

Mobilizing e-government to build resilient societies: preconditions and enabling environment

1.1 Introduction

At the United Nations Summit held in New York in September 2015, world leaders adopted an ambitious road map to guide the sustainable development of all countries over the next 15 years. This new Agenda – entitled “Transforming our world: the 2030 Agenda for Sustainable Development” – defines 17 Sustainable Development Goals (SDGs) and 169 targets to stimulate actions for people, planet, prosperity, peace and partnerships. With the adoption of the 2030 Agenda, a common transformative vision based on solidarity, accountability and shared responsibility, has been guiding governments, civil society, the private sector and other stakeholders in their efforts to eradicate poverty and promote a better world for all. The SDGs have been formulated to stimulate action over the next 12 years.

Indeed, the 2030 Agenda envisages a world in which “democracy, good governance and the rule of law, as well as an enabling environment at the national and international levels, are essential for sustainable development, including sustained and inclusive economic growth, social development, environmental protection and the eradication of poverty and hunger” (A/RES/70/1, para. 9). The Agenda explicitly highlights in Goal 16 the need to build peaceful, just and inclusive societies, which provide equal access to justice and are based on respect for human rights (including the right to development), effective rule of law and good governance at all levels, and transparent, effective and accountable institutions” (A/RES/70/1, para. 35).

It is widely agreed that deploying e-government in support of good governance is essential for building effective, accountable and inclusive institutions at all levels, as called for in Goal 16, and for strengthening implementation of Goal 17, both of which underpin achievement of the SDGs as a whole. In addition, the 2030 Agenda¹ underlines the strategic benefits offered by the technology revolution: “The spread of information and communications technology and global interconnectedness have great potential to accelerate human progress to bridge the digital divide and to develop knowledge societies, as does scientific and technological innovation across areas as diverse as medicine and energy.” However, for this to occur, several preconditions need to be in place, as outlined by the World Bank in its report on Digital Dividends.²



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This chapter sets out the conditions necessary for e-government to support sustainable and resilient societies, and it outlines ways in which e-government can support implementation of the SDGs. It also examines the challenges, risks and vulnerabilities associated with e-government and the readiness of countries and regions, and governments at all levels to confront them. Despite recent progress, there are heightened dangers of a more troubled world, owing to deepening and increasingly interconnected risks⁴. These include growing threats to social cohesion and economic prosperity, as well as planetary risks related to climate change and environmental stress. It is also ever more important to meet the special needs of the poorest and most vulnerable, by empowering them through a range of targeted policy measures. The chapter closes with a brief review of lessons learned and conclusions.

1.2 Preconditions for e-government to accelerate the building of sustainability and resilience

1.2.1. Political commitment and public trust in e-government

The 2030 Agenda encouraged all United Nations Member States to “develop as soon as practicable ambitious national responses to the overall implementation of this Agenda”. The Agenda notes that it is up to each Government to “decide how [the] aspirational and global targets [of the SDGs] should be incorporated into national planning processes, policies and strategies.” It specifies that national responses towards implementation can “build on existing planning instruments, such as national development and sustainable development strategies”. At the same time, the SDGs and the commitments contained in the Paris Climate Change Agreement, the SAMOA Pathway, the Addis Ababa Action Agenda, the Sendai Framework for Disaster Risk Reduction and other UN-lead agreements are mutually reinforcing. Thus, they should be implemented in a complementary and synergistic way. Institutions need new capacities and knowledge to provide integrated support to implementation and to leave no one behind.

Many governments have already made good progress in adapting the SDG targets to their national circumstances and priorities and incorporating them in their policies and strategic development plans, where applicable. By the United Nations High-Level Political Forum on Sustainable Development (HLPF) in 2016 and 2017, 65 countries had carried out the first and second voluntary national reviews (VNRs). They will be followed by 47 more countries, which will present their national reviews in July 2018 during the annual HLPF.⁵ That requires that national strategies, including those dealing with Information and Communication Technologies and e-government, adopt an integrated approach to comprehensive and balanced development. National plans and strategies set the overall direction and priorities and form the first opportunity to express SDG efforts in a coherent way at the national level.

Member States also will have to adapt their institutions, engage local governments, parliaments and other actors as they identify follow-up and review structures. The SDGs, as an integrated framework, call for whole-of-government and whole-of-society approaches, and many countries have been moving in this direction. Good practices, lessons and challenges are already emerging.

Based on a recent research conducted by UN-DESA⁶, existing national development plans and national sustainable development strategies provide a framework for implementation of the 2030 Agenda. (See Box 1.1.). These plans and strategies guide countries’ overall development and are not solely dedicated to SDGs.

Box 1.1. Compendium of national institutional arrangements for implementing the 2030 Agenda for Sustainable Development

In order to implement the 2030 Agenda for Sustainable Development and the SDGs, many countries have been adapting their policy and institutional frameworks and are actively mobilizing all parts of government, parliaments, supreme audit institutions, as well as non-state actors. The compendium of national institutional arrangements for implementing the 2030 Agenda reflects institutional approaches taken by countries facing different contexts and circumstances. The compendium aims at facilitating exchanges on institutional practices and lessons learned among governments and other stakeholders, thereby helping them to support the realization of the SDGs. The compendium, prepared by the Division for Public Institutions and Digital Government of the United Nations Department of Economic and Social Affairs, initially covered 22 UN Member States, which chose to present reviews of progress on the SDGs at the 2016 HLPF, and then was expanded to cover additional 43 countries that presented Voluntary National Reviews in 2017. The information collected for each country is classified in nine categories: (i) national strategies and plans; (ii) national institutional arrangements; (iii) local authorities; (iv) parliament; (v) engaging and equipping public servants; (vi) civil society and the private sector; (vii) monitoring and review; (viii) supreme audit institutions; and (ix) budgeting. The research was conducted between August 2016 to December 2017. All the countries covered in the report had an opportunity to review the information that concerned them, and to provide feedback, inputs and comments through their representatives to the UN in New York.



United Nations
Department of Economic
and Social Affairs

Source:
<http://workspace.unpan.org/sites/Internet/Documents/UNPAN97468.pdf>

1.2.2. National policy alignment

It is recommended that governments exploit the potential of ICTs through coherent public sector-wide policies closely aligned with the broader national policies aimed at delivering the SDGs. Being successful requires a whole-of-government approach across ministries and agencies and between levels, as well as partnerships with non-government actors. That approach must be supported by a high-level political will, an example of which is an effective cross-government institution with clearly earmarked financial resources and decision-making powers. Maximizing the potential of ICTs also demands appropriate infrastructure for interoperability and digital transactions across the public sector, dependent on common standards, data sharing, highly skilled staff, as well as sound organizational capacity.

There are many good examples from around the world where governments are applying such strategies. Azerbaijan, for instance has adopted a whole-of-government approach to modernize service delivery in a joined-up manner to change the mindset of civil servants through human resources and capacity building. Political will has proved critical for that strategic change of direction. It is also essential to achieve public service impacts through deployment of the full range of channels for service delivery, both online and offline, designed to reach the entire population, wherever they are and wherever they live⁷. That relies on improved accountability and inclusive public participation, in which all parties know their rights and duties. ICTs are essential tools to making that happen.

In some countries, such as Colombia, e-government is used to improve governance, equity and peaceful reconciliation to help heal the wounds of years of internal conflict and crime. Often, the only ties between the citizens and State are through public services, so if those are non-existent or of poor quality, trust rapidly disintegrates and progress towards sustainable development falters. To achieve such improvement, it is important that governments attempt to change the mindset, not only of civil servants, but also of its citizens. Indeed, the two are mutually reinforcing. For example, a strong focus is required on open and participative government, with institutional commitments to, among others, inclusion and gender sensitivity. Both of these commitments are themselves wellsprings of innovation and improve quality of life for the citizens.⁸

The Survey will explore ways to move in that direction. The theme will be examined against the backdrop of an analysis of the trends in e-government development worldwide.

