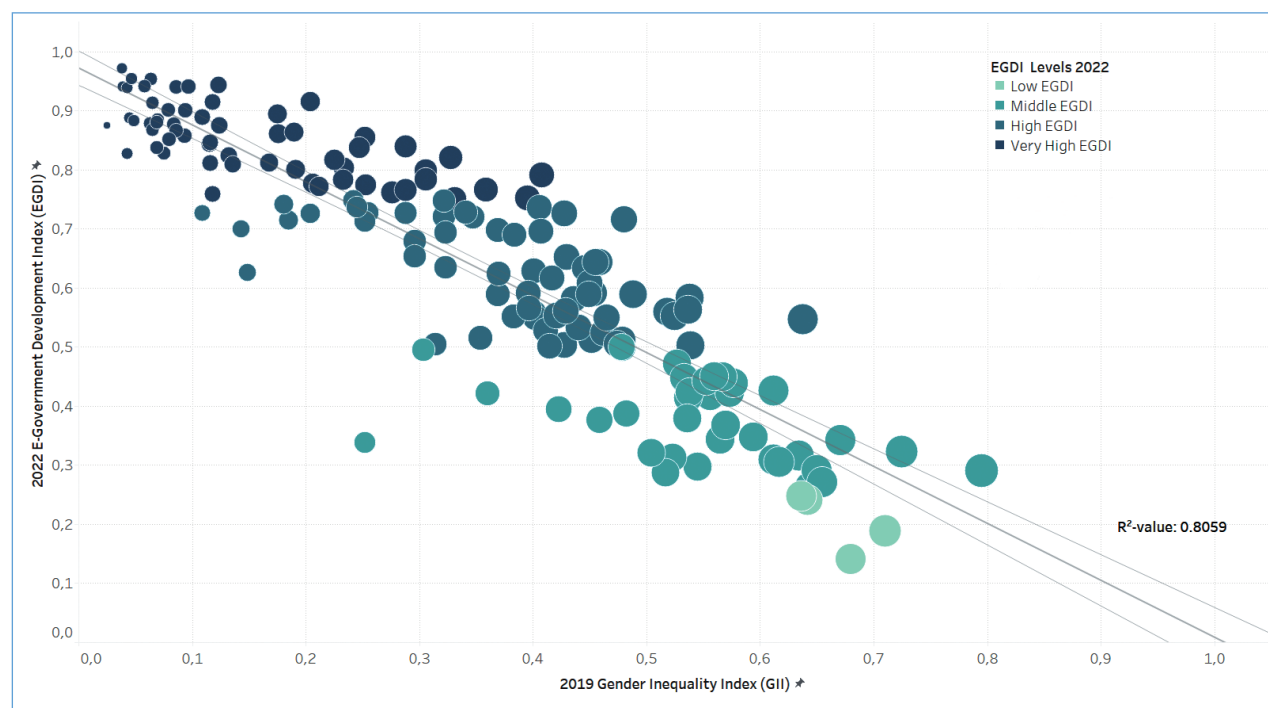
Source: <https://a2i.gov.bd/digital-financial-services/>; <https://www.cgap.org/blog/bangladeshs-covid-19-response-taking-digital-finance-new-levels>

and populations affected have little or no voice in policy design, formulation and implementation. People may remain poor not only because they lack economic means, but also because they have little or no opportunity to participate in society and are excluded from decision-making.¹⁶

4.2.2 Women and girls

Gender equality is one of the cornerstones of sustainable development, and public institutions have an important role to play in bridging the gender gap so that no one is left behind. In 2020, global averages for Internet use were 62 per cent for all men and 57 per cent for all women, irrespective of age, income or geography;¹⁷ the corresponding proportions were 31 and 19 per cent for least developed countries (LDCs), 38 and 27 per cent for landlocked developing countries (LLDCs), 35 and 24 per cent for Africa, and 68 and 58 per cent for the Arab States. The gender gap is evident across all sectoral services, with one research study concluding that women are 30 to 50 per cent less likely than men to use the Internet to participate in public life.¹⁸ Women are also less likely to own a smartphone, and even where the gender ratio in Internet use is nearly equal, other inequalities reduce the likelihood of women having higher-quality means to ensure meaningful connectivity.^{19,20} As seen figure 4.3, there is an inverse relationship between the EGD and the Gender Inequality Index²¹ (GII), indicating that there is more gender inequality in countries with low EGD values. There are also relatively few countries offering online services that may be of particular benefit to women.

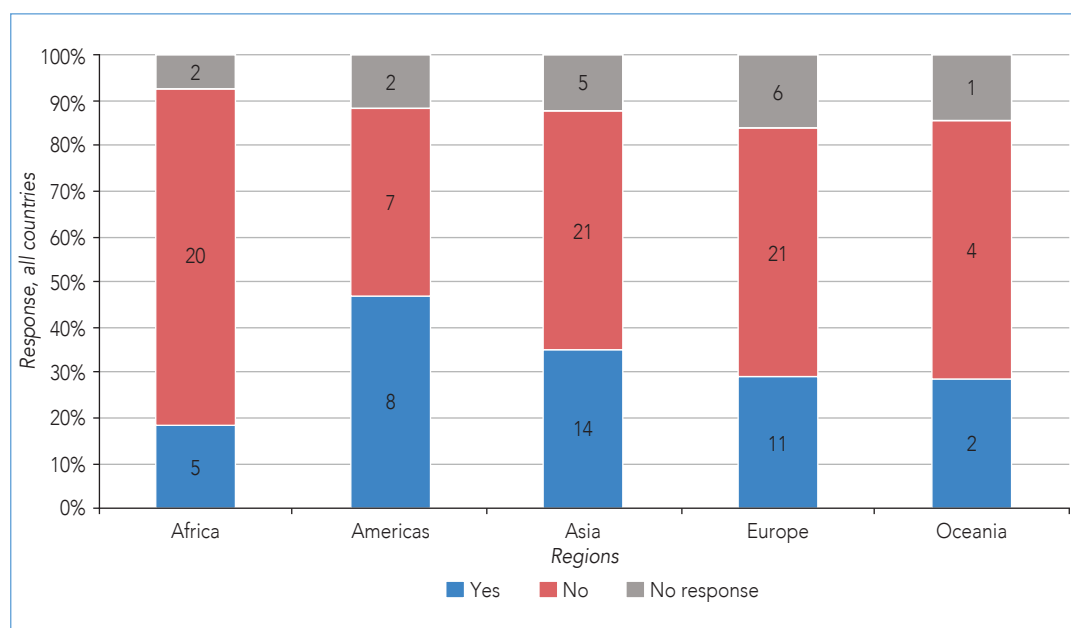
Figure 4.3 Inverse relationship between E-Government Development Index and Gender Inequality Index



For example, according to the 2022 Survey results, only 43 countries allow users to apply online for child benefits, and only 45 countries allow users to apply online for maternal or newborn benefits.

In addition to being less connected, women are underrepresented online and in data. Relatively few countries collect gender-disaggregated user data; as shown in figure 4.4, the proportion of countries that gather such data is highest in the Americas (47 per cent), followed by Asia (35 per cent), Europe

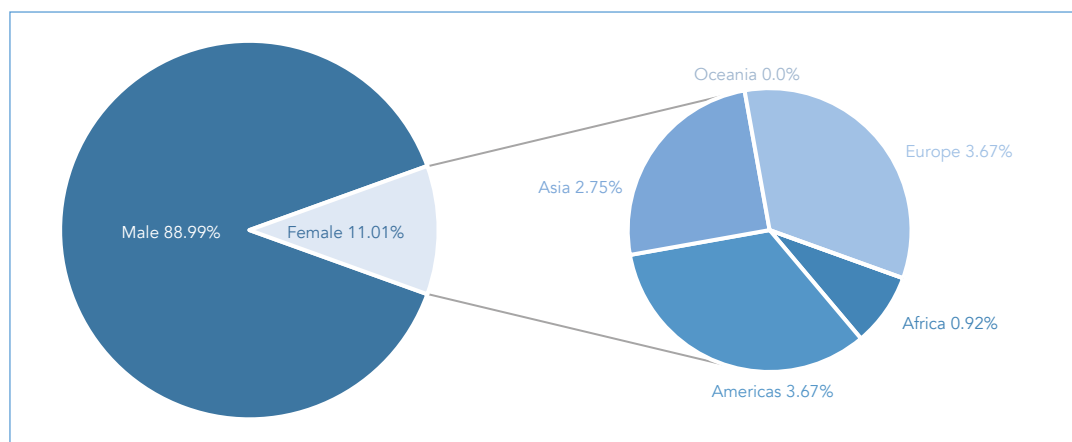
Figure 4.4 Proportion of countries collecting gender-disaggregated user data, by region



and Oceania (29 per cent), and Africa (19 per cent).²² Only 9 per cent of LLDCs, 16 per cent of LDCs, and 12 per cent of small island developing States (SIDS) collect gender-disaggregated user data. Additionally, fewer women than men use social media or other online platforms. This has first-order implications for online representation, access, perspectives and knowledge creation, but there are also second-order implications in terms of the data sets created, the algorithms developed, and the machine learning that takes place in the digital transformation of the public sector, such as the unintentional exclusion of certain vulnerable groups in service delivery.

Gender disparities at the top level of e-government leadership are significant. Among the 111 countries with chief information officers (CIOs) or the equivalent,²³ female CIOs account for only 11 per cent of the total. In terms of regional distribution, there are four female CIOs in the Americas (Belize, Cuba, Peru and Bolivarian Republic of Venezuela), four in Europe (Denmark, Montenegro, Portugal and Sweden) and three in Asia (Brunei Darussalam, Myanmar and Qatar); there is only one female CIO in Africa (Rwanda) and none in Oceania (see figure 4.5).

Figure 4.5 Gender disparities at the top level of leadership in e-government (chief information officer or the equivalent)



4.2.3 Older persons

The hybrid digital society is also an ageing society. Presently, around 10 per cent of the global population is at least 60 years of age, but this share is set to increase to about 20 per cent by 2050, equalling more than 2 billion people. Worldwide, the 60-79 and 80-plus age groups are experiencing the most rapid growth, especially in middle-income and high-income countries. While the global population is growing at around 1 per cent per year, the number of people over 80 years of age is increasing at 4 per cent annually, and it is predicted that by 2050, people over the age of 60 will outnumber children aged 14 years and under.²⁴ The growth in the share of older people is the result of declining fertility and increasing longevity as well as advances in social and economic development. This demographic transition is taking place against the backdrop of the accelerating digital transformation. In most countries, the elderly represent the largest group of individuals that do not use information and communications technology (ICT).

Assistive technology devices and solutions can support greater and safer mobility for older people, especially persons with disabilities or those living alone. Social media platforms can promote social interaction and reduce social isolation and loneliness. While there is a cohort of older persons who are gaining more experience and confidence using online services and choosing to adopt assistive technology solutions to improve the quality of their daily lives, especially among those in higher-

income groups,²⁵ there are other older adults who are being left behind. The COVID-19 pandemic has exacerbated the suffering of seniors in vulnerable situations and has demonstrated the fragility of the digital progress made by this cohort or the lack thereof. The risks and vulnerabilities faced by older persons are shared across the world; for instance, in many countries older individuals lack access to social protections such as universal health care and pensions. According to the 2022 Survey, 109 countries (56.4 per cent) provide online information on how older persons can apply for long-term care (see table 4.2).

Table 4.2 Availability of online information relating to long-term care for older persons

	Number of countries	Percentage
Online information on how older persons can apply for long-term care (including support enabling them to receive home-based care or secure a place in retirement housing facilities)	109	56.4

The 2022 Fourth Review and Appraisal of the Madrid International Plan of Action on Ageing (a) emphasizes that ageing technology—which is technology specifically designed to provide services to the growing number of older people and ensure that they stay connected, active and cared for—can reduce health risks and promote cost-effective access to health care for older people and (b) calls upon Governments to develop policies and action plans to achieve digital equity for all ages. In formulating these policies, it is particularly important to promote digital literacy and narrow the digital-skills gaps of older people through tailored peer-to-peer or intergenerational training programmes. In the fast-changing digital environment, developing, strengthening and maintaining digital literacy requires a life-course approach. While older people are among the least digitally connected population groups, they are also among the most vulnerable to cyberthreats such as cyberfraud, so it is also critical to establish adequate safety measures, raise awareness, and teach older users to be cautious online.

There is growing evidence that technological support can bring about significant benefits for older people while at the same time improving the cost-effectiveness of health and social services.²⁶ Research suggests that the use of innovative technologies may constitute a cost-effective approach to enhancing healthy ageing by enabling ageing-in-place, self-care and self-management, facilitating cognitive stimulation and social interaction, and improving the efficiency of and access to health and social services.²⁷ Seamless, easy-to-use e-government solutions, combined with face-to-face communication, define the future of digital inclusion for seniors. Building an agile plan directed at both digital seniors and elderly novices will enhance returns on investment, for instance, through blended/omnichannel delivery (Refer to later section 4.4.3 on Delivery).

4.2.4 Persons with disabilities

More than 1.3 billion people, or 15 per cent of the world's population, experience some form of disability, with a large number living in developing countries. It is important to recognise the diversity of disability as disability extends across a wide spectrum, involving various levels of ability and encompassing physical and mental limitations. Similar to older people, they tend to struggle with the adoption of digital technologies. Though they make up a relatively smaller share of the population, they should not be overlooked.

In many countries, essential services for persons with disabilities are poor or unavailable. It must be emphasized that there is nuanced diversity faced by different groups of persons with disabilities. Individuals with disabilities face exclusion at multiple levels: they must deal with negative attitudes, stigma and discrimination; they have little or no access to enabling physical and virtual environments, assistive technologies, and rehabilitation opportunities; and there are generally few societal mechanisms in place to promote independent living. Data show that, on average, poverty rates are 15 percentage points higher for persons with disabilities than for those without.²⁸

In article 9 of the United Nations Convention on the Rights of Persons with Disabilities, States Parties are called upon to “promote access for persons with disabilities to new information and communications technologies and systems, including the Internet”. The Convention has been in place for well over a decade, but relatively little headway has been made in creating an environment in which persons with disabilities are digitally connected, especially in developing countries. Article 9 of the Convention focuses on accessibility, mandating that countries take appropriate measures to ensure accessibility within both the physical and the virtual environment. Some Governments have responded by formulating policies, laws and guidelines to ensure digital accessibility; for example, New Zealand has focused on making websites more accessible, and Japan and the Republic of Korea have concentrated on the accessibility of mobile applications. In many countries, compliance is mandatory only for public sector institutions, but in India and the Republic of Korea, private sector organizations are also expected to ensure that their products and services are accessible to persons with disabilities.²⁹

In 2019, Secretary-General António Guterres launched the United Nations Disability Inclusion Strategy, noting that “when we remove policies or biases or obstacles to opportunity for persons with disabilities, the whole world benefits”.³⁰ There are evolving technology solutions that can benefit both persons with disabilities and the general community. Speech recognition systems were originally designed for people with limited hand movement, and the scanner was designed as part of a document-reading device coupled with speech synthesis for blind people; both are now mass-market products. Assistive technologies can help those with certain disabilities access e-services more effectively (see subsection 4.4.2).

At present, e-government is far from being accessible for all persons with disabilities. Many of those with disabilities lack access to both physical services and e-services. Access to online services confers a disproportionate advantage, while the lack of access constitutes a disproportionate disadvantage. It often takes more effort and/or costs more for persons with disabilities to use e-government services and engage in e-participation activities. A small number of targeted e-services are currently available in some countries; according the 2022 Survey, 95 countries (49.2 per cent) allow eligible persons to apply online for disability compensation benefits.

Technical standards for e-services can be developed to meet a particular disability need, but it is just as important to consider the potential disability-related impact at all stages in the development of general technical standards. Creating accessibility guidelines and consulting with disability experts are two ways to raise awareness among countries establishing e-services and relevant standards. In low-income communities with limited infrastructure and no previous experience with targeted assistance, those with disabilities can become increasingly isolated from the rest of society, but the provision of inclusive e-services can help close the gap. For persons with disabilities, accessibility and inclusion should be assigned top priority in the actions and policies of public institutions.

