Digital Governance for Recover Forward

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1. Introduction

Digitalisation can contribute to sustainable and inclusive development in many ways. Of the 169 Sustainable Development Goal (SDG) targets, 103 are directly influenced by digital technologies, and an analysis of 20 targets and their indicators across the SDGs shows that deploying existing digital technologies can, on average, accelerate progress by 22% and mitigate downwards trends by 23% (Global Enabling Sustainability Initiative, 2019). Digitalisation can create opportunities for development such as new types of goods and services, new markets, new jobs, new skills, and new capacities. In addition, digitalisation has huge potential to improve and shape governance systems, thereby increasing participation, coordination, and transparency. Social media, for instance, is changing how people participate in political and civic life. Traditional broadcasters now complement radio with chatbots and use WhatsApp groups to host discussions with expert guests, while micro-entrepreneurs in the informal sector can receive cash transfers through mobile money.

In accelerating implementation of the SDGs and recovering forward after the COVID-19-pandemic, the focus has shifted to leveraging digital governance approaches. Digital governance creates both systemic opportunities and challenges. Near-ubiquitous digital access provides citizens with more politically relevant information than ever before. However, microtargeted misinformation, misleading and fake news prevent informed debate and threaten the integrity of democratic elections. Any governance structures, processes and policies seeking to achieve transformative change must consider how digitalisation impacts governance and must alter current digital governance trends. Currently, the use of digital governance to implement the SDGs remains constrained due to challenges around data quality, culture and knowledge of technologies, digital trust and lagging institutional capacities (Denner, 2021). The SDGs do not explicitly link digital technologies and governance, but some SDGs will expand access to digital technology, particularly for women and rural populations, while others will improve governance. Some examples of these SDGs are provided below (United Nations, UN, 2015):

SDG 9.C: "Significantly increase access to information and communications technology and strive to promote universal and affordable access to the Internet in least developed countries by 2020".

SDG 5.B: "Enhance the use of enabling technology, in particular information and communications technology to promote the empowerment of women".

SDG 17.8: "Fully operationalize the technology bank and science technology and innovation capacity-building mechanism for least developing countries by 2017 and enhance the use of enabling technology, in particular information and communications technology".

SDG-16: "Responsive, inclusive, participatory, and representative decision-making at every level".

SDG 17: obligates nations to build a partnership for development between civil society, governments, and the private sector.

The SDGs provide orientation for the German Development Cooperation's (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ) planning, for appraisals and for Capacity Works (GIZ's management model for sustainable development). Effectively integrating the SDGs with GIZ's technical assistance will be critical for building resilience and recovery in partner countries. GIZ's Recover Better

Support Programme (RBSP) places special focus on developing and expanding fundamental governance structures, processes and policies to improve sustainability in partner countries. Recent GIZ guidance has defined transformative change as "processes that use disruptive innovations to change systems into fundamentally new systems that subsequently form the new mainstream" (Kehrer, 2020, p. 6). Like other complex adaptive systems, governance systems are dynamic and shaped by external factors. Digital disruption is one of the most significant contributors to the dynamism of governance systems. GIZ has acknowledged the disruptive nature of digitalisation on higher-level systems: "'great transformations' such as industrialisation and digitalisation change almost every area of life and a society in its entirety" (ibid). Therefore, practitioners and governments working on governance reforms must consider that digitalisation can massively transform the governance landscape. This report provides concrete, action-oriented recommendations for development and policy practitioners as well as donors to leverage digital governance approaches for implementing SDGs.

Section 2 presents the methodological approach adopted in the study. The interrelatedness of the SDGs offers a unique opportunity to develop common digital approaches and integration within and across institutions. This creates an environment primed for systems-level implementation using digital technologies, rather than project-level thinking. Therefore, the analysis in this study focuses on ICT Building Blocks[1] such as database structures and information architectures, e-commerce platforms, messaging services, geographic information services (GIS), and digital identity management, among others.[2] Section 3 provides context to the study, highlighting the opportunities, challenges, and trade-offs that digital approaches in general, including digital governance, present to the progress and implementation of the SDGs. It underscores the need for an integrated approach towards the SDGs, with shared responsibility for implementation. Section 4 concentrates on the concept of digital governance and maps existing projects using IDS's digital governance typology (Roberts and Hernandez, forthcoming). This typology classifies interventions under a) digital in government; b) digitalisation of government services for citizens; c) digital participatory governance; and d) governance in a digital world. Using this typology, Section 4 also reviews and presents best practices emerging from past and present projects, including some GIZ projects. Acknowledging that the challenge of development *"lies less in what needs to be done (identifying the right technical fix)…but rather how it is done (the processes and actors that facilitate or obstruct change)"* (Menocal, 2018, p. 2), Section 5 presents a political-economy understanding of digital governance approaches. Section 6 draws on the earlier sections to provide cross-cutting and targeted recommendations for development practitioners, donors, and policymakers on leveraging digital governance for SDG implementation. Section 7 concludes the study by focussing on how the GIZ can effectively integrate digital governance approaches in its own technical assistance programmes under the Recover Better Support Programme (RBSP).

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[1] Technology components that provide an underlying, fundamental function in multiple software applications and systems, designed to be shared and re-purposed for the different use cases.

[2] While we acknowledge that generating domestic revenue, increasing private financing and developing innovative ways of financing are critical for the uptake and scaling of digital projects and form a pre-requisite for leveraging digital governance for the SDGs, exploring sustainable finance as a driver for SDG implementation falls outside the remit of this study.

2. Methodological Approaches

The analysis in this study is largely based on a desk review of secondary data from key international reports, GIZ internal documents and country reports. It includes a review of the UN Secretary General's Sustainable Development Goals progress report (2019); the Global Environment Outlook 6 (GEO-6) regional assessments (2019); the International Labour Organization (ILO) and the Organization for Economic Cooperation and Development (OECD) reports on the future of work; GIZ's Digital Human Rights guidance; the World Bank's report Towards Our Common Digital Future; _Digital Principles,_ etc. We complement the desk review with secondary data collection and analysis to identify leading countries that have leveraged digital governance for SDGs and best practices. This is done using the latest edition of the UN e-Government Survey, particularly its Online Service Index and e-Participation Index, to assess the levels of Digital Government capacity reached by partner countries of the German Development Cooperation. We also collected primary data, using semi-structured interviews with GIZ staff working on the 2030 Agenda in the partner countries of Namibia and Mexico, to explore how systemic digital approaches can be integrated into GIZ's technical assistance programmes in partner countries.

A key difference the existing literature on digitalisation and the SDGs is the careful assessment of the digital divide and its implications for leveraging digital governance approaches. The process of digitalisation is fundamentally shifting patterns of economic growth, changing citizen-market-state relationships and the nature of development. It can improve progress towards some SDGs while worsening outcomes in other areas (Unwin, 2017). This goes against the 2030 Agenda, which outlines that no one SDG should be achieved at the expense of another. For instance, while digital technologies can lower the production and transaction costs for women and SMEs to participate in markets, it is well established that access to and use of technologies is not gender neutral. Internet use is already biased towards males in developing countries such as Botswana, Cameroon, Malawi, Nigeria and Zambia, and women are also less likely to access financial services, particularly via mobile technology (Commonwealth Secretariat, 2020). Digital approaches that end up widening the digital divide between men and women will hurt progress on SDG 5 (gender equality) and go against the 2030 Agenda's implementing principles of an 'integrated approach' and 'leaving no one behind'. Therefore, the analysis of how digital approaches in general (Section 3) and digital governance approaches specifically (Section 4) can accelerate SDG implementation is grounded in a careful assessment of the digital divide and the associated risks and challenges.

It is worth noting that the digital divide literature has long moved beyond conceptualising digital inequalities in terms of haves and have-nots. Whereas early digital divide literature asked questions about who has access, later scholars investigated what people are able to do when they have access, and who benefits the most from being online (van Deursen and Helsper, 2015). Others have highlighted that the digital divide is not binary; some users face limited and intermittent access while others enjoy unlimited and continuous access (Roberts and Hernandez 2019). Moreover, it is possible for active users to continue experiencing barriers to the full use of digital technologies, including but not limited to: low levels of digital skills, sub-par devices, slow Internet speeds, and government censorship of specific websites or platforms (Faith and Hernandez, forthcoming).