1.2.3. About resilience and SDGs

The HLPF in 2018 will focus on the theme of “Transformation towards sustainable and resilient societies” as a precondition to achieving SDGs. Strengthening resilience entails ensuring that people, societies and institutions have the resources and capacities to anticipate, reduce, absorb and adapt to various shocks and risks⁹. It also requires measures that target the poorest and most vulnerable and strive to empower them through employment and social and other policy measures. Resilience in all dimensions of sustainable development thus includes a range of strategies that go well beyond systems and emergency plans, such as bolstering public services, improving social safety nets, effective macroeconomic and urbanization policies.

Governments have the critical responsibility to build resilience and assist those most affected by possible shocks in pursuing the SDGs implementation. They must find ways to anticipate disasters and lower their impact. They themselves must prepare for risks of various kinds and adapt to and reduce their own vulnerability and exposure. They need to manage emergency responses, seamlessly perform essential functions and deliver services, and recover rapidly from crises while incorporating lessons learned into their institutions and public administrations.

Shocks of various kinds can derail progress towards realizing the vision of the 2030 Agenda. Strengthening resilience is at the heart of all SDGs and is thus essential for sustainable progress.

Digital technologies are often used by governments to respond better to disasters and other shocks and improve community resilience. Geographic Information Systems (GIS), open data, eGovernment services, and emerging cutting-edge technologies such as artificial intelligence (AI) or blockchain, can serve as a means for improving both resilience and emergency response.

Scientific and technological advancement in GIS can be utilized for better disaster risk reduction practices. Capturing, storing, analysing and managing georeferenced information (GIS) play an important role in disaster risk assessment and management. The use of spatial and geo-referenced data during pre- and post-disaster management contributes to risk reduction, early warning, vulnerability and risk assessment, and mitigation of damage. Similarly, the modern computational power of analysing big data and georeferenced images make it possible to use artificial intelligence to predict environmental changes. The World Resource Institute, for example, used a spatial modelling software and artificial intelligence to uncover the most accurate linkages between the past loss of forests and drivers of deforestation in the Democratic Republic of Congo (DRC)¹⁰. That helped produce a map showing areas at high risk for forest loss, and key factors behind it.

The development of ICTs has also added a new dimension of vulnerability. This requires bolstering resilience in areas where governments are not always well equipped to venture. Online services should be sheltered from the impact of cyber-attacks. Governments should find ways to ensure high security standards in online public services such as digital health while working closely with other institutions, the private sector and civil society. They must address the potential threats associated with the information society while gearing innovations towards areas that will improve people’s lives. Action is also required at the international level to help developing countries boost their resilience against shocks and threats related to e-government and ICTs, while also closing the digital divide.

1.2.4. Public Trust

Building public trust for effective e-government outcomes is another fundamental step towards achieving the SDGs. This will depend primarily on implementation of sound public policy that reflects people's priorities on institutional performance and on the equal access to quality public services. For effective service delivery, e-government applications should be designed to meet needs and should promote people's active participation in identifying those, and most importantly, to implement trustworthy plans and projects at all levels. The role of local authorities in sustainable development will be ever more important to reaching the most vulnerable. Therefore, working locally with all communities through innovative participatory mechanisms is a must.

An increase in citizens' expectations for effective, equitable and citizen-centric services, demands a shift from inward, disjointed and process-oriented organizational structures to highly collaborative frameworks for seamless delivery of services and enhanced development impact.

Clear and long-term policy and strategic frameworks are needed to create an enabling trustworthy, accountable, inclusive and effective environment for technology use in public service and good governance. These frameworks should be the blueprint for public service, in support of the implementation of the core principles of sustainable development. The capacity of reliable institutions to meet performance expectations, perceptions of competence and effective public service delivery for all, along with public accountability, should be among the leading concerns in public administration and underlying objectives of public sector reform. Gender inequality must be overcome through a multiplicity of public policies, especially through participatory gender-responsive budgets.¹¹ Citizens and businesses are demanding more open, transparent, accountable and effective governance, while new technologies are enabling effective knowledge management, sharing and collaboration between all sectors and at all levels of government. There should be particular emphasis on building trust between citizens and their government through principles of transparency, inclusion and collaboration.

Governments can no longer provide services unilaterally and disregard demands for a more efficient and accountable use of public funds, which can result from service integration (eGovernment Survey 2014). ICTs can improve transparency by providing access to information, which also increases accountability and can keep a check on what government is doing and how well it is doing it. ICTs also promote participation through the two-way sharing of knowledge and experiences between governments and their citizens. That makes it possible to co-create public services and collaborate on evidence-based decision and policy-making, both across the silos of national government as well as across borders. In short, ICTs are a game-changing enabler.

At the same time, lack of regulation can impede ICT use in public service design and delivery. Developing a long-term strategy for ICTs and supporting it with the necessary resources, regulatory framework and political will, has a uniquely powerful potential to ensure sustainable development. An overall open government strategy, sound human resource management, and comprehensive disclosure procedures should be put in place for managing and monitoring the conduct of public servants. New forms of institutional frameworks for effective coordination, cooperation and accountability should be put in place across government, between governments and with relevant non-public actors, which can contribute building trust and creating public value.

Policy-makers must seek a government that is open to its citizens. Innovative coordination processes and mechanisms for service delivery, and citizen engagement and empowerment are essential, as is making such services open, inclusive and accessible by all groups in society, including the disadvantaged and vulnerable. The extent of engagement and the methodology varies from country to country, but what works for all is the adoption of a holistic approach for a more inclusive

people-centric public-sector reform and ethical leadership at all levels. That will restore the public administration's credibility and trust in public institutions. This strategy also will foster a culture of multi-stakeholder collaboration based on a vision of common good for all. The results can advance realization of national development agendas and the SDGs.

All of this requires transformational capabilities through ethical leadership, transparency and combatting corruption. Public administration resources should be complemented by ethical values and the transparent management of those resources. As public service delivery is one of the most expensive aspects of a government's budget, it will be extremely important, not only to pair the right policies with specific context or jurisdiction, but also to appoint public leaders with high integrity and impeccable ethical behaviour. An example of such transformation is provided in Box 1.2. describing the approach of Tax Administration of Chungcheongnam-do province in the Republic of Korea, which secured transparency through active participation of residents and fiscal innovation. Disclosure of budget execution is not a statutory requirement in the country, yet the Tax Administration decided that all fiscal information should be made available to the public, in order to enhance transparency and monitoring by expanding participation, through full digital disclosure of tax use history to residents in real time. There is a critical need for new forms of collaborative leadership and shared organizational culture, including re-shaping values, mindsets, attitudes and behaviours in the public sector through visible guiding principles and leadership.

Finally, and often underpinning the other enabling factors for gearing e-government to support transformation towards sustainable and resilient societies, it is essential to harness the power of new

Box 1.2. Tax Administration Division, Republic of Korea (2018 UNPSA Winner)



Since the global economic crisis in 2008, the increase in social welfare spending has constrained the finances of national and local governments. The seriousness of the local fiscal crisis caused by various irregularities of public officials and the poor financial management of the heads of local governments demonstrated the need for the integrity and transparency of local finance. In this process, the local fiscal system based on control and management has shifted to the direction of securing transparency through active participation of residents and fiscal innovation. In the Republic of Korea, disclosure of budget execution is not a statutory requirement. Chungcheongnam-do has concluded that it is desirable that all fiscal information should be made available to the public, in order to increase fiscal transparency and fiscal monitoring by expanding participation of residents, through 100 per cent digital disclosure of tax use history to residents in real time. The characteristic of fiscal information released by Chungcheongnam-do is the further extension of fiscal information in cooperation with the city and county as well as expansion of residents' participation. All budget information includes real-time expenditure information and shows the amount of money [spent thus far?] [that can be executed from the total amount to the present]. This budget information includes various materials to help understand such aspects as a mid-term plan and sustainable development indicators. In addition, a questionnaire answer box was added to the person in charge of budget business, and a function of registering and responding to questions or suggestions about the budget was attached, as was a description of basic finance terms.