4.2.5 Youth

Globally, there are more than 1.8 billion young people between the ages of 15 and 24, and close to 90 per cent of them live in developing countries. Young people have never been more educated or more connected, yet they continue to encounter significant obstacles that prevent them from realizing their full potential. Around 267 million youth are not in education, employment or training; young women make up two thirds of this group as a result of gendered expectations guiding them towards unpaid family work and informal employment.

Technology has greatly expanded access to information and opportunities, prompting changes that have transformed the lives of many young people. The innovative potential of young people and the power of technology are already proving to be a powerful combination for empowering youth to achieve the Sustainable Development Goals. Young people around the globe are generally eager to adopt new technologies and should face no difficulties in embracing digital government.

As elucidated in *Our Common Agenda*, “[one] priority identified by youth is the availability and sustainability of decent jobs and economic opportunities. The COVID-19 pandemic has had a serious impact on young workers and those transitioning to employment, particularly young women. Too many are settling for work in the informal sector or jobs for which they are overqualified and underpaid, neither meeting their aspirations nor allowing them to unleash their full potential, and perpetuating underdevelopment and lack of tax revenue in low- and lower-middle-income countries.”³¹ The intersection of e-services and youth employment will allow young people to play a part in the achievement of the SDGs. When optimized, digital government can actively contribute to the creation of new jobs, the economic empowerment of vulnerable groups, the promotion of better health systems, and improved access to inclusive and equitable quality education. According to the 2022 Survey, 128 countries (66.3 per cent) provide links and references to employment for youth in their national portals.

Digital government can also play a central role in engaging young people in public discourse. Some government administrations have addressed the limited participation of youth in policymaking through targeted policy and institutional reform; the adoption of relevant legislation and the creation of a national youth congress are among the mechanisms implemented to facilitate youth participation in governance. Enhanced responsiveness to the needs of youth in the development and delivery of public services has stimulated an increase in proposals put forward by young people as inputs to policymaking.

4.2.6 Migrants and refugees

As noted in the *United Nations World Public Sector Report 2018*, delivering public services to migrants and refugees can be challenging.³² There are disparities within and between refugee and migrant groups in terms of physical access to digital technology, utilization rates, the skills needed to make best use of the different technologies, and the ability to pay for digital services.³³ Large inflows of migrants and refugees bring unprecedented challenges and place a severe strain on public institutions.

The public services needed for urban migrants versus those who reside in remote rural areas and others who live in refugee camps, often for protracted periods of time, are often very distinct, so different approaches to services provision may be required. Similarly, diverse subgroups of migrants and refugees will likely need different combinations of services.³⁴ Many countries have created or are considering the creation of one-stop shops for the provision of unified, interlinked services for migrants and refugees. In Denmark, newtodenmark.dk is a one-stop immigration portal consolidating all relevant information and access points to services. While one-stop shops have proved to be a useful institutional innovation, their effectiveness varies widely depending on the context.³⁵ Outside the direct provision of government services, refugees and migrants may benefit from global or regional initiatives with a digital component. The International Organization for Migration has launched an initiative called Migrants as Messengers, through which returned migrants use technology and in-person communication to share their stories so that prospective migrants can make informed decisions; recently, returnees have provided valuable information on the risks of COVID-19 and how to prevent its spread.³⁶

The issue of digital divides and migrant and refugee populations is not fully explored in the existing research and literature.³⁷ Understanding the critical challenges migrants and refugees experience is crucial in designing e-government policies and has the potential to increase their inclusion in society and decrease immigrant-native achievement gaps.³⁸ However, the provision of digital services for migrants and refugees needs to be balanced with face-to-face interaction and support.

4.2.7 Other vulnerable populations

The previous paragraphs have illustrated certain groups, but others being left behind in e-government include minorities, indigenous peoples, and those living in rural or remote areas. Generally, the lack of online services for vulnerable groups derives from intentional or unintentional discrimination, cultural barriers, educational opportunities and institutional gaps caused by the failure to identify emerging divides and respond with public policies and services that meet the needs of these groups.³⁹

There are also intersectionality and multipliers effect in settings characterized by inequitable power relations and discrimination that can interfere with the ability of women, those living in poverty, and other vulnerable groups to access public services.⁴⁰ There is still insufficient understanding of how the design and implementation of e-government affects people of different ages, capabilities and income levels and what needs to be done to address discrimination and ensure equity for all. A number of studies have shown that the most notable progress has been achieved among those groups that are easiest to reach, with many of the poorest and most vulnerable being left behind. Clearly, proactive efforts are needed to acknowledge and identify the gaps, to provide vulnerable populations with mechanisms for engagement so that the types and origins of discrimination are better understood, and to then use what has been learned to develop responsive e-government and improve the lives of those who are hardest to reach. Only 92 countries allow users to report any form of discrimination online, while 95 countries allow users to report violations of labour law online (Table 4.3).

Table 4.3 Online options for reporting discrimination and making declarations to the police

	Number of countries	Percentage
Users can report any form of discrimination (based on ethnicity, age, gender or other factors) online	92	47.7
Users can report violations of labour law online	95	49.2

4.3 Barriers relating to access, affordability and ability (3As)

Leaving no one behind is key to addressing the expansion of digital services to ensure access for all. The operationalization of this objective is critical but challenging, however, as digital inclusion is influenced by a multitude of economic, social and governmental factors relating directly and indirectly to issues around digitalization. People from all segments of society have an equal right to benefit from the advancement of digital government; however, among the poorest and most vulnerable, access to public services continues to be impeded by barriers such as financial cost, geographical location, cultural and environmental factors, discrimination, language-related issues, and the lack of institutional support for equitable digital inclusion in e-government. Different groups have specific constraints requiring targeted solutions.

4.3.1 The dynamic shifts and multiplying effects of digital exclusion

Digital divides are not static. The consensus among researchers is that vulnerability is a dynamic and shifting state, so a list of risk factors is not always sufficient to identify those who need different ways to access and utilize services.⁴¹ There is growing evidence that digital access alone is not enough and that challenges shift over time. Achieving universal digital inclusion requires not only meaningful access to digital services, but also the ability to pay for Internet services and mobile devices, the digital skills required to navigate new technologies safely and productively, and a knowledge of local and general content so that users can take advantage of support services, engagement opportunities,

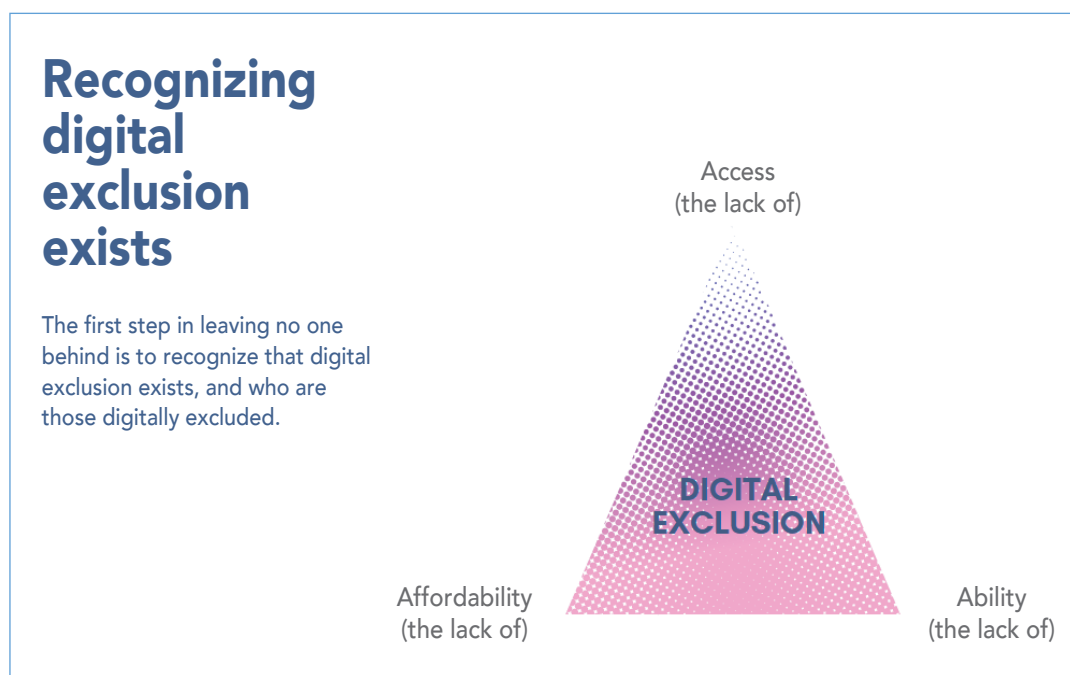
and other benefits offered. Given the rapidly changing nature of technology, any support provided needs to be ongoing to ensure that users are able to keep pace with technology developments, evolving modes of service delivery, and changing content options. Continuous monitoring and assessment of the shifting needs of vulnerable groups is also required to ensure that the services provided are actually meeting identified needs.

There is a clear link between digital inequalities and socioeconomic stratification, which means that vulnerable populations are less likely than those in more advantaged positions to have positive online experiences and connections.⁴² Beyond that generalization, digital divides are actually driven by the dynamic and sometimes complex relationship between multiple factors contributing to vulnerability. The most vulnerable populations tend to experience inequality at many levels; each barrier on its own may lead to exclusion for a particular segment of different vulnerable groups, but those who are most disadvantaged often experience multiple deprivations that exacerbate each other.⁴³ For example, while women often face particular difficulties in accessing public services and interacting with public institutions, digital divides are especially pronounced when both gender and geography are factors, meaning that rural women, who tend to have lower-than-average incomes, are among the least likely to have meaningful experiences with e-government, even when they have Internet access.⁴⁴ An older person with disabilities who lives in a remote area may also suffer from intersecting forms of inequality. The interplay of digital divides is driven not by socioeconomic status alone but rather by the interplay of multiple intersecting challenges and perspectives within the context of external economic, social, cultural and political trends. To address these compounded disadvantages, an integrated policy approach is needed.

In both the academic and policy realms, the conceptualization of digital inequalities has become more nuanced and complex.⁴⁵ Many recent publications acknowledge that the digital inequality debate has shifted from digital divides to gradations of exclusion that reflect levels of skill, motivation, engagement, and participation in public policy processes. Greater consideration is being given to the links between digital equity and socioeconomic inequalities and the need to adopt a user-centric approach. What this means for different vulnerable groups in developed and developing countries will vary. Essentially, determinations of digital inclusion or exclusion should consider access (the infrastructure needed for connectivity), affordability (the ability of users to cover the cost of Internet services and devices), meaningful use (digital skills, readiness, individual agency, and the availability of accessibility features to allow full engagement) and benefit (content related to each user's individual situation and requirements). The COVID-19 pandemic has not changed the overarching objective of digital inclusion — that all people should have access to and the ability to use digital services, including e-government services, in a meaningful way.

Some common approaches and indices have emerged to measure and assess digital inclusion. The Digital Inclusion Index developed by Ronald Berger measures and analyses levels of digital inclusiveness in countries based on values associated with four key levers: accessibility, affordability, ability and attitude.⁴⁶ The Australian Digital Inclusion Index measures progress across the three dimensions of access, affordability and digital ability, though with different areas of emphasis and definitions.⁴⁷ Researchers working with Making All Voices Count identified five A's of digital access—accessibility, ability, awareness, affordability and availability—"as a series of concentric circles that structurally exclude particular groups whenever digital technologies are deployed".⁴⁸ In the subsections below, an effort is made to identify digital barriers to leaving no one behind in the realm of digital government by exploring the dimensions access, affordability and ability in some depth (see figure 4.6).

Figure 4.6 The intersectionality of barriers: of access, affordability and ability in determining digital exclusion



4.3.2 Access

Access is a fundamental requirement for digital inclusion. Access to online information and digital services has become critical for social integration and progress. In recent years, the COVID-19 pandemic has amplified the importance of access and has drawn attention to issues surrounding access or the lack thereof. In countries that have experienced pandemic-driven shutdowns, digital services have been identified as essential services, alongside food production and distribution, health-care provision and other core services;⁴⁹ this heightened attention has also served to highlight the digital vulnerability of marginalized groups.

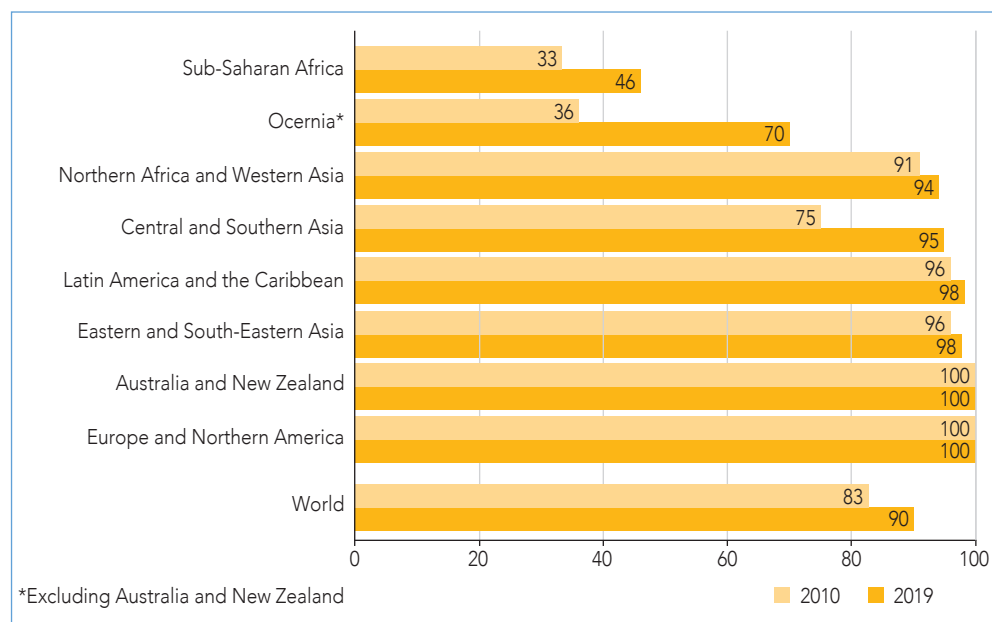
Critical areas of access in the context of e-government include access to electricity, access to the Internet and mobile infrastructure, and access to e-information and e-services.

Access to electricity

Developments in digitalization and digital government have no impact on those who have inadequate or irregular access to electricity. As noted in one report, “without electricity, the Internet is just a black hole”.⁵⁰ One group of researchers found that that access to mobile connectivity, as measured by mobile phone subscriptions or smartphone ownership in rural areas, increases with access to electricity, with women affected the most.⁵¹ Obviously, access to a stable energy source has a positive impact on usage, as measured by the increased volume of incoming communications and the ability to recharge digital devices.

Communities without access to a stable supply of electricity are typically overlooked by telecommunications operators and Internet service providers because they are seen as too remote or too poor and lack the energy capacity to maintain connectivity. The situation is improving for some, however, as electrification through decentralized, affordable, renewable and sustainable energy solutions has gained momentum in recent years. Globally, the number of people without access to electricity declined from 1.2 billion in 2010 to 759 million in 2019, with three quarters of those affected living in sub-Saharan Africa (see figure 4.7).⁵² If the current pace is maintained, an estimated

Figure 4.7 Proportion of the population with access to electricity, selected country groupings, 2010 and 2019 (Percentage)



Source: The Sustainable Development Goals Report 2021; available at: <https://unstats.un.org/sdgs/report/2021/The-Sustainable-Development-Goals-Report-2021.pdf>

660 million people will still be without electricity in 2030, with the vast majority situated in rural areas of sub-Saharan Africa.⁵³ It should be noted that the COVID-19 pandemic has reversed progress in some areas, especially in developing countries in Africa and Asia. Basic electricity services are now unaffordable for many people who had previously gained access, largely owing to population growth and increasing levels of poverty. In Asia, it is estimated that an additional 85 million people may be forced to scale back to basic electricity access because of their inability to pay.