The 5-A framework helps development practitioners think through local barriers to ICTs in general (Roberts and Hernandez 2019) as well as specific digital governance interventions. "The 5 A's help problematise the unconnected/connected binary by breaking access down into five constituent elements of: availability, affordability, awareness, ability, and agency" (p. 3).

- Availability refers to whether the Internet or a specific intervention is available to people in a specific area (country, region, city, rural village, etc.). In general, there tends to be an availability gap between poorer countries and wealthier countries as well as between poorer rural areas within countries and better-off cities. Better-off geographical areas tend to have more access to broadband, mobile signals, and apps serving the needs of local communities. Development practitioners therefore need to ensure that proposed digital governance solutions are in line with locally available technologies and devices, and provide offline alternatives for those who may be left out.

- Affordability can be a barrier beyond the cost of connectivity itself. The cost of devices, updating and maintaining devices (e.g., fixing a broken screen), and the cost of specific apps can also hinder potential users. Similar to energy, telecommunications expenditure represents a greater share of disposable income for lower-income households than for higher earners (Corfe and Keohane, 2018) Digital governance implementers and development practitioners should ensure that any digital solutions they implement are either free or do not price the extreme poor out of the market. Unfortunately, this is not always the case for development-related digital interventions. For example, a study of mobile money solutions found that most providers implement regressive pricing, where small transactions are charged higher fees in percentage terms than larger transactions (Holloway et al., 2017).

- Awareness is necessary for users to make use of a digital solution, but that alone cannot spark adoption. Potential users should also be aware of the possible benefits of using the solution. Digital governance implementers should ensure that rollout is accompanied by targeted public awareness-raising campaigns. This is especially important today as more and more stories break the news about negative experiences others have had on the Internet, which leads some non-users to believe that digital technologies may cause more harm than benefit.

- Ability includes having the digital skills and literacy needed to make use of digital technology in general and specific apps in particular. In fact, it is not uncommon for people who own an Internet-enabled device to be unable to use it due to a lack of digital skills. There is a strong correlation between income and digital skills as well as between gender and digital skills. One reason for this skill gap is that marginalised groups often have less exposure to and practice with digital technology starting from a young age (Tyers-Chowdhury and Binder, 2021). Low-income migrants and people with lower levels of literacy in local languages may be less able to engage with content on the web relevant to their local realities if they cannot understand, read, or write in the required language. People living with certain disabilities may be unable to use digital technologies and apps unless applications are designed to be accessible to them. Digital governance implementers should therefore ensure that digital governance solutions are available in all local languages and usable by people who speak an uncommon language or who are unable

to read and write content on a screen. They should also ensure that apps are made accessible to people living with disabilities.

- Agency refers to "the extent to which a person feels able to act in the world to bring about change (…). Some people who experience persistent deprivation supress their aspirations and revise their expectations downwards resulting in a lack of aspiration or appetite for change" (Roberts and Hernandez 2019, p. 5). This can be especially true for groups who tend to be held back by social norms. Girl Effect (2018) found that women and girls are less likely to own mobile phones than men and boys, and that women and girls are more likely to have their access to digital technology mediated by a male gatekeeper—usually a father or brother—which limits when they can use digital technologies and for what purposes. Moreover, some users lack digital skills or do not own digital devices, so they must rely on family members, civil society organisations or even private actors to perform digital tasks on their behalf (Schradie, 2011). Moreover, users who only have access at work, by borrowing devices or through public computers have less autonomy regarding what they can do online and when they can access the web.

Barriers experienced by potential users in any of the 5 As can limit general uptake or the ability to fully benefit from digital governance solutions. We draw on these categories further in Section 4, which evaluates the potential of digital governance projects in terms of opportunities and challenges for effective implementation and adoption.

3. Digital approaches and the SDGs; towards an integrated approach

Across low- and middle-income countries, the digitalisation of service delivery, digital platforms, e-commerce and big data, and the use of digital technologies in agriculture, manufacturing and services are already making headway. Technologies are successfully delivering on national development agendas: fintech is expanding access to financial services, which helps reduce poverty (SDG 1); satellite data, AI and cloud computing are being used to detect illegal mining, to tackle deforestation and climate change (SDG 13) and manage freshwater resources (SDG 6); drones and machine learning are increasing smallholder farmers' crop yields, while digital platforms are increasing their access to decent work (SDG 8). E-learning is increasing access to quality and cheaper education (SDG 4); health tech, including telemedicine and remote medical imaging, is promoting good health and well-being (SDG 3); and digital communication technologies are being used to expand collaboration and to further leverage the power of partnerships (SDG 17). Digitalisation also presents new and important opportunities for low- and middle-income countries. It lowers the costs of trade, reduces barriers to market entry (including non-tariff barriers), facilitates exports, enables market access through e-commerce, supports efficiency improvements, enables movement into more value-added products in the agriculture and services sectors and raises overall export competitiveness (SDGs 8 and 10). Thus, if managed well, digitalisation can open up new pathways for regional integration, economic development and prosperity, particularly for small and medium enterprises, women and youth in developing countries.

Currently very few SDG sub-targets are on a promising path, and many are off-track (e.g., zero hunger, reproductive health), with some even worsening (e.g. poverty and inequality, CO_2 emissions after economic recovery, biodiversity) (GSDR, 2019). Some targets like 9.C, which called for universal access

to ICTs by 2020, have already been missed. The COVID-19-pandemic has further reinforced this alarming picture and poses enormous challenges to industrialised nations and partner countries of the German development cooperation.

Although only a handful of SDG goals and targets explicitly call for the increased use of digital technology, digital technologies and digitalisation are likely to have an impact on all of the SDGs. The International Telecommunication Union (ITU) (2017) provides case studies and examples of ways in which digital technologies can be leveraged to achieve goals across the 17 Sustainable Development Goals. However, the ITU and several other high-profile development reports have warned that this relationship is not automatically a harmonious one, and that further steps are needed to work through potential trade-offs (ITU, 2017; UNDP, 2016; World Bank, 2016). Similarly, a recent study found that artificial intelligence (AI) has the potential to improve outcomes across 134 of the 169 SDG targets. However, without proper precautions in place, AI threatens to derail progress towards 59 of the targets (Vinuesa et al., 2020).

The synergy between digitalisation and achieving the SDGs depends on many factors, including who has access to digital technology, who designs digital solutions/for what purposes, how digitalisation is powered and even how devices are made. Without careful consideration of potential trade-offs, increases in digital access (SDG target 9.C) and the use of digital governance solutions could accelerate progress for some of the SDGs, but at the expense of slowing or reversing the progress of other SDGs. Systems thinking/system-aware approaches are needed to ensure that digital governance interventions maximize SDG gains while mitigating any potential trade-offs.

An integrated approach with shared responsibility is therefore critical in order to leverage digital technologies for SDG implementation. Development practitioners can and should minimise the risk that their digital governance solutions will inadvertently negatively impact some SDGs. However, risks related to digitalisation are global and well beyond what one actor can address unilaterally. Tackling these complex and interlinked challenges will require coordinated action and cooperation with governments (including developing country governments and donor country governments), the private sector, civil society, and citizens themselves. Below, we highlight some of the complex development challenges related to digitalisation, underscoring the need for an integrated approach.

3.1. Leave No One Behind

Digital technologies have spread unevenly, negatively affecting progress on the overarching SDG goal of Leave No One Behind. As digital technologies continue to become the preferred channel by which government, private and civil societies provide information and services, a lack of access to digital technology or lack of digital skills can lock non-users or less tech-savvy users out of benefits experienced by apt digital users (Hernandez and Roberts, 2018). It is usually people from marginalised socio-economic backgrounds (women, racial and ethnic minorities, undocumented migrants, people living with disabilities, the extreme poor, rural populations, etc.) who are digitally excluded or marginalised (UNDP, 2016; World Bank, 2016). Strategies that are 'digital by default' or 'digital first' have been shown to limit the inclusion of offline populations in e-government interventions (United Nations, 2018). Therefore, an integrated approach to digitalisation is critical, wherein digital interventions are designed with the most vulnerable in mind. This includes offering parallel offline channels for users who are unable to connect or use digital technologies. For example, a project aiming to digitalise the payment of

taxes through online payments need to be accompanied by other offline channels such as visiting government offices to pay the bill in person. Similarly, feedback from project beneficiaries, particularly in contexts with low literacy rates and high levels of poverty, should be collected through multiple parallel mechanisms: digital tools, face-to-face mechanisms, suggestion boxes, etc. (Feedback Mechanisms, 2016).