Apart from the central government, the provincial government has strengthened the disclosure of budget status, revenues and expenditure status, and settlement status on the website of Chungcheongnam-do Province. In particular, in the case of revenues and expenditures, in July 2013 a fiscal information disclosure system was established, linking 15 primary local governments in the province for the first time in the nation. For expenditures, all the contract methods, contract contents, and contract parties were disclosed, even meal expenses. As a result, citizens can check the budget execution status of Chungcheongnam-do online in real time. Fiscal surveillance has expanded and transparency and efficiency of fiscal spending have been maximized.

Source:
G<https://www.nts.go.kr>

technologies through appropriate ICT management strategies, which enhance policy integration and coherence in e-government approaches. The global spread of the Internet and the application of ICTs in government, as well as greater investments in telecommunication infrastructure coupled with capacity-building in human capital, can provide opportunities to promote integration and transform public administration into an instrument of collaborative governance which directly supports sustainable development outcomes.

1.2.5. Policy integration and coherence in e-government approaches

The 2030 Agenda emphasizes the importance of the integrated nature of the SDGs. Acknowledging possible synergies and the trade-offs required to achieve the targets depends on the sound allocation of resources. This can also eliminate unwanted side effects, which compromise achievement of targets in other areas.

In the same manner, providing the preconditions for sustainable and resilient societies through e-government depends upon a holistic approach that eliminates firewalls between ministries and builds government capacity to rewire policy-making through a new framework of governance and high-impact public services.

Broadly speaking, integration implies finding ways to foster cooperation among institutions at all levels dealing with closely interrelated issues. This may entail putting in place adequate institutional arrangements or streamlining public administration practices, mechanisms, capacities, budgetary arrangements and resources. It also encompasses various modalities of engagement of non-state stakeholders in decision-making¹² through participation, partnerships and the commonly used notion of whole-of-government approach. Box 1.3. refers to a recent UN DESA publication from 2018 on analysing integration efforts from an institutional perspective. The report presents three standard dimensions of integration: horizontal integration, i.e. integration across sectors or institutions; vertical integration, i.e. how the actions of national and sub-national levels of government can be aligned to produce coherent outcomes; and engagement of all stakeholders in the realisation of shared objectives.

Box 1.3. Policy integration for the Sustainable Development Goals

The World Public Sector Report 2018, entitled *Working together: Integration, Institutions and the Sustainable Development Goals*, aims to inform national efforts towards policy integration for the SDGs, while highlighting the challenges and opportunities that exist for public institutions and public administration. The report illustrates the ways in which interlinkages that exist among the SDGs can be addressed from an institutional perspective, based on examples. Through this, the report aims to sketch areas where public institutions need to work closely together; the types of tools that can be used to that end; and the broader implications for public institutions and public service. To illustrate the importance of integrated approaches, the report looks in detail at three themes: international migration, health, and sustainable development in post-conflict contexts.

The report finds that many countries have created a new structure or mechanism specifically designed to lead or coordinate SDG implementation across sectors. Most of these new institutions are of an inter-ministerial nature and are placed under the authority of the head of State or Government. In many countries, local governments are actively engaged in the SDGs' implementation. The report finds that stakeholder engagement has been happening through different activities, including awareness raising on the 2030 Agenda; adaptation and prioritization of the Goals in the national context; the development of national SDG implementation plans; their implementation; and monitoring and review.



Source: UN DESA, World Public Sector Report 2018: <https://publicadministration.un.org/en/Research/World-Public-Sector-Reports>

Alliances across government allows for coordination of policies and strategies and their implementation. Such joint efforts can leverage the maximum potential, avoid redundant or overlapping investments, exploit synergies, and introduce a culture of sharing. Of utmost importance is avoiding fragmentation and achieving effective cooperation within a collaborative governance structure that involves all relevant players. However, coordination among relevant stakeholders, such as IT bodies and ministries, is often lacking, as all too often those actors have their own agendas and do not take into consideration those of other entities. This fragmentation severely hampers the sustainable development of resilient societies.

It is important to ensure that responsibility for ICT uses in line ministries is spread among subordinated agencies, lest competition occur, leading to a duplication of efforts and wasted assets, all of which undermine interoperability. That, in turn, reduces government efficiency and effectiveness and results in poorly designed and delivered public services as well as a weakening of good governance overall. Although many deficiencies are the result of a lack of financial resources, existing systems often contain numerous redundancies, which reduce the impact of ICTs and other budgetary expenditures, thus hampering new opportunities for long-term growth.

The public sector generally considers strong organization as important to the successful integration and use of information systems and, indeed, horizontal policy integration is crucial to thwarting competition and facilitating a whole-of-government approach that fosters sustainable development.

The necessary cooperation requires extensive coordination among different agencies and organizations, and can only occur when an entity has cross-government responsibility and power, supported by clear political mandates from the top. This demands a fundamental change in culture and values of the entire organization. The transformational change and impressive performance of e-government by the Republic of Korea is an illustration of a new paradigm designed to deliver customized public services and generate new jobs through the sharing of government-owned data with the public and improved collaboration between government departments. Government 3.0, as the programme is called, was driven in 2013 by a foundational shift in institutional arrangements and behaviours based on a new set of values. That, in turn, made the government more service-oriented, competent, and transparent. The programme was successfully implemented through purposeful behaviour that was connected to a strategy with clear objectives from top management.¹³

As illustrated previously, enhanced efficiency and effectiveness in public administration and service delivery has been a longstanding and consistent driver of e-government reform. E-government facilitates, among other things, a reduction in the administrative burden. By eliminating duplication and limiting the number times the same information is collected from individuals or firms enables more systematic information sharing across government agencies.

Policy integration and coherence can be another powerful driver to advance e-government. An imperative of that integration is the design of new e-government approaches. Enhanced collaboration and cooperation across government agencies (both across sectors and levels) have implications for data sharing and communication protocols, which are directly relevant to e-government. Examples such as Bangladesh's integrated health data portal illustrates how data from various sources can be mobilised to provide different actors with a comprehensive overview of the situation in a given area, on a permanent and open basis. With regard to public services, collaboration and adequate resources are needed across government levels in order to enhance information flows. Dimensions such as data compatibility and associated standards are part of this discussion. As with other dimensions of integration in government, securing support from the public service institutions and public servants,

including through human resources and capacity building, is necessary to promote a mindset of collaboration and engagement.

Both efficiency and collaboration arguments are influenced by a third consideration, that of strengthening the interface between governments, citizens and other components of society. That involves the clear articulation of e-government solutions among all layers of government, to the benefit of both constituents and beneficiaries. ICTs provide the communication tools that enable users' direct participation in the design and delivery of services. There are examples of the use of mobile technology to facilitate participatory decision-making in Cameroon¹⁴. In South Kivu, Democratic Republic of the Congo for example¹⁵, mobile technologies allow communities to discuss their basic service needs and facilitate the government's response. People's positive perception of the government as deliverer of services resulted in improved tax collection. E-government can support strategies to improve governance and make it more inclusive, which is important in post-conflict situations.

Increasingly central is open government, which seeks to improve transparency in government processes and proceedings, and made documents and data more available, which facilitates public scrutiny and oversight. One of the tools used to increase transparency and participation is Open Government Data (OGD), which can be defined as government information proactively disclosed and made available online for all to access, without restriction. OGD introduces a new approach to publishing government data and helps bridge the gap between government, citizens and the other stakeholders. The access, reuse and re-distribution of OGD creates value not only for public sector agencies but for the entire society.¹⁶ It gives all stakeholders full and free access to public data and opens up the opportunity for people to evaluate the performance of various administrative institutions. Combined with the use of modern ICTs, this open platform allows for greater accessibility of key records to a much wider audience. Making data easily accessible gives citizens the opportunity to make informed decisions about public policies and identify development opportunities. Consequently, opening up government data can lead to more efficient use of resources and improved service delivery, which is an important component of e-government strategies in most countries.