The dependence of digital government on access to electricity is evident. A study undertaken in Nigeria found that inadequate power supply has clearly hindered access to digital government services. In rural areas, especially in the least developed countries, many residents do not apply for new utility services because connection costs can be relatively high considering the purchasing power equity. Where access is available, convenient payment mechanisms may not be in place. Data from the 2022 E-Government Survey indicate that 45 countries (23 per cent of those surveyed) still do not provide e-payment options for electricity or gas bills (see chapter 1). Efforts to expand electricity and Internet access should go hand in hand, as close coordination between the energy and telecommunications sectors is both logical and cost-effective; such collaboration can help ensure that all individuals — in particular rural populations in low-income countries — are able to reap the benefits of digitalization.

Access to the Internet and mobile infrastructure

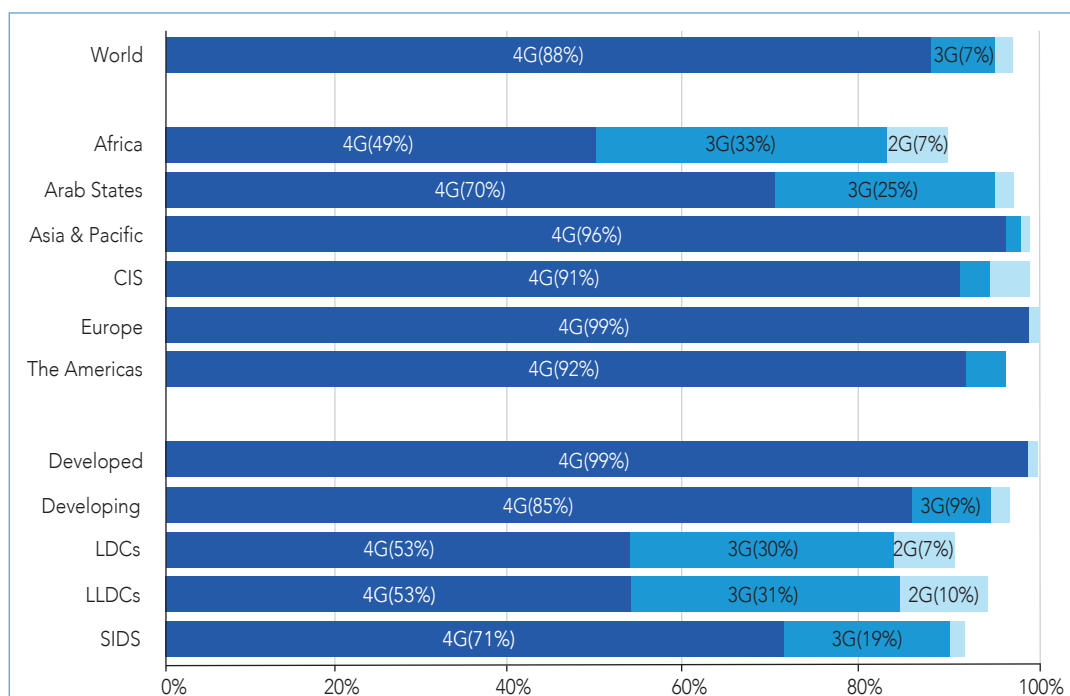
An estimated 2.9 billion people are still offline and are thus being deprived of the opportunity for meaningful engagement in the digital age.⁵⁴ The least developed countries are the least connected, with only 19 per cent of the population linked to digital networks. In recent years, much greater attention has been focused on addressing the urgent need to work towards meaningful universal connectivity, as called for in the United Nations Secretary-General's Roadmap for Digital Cooperation

and *Our Common Agenda*, as well as in the global dialogue on digital connectivity, including that taking place within multi-stakeholder contexts such as the Internet Governance Forum.⁵⁵ Internet connectivity has accelerated during the COVID-19 pandemic, but the urgency around identifying the barriers to digital access has also grown. In reconsidering strategies for closing access gaps, Governments should consider adopting disruptive approaches to infrastructure development.

Many high-income countries have greatly improved Internet speed, reliability and versatility through the introduction of cutting-edge 5G wireless technology and full optical-fibre deployment. These digital upgrades have contributed directly to higher EGD values for a number of wealthier countries, but they have also served to widen digital divides. The coverage gap remains significant in Africa; though there has been a 21 per cent increase in 4G coverage since 2020, 18 per cent of the region's population still lacks access to 3G or 4G mobile broadband networks. In the LDCs and LLDCs, the respective proportions are 17 and 16 per cent (see figure 4.8). Estimates indicate that close to 400 million people live where there is no mobile broadband signal.⁵⁶

The target for SDG indicator 9.c—to “significantly increase access to ICT and strive to provide universal and affordable access to Internet in LDCs by 2020”—has not been met.⁵⁷ However, efforts to improve digital access for this group of countries continue. The various multi-stakeholder partnership initiatives aimed at establishing reliable, low-cost satellite connectivity for development and emergency telecommunications on remote islands and in rural areas constitute a positive step forward. Innovative business models can be used to combine the provision of energy access and broadband connectivity to vulnerable segments of rural communities.⁵⁸

Figure 4.8 Mobile broadband coverage by type of network, 2021 (Percentage of the population)



Source: International Telecommunication Union, *Measuring Digital Development: Facts and Figures 2021* (Geneva, 2021), available at <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx>.

Access to e-information and e-services

Enabling access is not sufficient for e-government inclusion; meaningful engagement among vulnerable segments of the population is possible only if relevant content and services are made available. In a research study undertaken in Rwanda, official estimates indicate that 1 in 5 (or 20 per cent) of the country's residents are using the Internet, but the numbers for meaningful connectivity are as low as 1 in 160 (just over 0.6 per cent).⁵⁹ E-government content is wide-ranging and may include, for example, general and sectoral information, links to employment opportunities, access to social welfare programmes, legal advice and recourse options, support for commerce and trade, a multitude of online public services, and e-participation mechanisms. The scope of the e-government divide often extends from access to usage to socioeconomic outcomes. Ensuring public access to information is one of the focal points of SDG target 16.10; specifically, individuals should be able to access information without discrimination, and public information should be presented in a way that is understandable to all. This means that gender bias, cost and language barriers, and other factors that may disadvantage certain population groups need to be addressed in the provision of public sector content. Equitable access to information—in particular information on public policies—must be ensured for the poorest and most vulnerable groups.

The E-Government Survey tracks the provision of online services designed for vulnerable populations. It is encouraging that since 2016 there has been a general increase in the number of countries offering online information and e-services that specifically target vulnerable groups, including women, those living in poverty, persons with disabilities, older persons, and migrants and refugees (see figure 4.8); the only group for which there has not been an increase is youth. The average number of countries providing e-information and e-services has increased from 145 to 151 since 2020. However, very few countries show evidence of having engaged in online consultations involving vulnerable groups, and even fewer countries have evidence showing that user input has been considered or incorporated in policy decisions on issues relating to vulnerable groups. While the information and services gaps have narrowed in recent years, the gaps in e-consultation and decision-making are still very concerning.

A robust, user-focused e-government ecosystem is essential for ensuring meaningful usage and satisfaction among all users, including vulnerable groups. In order to identify the specific needs of different population groups and measure user satisfaction, Governments must collect information from and on users; figure 4.9 shows that there has been slow but steady growth in the number of countries that monitor usage and incorporate user feedback mechanisms on their portals (additional information is provided below). Once needs have been identified, Governments can take proactive steps to update relevant policies and regulations for the digital age. In the realm of banking and finance, for example, new or modified policies and regulations are needed to support the integration of blockchain and fintech options in government portals for e-payments and other financial transactions in order to ensure financial inclusion. Governments can also play a role in promoting digital startups by providing funding, supporting the formation of digital clusters, or facilitating the creation of incubators.

Expanding meaningful usage and enhancing user satisfaction are key to motivating and engaging all users, in particular vulnerable groups. This can only be achieved through continuous monitoring of usage and communication with users. As noted above, there has been some progress in this area, though there is significant room for improvement. A growing number of countries are providing usage statistics and measuring user satisfaction, but not even half of the countries surveyed have met these indicators; only 47 per cent provide usage statistics, and even fewer countries (36 per cent) measure user satisfaction. The proportion of countries that have set up mechanisms allowing users to provide feedback that can be used to improve the accessibility and usability of e-services increased from 64 per cent in 2020 to 66 per cent in 2022 (see figure 4.10).

Figure 4.9 Provision of e-information, e-services, e-consultation mechanisms, and e-decision-making opportunities for vulnerable groups

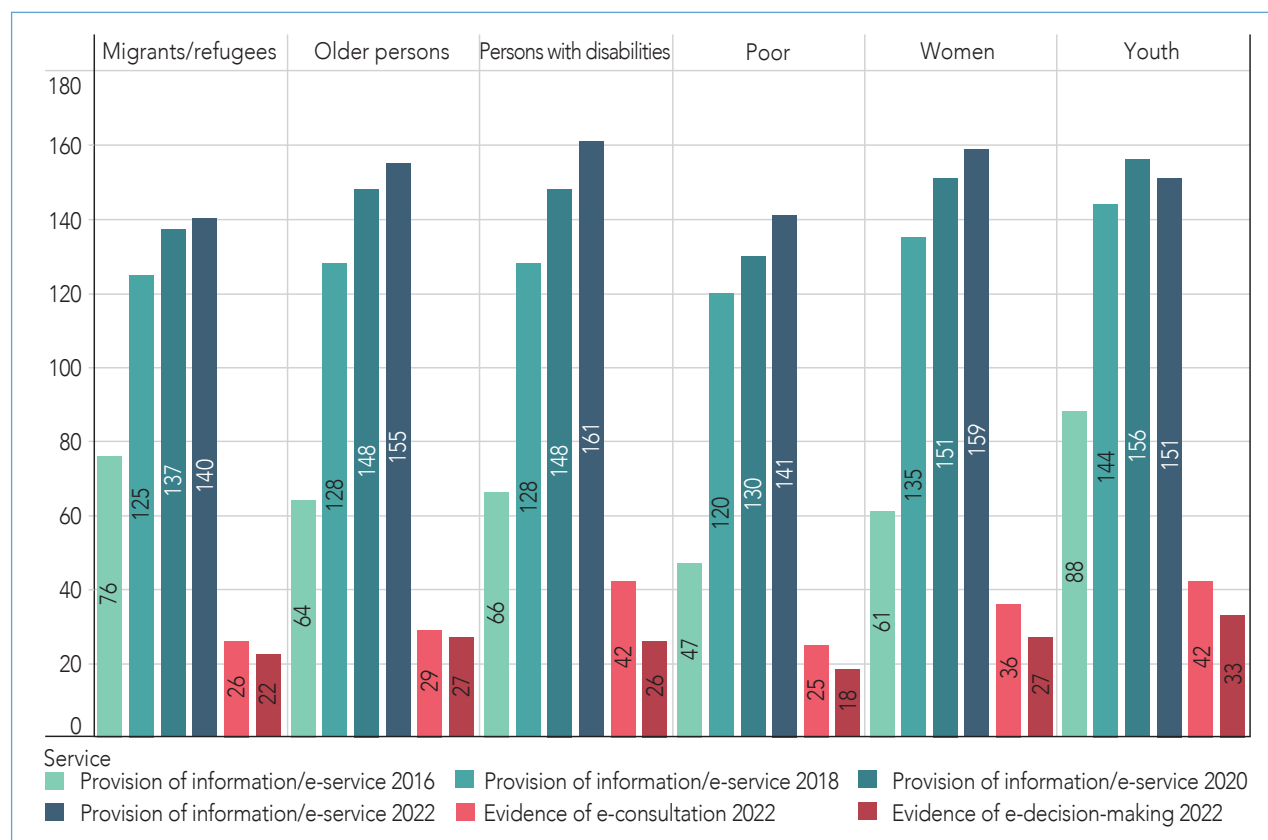
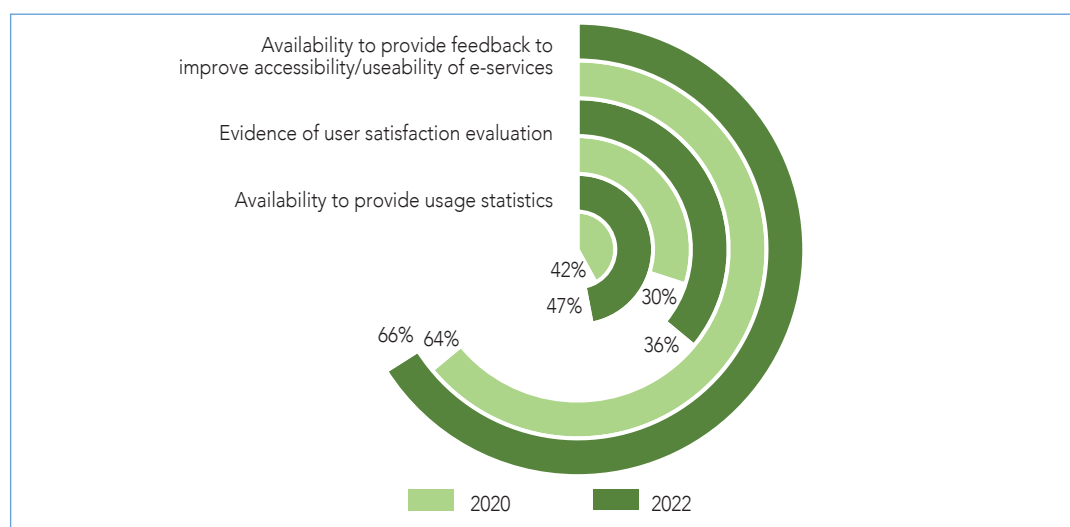


Figure 4.10 Availability of user feedback mechanisms in e-government portals



4.3.3 Affordability

Meaningful access to digital information and services remains too costly for many vulnerable groups, especially in developing communities and regions. The growing ubiquity and complexity of digital government make affordability an even bigger concern, as the inability to pay essentially translates

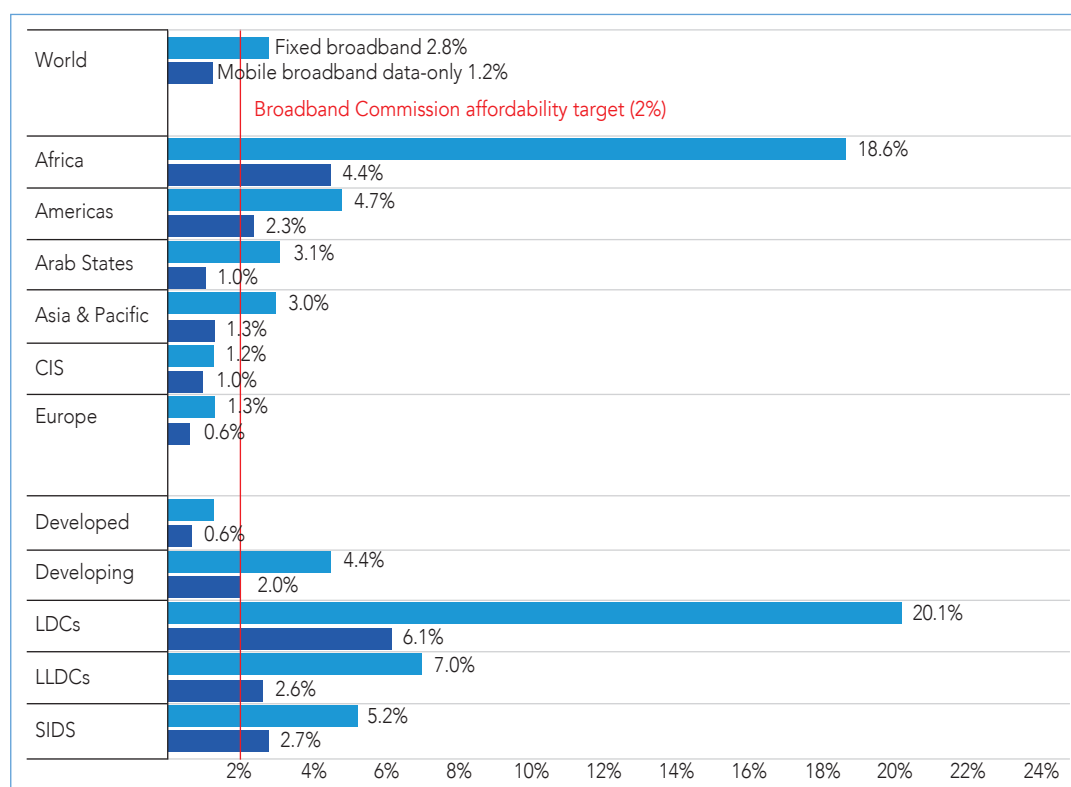
into digital exclusion when those who are most vulnerable are unable to access ever-evolving e-government services and are being left further and further behind.