3.2. Digital technology and the future of decent work

The rapid digitalisation of global production will have important implications for SDG 8—'full and productive employment and decent work for all'. In some countries/sectors, the cost of labour in certain tasks is set to become higher than the cost of automation and 3D printing. This can potentially lead to 'reshoring' of manufacturing jobs that have traditionally been done by workers in low- and middle-income countries or limited future offshoring of these jobs (Banga and te Velde, 2018). This creates challenges to achieving decent work and sustainable and inclusive economic growth in these countries. The situation has worsened during the COVID-19-pandemic, with the labour-intensive manufacturing value chains in developing countries hit hard by supply-side disruptions. Digital technologies present a viable route for mitigating some of the economic losses from the pandemic. However, the increased demand and expansion of Internet coverage in several low- and middle-income countries has come at the cost of declines in broadband speeds and overloaded networks (Banga and te Velde, 2020). There is thus a need to invest in digital infrastructure in these countries, going beyond just Internet access, by increasing access to reliable and high-quality digital connectivity. Increased adoption of digital technologies during the pandemic will also affect countries' occupational structures; an estimated 90 percent of jobs in Europe will require digital skills within 10 years, including existing jobs that are expected to be transformed by automation (van Eerd and Guo, 2020). Although this trend will likely lag in developing countries, they are likely to follow a similar trajectory over time. To prevent further marginalisation of digitally disconnected populations, development practitioners will therefore need to support programmes that prepare and equip the workforce with the necessary digital literacy and skills.

Moreover, the demand for digital technologies is having greater consequences for work than simply access. Supply chains for digital devices often rely on child or slave-like labour (Unwin, 2017). Globally, an estimated two-thirds of the adult population subscribed to mobile services in 2021 (GSMA, 2021). This near-ubiquitous access to mobile phones helps us get closer to achieving SDG 9—'build resilient infrastructure, promote sustainable industrialization and foster innovation'. However, mobile phones increasingly rely on lithium-ion batteries, which require cobalt, a rare mineral that is mainly produced in the Democratic Republic of Congo (DRC). The country controls almost 60% of the world's cobalt reserves, and children as young as six work in environmentally toxic and slave-like conditions to mine the resources, earning less than a dollar a day. The cobalt is then sold by middlemen to major device manufacturers, who unfortunately are not doing enough to ensure their supply chains are free of human rights abuses (Amnesty International, 2017). Moreover, mobile phones are often designed to become obsolete/dysfunctional within a few years in order to maintain a market for the latest devices. Not only does this design practice create an enormous amount of e-waste, but this e-waste tends to be dumped in developing countries, where waste-pickers and mobile recyclers are often exposed to the harmful chemicals inside the devices (Greenpeace, 2017; Perkins et al., 2014). Although some companies have made efforts to reduce harmful chemicals in their devices, many manufacturers lag behind. Donors can

ensure their work is not fuelling child or slave-like labour or harming the health of waste pickers by purchasing phones only from manufacturers that have made efforts to mitigate these risks.

3.3. Digitalisation and climate change — a shared responsibility

Digital approaches can help reduce climate change (SDG 13) and may offer a greener alternative to offline processes, which require more paper and more greenhouse-gas-emitting travel. But energy consumption continues to rise globally, and evidence shows that digital technologies account for greater and greater shares of global energy consumption over time (Greenpeace, 2017). Ironically, modern digital technologies have also become substantially more powerful while consuming a fraction of the energy previously needed to perform the same tasks. Alongside the rapid uptake of digital technologies, it is precisely these advances that have accelerated digital technology's energy consumption. 'Jevons' Paradox' suggests that efficiency-related price drops incentivise new and more powerful uses of technology that may not have been economically feasible in the past, thus offsetting potential energy savings (Gossart, 2014; Unwin, 2017). For example, the dial-up Internet connections of the 1990s and early 2000s meant that loading a basic text-based web page could take several minutes. Today's Internet users carry out significantly more data-intensive activities, like streaming videos instantaneously, now that speeds are faster, devices are more powerful, files require less space, and data plans are cheaper. Video streaming is expected to account for 82% of Internet traffic by the end of 2021 (Cisco, 2017).

The increased use of devices for such data-intensive activities results in greater energy consumption by the ICT infrastructure. Data centres already account for 2% of global emissions (Jones, 2018). Cryptocurrency mining is typically carried out in large facilities full of powerful computers run by mining groups. When combined, Bitcoin miners now consume more energy than the entire country of Finland (Huang et al., 2021). Andrae and Edler (2015) predicted the best, expected, and worst-case scenarios for the share of electricity consumed by digital technologies by 2030. According to their predictions, ICTs will account for anywhere between 8% (best-case scenario) and 51% (worst-case scenario) but will likely fall somewhere around 21% of global electricity usage by 2030. GIZ and other donors can steer the ship towards the best-case scenario and attempt to reverse these trends. At a macro level, GIZ, other donors, and development practitioners can do this by funding green energy infrastructure and regional sharing co-location data centres.

4. Digital governance; models, opportunities, and challenges for the SDGs

Digitalisation of government services has thus far largely targeted social empowerment and business opportunities, while addressing environmental and institutional challenges. But the priorities of digital approaches differ; in high-income countries, digital governance projects have focused on leveraging cloud services and green IT technologies for ecosystem-based service delivery, while in low- and middle-income countries, the focus has been on expanding access to government services for the rural population (Esteve and Janowski, 2013).

While several studies have examined digital governance and sustainable development individually, there is lack of a systematic understanding about how digital governance affects the SDGs. In this section, we draw on Roberts and Hernandez's (forthcoming) typology of digital governance approaches, which identifies four distinct categories: a) digital in government; b) digitalisation of government services; c)

digital participation; and d) governance in a digital world. For each category, we discuss new and important opportunities for implementing the SDGs, along with associated challenges, using the Five-A framework.

4.1. Digital in Government

Digital technologies hold immense potential for streamlining internal government functions and creating efficiencies. With 'digital in government' initiatives, digital technologies are mainly used to improve the internal and organizational functioning of government rather than its interactions with citizens and the wider world. The goal is to improve efficiency, cut costs and reduce fraud and corruption within government. These goals can be achieved through a wide range of activities, including the use of very basic technologies like installing computers in government buildings and providing staff with government email accounts. But they can also be achieved using more advanced technologies, like biometric verification of employees seeking to gain access to buildings, or even using algorithms and real-time data to predict stock shortages related to government services. Several examples highlight the potential of digitalisation in internal government processes to accelerate progress on the SDGs, particularly SDG 16 (Peace, Justice and Strong Institutions), by reducing corruption, increasing transparency and accountability, and facilitating more efficient public spending.

4.1.1. Opportunities

- The use of mobile money to pay salaries can reduce corruption; one widely cited example of digital in government occurred over 20 years ago in Afghanistan, when the government began paying its police officers using mobile money. Police officers thought they had gotten a raise after receiving their salaries via mobile money for the first time. However, the extra money reflected the fact that they were finally getting paid their true salaries rather than losing some of it to corruption. As much as 30% of police officer salaries in Afghanistan had been misappropriated prior to the use of mobile money (Leber, 2012). Crowdsourcing platforms such as IPaidaBrib in India have also helped reduce petty corruption (Kukutschka, 2016).

- Systemic digital solutions like the blockchain can increase transparency; the German Development Bank (KfW) is currently piloting a blockchain solution called TruBudget to increase transparency in budget allocations and spending in Africa. In Georgia, Bitfury is implementing a blockchain-based land registry system, which involves storing land ownership certificates on the blockchain to reduce document manipulation and increase transparency. Distributed ledger technologies such as blockchains are also being used by the European Commission to ensure transparent and effective use of financial resources under the Green Climate Fund (Schulz and Feist, 2021).

- Digital platforms can enable more efficient public spending; the Ukrainian e-procurement platform ProZorro is increasing transparency in public procurement, which leads to less corrupt contracting and more efficient public spending. The platform cut costs by 12%, saving $1.4 billion, and the percentage of suppliers who are small and medium-sized enterprises (SMEs) went from 24 to 80 percent between 2015 and 2018 (United States Agency for International Development, 2020).

- Digital asset declaration platforms can increase government accountability; the Corruption Eradication Commission (KPK), supported by GIZ, has developed an app that provides information about 48,000 local government bodies, 404,000 schools and 2,777 hospitals; a new online database also publishes asset declarations for politicians and public-sector employees.