ICTs are also essential tools to expanding coverage of public services to all population groups, which is a key principle of the 2030 Agenda. Combined with other approaches, ICTs can facilitate the tailoring of service delivery solutions in a way that explicitly targets marginalized groups such as those identified in the 2030 Agenda. Within this context, however, tensions and trade-offs among policy objectives also impact e-government strategies. A well-known example is the sharing of individuals' health data among government agencies, health providers, insurers and other actors. Similarly, the provision of public services to migrant populations may require the sharing of information across government agencies and layers, which in some cases may put the rights of migrants at risk.¹⁷ Therefore, the drive to enhance circulation of information across all government's layers and eliminate firewalls between them should be balanced by broader ethical and societal considerations.

Experience shows that e-government innovation often happens at local, regional or city levels. (See Box 1.4.). Cities are sufficiently large to wield considerable power and resources, while at the same time, small enough to be close to their inhabitants and the everyday concerns and demands of citizens and businesses. They are also taking an active stance in the implementation of the SDGs.

Box 1.4. Santiago: ingredients for a smart sustainable city¹⁸

The smart city pilot development programme “Santiago of Tomorrow”, initiated in 2013, seeks to improve quality of life for its inhabitants by increasing access to energy and emphasizing its sustainable use, and creating environmentally friendly smart homes. Some 85 per cent of Santiago’s population of 5.12 million, which represents 40 per cent of Chile’s population overall, lives in urban areas. In 2017, Santiago was named one of the top smart cities in Latin America, a ranking that includes a focus on resources and opportunities for older people and people with disabilities, with the goal of leaving no one behind¹⁹. In Santiago, there are business and innovation strategies for diversifying the economy away from primary industries by attracting massive ICT infrastructure investment. Another initiative is the “Start-Up Chile” programme of 2010, which aimed to establish Chile as “the definitive innovation and entrepreneurial hub of Latin America.” There is also a strong focus on energy, and Chile ranked in the global top 10 for the most sustainable buildings with investments in green infrastructure, including renewable energy. In terms of mobility, the city’s Metro network is organized around an ICT-based congestion pricing in a 3-tier system. Supported by a central card payment platform, the programme provides commuters with choices throughout the day. In addition, the ubiquitous network of bus routes provides free daily bus arrival updates via text messaging. There is also a strong cycling community with separated bikeways, large public bicycle racks, and bicycle sharing programmes based on smart phone apps. A pilot electric vehicle car-sharing programme, the first of its kind in Latin America, uses smart apps for real time information, booking and location updates.

Source:
<http://www.smartcitysantiago.cl/>

1.2.6. Societal engagement and partnerships

Sustainable development cannot be achieved by governments’ efforts alone. Partnerships are a fundamental pillar of SDG 17. Since the Agenda’s adoption, arrangements have been developed to ensure information sharing and accountability, and the launch of new partnerships at the global, regional and national levels, including public-private partnerships and multi-stakeholder partnerships. Such partnerships exist across many of the SDGs. For example, the overall review of the General Assembly on the World Summit of Information Society in December 2015 (WSIS+10) underscored the importance of public-private partnerships, along with universal access strategies and other approaches, to leveraging ICTs for sustainable development.

International agreements help to mobilize the private sector to contribute to the implementation of the SDGs. UN DESA has organized several international and regional fora to promote and facilitate a discussion among stakeholders about challenges and capacity gaps faced by public administrations in creating new partnerships. Those include “The Symposium on the Promotion of an inclusive and accountable public administration for sustainable development” (Bolivia, March 2016)²⁰, the Bahamas Symposium “Effective Partnerships for Implementing the SDGs and SAMOA Pathway”²¹ (February 2017), and the Regional Symposium “Building Effective, Accountable and Inclusive Institutions and Public Administration for Advancing the 2030 Agenda for Sustainable Development”²² (Republic of Korea, December 2017). Special attention has been given to whether public institutions have the necessary capacities, information, safeguards and culture to mobilize partnerships for delivering quality public services to all, including the poorest and most vulnerable, and realizing the SDGs and the SAMOA Pathway²³. These symposiums took stock of those efforts and reflected on the delivery of commitments made by partnerships thus far. Emerging models of partnerships such as those where the private sector or civil society take leading roles were also explored.

The role of the private sector remains critical for realizing the SDGs. It goes well beyond corporate social responsibility to include joining in the broader efforts to reach the Goals. It also includes the creation of financial tools, facilities and solutions that can support the huge investments needed to implement the SDGs. Effective investment can be achieved by learning – including from the

public sector - and strategizing on ways to engage the private sector and ensure that it augments implementation of the SDGs. The public sector, as the main driver of public services, must be able to deliver high-quality, user-friendly services. That, in turn, requires capacities, skills, financial support, human resources, structures, policies and strategies, as well as legal and regulatory frameworks. At the strategic level, careful policy design is needed, supported by evidence and analysis reliable enough to enable sound political judgments about which public services to offer and how to do so. In short, the services provided should align with need and produce the intended social, economic and environmental outcomes.

Successful examples of using innovative technology in solving a global humanitarian and social problems abound. The partnership between the government of Jordan, The World Food Programme (WFP), the United Nations High Commissioner for Refugees (UNHCR), Cairo Amman Bank and IrisGuard Inc., for example, has introduced an innovative iris scan payment system in Jordan's Zaatari and Azraq refugee camps²⁴ allowing 1.5 million Syrian refugees and migrants to use digital money deposited on e-cards to access food and basic services using a scan of their eye instead of cash or vouchers.

But much greater efforts are required to mobilize all the stakeholders behind the SDGs and give them the right "ecosystem" with which to engage. The government is responsible for identifying the key stakeholders in a given area, and to try new approaches to engage them, bearing in mind that the local and municipal levels are critical. It is urgent to strengthen global partnerships for realising the SDGs, so as to ensure that developing countries have the resources and capacities necessary to eradicate poverty and boost economic growth. North-South, South-South and triangular cooperation is therefore essential, and efforts should be made to extend this imperative throughout public administrations.

It is also crucial, albeit urgent, to involve youth and the poorest and most vulnerable people in decision-making. Countries should make full use of their existing institutions that give voice to the people and to civil society, as well as to parliaments.

ICTs provide the communication tools for service users' direct participation in the design and delivery of their services. Participatory decision-making in such areas as budgeting gives citizens the opportunity to discuss and vote on how parts of their government's budget should be used. The archetypal example at Porto Alegre in Brazil is recognized internationally as a ground-breaking local-level initiative in which the state government has engaged more than 1 million residents in its multi-channel online and offline decision-making to enhance provision of a wide range of public services and utilities²⁵. That is just one example of a way to increase revenue in developing countries, where tax collection rates are notably low, and where the dearth of financial resources often threatens sustainable development programmes.

Similarly, ICT use in Turkey enabled the establishment of a Communications Centre under the Prime Minister's purview to provide a fast and efficient system through which citizens can easily communicate requests, complaints and opinions related to administration. The scheme supported citizens' right to petition and right for information, and it introduced significant financial savings for the public.

Finally, governments should increase capacity to address disasters. Preventing them, where possible, through good planning and mitigation systems is essential, but effective responses in the aftermath of a disaster are also crucial. The deployment of ICTs and e-government to improve disaster mitigation and management has grown tremendously in recent years, but often remains a neglected tool, especially in those developing countries most subjected to events that threaten widespread loss

Box 1.5. President Communication Center (CIMER), Turkey

The President Communication Center (CIMER), previously called the Prime Ministry Communication Center (BIMER), is an important project that was launched in 2006 as an electronic public service tool where the public can apply for the right to petitions and right to information from anywhere in the country. As known in today's public administration literature, the concepts of "Governance" and "Participation" have come to the forefront. For this reason, the establishment of a fast and efficient system for citizens to easily communicate all requests, complaints and opinions related to administration is an indispensable requirement for the spread of democracy, as well as for the success of management. Applications are accepted all around the country and are delivered to the related public institutions rapidly. In addition, it aims to provide answers to the applicants as soon as possible, to warn the relevant units in case of delay, to receive statistical reports and to provide supervision from the center. Applicants who want to make an electronic application, can apply via "<https://www.cimer.gov.tr/>" or can use the e-government system. Applicants also can apply via ALO 150 telephone line, go to the application offices of the Ministry, the Governor's Office and the District Governorships in person, or by letter or fax. Approximately 6,000 applications are submitted through BIMER every day, and about 80,000 public personnel are employed by this project throughout the country. Considering that 92 per cent of the applications were received over the Internet and 60 per cent were made using mobile phones; CIMER provides significant financial savings to the public.