In this subsection, affordability covers three areas relevant to e-government: (a) the affordability of Internet access, especially broadband (for services requiring high bandwidth); (b) the affordability of cellular phones and other mobile-enabled devices; and (c) the affordability of e-services (some may require direct fees or the payment of fees to an intermediary, and users may need to travel a significant distance to access mobile services or complete e-service transactions). When connectivity remains beyond the reach of individuals or communities, free public access points set up the Government may be instrumental in facilitating digital inclusion.

Affordability of Internet access

There is a strong correlation between the affordability of Internet access and EGDI values. Countries with high GDP per capita have much higher levels of affordability. In developing countries, the cost of connecting remains high relative to income. The ITU/UNESCO Broadband Commission for Sustainable Development urges countries to make broadband prices affordable in developing countries by 2025, with affordability defined as the availability of broadband access at a price equivalent to less than 2 per cent of monthly gross national income (GNI) per capita. In the LDCs, the median price for entry-level broadband has been declining, but it remains beyond the means of the average consumer in all but 4 of the 43 LDCs for which data could be obtained. Among the 33 LDCs for which data are available, only one has met the 2 per cent target for fixed broadband pricing (see figure 4.11).

Figure 4.11 Basket prices for fixed broadband and data-only mobile broadband as a percentage of GNI per capita, 2020



Source: International Telecommunication Union, Measuring Digital Development: Facts and Figures 2021 (Geneva, 2021), available at <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx>.

Affordability of digital devices

Internet affordability is only one of the factors considered in assessing digital equity and inclusion; the affordability of digital devices is another. Owning a smartphone or other digital device can be transformative; for example, it can give a vulnerable woman starting a small business in a rural area access to online information, finance, markets and government support. Device ownership benefits residents of high-income and middle-income communities as well, but the potential impact on those in vulnerable situations is far greater, especially if they are the archetype of advanced users.

Globally, only 60 per cent of unique mobile subscribers have access to smartphones. The cost of smart devices remains relatively high for the largely low-income populations of many developing countries and transition economies. Many of the newer, more expensive smartphones have advanced accessibility features that would be useful for older people and persons with disabilities, but those who would benefit most from such features — visually impaired individuals living in low-income rural communities, for example — cannot afford them. Some countries, including India and Nigeria, are manufacturing digital devices domestically; local production not only makes the devices more affordable, but also promotes the growth of entrepreneurship and innovation in the local ICT sector.

It is vital to ensure the affordability of devices that can handle the demands of evolving digital trends over a relatively long period. Governments can subsidize digital devices such as laptops and put them into the hands of vulnerable groups where needed; an example would be providing youth with devices for online education during the COVID-19 pandemic. However, the shelf life of many devices can be relatively short due to wear and tear and technology obsolescence. In the mid to long term, these households may not be able to afford replacements for the digital devices they were given. Strategic long-term planning is essential to look at the costs of both devices and broadband connectivity to ensure continued meaningful digital access. When assistive technologies are required, especially for older people and persons with disabilities, the affordability barrier can be even higher.⁶⁰ While some Governments have instituted web accessibility policies, these cannot anticipate every accessibility need due to the known limitations of existing technologies. There may be other circumstances independent of technology that limit the accessibility of e-services, such as the financial dependence of certain vulnerable groups and various cultural factors.

Affordability of e-services and the need for public access points

The provision of public access points has been an integral part of national digital strategies over the past two decades. Its contribution to bridging the digital divide and achieving universal meaningful access has become increasingly important, especially in communities frequently underserved by the private market. Key to making this happen are policies that prioritize underserved groups and the provision of free Wi-Fi hotspots or computers in public spaces such as libraries, community centres, public transport interchanges and post offices. During the pandemic, many public libraries and private companies have made their Wi-Fi services available 24 hours a day, with some even improving their services, so that they can be accessed from parking lots outside.⁶¹ According to the 2022 Survey, the number of countries providing free public access points increased from 91 to 103 (or by 13 per cent) between 2020 and 2022, with the relative share growing from 47 to 53 per cent during this period. (See Table 4.4)

Table 4.4 Number of countries providing free public Internet access points, 2018, 2020 and 2022

	Number of countries		
	2018	2020	2022
Countries providing free Internet access through kiosks, community centres, post offices, libraries, public spaces or free Wi-Fi	106 (54.9 per cent)	91 (47.2 per cent)	103 (53.4 per cent)

Public digital access is easier to scale up when it is linked to other policy objectives such as universal education or universal health care. A number of initiatives that reflect such integration or complementarity have already been undertaken, including the UNICEF-ITU Giga initiative for schools⁶² and Every Community Connected programme created for libraries.⁶³ This approach can be extended to include cooperation with public sector partners engaged in infrastructure development—for example, working with energy and transport authorities on “dig once” interventions that can result in cost savings and environmental benefits.⁶⁴

A number of countries have been lauded for their consistent use of effective strategies for ensuring affordable public access.⁶⁵ The National Backbone Infrastructure Project for regional government offices in Uganda and the Swedish experience with municipal fibre networks are positive outcomes of strategies involving investment in middle-mile infrastructure, such as municipal networks, that can provide communal access to affordable Internet services.⁶⁶

4.3.4 Ability

As noted previously, access, affordability and ability are interconnected. Access and affordability are closely linked to digital literacy, as opportunities to improve digital competency mean little when individuals are digitally excluded or do not understand how they might benefit from digital connectivity. With countries increasingly shifting public services to virtual platforms, it is becoming imperative that everyone — including those living in poverty, women and girls, older people, persons with disabilities, youth, migrants, refugees, and other marginalized groups — be digitally competent and connected. The COVID-19 pandemic has illustrated the urgency of this mandate; with older people encouraged to stay indoors because of the higher probability of infection for this demographic, the only way for them to stay connected and ensure their physical, mental and overall wellness has been through digital platforms.

An expanded definition of literacy is the ability to read, write, speak and listen in a way that allows one to communicate effectively in traditional and digital environments, as well as the possession of competence or knowledge in a specified area. Illiteracy constitutes one of the greatest barriers to digital engagement; as the primary means of communication on digital platforms is the written language, the inability to read and write seriously limits usage. The three areas of literacy relevant to e-government participation are general (or traditional) literacy, digital literacy and language literacy; the latter two are explored in some detail in the subsections below.

The Human Capital Index (HCI), an EGD subindex, captures where countries stand in terms of general or traditional literacy; assessments are based on UNESCO data relating to combined primary, secondary and tertiary gross enrolment ratios, expected years of schooling, and average years of schooling (see the methodology section for more information).

Digital literacy

Empowering the digitally excluded to use digital services is vital for sustained engagement in e-government and broader digital inclusion. Countries with high HCI values have clear mandates for prioritizing education, but the same may not be true for digital literacy. While a growing number of countries at all socioeconomic levels are extending or expanding support for digital skill development, much more needs to be done. As shown in table 4.5, at least three quarters of the countries in all regions except Oceania have specific mechanisms or measures in place to help vulnerable groups build digital literacy and skills. Similar trends are observed for special country groupings; 68 per cent of LDCs and 89 per cent of LLDCs have digital literacy support mechanisms in place for underserved populations, but the same is true for only 41 per cent of SIDS.

Table 4.5 Countries that have specific measures or mechanisms in place to help vulnerable groups acquire digital skills and achieve digital literacy

		Total	Yes	No	Not applicable or no response	Yes	No
By region	Africa	27	22	5	0	81%	19%
	Americas	17	13	3	1	76%	18%
	Asia	40	34	4	2	85%	10%
	Europe	38	33	4	1	87%	11%
	Oceania	7	3	4	0	43%	57%
By special group	LDCs	25	17	8	0	68%	32%
	LLDCs	19	17	1	1	89%	5%
	SIDS	17	7	9	1	41%	53%
	Total	129	105	20	4	81%	16%

As the digital world can be intimidating for newcomers, there is a need for effective programmes that actively support the building of digital literacy, skills and confidence across the primary, secondary and tertiary levels, with policy priority given to vulnerable groups. Governments must ensure that digital literacy policies and programmes keep pace with advancements in technology, are flexible enough to meet the diverse needs of different vulnerable groups, and are empathetic to the challenges faced by certain groups of learners, including women and girls, older people and persons with disabilities.

Very often, the first step in achieving digital literacy is building digital awareness. Some segments of the population may not even know that e-government services are available, so campaigns that promote awareness and ICT usage can help drive digital inclusion efforts. Such campaigns should focus not only on exploring e-government but also on building trust, strengthening digital confidence, and broadening ICT knowledge and experience more generally. Content might focus on the following:

- Appreciating the convenience and benefits of e-government services and Internet banking;
- Registering and managing personal data and information needed to access e-government services;
- Exploring digital offerings such as search engines, social media, and ICT tools for online collaboration;
- Understanding and applying basic cybersecurity principles, with emphasis given to recognizing cybercriminal activities, disinformation, misinformation and fake news.

To some extent, digital exclusion is perpetuated by a vicious cycle rooted in ignorance: many of those who are digitally excluded do not see the need for digital devices or access, those who do not see the need for them do not have them, and those who do not have them are digitally excluded. This dynamic has been identified through research, where due to digital illiteracy and financial constraints, low-income households would not prioritize buying a digital device or paying for an Internet connection, and should they have the means to do so, they would choose mobile-first or mobile-only connectivity. Insufficient knowledge and skills are in themselves an impediment to meaningful digital connectivity.

Digital illiteracy remains a significant barrier for vulnerable groups, putting them at risk of being left further behind. While the benefits of building digital literacy among vulnerable groups are evident, it is difficult to move forward without objective statistical data. Much of the data gathered thus far may be seen as subjective, involving self-reporting or informal assessments of ICT skills.⁶⁷ Among the 40 per cent of countries for which digital literacy data are available, fewer than 40 per cent of individuals are reported to have carried out one of the activities that reflect basic skills, such as sending an e-mail with an attachment within the previous three months.⁶⁸

Language literacy

Language is a key component of human interaction. Governments endeavouring to move beyond rhetoric and reach those left furthest behind must also acknowledge the importance of leaving no language behind. In e-government, genuine engagement is possible only if users can communicate in their own language.

The low volume of local-language content constitutes a barrier to e-government participation and broader digital inclusion. There are around 7,000 languages in the world, yet only 7 per cent of them are reflected in published online material.⁶⁹ Facebook, for example, is seen as the most multilingual online social media platform, yet it supports only 111 languages.⁷⁰ A UNESCO survey found that 98 per cent of the Internet's web pages are published in just 12 languages, and more than half of them are in English.⁷¹ This trend is mirrored in e-government portals.

For the 2022 E-Government Survey, the assessment of each national portal was carried out by a native speaker of the official language of the country or, where that was not possible, by a speaker of one of the languages available on the site. Over 70 different languages were assessed among the 193 Member States. While it is encouraging to note that portal content in the vast majority of countries is available in more than one of the country's official languages (see table 4.6), linguistic diversity remains relatively limited in e-government portals both within and between countries. Among the countries surveyed, 156 offer portal content in only one language (the official national language), leaving only 37 countries that provide content in two or three official national languages. Figure 4.12 shows the primary official language used for portal content and assessment; English is used by the greatest number of countries (51), followed by French (23), Spanish (20), Arabic (18), and Portuguese (8), with many other countries using less common languages for their portal content. Not having portal content available in multiple languages makes it harder for those who speak one of the excluded languages and leaves many indigenous cultures without a voice online.⁷² Those who are proficient in English, commonly perceived to be “the language of the web”, have an edge when it comes to developing digital abilities and enjoying the benefits of e-services.

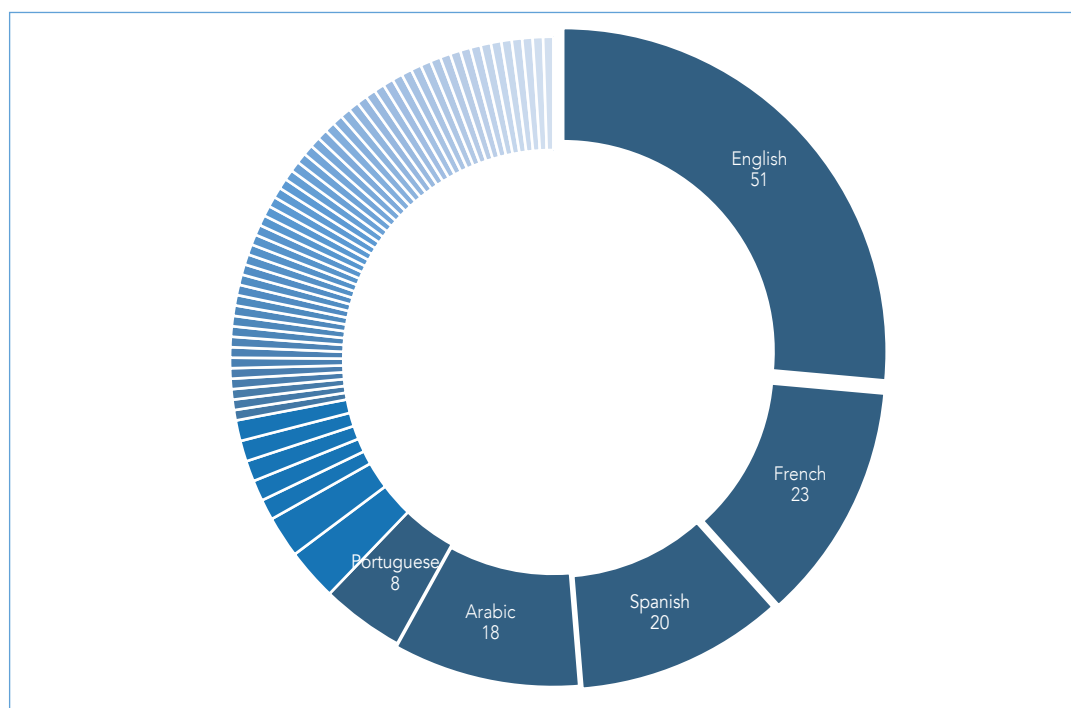
The lack of language diversity in e-government portals leads to the underutilization of e-services and miscommunication between government authorities and constituents—which can serve to undermine progress towards the SDGs. Some policymakers and researchers may argue that a *lingua franca*, or common language for communication, is needed for digital government, but this would still leave many of those with a different mother tongue unable to take full advantage e-government information and services. Where proficiency in the portal language is low or non-existent, e-government engagement is far less likely to occur.⁷³ If Governments continue to offer content in one or a very limited number of languages, many will be left behind.

Language barriers and the isolation they cause are real and deeply ingrained. Greater consideration needs to be given to meeting the needs of different linguistic groups, creating support networks (including intermediaries), and introducing more linguistic coloration in general. On 21 February of every year, the United Nations celebrates International Mother Language Day as a reminder of the power of language in preserving the uniqueness of human societies and promoting their

Table 4.6 Countries with national portals that have content available in more than one official language, 2020 and 2022

	Number of countries	
	2020	2022
Countries with national portal content available in more than one official language of that country [Note: the count includes countries with one official language]	166 (86.0 per cent)	158 (81.8 per cent)

Figure 4.12 Primary official language in which content was assessed for each of the national portals



Source: United Nations 2022 E-Government Survey.

distinct values.⁷⁴ The theme of International Mother Language Day in 2022—“Using technology for multilingual learning: challenges and opportunities”—aims to promote the use of technology in advancing multilingual education.⁷⁵ One of the founding principles of the European Union is multilingualism, as the member countries are collectively home to 24 official languages and over 60 regional or minority languages.⁷⁶ In Africa, one noteworthy initiative is the Science and Language Mobility Scheme Africa, which “seeks to build language skills and cultural capabilities of researchers ... [to address] one of the barriers to intra-Africa scientific collaboration”.⁷⁷ Artificial intelligence (AI) applications such as natural language processing can play a vital role in promoting multilingual communication as they offer immediate and relatively high-quality translations of content at low cost.