4.1.2. Challenges

There is a significant digital divide in public Internet infrastructure. Low- and middle-income countries are lagging in terms of digital infrastructure and country readiness, limiting the potential of digitalisation within government departments, while higher-income countries are leveraging maximum benefits. Despite a lack of comparative information on digitalisation within the government departments of partner countries of the German Development Cooperation, Table 1 presents the telecommunication infrastructure index across partner countries, with an average value of 0.43. The African countries of Kenya, Ethiopia, Mozambique, Burkina Faso, Mali, Uganda, and Niger seem to be doing worse than other partner countries; their average telecommunication infrastructure index is below the average value of 0.43 (red blocks).

Table 1: Performance of GIZ partner countries on the Telecom Infrastructure Index

	Telecommunication Infrastructure Index
China	0.7388
Georgia (country)	0.6923
Vietnam	0.6694
Brazil	0.6522
Tunisia	0.6369
Bosnia and Herzegovina	0.6295
Serbia	0.62
Colombia	0.6122
Ukraine	0.5942
Mexico	0.591
South Africa	0.5832
Morocco	0.58
Algeria	0.5787
Albania	0.5785
Peru	0.578
Indonesia	0.5669
Ghana	0.5596
Jordan	0.554
Cambodia	0.5466
Namibia	0.5447
Ecuador	0.5133
Côte d'Ivoire	0.5034
Uzbekistan	0.4736

Egypt	0.4683
Senegal	0.4358
Lebanon	0.4123
Mauritania	0.3886
Bangladesh	0.3717
Mali	0.3546
Nigeria	0.3534
India	0.3515
Kenya	0.3402
Zambia	0.3394
Burkina Faso	0.3117
Rwanda	0.2931
Benin	0.2595
Togo	0.2532
Pakistan	0.2437
United Republic of Tanzania	0.243
Cameroon	0.2299
Uganda	0.2278
Afghanistan	0.1762
Malawi	0.1394
Mozambique	0.1293
Ethiopia	0.1194
Madagascar	0.1096
Niger	0.0737

Source: United Nations E-Government Survey 2020 (UN, 2020).

The case of Zimbabwe illustrates these limitations. The digital readiness assessment, supported by GIZ, showed that the Parliament of Zimbabwe lacks meaningful digital access; it has insufficient ICT infrastructure, slow Internet speeds and over-burdened networks. Digital terminals (smartphones, desktops, and laptops) remain limited, with the secretariat and Members of Parliament having to use personal terminals. The Parliament is active on Facebook, Twitter, WhatsApp, and Instagram, but there is little to no participation by the respective constituents. The situation has only worsened during COVID-19; in many developing countries, such as Nigeria, India, Ghana, Sri Lanka, Malaysia, and Cote d'Ivoire, average broadband speeds declined by 20% during the lockdown periods as compared to before lockdown (Banga and te Velde, 2020).

4.2. Digital Government Services (also known as e-government)

This refers to digital initiatives that seek to improve government service delivery and external one-way information sharing. Services in this category tend to be top-down/unidirectional, flowing from government to citizens, and generally do not include space for citizen participation (see section 4.3 for services that do include citizen participation). The goal of digital government services is to improve efficiency, reduce transaction costs between governments and citizens, and remove the potential for petty corruption in service delivery. At the most basic level, every UN member state now has at least a

government website where information can be shared with its citizens. 84% of governments now provide citizens with the opportunity to fulfil at least one transaction online, and governments now offer 14 online transactions on average globally (United Nations 2020). These transactions include everything from applying for a business license to filing income taxes, land title registration, applying for benefits, etc. Digital government services allow connected citizens to access government services and transactions at any time of the day without going to a physical location during opening times or waiting on long queues, significantly contributing to SDG 10 on reducing inequalities and SDG 16 on peace, justice and strong institutions.

4.2.1. Opportunities

- E-learning platforms can help expand access to education for citizens; GIZ, on behalf of BMZ, has implemented "Reforming Technical and Vocational Education and Training in Vietnam", which helps the Vietnamese Directorate of Vocational Education and Training (DVET) identify and develop suitable e-learning platforms, implement an integrated student database system, and set up a platform for free and openly accessible training materials, i.e., open educational resources. This programme is still in progress, but the digital transformation of TVET has occurred thanks to strategic advice, capacity development, a virtual conference, and e-learning rooms for DVET and TVET institutes. Overall, more than 1,700 trainees benefit directly from the trainings offered, including retraining for more than 800 people who lost their jobs due to the COVID-19-pandemic (GIZ, 2021).

- Online platforms can increase access to financing, allowing firms to invest in digitalisation for enhanced productivity and growth. In Albania, the European Bank for Reconstruction and Development (EBRD) is helping the Ministry of Finance and Economy implement the digitalisation of SMEs by a) identifying and supporting policies to increase digital access by the SMEs; and b) creating an online platform to increase SMEs' access to financial investments in digital technologies.

- Digital technologies can help build decentralised capabilities at the local levels of governance; in South Africa, for example, the People's Health Movement uses basic text messaging technology in their Bavuse! system as a decentralised way to access local health services. The system provides options to call local meetings, run polls and organise local health campaigns remotely. The Decentralisation and Administrative Reform programme (DAR) in Cambodia, supported by GIZ, is facilitating digitalisation of local government services by supporting One Stop Window Offices (OSWO) at the district level, which uses archived administration data for faster local service delivery (GIZ, 2016).

- E-governance projects help local governments strengthen their capacity and improve the service they provide to the local population. For example, e-governance in Georgia includes developing community centres for improved service delivery at the village level. It also fosters the development of the municipal management system in local governments, improving the quality of management and streamlining service delivery on the ground. The Unified Portal of Electronic Services in Georgia saw increased demand during the COVID-19-pandemic; use of e-services was 30% higher between October-December 2020 compared to January-March of the

same year, with the number of e-services also rising from 468 in 2019 to 700 in 2020 (UNDP, 2021).

- The United Republic of Tanzania embraces a public-private partnership approach to e-government implementation and works closely with private-sector and regional institutions to adopt new technologies. In 2019 it established the e-Government Authority, which has a mandate to coordinate, promote and enforce e-government policies in order to facilitate public access to digital services. The country requires online services to be tracked and measured so the progress and impact of e-government development can be assessed, and every public institution collects statistics on the usage of e-government services through their respective websites or portals.

4.2.2. Challenges

There is a persistent digital divide across and within partner countries of the German Development Cooperation—digitalisation of government services could create new winners and losers in terms of who can access these services and benefits. Table 2 presents the Online Service Index (OSI) for partner countries, with an average value of 0.56. Countries represented in green fare above average in terms of the OSI, while those in red fare below average. We note that the African countries are particularly lagging in digitalisation of public service delivery.

Citizens who have digital devices, the necessary digital literacy and skills and adequate connectivity—as well as an awareness of and ability to access government tenders, obtain licences and permits, and access and utilise open government data—will see greater benefits from the digitalisation of public service delivery than the digitally unconnected. These inequalities of access and outcomes have been evident in the case of India's national identity system Aadhar, which has been accused of jeopardising the privacy of citizens as well as deepening exclusion and marginalisation (Dixon, 2017). For instance, Indian citizens can access health care through their Aadhaar identity using digital authentication through a fingerprint scanner or a mobile phone. However, a large population of India's rural farmers have lost their fingerprints during hard labour and cannot be recognised by standard biometric techniques. These trends were exacerbated during the ongoing COVID-19-pandemic, raising concerns that fingerprint-based authentication not only increases the risk of spreading COVID-19, but also excludes communities where people do not fit the biometric standards for various reasons. Even in the provision of e-business services, investments must be needs-based and targeted. In Kosovo, for example, the lack of a skilled workforce, knowledge and financial means has contributed to the limited ability to use digital technologies in SMEs.