Source: <https://www.cimer.gov.tr/>

of life and material destruction. At the same time, ICT use requires adequate infrastructure for organizations and individuals. During the past decade, many developing countries have put that in place, as they strive to make ICTs accessible and affordable. Mobile technology, the Internet, Web 2.0 tools like social media, Geographic Information Systems (GIS), remote sensing and satellite communications, as well as different types of radio communication including amateur and satellite radio²⁶ have proved indispensable to disaster risk reduction.

1.2.7. Effective institutions in transforming and innovating government

In its resolution on Promoting Public Sector Leadership,²⁷ the UN Economic and Social Council (ECOSOC) stressed that governments have the "central role" in SDG implementation, and notes that "effective institutions" are essential for achieving all the Goals and targets. The resolution indicates that many countries are in the process of identifying and updating policies, strategies, institutions and arrangements for spearheading and coordinating the implementation and progress review of the SDGs. The text also recognizes that implementing the SDGs does not necessarily require the creation of new institutions. With no one blueprint for implementation, existing institutions, such as planning and finance ministries, have a critical role to play.

Governments around the world have pioneered widespread innovation and transformation across multiple levels and various platforms. These developments are critical to support the creation of sustainable and resilient societies, which meet the needs of all people. It is important to shift from an approach where the latest technologies are the exclusive focus in e-government to digital government where technology is "fully" integrated and embedded in government processes in a sustainable way and with proper institutional and legislative support²⁸. The new approach must seek to build resilience and promote sustainable development in a way that leaves no one behind.

The ECOSOC resolution underlines the critical importance of leadership at all levels of government and welcomes government engagement at the highest political level in SDG implementation. It invites governments to undertake concerted efforts to raise awareness and increase ownership of the goals within national, regional and local authorities, civil society, the private sector and society

at large, and to launch initiatives to build the awareness and commitment of civil servants at all levels to the vision of the 2030 Agenda. It also invites governments to build the capacities and skills of civil servants in areas such as integrated and coherent policymaking, planning, implementation, foresight, consultation, evidence-based reviews of progress and the collection and use of statistics and data. The resolution further encourages governments to “redouble efforts” to ensure respect for the rule of law by institutions at all levels.

Box 1.6. The United Nations Public Service Forum and Awards Ceremony

The UNPSA is a prestigious international recognition of excellence in public service. It promotes and rewards innovation and excellence in public services for realizing the SDGs and the principle to leave no one behind, which is at the core of the 2030 Agenda. Through an annual competition, the UNPSA promotes the role, professionalism and visibility of public service. It was launched in 2003 and since then it has encouraged exemplary public service and recognized that democracy and successful governance are built on a competent civil service.

The Awards are usually handed out on 23 June, day designated by the General Assembly as the United Nations Public Service Day to “celebrate the value and virtue of public service to the community” (A/RES/57/277). The General Assembly, in its resolution 57/277, encourages Member States to organize special events on that Day to highlight the contribution of public service in the development process.

The UN Public Service Award (UNPSA) ceremony is part of a United Nations Public Service Forum, which takes place in different regions of the world. The United Nations Public Service Forum is a capacity development activity of UN-DESA where ministers, public servants, and representatives of civil society from all over the world gather to discuss and share innovations, build synergies and partnerships and exchange knowledge and best practices. In 2003, the General Assembly decided “that 23 June would be designated United Nations Public Service Day”.

Unique global event on public governance that provides a platform for decision-makers to share successful strategies, innovative approaches and lessons learned on how to rally public servants to realize the SDGs and leave no one behind. By hearing from their peers on how they addressed the challenges related to designing and delivering services, Government officials bolster their capacity to respond to the 2030 Agenda.²⁹



United Nations
Department of Economic
and Social Affairs

Source: <https://publicadministration.un.org/en/UNPSA>

Many innovative approaches around the world make public services more effective, efficient and often transformative. These cases were recognized during the annual United Nations Public Service Awards (UN PSA) programme (please see Box 1.6.).

Significant population changes, such as increases in both the number and proportion of elderly, birth rate reductions, and migration will require more and better services. Key areas of health and long-term care, education, and professional training are starting to use big data to increase personalized and potentially more efficient and effective services, as well as artificial intelligence, which, if properly deployed, can lead to better decisions. ICTs overall can enable personalized medicine and education, support vulnerable populations, predict and manage shocks and disasters, promote social and political inclusion, improve sanitation, provide identity for unregistered persons, and reduce environmental toxicity through better monitoring. In this regard, governments have been exploring private and public partnerships to improve service delivery.

Singapore, notably, has partnered with Microsoft to create “chatbots” to deliver certain public services. There is also the potential for significant wins through the use of artificial intelligence to allocate resources in hospitals more efficiently, and, among other things, to model and control scheduling systems for public transport navigating the complex ways in which traffic flows through a

city.³⁰ Therefore, it is not surprising that in many countries, ICT-enabled technologies are increasingly being used to design and deliver innovative public services. This trend is likely to increase significantly in the future with lessons already being drawn. The processes of public service design, delivery and use depend largely on the preconditions, related to the policy, strategy and capacities of the public sector, and collaboration among actors. The overarching aim is to provide good quality public services across the main sustainable development pillars of social, economic and environmental need, and, generally, to improve welfare and prosperity across the whole of societies.

The process must be built on institutional changes that ensure the ability of public institutions to adapt to the new technologies and prevailing conditions and needs through greater efficiency, effectiveness, transparency, accountability and inclusivity.

1.3 E-government strategies for sustainability and resilience

1.3.1 Ensuring access for all to inclusive public services

There are many examples where ICTs are being used with tremendous effect in delivering public services to lower-income, developing countries and emerging economies. Such examples spotlight the ways in which ICTs can make huge differences in public service delivery. In developing countries, in particular, non-digital service delivery channels, such as traditional post offices, telephone call centres, over-the-counter face-to-face services in citizen centres, as well as television and radio, remain important. However, those can be significantly improved by adding a digital channel, for example, or using satellite broadcasting and multi-channel learning services through mobile Internet centres that connect teachers, learners and communities. The “back offices” of service providers can also be digitized and joined up to provide innovative solutions for enhancing service delivery, including via traditional channels. Many service components will continue to require direct human interaction in health, care, education and the building of personal and trusting relationships through dialogue and empathy. In that, ICTs can be a valuable support tool for front-line staff. Notably, ICTs are being used innovatively to provide instant access to remote and hard-to-reach people across large areas and distances, regardless of time or location.

In terms of access to and information about public services, a new initiative in Ghana is providing Wifi and Internet access in remote rural areas (Box 1.7.).

Box 1.7. Ghana: Remote access to wifi and internet services³¹



In early 2018, a Danish ICT company, in collaboration with the Ministry of Communications in Ghana, launched an affordable and sustainable “connecting the unconnected project” in four rural communities in western Ghana, prior to it being rolled out across the country. A base station 100 per cent solar energy powered establishes a Wifi hotspot with a range of up to one kilometre in diameter.³² The hotspot is connected to the Internet by existing infrastructure such as microwave link and fibre, satellite, balloons or drones, bringing connectivity to even the most remote areas of the world. Because the programme is based on Wifi, users can browse the web, stay in touch, or participate in educational programmes using any smartphone, tablet, or laptop. A local cloud at the base station provides fast and easy access to e-learning, e-health, and e-governance, and allows citizens to share information, such as on health care and agriculture, as well as to communicate online with government authorities. Farmers can watch training videos to help them make the most of their land and to sell their crops at a fair price. Local doctors can access lifesaving information and much more. The hotspots are also in use in public establishments such as schools, hospitals, banks, police stations and market places.