At the United Nations Internet Governance Forum, multilingualism is a recurring theme, with relevant issues addressed from different perspectives. Among the conclusions reached by the Forum are that translation in portals is inadequate, especially when dealing with interactions involving “minor” languages; that while technology is essential for dealing with multilingualism on the Internet, it does not constitute a solution; and that establishing institutional multilingualism requires broad actions from different stakeholders, including Governments and civil society.⁷⁸

4.4 The role data, design and delivery can play in ensuring no one is left behind

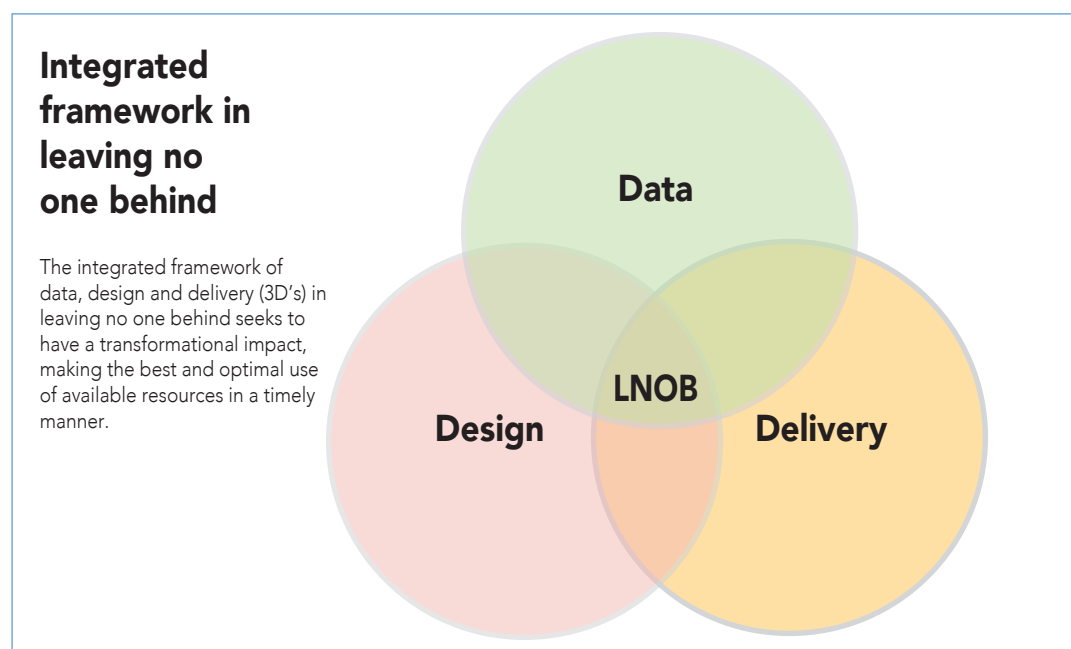
Even with the accelerated adoption of digital technologies and the expansion of e-government during the pandemic, the benefits of digitalization remain unequally distributed, and the gaps between leaders and laggards has grown wider. Digital technologies have been used by Governments to integrate and streamline internal processes and improve services delivery. Vulnerable groups face barriers relating to access, affordability and ability, but they can also be deterred by the rapid advancements in

technology and the complexity and associated risks of digital tools. An understanding of why certain groups or individuals are effectively excluded can inform the approaches taken by Governments to achieve digital inclusion.

In order to address evolving needs within the new hybrid digital society and ensure that no one is left behind, Governments may need to rethink, revise or even revolutionize the way they provide services and interact with the public, with particular attention given to vulnerable populations, and through an integrated offline-online approach. It is important to shift the focus from abstract visions to functional solutions that answer objectively assessed needs. This section offers an integrated framework for e-government engagement grounded in three essential elements (see figure 4.13):

- *Data* informed by the specific needs of vulnerable groups;
- *Design* that places people at the centre of e-government policy processes and services provision;
- *Delivery* approaches that focus on inclusion and the use of innovative approaches (such as blended/omnichannel delivery, pilot initiatives, experimentation and sandboxing) to reach those left furthest behind.

Figure 4.13 Integrated data-design-delivery framework for e-government



Strategies centred around data, design and delivery are not new, but they have not been used widely by Governments in an integrated framework. These “3D’s” are intersecting tools that can have a transformational impact. Taken together, they can improve e-government for all but are likely to have the greatest effect on vulnerable populations, given the challenges disadvantaged groups face with regard to meaningful digital access and connectivity, the affordability of mobile devices and Internet connectivity, and the ability to engage in and benefit from e-government.

4.4.1 Data

Reliable data are essential for policy development and decision-making at all levels but are especially critical for ensuring that no one is left behind. It is evident that many countries across the EGDI spectrum do not have sufficient data to assess the e-government status of vulnerable groups or to identify critical gaps. The collection, analysis and application of relevant data are imperative for the public sector, as appropriate decisions cannot be made or actions taken if the needs of constituents are poorly understood. Three priority areas relating to data—disaggregated data, open government data and digital identity—are examined below.

Identifying variables and securing data that pertain to leaving no one behind can present two major types of challenges. The first challenge relates to the analytical and operational constraints surrounding data collection, analysis, monitoring and evaluation. Governments do not always have the financial resources or the administrative, technical or human capacities to undertake household or other types of surveys, and they may also face difficulties in identifying and reaching different vulnerable groups.⁷⁹ The second challenge is more fundamental in that it relates to the conceptualization of leaving no one behind and the identification of relevant measurement parameters. In a report released by the Open Data Institute, several SDG targets are used to measure leaving no one behind. Another approach used by some countries is based on the Multidimensional Poverty Index, which can be adapted to national or local contexts and conditions to better evaluate leaving no one behind. Surveys of human and social inclusion/exclusion and those that assess social capital and trust can also complement the measurement and operationalization of leaving no one behind. To a certain extent, the E-Government Survey assesses the availability of e-government services that address the needs of the most vulnerable segments of the population.

Disaggregated data

Very often, reliable disaggregated data on segments of the population that do not benefit from e-government or those who have experienced discrimination and exclusion are scarce or non-existent.⁸⁰ Most affected — and therefore most in need of data coverage — are those living in poverty, women, and others who have experienced marginalization.

Disaggregated data and analytics are at the heart of digital services operationalization, especially for vulnerable groups, and are essential for assessing e-government progress in leaving no one behind.⁸¹ Without data, vulnerable populations are invisible in the digital society. Uncounted individuals and groups can be further marginalized by their exclusion from statistics and administrative data. Caution should be exercised when dealing with data disaggregation as it relates to disadvantaged groups; while counting or tracking can reflect existing inequalities, it can also exacerbate them.⁸² The smart use of data and foresight will be key to understanding the challenges and needs of vulnerable populations and planning how services can be developed to accommodate their needs. Big data, real-time data and geospatial data constitute important sources of information and support in assessing and addressing the situations of the poorest and most vulnerable.

High-quality, timely, accessible and reliable disaggregated data are essential – but often missing, for the implementation and evaluation of e-government policies and initiatives aimed at ensuring no one is left behind, as such data highlight the challenges and needs of different population groups and guide Governments in the development of targeted solutions.⁸³ Gathering and processing data and designing and executing appropriate evidence-based policies will support the creation of responsive e-services. This approach can help reduce inequalities because it is focused on meeting self-identified needs; targeted e-services could, for example, serve youth by linking young people to decent work and employment opportunities or promote gender equality by facilitating women's access to the services they need most.

At this point, many countries have underdelivered on their pledge to help disadvantaged countries strengthen their data infrastructure; SDG target 17.18 gave countries until 2020 to demonstrate that serious efforts were being made to “enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts”.⁸⁴

There is a lack of longitudinal data on many e-government subdomains, including social components such as in e-health and e-education. Even without hard data, it is generally agreed that progress in e-government development has benefited those groups that are easiest to reach, while many of the poorest and most vulnerable have been left behind. While various studies have highlighted cases in which incentives were provided to specific disadvantaged groups, which then benefited most, these constitute the exception rather than the rule.⁸⁵ From a policy perspective, the lack of disaggregated data is problematic because there is little to no objective evidence to guide the design of targeted e-government interventions that could address the challenges faced by the vulnerable segments of society.⁸⁶ Where disaggregated data are available, evidence is likely to suggest that the most disadvantaged groups benefit less from e-government development than the rest of the population, contributing to widening inequalities. It is also concerning, based on the sparse data available, that during periods of uncertainty such as the COVID-19 pandemic, those living in poverty and other vulnerable groups tend to be at greater risk of social and economic exclusion.

Open government data

There are innumerable benefits associated with open government data (OGD)⁸⁷. For instance, OGD can stimulate innovation through people-centric analytics and applications, leading to the provision of services tailored to the needs of vulnerable groups.⁸⁸ Providing open data through an online portal, if implemented effectively, can enhance transparency and reduce the time and resources associated with public requests for data, allowing academics, businesses and civil society organizations that contribute to digital inclusion efforts to gain new insights into complex policy issues surrounding the principle of leaving no one behind. OGD provides important opportunities, and its impact on vulnerable groups and leaving no one behind should be further examined. However, it is essential for Governments to develop rigorous protocols for protecting the privacy of vulnerable groups and safeguarding the confidentiality of the information as appropriate.

With the availability of open government data, especially data relating to vulnerable groups, institutions can be held accountable. On the other hand, data may well be skewed against vulnerable groups because they are less likely to be included. Tracking government spending for vulnerable groups in sectors that provide essential services would provide important metadata on the number and demographic composition of those in danger of being left behind in development efforts.⁸⁹ Such data—disaggregated as needed—should be made available in an open data format to enhance accountability and transparency. The E-Government Survey tracks the availability of open data (in both non-machine-readable formats such as PDF and machine-readable formats such as XML) on expenditure in key sectors, including education, health, justice, social protection, environment and employment. Among the 193 countries surveyed, only 65 provide OGD on social protection in machine-readable formats, and 63 provide OGD on social protection in non-machine-readable formats.

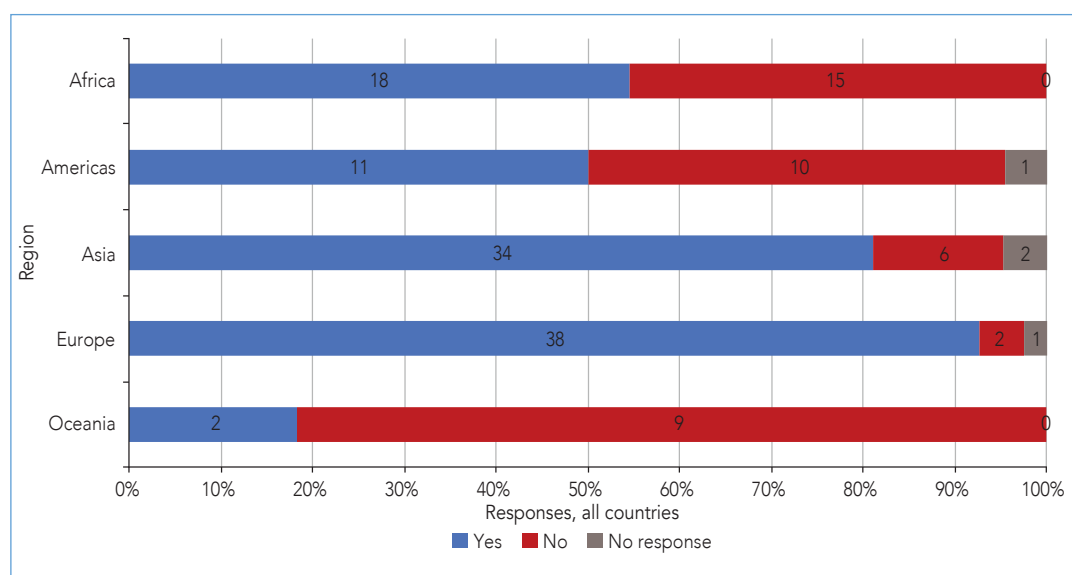
Digital identity

To utilize data to serve disadvantaged segments of the population and deliver effective e-services for all, it is first necessary to identify the individuals that make up each demographic. There are an estimated 1.5 billion people in the world who do not have official documentation to prove their identity,⁹⁰ and an estimated 2.5 billion are excluded from access to banking and financial services such as savings accounts and monetary loans.⁹¹ The aim of SDG target 16.9 is to provide legal identity for all, including free birth registration, by 2030. Standardized identification systems offer opportunities to meet this target and are essential for ensuring the inclusive distribution and efficient administration of digital health, finance, education and other e-services.

Countries are increasingly turning to digital identity systems as a foundational platform for other digital tools and services that help vulnerable groups. Civil registration and the establishment of a legal identity are preconditions for empowering vulnerable groups through data and ensuring that they benefit from the range of digital services available. MSQ findings for 2022 indicate that Europe has the highest proportion of countries with laws or regulations on digital identity (93 per cent), followed by Asia (81 per cent), Africa (55 per cent), the Americas (50 per cent) and Oceania (18 per cent) (see figure 4.14).

Digital identity is not only a prerequisite for the inclusive distribution and efficient administration of e-services but is also the key to accessing information and the benefits of development. People who have an officially recognized identity are more aware of and are better able to exercise their legal rights, have increased access to services, can make more informed choices, and are more likely to be engaged in e-government, including decision-making.⁹²

Figure 4.14 Number of countries with laws or regulations pertaining to digital identity



Source: 2022 Member States Questionnaires.

Box 4.3 Digital identify and social support for refugees in Poland

Since the outbreak of the war in Ukraine in February 2022, the Polish authorities have taken immediate action so that Ukrainian war refugees could apply for a Polish national ID Number which allows them to fully benefit from the assistance offered by the Polish central and local government units, such as gaining access to the national healthcare system and educational system under the same conditions as the Polish citizens. The process of assigning the PESEL identification number in a non-discriminatory way (i.e., it is assigned in the same way to Ukrainian citizens and to the Polish). The ID number, known as PESEL, was made available to Ukrainian refugees as soon as just three weeks after the war in Ukraine has broken out. Any refugee can register at any commune office by submitting a filled-in application form and a photograph. Ukrainian citizens who are over 18 years old can also create a [Profil Zaufany](#) (Trusted Profile), to allow them to use public administration services online as some services are available exclusively on the Internet. Within first weeks there were over 270k new Trusted Profiles registered.



4.4.2 Design

While important advances have been made in e-government over the past two decades, inclusive design has not received sufficient attention. Governments will continue to transition from traditional to digital modes of public services delivery, and those e-services that are not designed to facilitate inclusion will likely be underutilized by vulnerable groups, effectively denying them the rights and opportunities enjoyed by more advantaged populations in the hybrid digital society. E-government portals and services should be developed in a way that allows them to be used by as many people as possible, including the poorest members of the population, women and girls, older people, persons with disabilities, youth, migrants, refugees, and other marginalized groups.

Designing for inclusion, including e-inclusion, is critical for leaving no one behind, but it can also be a driving force for creativity in e-government. An important first step is recognizing that exclusion exists—largely because perceptions and solutions are driven by (often unconscious or unintentional) biases rather than by objective, data-driven evidence.⁹³ Once identified and acknowledged, exclusion should be seen as an opportunity to explore new ideas and inclusive designs, to learn from human diversity, and to put people at the centre from the beginning of the e-government development process. The principle of “solve for one, extend to many” could also be applied; as an example, designing for persons with disabilities could actually end up benefiting the general population.

E-participation and e-engagement

As a precondition, inclusive design requires input from the public, in particular those being left behind. This approach is aligned with SDG target 16.7, which calls for ensuring responsive, inclusive, participatory and representative decision-making at all levels. As the target implies, actions taken to assess or achieve inclusion should extend beyond the collection of public feedback. Using sex, age, disability status and population groups as key indicators to assess relative rates of participation in national and local institutions such as legislatures, public service and the judiciary and comparing them to national distributions (as set out in SDG indicator 16.7.1) can help public institutions identify gaps in representation and inclusion. Over the past two decades, a growing number of Governments have recognized the importance of e-participation, especially for underserved populations. In most regions and special country groupings more than half of the countries provide e-participation support for vulnerable groups; the two exceptions are Oceania (29 per cent) and SIDS (24 per cent) (see table 4.7).