Table 2: Online Service Index

	Online Service Index
China	0.9059
Brazil	0.8706
India	0.8529
Albania	0.8412
Mexico	0.8235

Ecuador	0.8118
Serbia	0.7941
Uzbekistan	0.7824
Colombia	0.7647
Peru	0.7529
South Africa	0.7471
Ukraine	0.6824
Indonesia	0.6824
Kenya	0.6765
Vietnam	0.6529
Ghana	0.6353
Pakistan	0.6294
Tunisia	0.6235
Rwanda	0.6176
Bangladesh	0.6118
Georgia (country)	0.5882
Uganda	0.5824
Egypt	0.5706
United Republic of Tanzania	0.5529
Bosnia and Herzegovina	0.5353
Namibia	0.5235
Morocco	0.5235
Nigeria	0.5176
Mozambique	0.5176
Benin	0.5118
Togo	0.5
Senegal	0.4941
Cameroon	0.4706
Burkina Faso	0.4647
Cambodia	0.4529
Côte d'Ivoire	0.4529
Malawi	0.4235
Lebanon	0.4176
Afghanistan	0.4118
Ethiopia	0.3647
Jordan	0.3588
Mali	0.3471
Niger	0.2941
Madagascar	0.2882
Algeria	0.2765
Zambia	0.2588
Mauritania	0.1

Source: United Nations E-Government Survey 2020 (UN, 2020)

'Digital-first' and 'digital-by-default' programmes run the risk of amplifying existing divides, adding a new digital dimension to poverty. Digitalising service delivery without a clear understanding of the multi-

dimensional nature of the digital divide (the Five As) not only limits the digital dividends, but also threatens to exacerbate and perpetuate existing socio-economic divides. This is clear from the evidence on e-learning programmes. For instance, under the One Laptop Per Child (OLPC) programme, 2.4 million laptops were distributed to under-served primary-school children in 42 countries around the globe to accelerate implementation of SDG 5 on ensuring 'inclusive and equitable education for all'. This scheme was later found to be problematic and ineffective for children's learning, particularly in Peru and Uruguay (Hennessey et al., 2021). Another example is that of EdTech infrastructure development in Ghana. Disparities in EdTech infrastructure across urban and rural regions are found to be highest for the Internet and lowest for radio in Ghana (Jacobs Foundation, 2020). Projects on digitalising public education in Ghana through the Internet alone will inadvertently create new digital divides by advancing e-government services for better-off users, at the expense of those who cannot access the services. However, parallel channels that provide radio-based educational services can help close this divide between urban and rural communities.

4.3. Digital Participation in Government

This refers to spaces and initiatives designed to facilitate two-way interactions between citizens and government. Digital participation in governance initiatives can take many forms, including government-led initiatives that digitalise existing participatory governance processes (e.g., consultations, petitions, and inclusive decision-making fora) or introduce them in digital form. However, digital participation in government initiatives can also be citizen- or civil-society-led. For example, citizens can use digital technology to monitor government projects and share progress in order to improve the accountability of government and corporate governance bodies or to demand change. Citizens and civil society can also access and analyse open data in order to hold powerful actors to account. Digital participation in government has immense potential to accelerate SDG 16, which calls on actors to "promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels" (UN, 2015).

4.3.1. Opportunities

- Open-source participatory platforms can facilitate inclusion in the governance process; the 'Decidim' platform in Barcelona made it easy to configure participatory governance processes so that national strategies can be adapted and action plans developed for sustainable recovery. Available evidence suggests that the Decidim platform boosted overall citizen participation; there was a 150% increase in the number of citizens who took part in the various deliberations and submitted proposals (Peña-Lopez, 2017). After its success in Barcelona, the platform was adapted and adopted by countries, municipalities, and organisations across the world. The e-government platform in Rwanda also supports two-way communication, not only providing e-service updates but also allowing people to request information and voice their concerns directly (UN, 2020).

- Open government data (OGD) can increase government accountability and empower citizens to make more informed decisions; analysis of 25 SSA countries finds that OGD and accountability are positively related (Jelenic, 2021). Uganda, for example, has a robust legal framework of comprehensive provisions relating to open government data and data protection. The country's

e-Government Master Plan is updated every two years based on nationwide surveys, and every government entity has its own online portal.

- Citizens and civil society can create apps and software to crowdsource information about incidents, or to gather reports that highlight and/or map the existence and extent of a problem that needs to be addressed by government or other powerful actors:

    - IPaidaBribe is a crowdsourced corruption reporting system in India where anyone can anonymously upload reports of government officials' demanding bribes to carry out their duties, of saying "No" to an officer requesting a bribe, or of meeting an honest officer who did not ask for a bribe[3]. Reports are mapped and can be read by anyone.

    - PentaBencana.id generates real-time disaster maps through crowd-sourced reports of flooding[4]. Reports are generated directly by citizens and through an algorithm that actively scans social media posts for mentions of flooding and follows up with the post creators. The system allows residents to make more informed decisions about their commutes and provides government with more accurate data on areas requiring assistance.

    - HarassMap is a reporting system in Egypt that crowdsources and maps instances of sexual harassment and interventions (when someone tries to stop sexual harassment or help a victim)[5]. The map allows anyone to see which places have had reports and how many reports have been made in one place, as well as the reports themselves.

- Digital technology can help facilitate remote meetings between citizens and government during times when meeting face to face is not possible or desirable. For example, municipal governments in Kosovo were able to continue regular consultations with citizens during the COVID pandemic by moving their consultations online, allowing citizens to participate in governance processes despite quarantine and social distancing measures.

- In Latin America, Telefónica and the Centre for International Strategic Thinking established Data Republica to collect and centralize data from different institutions and associated them with the 17 Sustainable Development Goals.

4.3.2. Challenges

Table 3 shows wide disparities amongst GIZ partner countries in terms of e-governance. The average e-participation index is 0.56, with countries faring above average represented in green, while those faring below average are represented in red. Within Africa, Kenya, Uganda, Rwanda, Ghana and South Africa appear to be doing better. Overall, e-governance initiatives seeking to increase citizen participation have a high failure rate of over 80% as per World Bank's estimates in 2016 (World Bank, 2016). Participation levels on these digital platforms remain particularly low amongst rural communities, women, and marginalized sections of society. The uptake of digital participatory platforms is shaped by the awareness

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[3] http://www.ipaidabribe.com/#gsc.tab=0
[4] https://info.petabencana.id/about/
[5] https://harassmap.org/en/

of such platforms across communities and ownership of digital devices through which they can access these platforms. Other factors include people's ability and digital skills to use these platforms, as well as agency—the change they think such platforms will bring to their lives and whether they will be effective in making their voice heard.

Table 3: E-Participation index

	E-Participation Index
China	0.9643
Brazil	0.9048
Colombia	0.869
India	0.8571
Albania	0.8452
Serbia	0.8214
Mexico	0.8214
Ukraine	0.8095
Uzbekistan	0.8095
Ecuador	0.7976
Peru	0.7619
South Africa	0.75
Indonesia	0.75
Vietnam	0.7024
Tunisia	0.6905
Georgia (country)	0.6429
Ghana	0.631
Rwanda	0.631
Bosnia and Herzegovina	0.6071
Kenya	0.5952
Bangladesh	0.5714
Uganda	0.5714
United Republic of Tanzania	0.5595
Benin	0.5476
Pakistan	0.5238
Mozambique	0.5238
Morocco	0.5119
Egypt	0.5119
Togo	0.5119
Burkina Faso	0.5119
Namibia	0.5
Nigeria	0.4881
Afghanistan	0.4643
Senegal	0.4405
Cambodia	0.4167
Cameroon	0.4167
Malawi	0.4167
Côte d'Ivoire	0.4048
Jordan	0.3333
Lebanon	0.3333

Ethiopia	0.3333
Mali	0.3214
Zambia	0.3095
Madagascar	0.2976
Niger	0.2976
Algeria	0.1548
Mauritania	0.0952

Source: United Nations E-Government Survey 2020 (UN, 2020)

While open data initiatives can potentially facilitate accountability and transparency in governance, increase productivity and efficiency of agencies, and promote public participation, they can also reproduce existing economic and social inequalities due to the underlying politics of such initiatives. The Web Foundation (2017) found that "few open data initiatives actively promote inclusion and equity" (p. 20). Although open data has contributed to innovation and economic growth, it has done very little to improve social inclusion. Moreover, merely having access to data does not establish economic rents; open data is needed to establish business models that can increase sales or productivity. The ability to use such data depends crucially on the data processing and analytical capabilities that are lagging in low- and middle-income countries and particularly in marginalized communities, which include rural populations, micro-enterprises, and women. These sections of society are not only under-represented in the data (Perez, 2019). They are also less likely to make use of such data to gain economic and social benefits. This is due to their limited digital skills, poor capacity to use digital devices, and lack of agency or perceived benefits from digitalisation. Sometimes governments sign on to the Open Government Partnership but do not fulfil membership mandates, often due to a lack of political will. Evidence also shows that governments are more likely to open data that is apolitical in nature (e.g., economic growth and innovation) while keeping more contentious data closed (e.g., budgets, spending, contracting, etc.) (Web Foundation, 2017). The result is that even after governments begin opening data, citizens do not always get the data they want or need in order to advocate for their rights or improvements to service delivery.