Source: <http://gifec.gov.gh/>

Often, specific needs can be precisely targeted by using a multi-channel approach consisting of different combinations of both ICTs and traditional communication means. Relatively inexpensive ICTs, such as mobile phones, along with more traditional media like TV, radio and newspapers, are highly effective in the context of the poor and marginalized. Such approaches can be hugely successful if the business model is right, as in the Text4Baby example in the United States, which targets new and expectant mothers, most of whom, with disadvantaged backgrounds, are otherwise hard to reach (Box 1.8.).

Box 1.8. USA: *Text4Baby* SMS support service for new and expectant mothers³³

Text4Baby provides information to expectant and new mothers about how to take care of themselves and their baby while pregnant and during the baby's first year of its life. The women most at risk often come from a disadvantaged background and thus have limited access to the Internet, but they are likely to have access to a mobile phone, so the programme sends them relevant text messages in either English or Spanish once a week. Results show a very high satisfaction rate with the service. Additionally, users' health knowledge increases, there is improved interaction with health care providers, greater adherence to appointments and immunizations, and increased access to health resources generally. The Text4Baby initiative is a highly successful partnership between the United States government and a number of non-profit and other non-governmental organizations, consisting of more than 700 partners. It is thus a very good example of collaboration between the public and civil sectors deploying simple but highly effective technology tailored to the target group.



Source: <https://www.text4baby.org/>

There are additional examples of how such widespread and inexpensive ICTs can have significant impacts on health. An African-based for-profit company spun out of a non-profit organization, mPedigree, works with mobile operators and pharmaceutical manufacturers to provide a mobile phone-based drug verification system for addressing the issue of counterfeit drugs in pharmacies at the point-of-sale, in Ghana, Kenya, and Nigeria. The mPedigree service is free to users and allows instant verification of whether a drug is real or counterfeit by sending a unique code via simple SMS. Automated responses in the appropriate language follow. The service relies on various partners across the value chain, both private and public, and it is also simple to rollout to new customers and easy to access for the end-user.³⁴

These examples illustrate the many ways in which ICTs can help meet the SDGs. Water and sanitation are vital for basic human health and quality of life and, although those are physical services, ICTs can play a vital role in improving access, service delivery and governance. Water in particular is becoming an increasingly scarce resource as demand rises and pollution and climate change take their toll. ICTs can significantly enhance the identification, extraction and recovery of water supplies by providers as well as its efficient and effective access and use. ICTs can also improve distribution and payment systems for users, especially the poor, through mobile payment services.

In developing countries where access to good quality water is a serious challenge, there are additional examples of ICT use, such as mWater, which is a mobile and web platform for monitoring and regulating 252 water schemes in small towns, such as in Senegal, Mali, Benin and Niger, which typically rely on hand pumps from piped systems operated by private companies. The providers often have poor operational performance with a lack of knowledge about maintenance of the pipes and asset levels, which can lead to high water tariffs and poor coverage. Through ICT use, data is now collected via mobile phones, which enables providers to improve their operations, and the regulators to monitor the programme's performance.

The use of mobile devices assists in finding and exploiting suitable water resources by showing the reality of a situation on the ground. The data collected is used to make decisions aimed at establishing the sustainability and quality of water services. The so-called Water Point Mapping (WPM) in Rwanda and Ethiopia has been very successful through the use of mobile data³⁵, and the MajiVoice for better water in Nairobi turns citizens into active participants when it comes to their water supply services. The programme allows customers to report complaints, and the water company to provide service updates as well as proof that the complaints have been addressed, by, for example, sending photos from engineers when they repair a leak. The number of reported leaks has doubled since the introduction of MajiVoice, resulting in enhanced service performance through greater accountability. The programme also averts visits to an office, and enables staff to resolve complaints faster, thereby strengthening management and regulation³⁶.

1.3.2. E-government as a sustainable development platform

Viewing e-government as a platform for resilience and sustainable development arises directly out of the open governance approach. In that context, a platform means an open environment and data ecosystem, with clear standards and guidelines, tools and resources. The aim is to invite all stakeholders to collaborate in producing public value, thereby contributing to society and the common good. In one manifestation, that might be an open source service platform in the Internet cloud providing government services, data and enablers as building blocks for increased efficiency and effectiveness, as promoted by the European E-Government Action Plan.

E-government operating as a platform for sustainable development can generate public value and a range of people-centred benefits. ICT use transforms citizens' lives, communities, civil society groups and businesses from passive consumers of data and knowledge to active producers. For example, citizens are sharing ever more with each other on social media platforms and tend to consult other citizens, rather than the government, for advice. Put another way, they increasingly use the "social signal" and "social search" to organize and improve their lives. Governments thus need to recognize the value of collaboration and crowd-sourcing, which enable citizens and others to contribute as co-creators. Although governments should better mobilize their resources and talent, there is always additional talent to be found outside as well.

The public sector as a platform for ICT use can facilitate sustainable development and can support an ecosystem of stakeholders with changing roles and relationships. There is a need to consider both virtual and physical platforms, as well as their inter-relationships, to support public value co-creation with other actors. Thus, a better understanding is needed of how government - the main designer and provider of public services - can adapt its role to become an enabler, facilitator and orchestrator of that ecosystem, which would increase its public value. Such new roles, aided by appropriate tools and support, including big open and linked data, can create resilient and sustainable societies, built on standards, ethics and inclusion.³⁷

There are already numerous examples of ICT use where non-government stakeholders have assumed or supplemented certain government roles. In just a few examples, noise level measurements around Amsterdam Airport were undertaken by residents in the flight path, when the responsible public authority was underperforming;³⁸ Microsoft's so-called health vault, which stores health records in the cloud, can be accessed by patients when they change health providers, including across borders;³⁹ and "Fix-My-Street" in the United Kingdom, which was developed by the civil society organization *MySociety*, enables individuals to report broken or failing infrastructure and other local problems.⁴⁰ The programme has been adopted by many local authorities and governments around the world.⁴¹ A website, "Patients know best", allows patients to control their own medical data when negotiating

with public health authorities about their treatment.⁴² In India, a non-governmental organization has supplanted the role of government in rooting out corruption with its anti-corruption initiative, “I Paid a Bribe”.⁴³ Set up in 2010, it harnesses the collective energy of citizens to tackle corruption in public services across India. The site collects reports on its website about the nature, number, pattern, types, location, frequency and monetary value of actual corrupt acts in specific locations. The information is then used to advocate changes in governance and accountability processes, as well as to confront particular incidences of corruption. That initiative is now in use in several other countries.

Those examples spotlight just a few cases where ordinary citizens, civil organizations, private companies and others have spearheaded the use of ICTs to fill voids left by governments or to remedy governments’ underperformance. However, it is important to stress that, whether or not the public sector is directly involved, the government always needs to exercise final responsibility to ensure that such activities are fair and ethical, as well as open and inclusive, and in line with prevailing regulations and laws. Government represents all interests in society, and thus, it has the legitimacy and authority to ensure the widest possible range of public value creation for sustainable development. As the duty bearer for basic services, the government, in the end, is responsible for ensuring minimum service quality, interoperability standards, legal and regulatory frameworks, and elaborating long-term policies for sustainable development. Governments are also responsible for fixing a problem when something goes wrong, even if they were not directly involved in designing and delivering a specific initiative, for it is the main entity tasked with balancing society’s often competing interests.

There are numerous instances where government and e-government are the main actors. The Australian Government, for example, created a Digital Transformation Agency, which focuses on enhancing service delivery by acting as a central repository for open government data. The platform adds value to users, intermediaries and society as a whole.⁴⁴

1.3.3. ICT-enabled public institutions

The increasing use of ICTs by institutions has also dramatically impacts public services and their delivery, both via Internet websites and portals, mobile and especially smart phones, social media, and kiosks situated in places accessible to the public. ICT-enabled public service delivery is having a significant impact, as it is much more affordable for an increasing number of users and more cost effective for governments than traditional supply channels. ICT use also enables more targeted, personalized and up-to-date service design and delivery. That gives the service user greater benefits than the sole reliance on traditional service channels, in terms of access, convenience through 24/7 availability, savings in time, and the cost of travel to physical premises such as offices. It also opens up the possibility of new types of public services for achieving the SDGs by 2030.