Table 4.7 Countries that have e-participation measures or mechanisms in place for women and other vulnerable groups

		Total	Yes	No	Not applicable or no response	Yes	No
By region	Africa	27	17	10	0	63%	37%
	Americas	17	10	6	1	59%	35%
	Asia	40	28	10	2	70%	25%
	Europe	38	22	15	1	58%	39%
	Oceania	7	2	5	0	29%	71%
By special group	LDCs	25	14	11	0	56%	44%
	LLDCs	19	14	4	1	74%	21%
	SIDS	17	4	12	1	24%	71%
	Total	129	79	46	4	61%	36%

Governments are not seen to be inclusive unless active steps are being taken to include marginalized sectors in the planning and delivery of public services.⁹⁴ Public authorities and institutions should proactively reach out to the poorest and most vulnerable to engage them in shaping e-government policies and designing e-services that respond to their needs. This requires a mix of tools and approaches, with the choice of policy instruments partly determined by “whether or not the process is transparent, and stakeholders are involved”.⁹⁵ The openness of policymakers to promoting e-participation and seeking collective solutions is essential.⁹⁶ With the limited resources available, especially among countries at the low and middle EGDI levels, policy approaches must be innovative. Such approaches will succeed only if they are designed and implemented in a bottom-up integrated fashion, with the relevant communities and concerned government entities aligning their objectives and cooperating with one another to respond to the needs of vulnerable groups.

The availability of e-participation platforms does not always translate into broader or deeper participation.⁹⁷ In many countries, the utilization of e-participation mechanisms remains low. As shown earlier in figure 4.8, very few countries can show evidence of having had recent online consultations involving vulnerable groups, and even fewer countries have evidence indicating that public input is considered or incorporated in policy decisions on issues relating to vulnerable groups. There are more countries that have held consultations with persons with disabilities and youth (42 countries each) than there are those that have engaged with refugees/migrants (26 countries) or the poorest segments of the population (25 countries) (see table 4.8). Vulnerable groups should be engaged not only to be heard but also to be agents of change for building community resilience through e-participation. The value of public services is increased when people and non-governmental organizations (NGOs) can provide objective feedback on the realities surrounding services provision, as this helps to identify obstacles, call attention to gaps, and encourage pragmatic responses.

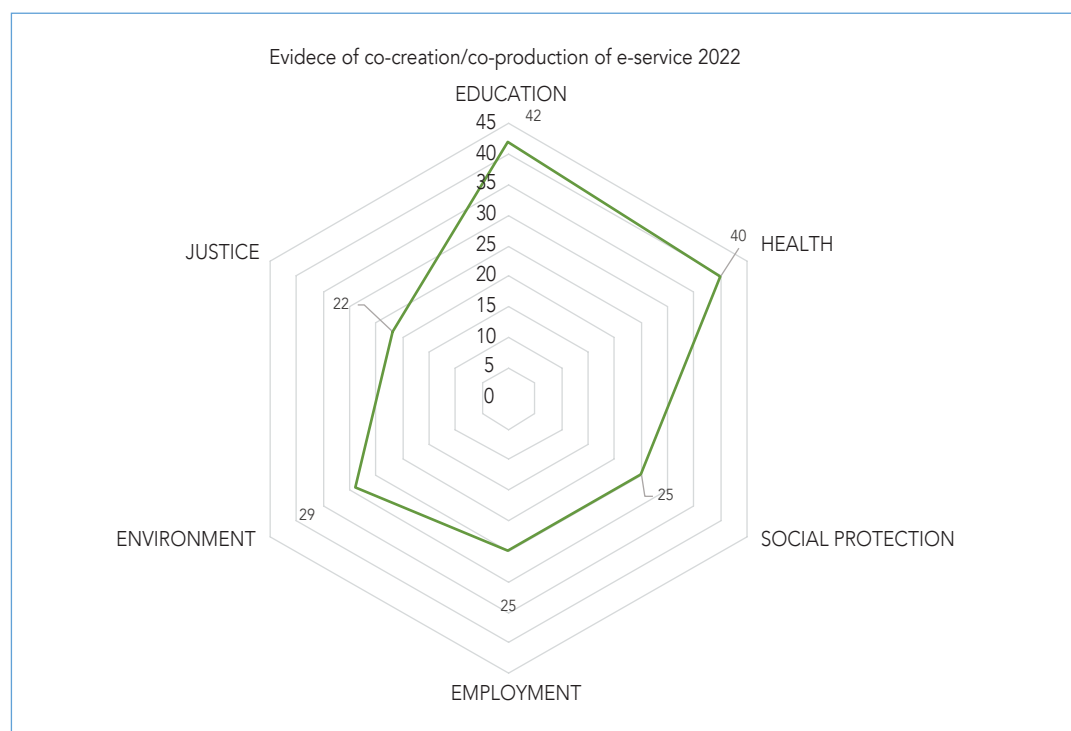
E-participation should complement rather than replace traditional forms of public participation in efforts aimed at ensuring no one is left behind; face-to-face meetings, paper-based communications, telephone calls, physical bulletin boards, and other hands-on modalities are still important. Strengthening the inclusiveness of vulnerable groups requires the provision of physical public space for the engagement of vulnerable groups, particularly at the local level. Public spaces are integral to successful community development. Public institutions can also combine digital and face-to-face approaches to facilitate complex discussions involving large numbers of people and incorporating a diverse range of views and interests. A number of Member States have successfully created digital spaces that have brought together offline and online participants to identify and explore key sectoral issues (such as those surrounding the current pandemic) through electronic deliberation and dialogue and to then communicate their concerns and findings back to the Government. Further

action is required to develop similar digital or hybrid modalities and supportive policies that promote engagement aimed at addressing the concerns of vulnerable groups.

Co-design and co-production of e-services

Bridging the digital divide is a massive undertaking, but it is achievable through the co-design, co-creation and co-production of e-services with other stakeholders, including the private sector and the community at large. Drawing from successful cases of collaboration, this could be initiated proactively by the Government to uncover new potential that could propel the inclusive design of e-services to greater heights in the future. Vulnerable groups themselves should be included in designing the projects and solutions that serve their communities. As shown in figure 4.15, this has yet to become a dominant trend; of the 193 countries surveyed, only 42 have made some headway in co-creating education e-services (the highest number among the six sectors assessed), and only 22 countries have engaged in the collaborative development of justice-related e-services (the lowest number).

Figure 4.15 Low numbers of countries engaged in the co-design, co-creation and co-production of e-services in six sectors



One of the reasons disadvantaged groups continue to be underserved in today's hybrid digital society is the distance between policymakers and the people they serve. Understanding and working closely with vulnerable groups and conducting ongoing research, experimentation and assessment are all essential for getting public policies and public services right in the digital age. Using behavioural science and in-depth user research to connect vulnerable populations with essential e-services can help these groups improve their quality of life and stay healthy and safe.

It is vital that vulnerable groups be involved in the development of e-services, as they offer a personal, experiential perspective on the challenges they face. Persons with disabilities, for instance, have unique insights about their disabilities and situations and should be consulted and actively involved

in the formulation and implementation of relevant policies, laws and services so that Governments can better understand their needs and how e-government can address them. In Pakistan, a multi-stakeholder working group on ICT accessibility⁹⁸ — comprising persons with disabilities, organizations working on disability issues, government organizations, and businesses and developers—successfully introduced a component relating to persons with disabilities in the draft IT policy of Pakistan.⁹⁹ In India, where some of the world's largest gender gaps prevail, the Sanchar Shakti programme is focused on the inclusion of women in project design.^{100,101} The co-design, co-creation and co-production of public services through inclusive engagement can reduce the potential for incorrect assumptions to become a stumbling block to successful implementation of a project and thereby improve outcomes.¹⁰²

Transforming the development and delivery of public services for the most vulnerable requires the input of a wide range of non-traditional actors — including community activists, philosophers, anthropologists, economists and sociologists — on the complex context of leaving no one behind.¹⁰³ There continues to be a disproportionate emphasis on building technocratic capacities in e-government agencies, and while programmers and data analysts are important, they do not have the skills, experience or expertise needed to design or administer e-services for vulnerable groups. A more effective, inclusive approach involves working with non-State actors on the design and provision of assistance and services for those left furthest behind. Governments need to make sure mechanisms are in place to ensure that there are adequate standards for public services and shared accountability among State and non-State actors for the delivery of high-quality services for all, with special attention given to the poorest and most vulnerable.

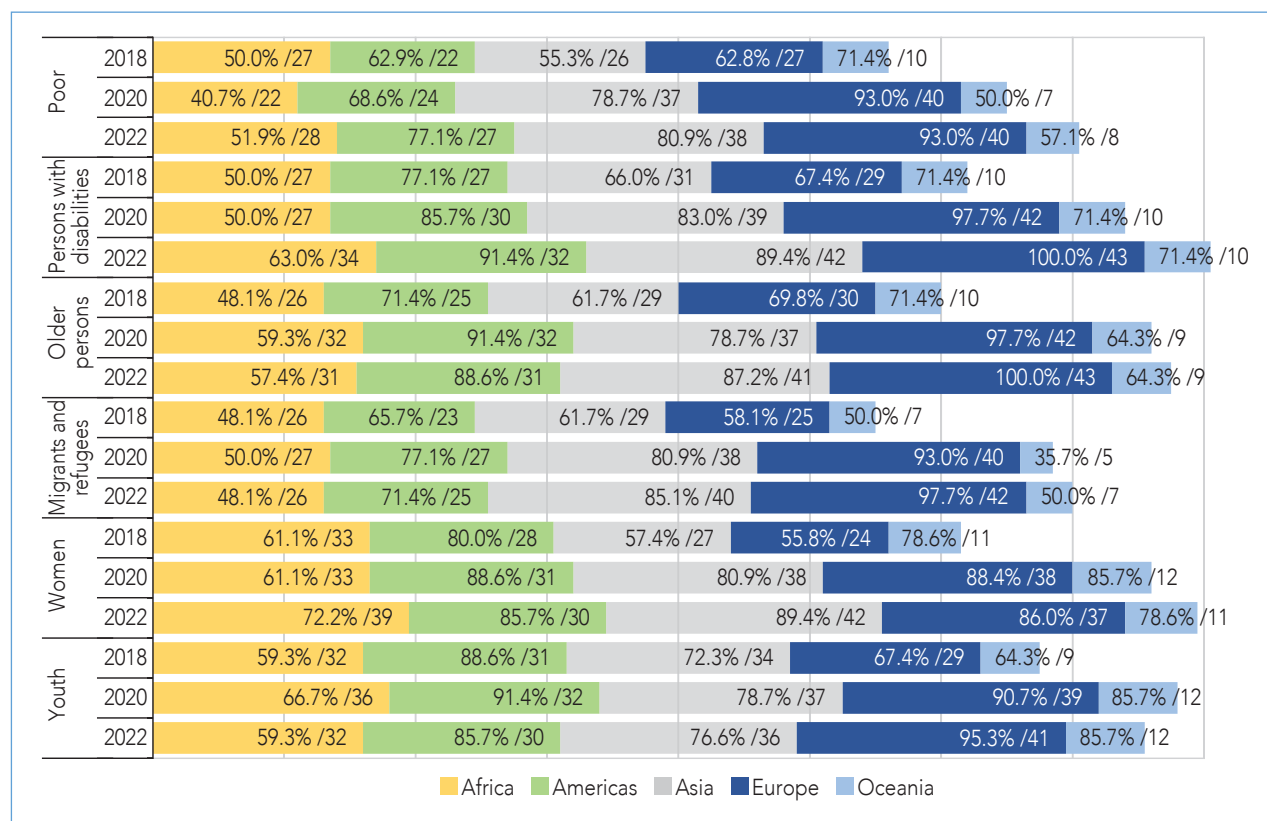
Targeted services for vulnerable groups

There is a global trend towards the adoption of digital-by-default, digital-first, invisible-government and one-stop-shop strategies, but such approaches contribute to the risk of leaving more people behind in the hybrid digital society. Not all excluded groups are confronted with the same barriers or are affected to the same extent, so targeted, localized and contextual approaches may be needed.

While some integrated policies should be universal in nature, benefiting all people, others may need to be more targeted, focusing on strategies such as affirmative action and solutions tailored to specific needs. For the latter, differentiated criteria such as specific sets of vulnerabilities or geographical variables can be used to determine the target recipients of intended services.¹⁰⁴ For example, specific e-services may be needed for young women, older persons with disabilities, or those dwelling in rural areas. Social protection policies aimed at promoting social integration and addressing discrimination should be designed for targeted groups to achieve specific outcomes and real change. These policies should be based on evidence drawn from disaggregated data on various marginalized segments of society, and robust implementation mechanisms should be established to ensure effective services delivery. Social protection measures such as digital cash transfer systems can be designed to reduce poverty and protect against a range of risks, vulnerabilities and life-cycle contingencies such as unemployment, old age, childhood, maternity or sickness. Figure 4.16 illustrates the steady increase in recent years in the number of countries providing specific information and/or e-services for all vulnerable groups except youth.

Increasingly, quality improvements in public services delivery are linked to service personalization and the use of predictive analytics to identify target populations.¹⁰⁵ Complex analytics and AI allow public institutions to better understand and address the needs of different segments of the population, including vulnerable groups. Governments utilizing these tools can acquire the information they need to develop tailored solutions such as personalized education for disabled persons or can use predictive analysis to develop precision health-care solutions for older people.

Figure 4.16 Progress made in the provision of specific information and/or e-services for vulnerable groups, by region, 2018-2022



Box 4.4 Social protection disbursements in Togo - through AI enabled by mobile data and satellite imagery

To alleviate poverty and hardship during the COVID-19 pandemic in Togo, AI enabled by mobile data and satellite imagery was used to ensure the quick and efficient distribution of \$22 million (in three monthly mobile phone payments of \$20 for men and \$22 for women) to 600,000 residents in urban areas.¹⁰⁶ This programme was made possible through a multi-stakeholder partnership between the Government of Togo, a philanthropic organization, and academia.



Recognizing and harnessing the transformative potential of AI in the public sector, while can have a significant impact in terms of delivering public value and ensuring inclusion. Just under half of the 138 countries responding to the 2022 MSQ indicate that they have a national AI strategy.¹⁰⁷ The breadth, depth and scope of the respective national AI strategies (including the role of AI in promoting inclusion) vary according to the objectives, expected outcomes and foreseeable impacts identified within each national context.

The trade-off between universality and targeting in policy development is often dictated by the availability of resources and the level of sustained effort required. When targeted services are integrated into a universal access strategy aimed at ensuring the provision of e-services for all, institutional coordination will be required at the policy design and implementation stages.

Web standards and assistive technologies

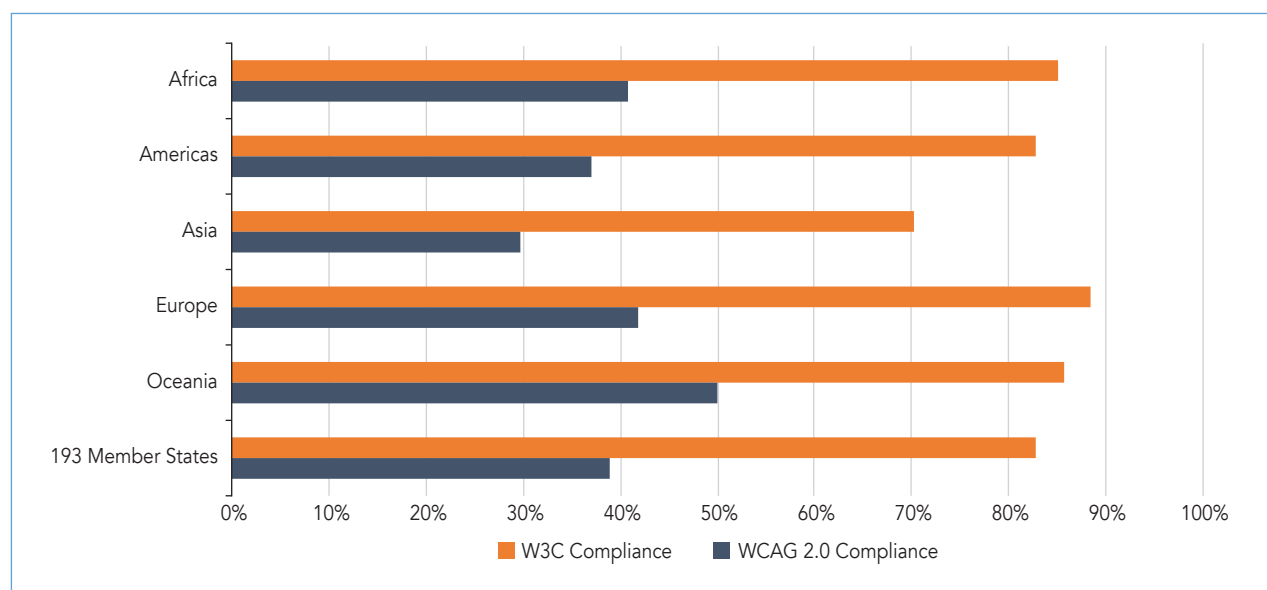
Given estimates that only 2 per cent of the 1.9 billion websites available globally are fully accessible to persons with disabilities, it is not surprising that most e-government portals are not fully accessible according to recommended standards.^{108,109} The sizeable accessibility gap closes the most vulnerable off from many of the benefits and opportunities e-government offers.