Moreover, data itself is not neutral; social structures are inherent in open data and subsequently affect who is captured in the data, its analysis, and interpretation. For instance, the digitalisation of land records in Karnataka, India, further empowered those with financial resources and skills (Gurstein, 2011). Once the previously restricted land records data became available, the richer were able to make the most use of the data and records to eventually acquire more estate, which further concentrated wealth. 'Citizen-generated data' can be especially biased. This is true for data that citizens actively upload to digital platforms like 'IPaidaBribe' in India or 'HarassMap' in Egypt (Pawelke et al., 2017). In cases like these, there is a risk that better-connected citizens will have their experiences better captured, so services will be tailored to better respond to their needs. For example, HarassMap captures real-time self-reported data of sexual harassment experienced by women in Cairo, Egypt. However, if only better-off, connected women can report their experiences, policy responses based on HarassMap data may not effectively respond to the needs of women in less well-connected areas, or of poorer women who may experience harassment and violence differently (Roberts and Marchais, 2017). In the case of reporting corruption or bribery, crowdsourced platforms tend to be mainly used by young, technically savvy individuals, and are often not accessible to the people who suffer most from the effects of bribery (Kukutschka, 2016).

<u>When relying on crowdsourced data, implementation teams should ensure that extra steps are taken to account for people who are unable to upload their own data.</u> Moreover, citizen-generated data that is not actively uploaded by citizens, but instead is scraped by private companies based on technology usage, is also inherently biased. That is because such data relies on the use of technology, which is unevenly distributed. Big data generated by technology platforms and telecommunications companies is an example of this, because only the experiences of connected citizens are captured (Pawelke et al., 2017).

4.4. Governance in a Digital World

All governance now takes place amidst rapid digitisation, which has broader implications for governance. Like other complex adaptive systems, governance systems are dynamic and shaped by external factors. Any governance structures, processes and policies seeking to achieve transformative change must be informed by the ways that digitalisation impacts governance, while also altering current digital governance trends. A failure to do so will result in a failure to generate a new mainstream that aligns with the Recover Better Support programme's goals.

Regulators are increasingly challenged to create effective frameworks to govern their digital transition, and countries are now developing their own approaches to Internet governance as they utilise Internet and data policies in the service of economic and trade objectives. However, there are complex power relations at play. The digital transition is a site of geopolitical competition between (for example) the US and China. The EU's General Data Protection Regulation, for instance, also stimulates the development of local digital regulations (European Think Tanks Group, 2020). But developing countries may struggle to find experienced regulators who can shape these incentives, understand the implications for sustainable development and enforce sanctions for those who break the rules. Limited institutional capacities and varied and fragmented enforcement regimes around data protection and privacy are major obstacles to effective data governance in low- and middle-income countries. Moreover, digital monopolies, such as Amazon and Alibaba, are gradually taking over critical national infrastructure and creating new dependencies and inequalities. This threatens progress on SDG 10, reducing inequalities between countries and amongst groups.

As described in Roberts and Hernandez (forthcoming), a type of 'digital authoritarianism' is rising, where most countries are experiencing a decline in political rights and civil liberties, thus harming progress on SDGs 16 and 17. IDS's research on *Digital Rights in Closing Civic Space* identifies four authoritarian threats to a free and open Internet: Internet shutdowns, digital surveillance, digital disinformation, repressive digital laws, and arrests of digital activists. In some cases, the governments themselves are using the Internet for unwarranted citizen surveillance and to suppress opposing voices; citizens in 29 countries experienced Internet shutdowns in 2020, with India alone recording over 100 Internet shutdowns (Access Now, 2021). In Uganda, Internet shutdowns and closing of civic spaces were found to have a negative impact on development (CIPESA, 2017). At present, only 28 African countries have active data protection and privacy legislation (UNCTAD cyber-law tracker); such lax laws around privacy and identity in these countries can help powerful groups identify, target and discriminate against already marginalised groups, setting back progress on SDG 16 on the creation of 'peaceful and inclusive societies'. For example, micro-targeted digital disinformation is being designed to influence voter turnout of particular demographic groups in specific constituencies (Ryan-Mosley, 2020).

Social media platforms have accelerated the speed and reach of hate speech and disinformation in some cases, while algorithmic and data-driven decision-making on platforms threatens to replicate existing socio-economic disparities. For instance, women-led enterprises were disadvantaged in the data-based scoring processes of Amazon's 'Buy Box' algorithm. Platforms are becoming increasingly privatised, limiting citizens' ability to avoid authoritarianism as characterized by surveillance and disinformation. Poor policy frameworks as well as concerns about data privacy and cybercrime also give rise to low levels of trust: this is a key obstacle to strengthening the state-society contract, itself a cornerstone of sustainable development (Menocal, 2018).

The digitalisation trends and the state of Internet governance—or the lack thereof—will affect interventions across the previous three areas mentioned above (digital in government, digital government services and digital participation in governance). For example, fake news and misinformation threaten the integrity of any public deliberation process about digital participation in governance platforms. Meanwhile, providing digital tech and infrastructure to governments with authoritarian ambitions (digital in government) could result in the technology's being used for unwarranted surveillance and to crack down on dissent. GIZ is already working on addressing some of these challenges. For instance, GIZ launched the 'CallvsCorona' project to tackle the 'infodemic'—the parallel epidemic of inaccurate medical information on social media—through a 24-hour interactive phone service in five countries (Haiti, Madagascar, Malawi, Mozambique, and Zambia). It aims to providing a reliable source of information to people living in remote areas; hence information is delivered through basic mobile phones and access to radio stations. As part of FAIR forward, GIZ is also supporting Ghana, Rwanda, South Africa, Uganda, and India in building, expanding, and transferring knowledge to AI; improving the access to training data and AI technology; and developing political frameworks for ethical AI and improved data protection. GIZ could further support partner countries of the German Development Cooperation by supporting existing forums such as the Internet Governance Forum (IGF), which provides a platform for all stakeholders to exchange ideas and best practices related to Internet governance. Such platforms however need to include participation from civil society and marginalized groups.

5. A political economy understanding of digital governance

When development practitioners set out to implement and scale digital governance projects under the four categories mentioned above, the key challenges they are likely to face include a) low access to capital; b) a lack of national ownership of initiatives; and c) a lack of regulatory clarity/ integration with government and other stakeholders. Understanding how structural factors are shaping the uptake of digital governance projects, the actors involved in (or excluded from) the framing and design of initiatives, as well as the formal and informal 'rules of the game' (i.e., how social, cultural, and religious norms are affecting the adoption of uptake) is therefore critical for scaling and implementing digital governance projects.

For example, in the case of Kenya, regulations in the ICT services sector are spread out between the central government and state entities in Kenyan counties, leading to unclear division of responsibilities and overlap of roles, making it difficult for regulatory institutions to prosecute cybercrime such as software piracy, which further deter foreign investment (Akamanzi et al., 2016), deteriorating progress on SDGs 8, 9 and 16. Even the M-Pesa success has been attributed to political patronage. M-Pesa's

parent company Safaricom enjoyed a close relationship with the Jubilee party, which enabled it to actively block competition from new entrants whilst carrying out continuous innovations with M-Pesa (Tyce, 2020). Another example is the case of Uganda, where the Uganda Communications Commission has oversight over all the telecoms players in the sector and serves as the main channel through which government censorship is implemented by arbitrary withdrawal of licenses, 'at source' throttling and internet shutdowns with serious consequences for freedom of speech (Asiimwe, 2019).

Data privacy and data ownership are key considerations within the *Digital Principles* and GIZ's Digital Human Rights principles, which all projects need to consider. While digital identity forms an important part of building 'legal identity for all' by 2030 under SDG Target 16.9, reliance on digital identity and algorithms to manage essential services, such as food distribution, can end up marginalising those whose identity caused them to be displaced in the first place. Moreover, automating welfare processes provide the state with an increased capability of surveillance and influencing the behaviour of citizens (Eubanks, 2018), while the citizens, particularly the marginalised, poor and digitally disconnected individuals, are less likely to exhibit any form of control over their own data. And for those who choose to protect their privacy, this comes at the cost of being excluded from the welfare system, as seen in the case of digital identity systems in both Kenya and India. These challenges are multiplied in fragile and conflict-affected GIZ partner countries, where access to digital technologies becomes even more asymmetrical and where digital technologies can increase the risk of armed conflict.