ICT solutions are also being used internally within institutions to better manage and analyse large amounts of data in more routine and rule-governed processes and transactions, thereby reducing overall transaction costs and increasing efficiency. One example is a collaborative health project in Cambodia to combat malaria, where there is an effective interplay among national control programmes, research institutions, and commercial and civil society organizations, aimed at data sharing and response coordination. The Malaria Information System (MIS) has been set up to process data from village malaria workers and health facilities, and to use open source software for MIS reporting via mobile phones. That also is a tool for district staff to manage such activities as mosquito net distribution and ‘drug stock out’ system tracking in health centres and clinics, when levels drop below a set threshold. It can also reduce the inappropriate use of antibiotics in human beings and animals and measure its impact on antibiotic resistance.⁴⁵

However, institutions in many developing countries still have not been able to deliver basic services like education, health, water and sanitation, as well as infrastructure and other utilities, to their entire population. ICT use can contribute substantially to closing those gaps, given its extremely low cost, its power of reach, and the rapidity with which it is able to be rolled out. Thus, the aim in all countries must be to ensure access for all, including to basic services. The more developed economies have generally achieved universal access to ICTs, so there, the focus tends to be on more advanced and personalized ICT-enabled services as the next step. However, there are many examples of clever ICT use in developing countries as well.

1.3.4. User-centricity and co-creation of public services

Although context largely defines service design and delivery, ICTs enhance the process by focusing increasingly on user-centricity, with well-defined needs at its core. In a growing number of cases, that principle is complemented by the notion of user-driven and user-personalized services, where the user determines precisely the service sought or required. In turn, that lays the basis for developments in so-called open services and the co-creation of services in cooperation, or even competition, with relevant stakeholders. The design and delivery process, if undertaken in a transparent manner, can further drive innovation. ICT use has already shown its potential and benefits in terms of access, affordability and usability, and flexibility. Service design is related directly to user needs and behaviours rather than to the requirements of government. ICT use has also simplified back-office processes to save resources and offer better services. Additionally, service personalization is enhanced in the front-office to satisfy individual needs. Finally, multi-channel and blended service delivery that uses a channel mix best suited to the individual user is becoming the norm, and flexibility has been enhanced.

Portugal's modernization of public services is a good example (Box 1.9.).

Box 1.9. Portugal: The modernization of public services⁴⁶



The modernization of public services in Portugal since the late 1990s has been driven by a policy focused both on efficiency and cost reduction, on the one hand, and high-quality services and their multi-channel delivery on the other. These policies and strategies emphasize three principles: rolling out citizen-centric services, administrative simplification, and the rationalization of the administration's interoperability, costs and resource use. So-called "citizen shops" are one of the flagships of this policy as an innovative concept of public service delivery that brings together, in the same space, several public and private entities. This involves collaboration between the local public administration and local partners and citizens who best know the needs of a population and the area. There are now more than 150 such physical multi-service centres as part of a national network utilizing ICTs to set up citizen spaces for the provision of digitally delivered services, with in-person assistance if required. This addresses the fact that digital literacy is not at the same level everywhere in the country. Another important policy pillar is the "Simplex" programme, which aims to streamline bureaucracy, modernize public administration, and facilitate interaction between citizens and companies with public administration, at both central and municipal levels.

Source: <http://www.gee.gov.pt/>

An example of user-centric and co-created service innovations in education is the development of massive open on-line courses (MOOCs) enabling anyone in the world with an Internet connection to access quality educational material and adapt it to their own use (Box 1.10.).

Box 1.10. MOOCs: Massive Open Online Courses -- a global phenomenon⁴⁷

This initiative makes available all types of educational courses and material for unlimited participation, often with free and open access for everyone connected to the Internet anywhere in the world. It also directly addresses the need for lifelong education and learning as well as the “up-skilling” of the labour force. The programme offers a flexible, wide-reaching and inexpensive way of meeting societies’ need for education of all types through democratizing access and providing, in principle, no limits on the numbers participating. Although there have been correspondence and open courses before, ICTs provides the means for the massive expansion of this type of education, often through “blended” learning where online channels are combined with offline and face-to-face channels. Like any other use of ICTs for service delivery, there are potential barriers in terms of limited access to high-speed networks, and varying degrees of digital literacy. Such challenges need to be addressed to ensure the quality of the course material and uphold certification and accreditation standards so the education obtained is recognized by employers and society at large. An example of a non-profit MOOC platform is edX (www.edx.org). It hosts online university-level courses in a wide range of disciplines, including some at no charge, to a worldwide student body. It also conducts research on how to use its platform. The Massachusetts Institute of Technology and Harvard University created edX in May 2012. More than 70 schools, non-profit organizations, and corporations offer or plan to offer courses on the edX website. As of 29 December 2016, edX had some 10 million students taking more than 1,270 courses online.



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

Other trends in the area of user-centricity include the bundling of related services around the life events and experiences of users. That is a departure from service delivery, determined by the physical infrastructures and organization of government, towards more people-friendly service geared to the needs of real people in their everyday lives. The Singapore eCitizen portal was the first in the world, in 2002 to bundle service offerings around user life events for easy navigation and user-centricity. It further developed that approach in 2018 into an integrated citizen experience and one-stop-shop⁴⁸. Another leading trend is incorporating user behavioural approaches and design thinking into creating, delivering and using services, as exemplified by initiatives in both Singapore and the United Kingdom.

It is important to recognize that users are already dramatically changing their behaviour when it comes to accessing and using e-services of any kind. The evolutionary approach to making e-government services available has been, first, abandoning the “many stops” approach and moving to the one-stop shop. However, complexity still dominates the navigation for many one-stop shop portals, hampering a user-friendly approach. However, recent experience like that in the United Kingdom shows that, rather than using sophisticated navigation, some users are increasingly deploying advanced search tools, such as autocomplete and predictive searches to attain access to the service they want in one or two clicks. In other words, users are finding and accessing services - whether commercial, personal or public by advanced online search, rather than expensive navigation portals.

In the United Kingdom, for example, the previous navigation portal, DirectGov, was replaced by Gov.uk, because, in practice, users just typed what they wanted to do into a good search engine. A group of non-government hackers had set up a rival unofficial site with such a search engine, which was being used much more widely than the official portal. The government wisely recognized this behavioral change and co-opted the group, co-creating the world’s first e-government portal publicly launched in both alpha and then beta versions, rather than relying only on IT experts and a few user tests. User tests were conducted, however, to find the search terms that people actually used when searching for helpful government offerings⁴⁹.

1.4 Challenges, risks and vulnerabilities

Despite the successes and opportunities arising from the public sector's use of ICTs in furthering the goals of resilient and sustainable societies, there are many challenges and risks that can undermine the role of e-government in supporting the SDGs. Those include environmental stresses and disasters, socio-economic and governance risks, as well as those related to technologies themselves. Disturbances to political, economic and social systems are becoming more common, and often shift attention and resources away from the processes by which a society produces public, private and social goods and services. Delivery of public services is also disturbed, exposing millions to insecurity, loss of opportunity, and poverty. In the reverberation of those disturbances and stresses, public services may break down altogether, especially for the poor and vulnerable, women, children and elderly. Weakened state capacity is often reflected in a loss of control over basic public services, especially where resilience measures are lacking. Inadequate governance institutions often contribute to inconsistent or non-existent provision of education, health, and clean water. Damage to basic services may even become permanent. Risk drivers such as badly planned and managed urbanization, environmental degradation and poverty often exacerbate vulnerability with adverse impacts on progress towards implementation of the 2030 Agenda.