Web accessibility entails designing for people on the periphery, including those who may have physical or sensory disabilities (such as impaired vision, hearing or motor skills), specific emotional challenges (such as anxiety) or different cognitive capacities.¹¹⁰ Accessible websites may also benefit disadvantaged groups such as older persons or those with mobile-only or slow network connections. According to usability.gov, accessible sites use multisensory and multi-interactivity approaches that allow users to absorb digital content through multiple senses such as both sound and sight.¹¹¹ In Bangladesh, the Disability Innovation Lab was established through the Prime Minister's Office as a Service Innovation Fund project to support the creation, testing and commercialization of disability-inclusive products and e-services.¹¹² Accessible sites go beyond typical point-and-click services, integrating keyboard-based control and voice-based navigation tools.

The Internet technical community has recognized the importance of web accessibility since the first websites were developed in 1991, but this perspective has not been fully evident in e-government portal development. National portals that lack accessibility features will remain inaccessible for a significant share of the population. Inclusive design approaches that address accessibility imbalances have been enabled by technological advances over the past few decades, though it is generally acknowledged that creating accessible formats for some e-government services or types of disability may be technologically infeasible or impractical.

The United Nations E-Government Survey assesses the compliance of national portals with internationally recognized accessibility guidelines and relevant validity standards. Accessibility guidelines developed by W3C relate to web content, authoring tools and user agents. Version 2 of the Web Content Accessibility Guidelines (WCAG 2.0) stipulates that website content and interface components must be perceivable, operable, understandable and robust.¹¹³ It is important that the design of e-government websites be optimized to ensure broad readability and usability—which means that certain criteria must be followed when developing and incorporating accessibility features for people with disabilities so that they are able to operate the interface and take full advantage of the evolving content. As seen in figure 4.17, 160 national portals (83 per cent of the 193 countries surveyed) are compliant with W3C markup validity standards, but only 75 countries (39 per cent) are in compliance with WCAG 2.0 guidelines. Even in Europe—the top EGDl performer—only 18 out of 43 countries are WCAG 2.0 compliant.

Figure 4.17 Regional compliance with W3C standards versus WCAG 2.0 guidelines



Responsive web design

E-government services are accessed through a variety of devices. The number of people browsing the Internet using mobile tools such as smartphones and other handheld devices now exceeds the number accessing the Internet from desktop computers. With approximately 60 per cent of organic search engine visits occurring on mobile devices, it is becoming increasingly important to make sure e-government portals are set up to provide a good user experience regardless of the type of device used. One particular challenge in designing mobile-specific apps relates to the existence of different mobile operating systems (such as Android, iOS and EMUI). This incompatibility among operating systems, coupled with the limited availability and affordability of Internet services and mobile devices, can limit the use of e-government services among vulnerable groups.

The best way to address this need is to build a responsive national portal—one that utilizes a flexible web design layout that adjusts based on screen size, ensuring that all images, content and functions look the same, regardless of the type of device used. Adherence to such web standards usually enhances a government portal's cross-browser compatibility, responsiveness to the performance parameters specific to each type of device, and the possibility for seamless integration and interaction across different platforms. (See Box 4.5) As seen in table 4.8, the number of countries that have integrated responsive web design in at least one of their national portals increased from 146 in 2020 to 170 in 2022.

Table 4.8 Number of national portals integrating responsive web design, 2018, 2020 and 2022

	Number of countries		
	2018	2020	2022
Number of countries integrating responsive web design in national portals	144 (74.6 per cent)	146 (75.6 per cent)	170 (88.1 per cent)

Box 4.5 United Kingdom: Increasing Accessibility by Implementing Standards



The United Kingdom's Digital Inclusion Strategy sets out how government and partners from the public, private and voluntary sectors could collaborate to help as many people as possible become capable of using and benefiting from the Internet. The accessibility standards that the government has adopted mean that public sector organizations are legally obliged to ensure their digital offerings (on mobiles, websites and applications) meet agreed accessibility standards. The Service Manual is a set of guidelines and standards to help service teams develop, build and maintain digital services that will meet the Service Standard and be allowed to live on GOV.UK. The Digital Inclusion Evaluation Toolkit is a collection of resources designed to help any organization assess the impact of a digital inclusion project. The toolkit aims to enable teams to provide evidence on how successful a project has been at implementing change and show how a project could be improved or iterated to increase its impact.

Assistive technologies

The use of assistive technologies in e-government services provision serves persons with disabilities as well as individuals who are “temporarily able-bodied” (those with no disabilities at present); at one time or another, virtually all users are likely to benefit from accommodations such as larger font sizes and text-to-speech or speech-to-text facilities.¹¹⁴ Frontier technologies and the power of innovation offer tremendous opportunities for removing barriers for persons with disabilities and enhancing user experiences for those without disabilities. For instance, voice assistance with natural language recognition is a powerful enabler for assistive technology, but it can be used to empower all users—including but not limited to those with visual, hearing or motor disabilities—to engage productively in e-government and take advantage of the services offered. While the number of countries offering AI-enabled chatbox functionality in their e-government portals has increased significantly over the past several years, the total is still relatively low, accounting for just over a third of the 193 countries surveyed (see table 4.9).

Table 4.9 Number of countries providing AI-enabled chatbot functionality in their national portals, 2018, 2020 and 2022

	Number of countries		
	2018	2020	2022
Number of countries offering AI-enabled chatbot functionality in their national portals	28 (14.5 per cent)	58 (30.1 per cent)	69 (35.8 per cent)

Governments can also take advantage of other technologies and tools (including open software) designed to make the digital experience more accessible to persons with disabilities.¹¹⁵ For example, a new search engine called accessFind can help persons with disabilities find websites that are accessible to them;¹¹⁶ social media companies are experimenting with AI to help the visually impaired use their platforms;¹¹⁷ and device manufacturers are expanding their screen-reading software and mobile apps.¹¹⁸ Cloud computing has massive potential for the delivery of affordable and accessible services to older persons and persons with disabilities. Interoperability between assistive technologies and mainstream platforms has been a challenge but is one that may be overcome through cloud-based initiatives such as the Global Public Inclusive Infrastructure (GPII), which is supported by a consortium of academics, major tech companies, NGOs and individuals.¹¹⁹ By offering users who

face accessibility barriers due to disability, illiteracy, digital illiteracy or ageing the ability “to invoke and use the access features they need anywhere, anytime, on any device”,¹²⁰ initiatives such as GPII have the potential to significantly reduce the costs of assistive technologies for persons with disabilities across the world, especially in developing countries. There are also opportunities to tap into commercial technologies that are already familiar to users, such as Apple VoiceOver or Android TalkBack, when designing accessibility features in e-government portals.

There are some risks and potential disadvantages associated with assistive technologies; one research study showed, for example, that natural language processing models can perpetuate biases against persons with disabilities. There is a lot more work to be done to ensure that these technologies can be integrated seamlessly, ethically and inclusively in e-government services provision to enhance the lives of persons with disabilities. The burden of advocating for and facilitating accessibility has typically fallen on disabled persons themselves, and the default solution has often been to create special apps for persons with disabilities rather than making mainstream platforms accessible.

4.4.3 Delivery

In developing and delivering e-services for vulnerable groups, public authorities should be guided by the need for effectiveness, inclusiveness and accountability and by the core principle of leaving no one behind. Integrated efforts are required to ensure equitable access to digital services and information for everyone without bias or discrimination.¹²¹ This subsection focuses on three approaches for improving services delivery: blended/omnichannel delivery (offline-online integration); local e-government and community network support for leaving no one behind; and pilots, experimentation and sandboxes.

Blended/omnichannel delivery

As emphasized throughout this chapter, vulnerable groups are left behind when they do not have the financial resources, access or ability to take advantage of e-government services. At the extreme end of the spectrum, a complete lack of digital access may require the use of “analogue” measures to reach those who are offline. For example, in the arid regions of northern Chad, where residents are completely cut off from Internet and digital and mobile phone services, the International Organization for Migration has engaged traditional town criers and troubadours to spread information about COVID-19.¹²²

One recent trend involves offering blended or omnichannel e-services delivery, where integrated online and offline options are coordinated to provide a seamless experience for all users, including vulnerable groups. In blended e-government services delivery, the customer journey consists of a combination of online and offline touchpoints, where service agents are present digitally with shared data and synchronized services and customers can connect digitally, at home or through mobile delivery, or physically at strategically placed government services centres. The E-Government Survey indicates that there has been a gradual increase in recent years in the number of countries providing both online and offline channels through which residents can pay for public utilities and other e-services (see table 4.10).

Table 4.10 Number of countries with multichannel payment options for public utilities and other services, 2018, 2020 and 2022

	Number of countries		
	2018	2020	2022
Number of countries offering the option to pay for public utilities and other e-services via online and offline channels	131 (67.9 per cent)	133 (68.9 per cent)	143 (74.1 per cent)

Local and community networks and intermediaries

Across different parts of the world, people living in rural areas are less likely to use e-services than those residing in urban areas.¹²³ Many low-income countries are still underdeveloped and have large rural populations. Although digital coverage reaches many rural areas, geography and population density can make it economically unviable for telecommunications companies to set up the necessary infrastructure for all rural areas. Without coverage or network connectivity of sufficient quality, rural residents are likely to be excluded.

Empirical evidence indicates that local authorities are typically the best placed to understand and respond to the needs of the poorest and most vulnerable. They are also more likely to take a holistic approach to development (unlike national sectoral ministries) and are easier to hold accountable. However, expanded responsibilities require a corresponding expansion in resources, capacities and levels of authority; as this can take time, a carefully staggered approach is needed for the devolution of digital government responsibilities to local authorities. Fiscal reform and financial instruments may also be needed, as some authorities are in a position to mobilize resources, while others are not.

Issues can arise if local e-participation strategies are not carefully designed; one problem that may emerge is the dominance of vested interest groups and traditional elites.¹²⁴ This dynamic can make the voices of the vulnerable even harder to hear. To achieve balance, it is essential to exercise great care in the design and monitoring of such strategies, but it is also important to build the capacities of local authorities and civil society organizations and support social mobilization. From the outset, digital government agencies at both the local and national levels need to be fully representative of all the different segments of the population they serve. This is critical if the voices of the poorest and most vulnerable are to be truly heard.

The provision of targeted services at the individual and community levels is gaining traction, as is the targeting of socially disadvantaged groups through multiple channels. Research indicates that the most inclusive e-government practices are observed at the local or regional level. This reinforces the notion that efforts aimed at leaving no one behind are more effective if they are tied to a context-specific approach in which the geographical, physical, socioeconomic and cultural environments for specific target populations are taken into account.

To reach the poorest and most vulnerable populations, national and local government authorities may need to build partnerships with private sector entities and civil society organizations and engage with vulnerable groups through intermediaries or representatives that work more closely with these communities.¹²⁵ Non-governmental actors can play a complementary role, serving as government surrogates or proxies by delivering basic public services to disadvantaged communities where Governments are too weak, too far away or otherwise unable to provide such services.¹²⁶ Civil society organizations can also act as an invaluable conduit for communication, providing accurate information on the circumstances and needs of vulnerable populations.¹²⁷

Governments will sometimes fund programmes and establish eligibility criteria but rely on NGOs or commercial entities for implementation. There is a need for robust legal, regulatory and fiscal frameworks that allow agility in certain kind of projects to support cooperative efforts aimed at leaving no one behind. Partnerships with NGOs and businesses require public institutions to be appropriately equipped and willing to work with non-State actors. Steps must be taken to ensure that all partners are actively engaged in policy implementation and decision-making and in identifying common or win-win goals. Efforts should be made to align incentives and build trust by, for example, initiating participatory dialogues or forming alliances with social movements and parliamentary committees or political parties. It is important to set up accountability mechanisms to produce meaningful results for the most vulnerable groups and the general public.

Pilots, experimentation and sandboxes

Sandboxes and experimentation are two relatively new approaches that have proven to be effective in creating a conducive, contained environment where Governments can partner with private sector and other relevant stakeholders to test technologies in a controlled space with a small sample group before launching them at scale — which allows them to dramatically reduce costs and limit the chances of failure and negative impacts.¹²⁸ Through sandboxing, experimentation, and collaboration with academia, think tanks, the private sector and civil society, Governments can better engage in systems thinking, examining the linkages and interactions that could best leverage the potential of digital government for leaving no one behind.

Experimentation and sandboxing can effectively capture the knowledge and perspectives of beneficiaries, produce a better understanding of the complex and less visible realities of excluded persons, and contribute to transformative change with fewer resources and reduced risks, but there are other solutions that promise faster gains. The minimal viable product approach is a development technique in which minimal resources are used to create a basic, rough, low-tech or low-fidelity prototype that is then tested in trials with selected groups of users. The potential for supporting vulnerable groups using this type of approach is largely untapped. In practice, this would involve running a small pilot test of how something might work, assessing the outcome, and making adjustments and improvements before broadening usage for the targeted group. This would require extensive research, analysis and follow-up, including deep inquiry to identify gaps and challenges, mapping user journeys through data collection and analysis, rapid prototyping through experimentation and minimum viable product testing, and final product development and delivery. It would be important to approach delivery holistically by contextualizing the nuances of the local community—including gender, cultural, religious and power dynamics—which would be possible only through more effective e-participation and e-engagement. Investing in sandboxes and minimal viable product approaches represents a solid strategic decision for policymakers, but it is important for institutions allow failures in pilots and experimentation, as the process of trial and error offers valuable learning opportunities.

Advances in AI and other technologies have made it possible to replicate complex, human-like computational abilities and interactivity, which may ultimately lead to a phasing out of traditional modes of public services delivery; while this shift is positive in many ways, it may also result in some vulnerable groups being left further behind. In digital government development, it is important to adopt data, design and delivery approaches that address the challenges and needs of all people, especially those who have historically been left behind (often as a result of deeply embedded intergenerational inequalities).

4.5 Policy messages

Global efforts to achieve sustainable development are being undermined by growing uncertainties and challenges deriving from economic volatility, stagnant growth, rising unemployment (especially among youth), increasing inequalities, chronic poverty and famine, ageing, migrant and refugee concerns, the effects of climate change, and unexpected crises such as the COVID-19 pandemic.¹²⁹ The overlapping and sheer relentlessness of these challenges can be overwhelming, and vulnerable groups are always disproportionately affected. Digital solutions can play a key role in moving society forward, but stopgap measures are not enough; it is vital that Governments adopt a comprehensive, deliberate and integrated approach to leaving no one behind in the hybrid digital society.

While all countries have expressed support for the 2030 Agenda and have pledged to leave no one behind, key questions remain about how to establish priorities and identify areas of urgent need and how to make pragmatic decisions and take action in contexts in which information is limited. While digital government has enjoyed political popularity, as it has given Governments a chance to deliver on promises of a better future, it has failed to live up to its full potential, as many people are still being left behind. There is a need for creative and inclusive approaches to e-government, with particular attention given to adopting forward-looking policies and regulations, developing innovative financing solutions, establishing strong and flexible infrastructure and content platforms, forming strategic partnerships, and establishing effective business models and accountability mechanisms in order to ensure that no one is left behind in the digital society.