Data-driven digital governance projects in low- and middle-income countries can ultimately create new winners and losers; the ability to extract 'value' or rents from data is shaped by digital infrastructure such as data centres and cloud solutions; digital literacy and analytical capabilities to clean and process the data; and AI capabilities to convert data into data intelligence (i.e., data-driven business models). These capabilities remain concentrated in developed countries; the entire African continent, for instance, accounts for less than 1% of the global data capacity (Munshi, 2020). Moreover, the process of data collection, analysis, interpretation, and use is critically shaped by power relations. Digital governance projects that rely heavily on remote data collection and technical analysis may also end up relying on analysts from the Global North, inadvertently reinforcing power relations that disadvantage the growth of local data science expertise. The need for computing power and data science expertise makes it difficult for small and local actors to lead on predictive analytics, potentially creating new dependencies (Hernandez and Roberts, 2020).

6. Emerging trends for development practitioners

It is clear that digital governance approaches, categorised as Digital in Government, Digital Government Services and Digital Participation in Government, hold significant potential for SDG acceleration but suffer from important challenges in implementation and scaling (Section 4), including emerging political economy issues (Section 5). Below, we provide recommendations on how GIZ, other donors and development practitioners can provide targeted support to digital governance projects that enable progress on the SDGs.

In alignment with the principle of 'Leaving No One Behind', digital governance projects need to account for the five dimensions of the digital divide—access, adoption, awareness, ability, and agency—and the 'models of use' in the local context.

Digital solutions implemented by development practitioners must account for expanding access to the most marginalized sections of the society, which suffer from not only limited digital access but also lower adoption rates due to lower affordability of digital solutions, lack of awareness of the existence and benefits of digital technologies, lagging abilities and skills to effectively use these digital approaches as well as lower levels of agency. In Mexico, for instance, new GIZ digital projects should target areas that are not digitally connected or are severely lagging in digital connectivity. In the case of the Middle East and North Africa (MENA), 50% of GIZ projects already implement digital approaches with project partners. This has facilitated access to justice and more transparent service delivery, but there is still much scope to maximise benefits for marginalised sections of society by improving their access to affordable smartphones and digital skills trainings.

In the conceptual and design stages of digital projects, development practitioners need to account for the multi-faceted nature of the digital divide to avoid exacerbating existing inequalities. 'Digital by Default' policies must be accompanied by parallel offline channels for the most marginalised and least digitally connected populations. One way of expanding digital access is by leveraging local communities and social networks to help people use digital devices and raising awareness about the existence of such projects. Evidence from Uganda suggests that cooperatives and local community groups have been critical both in expanding businesses for agri-entrepreneurs as well as helping entrepreneurs access and use digital platforms (Banga et al., 2021). Digital governance projects need to be implemented in partnership with local tech providers who can offer maintenance, repair services and troubleshooting services for digital hardware and software; donor support should build local tech capacity and facilitate linkages with local tech providers.

Investing in projects that facilitate digital de-centralisation, localising Agenda 2030 and building the institutional capacity of implementing partners.

Digital technologies are opening up new possibilities for decentralisation and local governance, particularly in a post-COVID scenario. The lockdowns and social distancing requirements during the COVID-19-pandemic have also accelerated localisation of the 2030 Agenda through the adoption of digital approaches. Local and national governments have turned to digital channels to increase citizen participation[6], with municipalities in countries like Kosovo recently adopting this for the first time to ensure democratic continuity. But the lack of coordination among ministries and agencies; challenges linked to inefficiencies in staffing patterns; weak data collection and monitoring of sector trends; and poor absorption capacity of public institutions continue to be key challenges in leveraging digital approaches for the SDGs.

GIZ and other development practitioners can play a critical role in supporting and facilitating multi-stakeholder dialogue and partnerships between key horizontal and vertical stakeholders. This can be done through continued support for awareness-building activities. For instance, the SDGs for All platform in Serbia supports society-wide multi-stakeholder dialogue for defining and implementing SDG-related policy priorities, and creates an open space for discussion and consent-building with state actors on different levels. Support is particularly needed for digital platforms and other digital approaches that not only facilitate dialogues between multiple stakeholders critical to the digital transition (e.g., private sector, civil society, different ministries, and citizens) but also facilitate

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[6] http://helvetas-ks.org/demos/supporting-municipalities-to-bridge-the-gap-with-citizens-through-online-meetings/

coordination at multiple levels of governance. Furthermore, support is needed for the digitalisation of government departments and services at the sub-national level, which can enable a form of digital decentralisation that shifts digital control and sovereignty towards local governments and citizens.

Here, development practitioners can build capacity that allows implementing partners to mainstream digital approaches for scaling existing local projects, rather than funding competing projects. For example, although there is great opportunity for public-private partnership in the area of educational technology (EdTech) in Ghana, the government often opts for foreign EdTech solutions rather than local solutions, increasing the patronage of foreign EdTech providers over local ones. Instead of supporting a quality Ghanaian EdTech scale-up of existing tools in Ghana, foreign companies and non-governmental organization (NGO) coalitions import their own tech solutions (Jacobs Foundation, 2020). For instance, 'Edify' is a foreign NGO that uses its own tech solution for schools in Ghana.

To incorporate a clear sustainability architecture that focuses on the 'whole-of-government' approach, development practitioners should help partner countries develop clear national policy frameworks, with a single vision driving and leading the digital transformation of the public sector towards SDG attainment.

SDG implementation is a shared responsibility and requires an integrated approach. However, the existence of several digital policies, the multiplication of strategies, and fragmented ICT responsibilities blur institutional governance and lead to unclear whole-of-government visions. Development Cooperation should offer technical assistance to partner countries to create coordination processes or multi-sectoral mechanisms that can improve cooperation across ministries and stakeholders to meet SDG priorities. This can be direct support; for example, the German Development Cooperation/development practitioners can help improve accountability on SDG commitments by helping partner countries establish sustainability councils that use digital technology to examine and audit public funds. Successful sustainability councils require multi-stakeholder dialogue and citizen engagement. Communication about a clear division of responsibilities with other ministerial departments is also essential. Bi- and multilateral cooperation projects like the Recover Better Support Programme can also indirectly aid the coordination process in partner countries by supporting the development and in-country uptake of digital platforms that foster multi-stakeholder dialogue, and by supporting digital participatory governance initiatives.

Data collection for evidence-based design of SDG interventions can be improved by supporting new digital collection methods such as open data, citizen-generated data, and big data.

These methods could also be combined with other innovative digital data collection methods such as open earth observation data and satellite imagery. Digital governance projects relying on crowdsourced data, big data, or open data should account for underlying social structures and power relations that affect whose realities and interests the data reflects, to ensure that digital data-informed decisions do not exacerbate social or economic divides. All German Development Cooperation projects must align with the data privacy and data ownership considerations laid out in the *Digital Principles* and GIZ's Digital Human Rights principles. In implementing data-driven digital governance projects, the German Development Cooperation and its partners must account for the underlying power relations in data collection, analysis, interpretation, and use. Open data that is relevant to social change and sustainability often goes unused due to local capacity gaps. One interviewee pointed out that *while vast amounts of data*

were being generated by government departments, there is room to improve capability, data collection structures (e.g., guidelines on how data should be collected and at what level of granularity), as well as awareness among public servants on the potential of data. The German Development Cooperation and programmes such as the Recover Better Support Programme should direct their investment and support towards strengthening the capabilities of local 'infomediaries' – data intermediaries that can turn data into actionable information.

Understanding the political economy of data-driven and digital projects, and embedding such analysis into the design of digital governance projects.