Governments need to understand the critical risks arising both from shocks and disasters and the vulnerability of e-government systems and consider ways to mitigate them. The manifold risks are often deeply interlinked and become more intractable in the face of so-called "wicked" problems. Those include planetary environmental risks related to climate change, extreme weather events, water crises, bio-diversity and habitat reduction, to name a few. Such stresses threaten rural and urban development, health, and economic sectors, such as agriculture and fishing, which often provide the livelihoods for poor and marginalized populations. Those problems have social and economic consequences, which governments, in partnership with non-governmental actors, must address in order to prevent erosion of social cohesion and economic prosperity. Otherwise, a vicious cycle may result of under- and unemployment, which increases income and wealth inequality and foments demographic pressures like ageing and migration, economic downturns, terrorism and conflict, and failing States. Those threats naturally strain public services⁵⁰, and combined, can derail progress towards realizing Agenda 2030. Strengthening resilience to avoid, mitigate and cope with such threats is critical, and requires the adoption of measures, including emergency plans, for tackling both natural and person-made disasters.

1.4.1. The need for adequate strategies and response systems

Good planning, mitigation systems and policies, therefore, are vital in anticipating and coping with the burgeoning stresses and threats arising from today's increasingly fractured world.⁵¹

Basic data, about both the population and the physical features of areas prone to disasters is essential to implementing successful strategies and response systems. ICTs, in particular mobile phones, can provide instant data from virtually any location. It is crucial to be able to collect, analyse and visualize data during and after a disaster, such as through real time spatial applications. The ability to seamlessly integrate and distribute digital data into spatially explicit forms for rapid assessment and other analyses can be enormously helpful in saving lives and mitigating long-term impacts. Governments, citizens, and businesses are increasingly using mobile technology in natural disaster preparedness and public safety responses. Real-time mobile phone data can also provide valuable insights about the behaviour of affected populations and enable both victims and rescuers to send real-time reports. By examining mobile phone activity data before, during and after a disaster, a baseline understanding of emergency behaviour and capacity to measure the rate of disaster recovery can be established.⁵²

1.4.2. Technological misuse, distortion and risks

At the same time, specific threats have arisen from the way technology, especially ICTs, is developing and being used by governments and society. As digital technology companies advance, power may be concentrated in ways that current legal and regulatory frameworks are unable to address. Governments and regulators often struggle to understand the pace of change, let alone formulate relevant policies, prompting the question of what technology companies are accountable for and to whom. Such questions raise concern in various regions of the world. In relation to security, privacy and control, the rise of digital connectivity is leading to increased cyber-security concerns, for example with the hacking of critical infrastructures, including those that control power supplies and transportation networks. It is becoming increasingly important to consider the security, ownership and usage of the massive amount of personal data which is created and shared, as well as to protect the identities of both individuals and organizations.

New technology can also be misused by governments and private companies. According to the freedom on the net report⁵³, Internet freedom has declined for the sixth consecutive year, with more governments than ever targeting social media and communication apps as a means of halting the rapid dissemination of information, particularly during anti-government protests. Online activism has reached new heights, and the number of countries where arrests for online posts have occurred has increased by more than 50 per cent since 2013. Since June 2015, police in 38 countries have arrested individuals for their activities on social media. Social media users face unprecedented penalties, as governments censor more diverse content and install security measures that threaten free speech and privacy. There is also the rise of the so-called post-truth society, fake and fact-free news, which can thwart political discourse. Although those are not new phenomena, their significance has reached vastly new heights. Social media have played a significant role in that trend, and currently, Facebook, Twitter, Google, and others are working together to see whether they can develop algorithms to filter out false news, hate speech, and terrorist propaganda. At the same time, repeated and often large-scale leaks and hacks of user-data collected by technology companies jeopardize the trust, social cohesion and governance processes in different parts of the world. Ensuring anonymity and privacy of voter decisions during the elections is a responsibility of government authorities, and Information technology may play a role in different phases in the voting process, thus, having an impact on voter privacy. Secret balloting in many countries is aimed at preventing vote buying and coercion.

For information technology to be used for casting votes, privacy becomes not only a right but also a duty, thus e-democracy initiatives shall change the way privacy is viewed in the political process⁵⁴. Information technology developments shall guarantee the voter right to fulfil this duty while providing a possibility for the authorities to verify the process. Recent cases of user-data transfers to and hacks by Cambridge Analytica, a political data firm hired to provide services during the 2016 presidential campaign in the United States, raised concerns about targeted political messaging on social media to influence voter preferences.

These issues are of fundamental importance for sustainable development. International organizations have a major role to play in reinstating facts and evidence, and expertise in policy debates, while ensuring they get the balance right by also leaving those debates open to legitimate scrutiny and transparency.

1.4.3. The complex roles of technology in society

It is also true that technology can no longer be considered simply as a straightforward tool, for it plays a complex role, as today's general-purpose technology affects all aspects of societal

development. Although the advance of technology has created enormous new opportunities across a range of sectors, the speed and impact of these changes have made it very difficult for society and governments to keep up and respond appropriately.

In many ways, technology is not neutral because its impacts are determined by how it is used. Social media has indeed had huge positive impacts on the lives of many, bringing people together globally, and extending an individual's horizons beyond local and even national borders. It keeps families in different parts of the world connected, and it enables communities, campaigns and democratic movements to form. It also makes governments and big business more transparent. At the same time, misuse of social media has mushroomed, from trolling and bullying the vulnerable online or allowing paedophiles to share child pornography, to the so-called "dark web" where illegal and dangerous anti-social transactions take place. The democratic and mind-broadening potential of the web has also come under scrutiny as more and more people access only the material they choose to follow. They increasingly ignore other content, leading to so-called filter-bubbles. The more they use the search engines, the more those engines adapt, through sophisticated algorithms, to feeding users what they like.⁵⁵ When people go online, they leave digital traces or footprints, which are scooped up by the tech companies and sold to advertisers who use their intimate knowledge of a user's personal life to target their advertising. The users are thus digital products to be sold to the highest bidder, in a bizarre reversal of traditional economic relationships.

Neither is the so-called neutrality of technology straightforward. There are numerous examples where technological advances are driven by social needs, such as the Linux free open-source operating system for computers and the M-PESA mobile phone money transfer app in Kenya, which allows poor people with no bank account to make secure commercial and family transactions over long distances. However, it is also clear that most technological advances are market-driven, arising out of companies' desires, first and foremost, to increase their profits. Proportionate regulation is therefore required, but there must be caution that it does not hamper increasing prosperity and realization of the SDGs.

There are also examples where new ICTs are being designed to extract market value from individuals and communities rather than increase it. Recent e-learning initiatives in Africa, connecting globally via new ICT infrastructure, can sometimes become overwhelmed by international content and social media. That risks crowding out local content and languages, which help develop local communities, cultures, companies and entrepreneurship. In turn, that can cause local income to leave the locality and even the country, draining rather than supplementing indigenous development. Also, with scant international investment in local content and language, the local context is increasingly neither supported nor even recognized as legitimate⁵⁶.

1.5 Conclusions

This chapter has demonstrated the multifarious and complex opportunities for deploying e-government to build resilient societies and play a major role in sustainable development. It has also described many of the risks, challenges and vulnerabilities governments face in ensuring their e-government systems are able to fulfil that potential. Basic services like education, health, water and sanitation, as well as infrastructure and other utilities, are essential to sustaining e-development and improving quality of life and prosperity. To ensure resilience and sustainability, those services need to be delivered universally in order to not leave anyone behind, a crucial pillar of sustainable development. New technologies and ICTs are essential to that quest, both through widening access and providing significant benefits to service users while at the same time reducing provider costs.

The transformational and facilitating power of ICTs is creating a paradigm shift in the public sector, driven by three trends. The first is the need to address ever increasing and complex societal challenges, while promoting resilience and sustainable development. The second is acceptance that, although the public sector is normally the biggest and most powerful actor, it does not have a monopoly on resources or the ability to innovate. Governments need to retain overall responsibility for quality, standards, and ethics, and ensure that no one is left behind. The third trend concerns the increased capacities of other State actors as well as civil society and the commercial sector, to participate alongside the public sector in addressing societal challenges. ICTs have not only given rise to those overlapping trends, but have shown their increasing potential to deliver when it comes to building sustainable and resilient societies, with the right preconditions and an enabling environment.

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