4.5.1 Recognizing that the new face of inequality is digital

The new face of inequality is digital, and e-government can serve as an equalizer—but only if it is accessible to all members of society. The urgent need for digital inclusion is perhaps best illustrated by the circumstances surrounding the COVID-19 pandemic. During this period, digital government has increasingly replaced physical interactions and transactions between public institutions and people, so excluded communities have lacked support and access to crucial updates on the COVID-19 situation, leaving them more vulnerable to misinformation and the disease itself.

Those who are digitally included have easy access to government services and save time when using them. For government institutions, delivering services digitally is cheaper and more efficient. Inclusion in e-government means that all individuals are able to utilize digital platforms that optimize, automate and accelerate the provision of traditional public services. Digital inclusion is no longer a privilege; it is a necessity.

Support should be provided for vulnerable groups that are excluded from mainstream social protection programmes—and for the development of solutions that facilitate digital inclusion for these groups. Viet Nam offers incentives such as tax savings, concessional loans, and other support for the research, manufacture and production of products and services that enable persons with disabilities to access digital services. The country also does not impose import taxes on assistive devices for persons with disabilities.¹³⁰

4.5.2 Identifying barriers linked to access, affordability and ability

The digital barriers faced by vulnerable groups are often complex and difficult to comprehend, in part due to the sparsity of relevant data. It is generally agreed, however, that e-government exclusion does not derive solely from the lack of Internet access.

A broader approach to assessing and addressing barriers to e-government focuses on access, affordability and ability. These indicators can be used not only to identify the extent of vulnerability and digital inclusion, but also to inform proactive preventive efforts and the development of targeted solutions. The availability of detailed data on digital access, affordability and ability can help developers address specific e-government design and implementation gaps and thereby increase overall utilization rates and user satisfaction. This is not a comprehensive strategy in and of itself, as Governments need to consider a multitude of other factors, including social norms, personal security, and privacy issues, in formulating policies for universal e-government access.

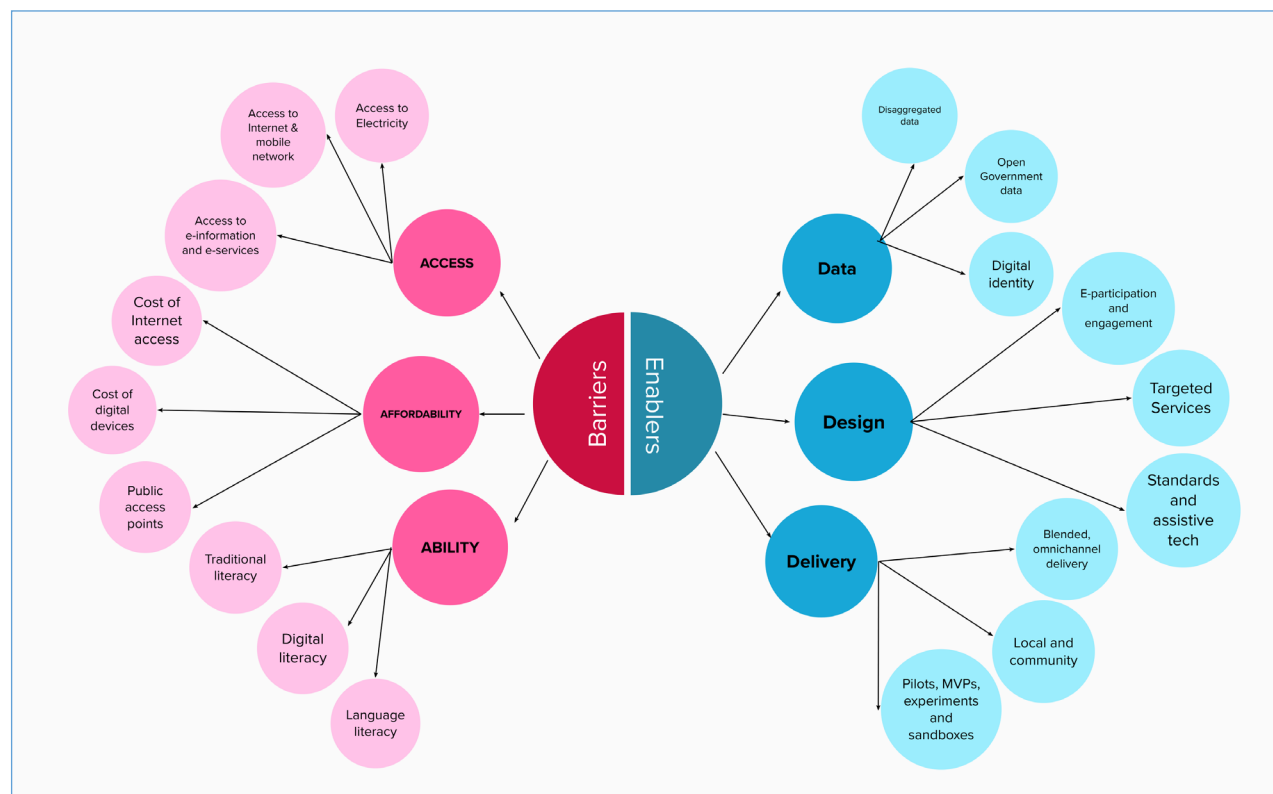
4.5.3 The integrated roles of data, design and delivery in shaping inclusive e-government

Leaving no one behind in e-government cannot be achieved by any one sector, institution or set of actions. Even when there are deliberate efforts to serve vulnerable groups, the lack of data and research, thoughtful design and inclusive delivery will result in the development of miscontextualized solutions and unscalable services. Leaving no one behind also requires complex coordination across ministries, departments and subsidiary entities, as digital initiatives are typically multifaceted; those relating to land development and social protection, for example, require multiple well-coordinated layers of input. Digital government should address than exacerbate existing structural inequalities.

The integrated e-government framework proposed in this chapter focuses on improving data, design and delivery (enablers) to address barriers relating to access, affordability and ability in order to ensure that no one is left behind (see figure 4.18). The data-design-delivery framework is dynamic, integrating the evolving tools and technologies of the digital age, and promotes thoughtful, evidence-based e-government development at all stages to ensure that public services are accessible, affordable and user-friendly for everyone in society.

While data, design and delivery each play an important role in shaping policy responses and digital government, these elements are meant to be addressed synergistically and not in isolation from one another. Governments using a combined approach can establish a solid path to inclusiveness, leveraging this integration to support collaboration across public institutions and sectors. This shared, intentional focus on three key priorities can help bring government agencies closer together, promoting greater alignment through, for example, the sharing of data, agreed design standards, and a common, integrated delivery platform. With a joint strategy for strengthening data, design and delivery, Governments can avoid silo approaches to e-government and will be better able to integrate and coordinate efforts among different sectoral agencies for the delivery e-government services to all segments of the population. This integrated approach must also be forward-looking so that actions taken now are designed to produce long-term benefits and prevent future digital gaps; examples might include investing in digital infrastructure in rural locations, building capacity in digital literacy, and providing vulnerable groups with the twenty-first century digital skills they will need for the jobs of the future.

Figure 4.18 An integrated framework for e-government: strengthening data, design and delivery (enablers) to address barriers relating to access, affordability and ability



4.5.4 “Leaving no one behind” as the guiding principle for e-government development

Activating the integrated framework requires a well-developed policy framework supported by strong political leadership and the requisite resources. The policy component legitimizes and formalizes the data-design-delivery approach but is also meant to ensure that a strong institutional framework exists to provide ongoing support. The policy framework must reflect explicit recognition of the interlinkages between economic, social, environmental and cultural challenges and should support an institutional set-up that eschews the silo approach to policy and action and instead supports policy alignment and collaboration.¹³¹ A strong, clear vision is required as a first step to support the broad strategy shift towards leaving no one behind in e-government. With that vision, Governments should focus on strengthening institutional capacity, ensuring greater transparency, and facilitating broad sectoral involvement in transitioning to full digital inclusion.

It is recommended that “leaving no one behind” become the operational principle guiding policy development and implementation in e-government and the public sector. At the policy and regulatory level, Governments should adopt “inclusion by design”, “inclusion by default” or “inclusion first” strategies to counter the current default emphasis on “digital first” or “digital by default” strategies in e-government. As highlighted earlier, it is important for institutions to acknowledge diversity and recognize that exclusion exists as a prerequisite for activating the principle of leaving no one behind. While technology can be a catalyst for inclusive digital development, it is the combination of effective policy and institutional support that drive the digital transformation towards universal access for all. Policymakers can synchronize policy measures where linkages between various groups exist.¹³² Inclusive e-government policies may focus on one or multiple barriers (access, affordability

and/or ability) that may shift over time and require appropriate adjustments in the areas of data, design and delivery. An integrated approach is necessary because there is a great deal of overlap and interdependence among the variables linked to barriers, enablers, e-government development, and leaving no one behind; for example, building digital ability is irrelevant if the required infrastructure is not available for a certain locality or community, and immigrant integration policies and programmes will likely need to be aligned with programmes and policies that address the public service needs of the general population.

A whole-of-government approach that integrates multilevel, multisectoral and multidisciplinary strategies and partnerships is needed for the implementation of inclusive digital government. Top-down and bottom-up approaches should be combined to better understand and address the e-government needs of the most vulnerable. Top-down legislative approaches impose direct obligations on those producing e-government products and services to ensure accessibility, and bottom-up policy approaches include non-discrimination guidelines that explicitly cover the accessibility of e-services. Steps should be taken to ensure that measures and policies adopted in one area do not undermine objectives in another area. For instance, e-government policies for micro, small and medium-sized enterprises need to be screened to ensure that they do not have a negative impact on the poorest and most vulnerable segments of society. This must be accompanied by a monitoring, evaluation and learning (MEL) framework.

Governments need to take the lead in driving the strategic shift towards leaving no one behind and in managing the change in mindset that will need to occur if this new approach is to gain traction. Some countries have set up a national agency to oversee the transformation process. For example, Malaysia has established a digital inclusion council;¹³³ over time, as digital inclusion grows, this council may shift its focus to loftier goals such as national digital readiness, similar to the Smart Nation initiative in Singapore.¹³⁴ Some countries have implemented targeted policy and institutional reforms and measures to address the limited participation of youth in policymaking; the Republic of Korea, for example, has created a national youth congress and has adopted legislation aimed at giving youth a voice in the public discourse.¹³⁵ Enhanced youth engagement opens the door to increased involvement in policy discussions and input, which can in turn strengthen the responsiveness of Governments to the needs of youth in the development and delivery of public services.¹³⁶

Finally, there is a need to mobilize resources, build capacities, create sustainable financing frameworks, and leverage national research and innovation agendas to achieve universal digital inclusion so that no one is left behind. The task of ensuring that adequate financial, political and human resources are available to meet these overarching goals can be shared by local and national governments, and regional or global support may be available as well. Activating “digital inclusion by design” and “leaving no one behind” strategies requires that policy choices be made sooner rather than later to remove the barriers vulnerable groups face in terms of digital access, affordability and ability using the integrated framework for optimizing data, design and delivery. Without these policy goals and interventions, leaving no one behind will enjoy limited or uneven success—or remain in the realm of rhetoric.

4.5.5 Leaving no country behind in e-government

The challenges associated with advancing e-government are normally more acute and persistent for countries in special situations, including LDCs, LLDCs, SIDS and countries in post-conflict situations. Low productive capacity and structural insufficiencies such as the lack of digital infrastructure and limited access to technologies continue to challenge public institutions in such areas. These countries are often disproportionately impacted by global crises such as the COVID-19 pandemic, and the increasing effects of climate change also place burdens on public institutions. The geographical constraints of LLDCs result in greater dependence on bordering countries for trade and infrastructure development. For SIDS, intracountry and inter-community isolation hinders the flow of information

and public services, which also poses challenges for public institutions. Countries in post-conflict and post-disaster situations face enormous challenges at multiple levels that can undermine progress towards the SDGs and put them at risk of being left behind. Most countries emerging from conflict do not have sufficient capacity to rebuild public administration through digital transformation. The critical lack of resources and “brain drain” (human capital flight) are compounded by the absence of public trust in government.

Most of this chapter has focused on the digital exclusion of vulnerable population groups, but as the foregoing illustrates, being left behind is a risk that may be faced at the whole-country level as well. This is significant, as while Governments with sufficient resources can pursue digital inclusion strategies by shifting priorities and changing mindsets, vulnerable countries lack the basic foundations for pursuing digital development, even if the will is there. Just as no one should be left behind, so should no country be left behind; therefore, special attention must be given to the profound challenges faced by public institutions in countries in special situations. There is a need for more international support, including through South-South and triangular cooperation. While countries in special situations face some unique challenges, there are many common challenges and strategic objectives they share with the rest of the world. Many opportunities lie ahead for enhancing partnerships and capacity-building and for strengthening international and regional cooperation aimed at leveraging advancements in digital government to achieve the development objectives embodied by the SDGs.

Bilateral and multilateral collaboration can facilitate knowledge sharing, policy alignment, and the transfer and replication of best practices. Collaboration at the global and regional levels has led to important advances in e-government development and coordination and has strengthened the contribution of digital government to sustainable development. Collaboration takes many forms and can be initiated at multiple levels. Some collaborative efforts and partnerships have been facilitated by the United Nations Department of Economic and Social Affairs and other agencies through mechanisms such as the Internet Governance Forum, the Multi-stakeholder Forum on Science, Technology and Innovation for the SDGs (STI Forum), and the World Summit on the Information Society (with special attention given to the implementation of action lines, including ICT applications relating to e-government, e-health, e-learning and other key areas).¹³⁷ Other collaborative structures have been created by individual countries; Singapore, for example, initiated the Digital Government Exchange, which brings together CIOs and digital government leaders from around the world.¹³⁸ The expansion of existing partnerships and the launching of new partnerships with international organizations, regional development banks, and individual developed countries are needed to mobilize financial and human resources for more strategic ICT and e-government development to ensure that no country is left behind.¹³⁹

4.6 Conclusion

In the hybrid digital society, digital development and inclusion are important, but they are part of the broader framework for sustainable development and not end goals in and of themselves. While technology can be a transformative factor in serving the most vulnerable groups, addressing the deeper, interlinked problems of the digital age will require solutions that extend far beyond digital technologies. It will take time to achieve the cultural shifts and digital mindset needed to take optimal advantage of e-government and other digital offerings. For many reasons, the digital component of e-government should be complemented by analogue approaches such as hotlines, call centres, in-person service centres, and even house visits so that no one is excluded.

One of the key lessons learned during the COVID-19 pandemic is that the future is hybrid and not digital; in other words, the primary objective is not digital development but rather supporting human development through digitalization. Without this distinction, there is a risk of dehumanizing society through technology, as exemplified by the replication of more human-like public services through

rapid advances in AI. It is important for Governments to keep sight of the fact that advances in technology and e-government must ultimately serve the wider goal of supporting sustainable human development—and leaving no one behind. Digital government services will never fully replace human interaction; in inclusive e-government, technologies should not constitute the only channel of communication—even if all barriers relating to access, affordability and ability have been eliminated. Policy decisions that affect humanity should continue to be made by humans, with e-government accountability given careful consideration.

There are policy dilemmas that may arise in the process of e-government development that reflect genuine concerns about how far countries should go to achieve universal digital inclusion and the defining goal of leaving no one behind. To what extent should countries pursue e-government for all, and how does this tie in with ensuring equitable social progress among the bottom 1 per cent of the population? Given that facilitating e-participation and digital inclusion are time-intensive and resource-intensive processes, how can Governments measure returns on investment and try to strike a sustainable balance in efforts to improve the overall efficacy of public services delivery and SDG implementation and strengthen the engagement of vulnerable segments of the population? There are no easy answers to the complex questions and issues that will arise as Governments commit to the pursuit of universal digital inclusion. Careful deliberation will be required, and solutions will need to be tailored to specific local needs, contexts and circumstances, but what is most important is to not lose sight of the overarching goal of leaving no one behind in the hybrid digital society.

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