Our interviewees emphasised the importance of political will as a necessary factor for the success of digital governance projects, especially projects that require a great deal of collaboration and data sharing between multiple government ministries or service providers. Whole-of-government solutions are especially challenging from a political economy perspective, since they require buy-in and participation from many different government institutions. One interviewee stressed that *recent government reform and moments of political momentum can serve as windows of opportunity for digital governance projects.*

Scaling and implementing digital governance projects requires an understanding of how structural factors shape the uptake of digital governance projects, the actors involved in (or excluded from) the framing and design of initiatives, as well as the formal and informal 'rules of the game' (i.e. how social, cultural, and religious norms affect the uptake). <u>At the concept and design stage of the project, digital governance projects should examine patterns of how digital services are being accessed and by whom.</u> This includes examining existing barriers to access, patterns of digital device ownership, and type of platforms (USSD, SMS, digital platforms such as WhatsApp). Understanding how digital access interacts with analogue sources of information, such as the radio and community groups; who is routinely left behind; and factors shaping the uptake of digital services is also critical.

<u>Digital governance projects that are data-driven or use open data should account for underlying social structures, which affect how and on whom the data is collected as well as its analysis and interpretation, to ensure that such projects do not exacerbate social or economic divides</u>, as evidenced in the case of digitalisation of land documents in Karnataka (see Section 4.3.2). Digital governance projects relying on crowdsourced data need to account for people who are unable to upload their own data, while donors and development practitioners supporting such projects must build the capacity of local partners and local data science expertise in terms of data collection, processing, and analytical capabilities.

Taking an adaptive management approach towards implementing digital governance projects.

Development projects do not always work out as envisioned, and theories of change do not always hold true. This applies especially when the challenges being addressed are systemic, complex and have many moving parts, and where contexts are highly unpredictable and dynamic, involving many actors with differing interests that influence change (Ramalingam, 2013). Adaptive management has been proposed as an ideal management theory for these types of situations. Proponents of adaptive management suggest that addressing complex challenges requires programme design and implementation teams to think and work non-linearly. Such teams must routinely revisit and readjust theories of change based on feedback from beneficiaries in order to identify emerging—or sudden—trends within the context and from data collected during monitoring and evaluation (M&E) efforts. This requires implementers to acknowledge that although they may be able to make educated guesses about how to solve complex

problems, they do not necessarily know what will work at the beginning of the programme. This is in contrast to the aid sector, which typically favours bureaucratic, linear technocratic management approaches where success is measured based on how well implementation teams are able to achieve development outcomes while following the original theory of change (Ramalingam, 2013). Being adaptive requires implementing teams to actively collect data and information throughout the life of the project in order to learn what has worked according to the plan, identify new opportunities that may work, and pinpoint parts of the project that are currently not working and may need to be altered or discontinued altogether.

Due to its complex nature, governance is one area where adaptive management has gained some traction. Some of the best-known adaptive approaches have been popularized, trialled and tested in governance programmes, including problem-driven iterative adaptation (PDIA) and thinking and working politically (TWP) (Andrews et al., 2017; Laws and Marquette, 2018). These approaches inherently incorporate elements of Political Economy Analysis (PEA) as part of the design and implementation process, allowing them to make decisions that factor in local politics and power relations. In fact, it is often local politics and power relations that inform adaptations in intervention and programme design.

Because they seek to solve complex governance challenges using software, digital governance initiatives are likely to require adapting the project theory of change as well as the software/technology being used. High levels of adaptiveness tend to be the norm for projects implemented by private technology companies, in the form of 'agile software development', which emphasizes iteratively improving products through short cycles—or loops—of implementation, user feedback, and adaptation (Agile Alliance, 2001; Prieto Martin et al., 2017). Surprisingly, the growing popularity of adaptive management approaches in governance programmes and the natural tendency for private technology firms to work in agile ways rarely translates to adaptive digital governance initiatives. Instead, many digital governance projects tend to be implemented using traditional linear models (Prieto Martin et al., 2017). A study focusing on Technology for Transparency and Accountability (T4TA) projects in Kenya found that digital solutions tended to be designed and implemented in a linear fashion, but rarely worked as envisioned due to difficulties getting buy-in from powerful actors, partners and potential users; due to the time-consuming nature of building relationships with government; and because important issues were discovered too late (e.g., at the end of a pilot) (Prieto Martin et al., 2017). These challenges—among others—meant that the original solution did not fit the context. The issue was compounded by the fact that many T4TA projects mainly receive pilot funding, which may not provide enough time to adapt the solution based on lessons learnt—especially those related to politics and power—and to leverage relationships built during the pilot. The over-emphasis on funding pilots is a common phenomenon in digital development and has been termed 'pilotitis' (Huang et al., 2017). The result is that pilots are often created within the same context, seeking to solve the same or very similar problems, but then fail after encountering similar barriers. Very few implementation teams, if any, are able to learn from their failure because funding is rarely available beyond the pilots.

Development practitioners can improve the chances for their digital governance initiatives to succeed by incentivizing and providing space for adaptation. There are examples of projects that have adapted based on learning at GIZ. For example, one of the key findings from GIZ's DAR programme in Cambodia on the creation of a One-Stop Window Office (OSWO) was that Facebook pages were a

popular way of sharing information with citizens. GIZ could therefore adapt its original approach to incorporate support for or investment in local tech providers to create attractive and user-friendly Facebook pages for the OSWO. For instance, such Facebook pages could integrate 'chatbots' and present relevant information in local languages. Another example is adapting and including different actors in the project target audience through learnings on the ground. For example, interviewees revealed that *the GIZ country office in Mexico had a broad mandate on incorporating AI in local governments. However, after learning that the civil society was very strong on digital inclusion in the local context, it shifted the focus to bringing together civil society and academics to foster a multi-actor dialogue with local governments on AI. This enabled the GIZ country office in Mexico to create awareness in local governments about the opportunities and challenges related to AI.* However, another interviewee stressed that *although her project is adapted based on learning, this tends to occur informally without any clear tools or processes to guide effective adaptation.* The interviewee suggested that formal processes and guidance would be helpful in facilitating further adaptive management of digital governance projects. She also pointed out that *introducing a formal adaptation of processes at GIZ could help document lessons learned, both informing and arising from adaptation. This may be useful for other GIZ staff working on similar issues in the future.*

A shift towards adaptive management may require funding modalities and accountability mechanisms that do not require implementation teams to adhere to the original plans. GIZ should review its design and implementation processes to uncover any bottlenecks that hinder adaptation. For example, one interviewee highlighted *an opportunity to reduce lock-in at the stage where work plans are presented to country-level steering committees involving GIZ and its partners.* The interviewee stressed *the need to make it easier to use learning to deviate from original plans once it becomes clear that new courses of action may be needed to achieve the intended outcomes.* Digital governance implementation teams can improve their chances of success by incorporating regular theory-of-change reflection points into their planning and by collecting data that may aid with agile software development. Moreover, implementation teams should ensure that data is also collected for potential beneficiaries whom the digital solution may not reach so that they can create or adapt parallel offline channels accordingly.

Adaptive management may also require donors to think beyond funding mainly pilots or short-term projects. Another interviewee highlighted that although it is not the norm in GIZ, her programme—which develops ICT building-block governance solutions—is looking into long-term procurement mechanisms for its partners and implementing partners that allow for rapid prototyping. The mechanisms also enable partners to come back to the programme for additional funding.

7. Conclusions and implications for GIZ's Recover Better Support Programme

This study aimed to review evidence on the use of digital governance approaches to accelerate the implementation of the SDGs, and how GIZ can effectively integrate such approaches into its technical assistance programmes under the Recover Better Support Programme (RBSP). The analysis is largely based on a desk review of secondary data from key international reports, GIZ internal documents and country reports, and international databases, as well as primary data using semi-structured interviews with GIZ staff working on the 2030 Implementation Initiative, specifically in the partner countries of Namibia and Mexico. The objective was to ascertain points of entry for integrating systemic digital approaches into GIZ's technical assistance programmes in partner countries.

The interrelatedness of the SDGs offers a unique opportunity to develop common digital approaches and integration within and across institutions, creating an environment primed for a systems-level implementation using digital technologies. The analysis in the study therefore focused on ICT building blocks such as the blockchain, database structures and information architectures, e-commerce platforms, messaging services, geographic information service (GIS) and digital identity management, among others. Our analysis provided a careful assessment of the risks, challenges and potential trade-offs to the SDGs presented by digital governance approaches, using the digital governance typology in Roberts and Hernandez (forthcoming): 1**)** Digital in government: use of digital technologies to streamline internal government functions, such as the use of the blockchain to increase transparency in budget allocation for the SDGs; 2) Digitalisation of government services: improving government service delivery and external one-way information sharing through digital initiatives, such as e-learning platforms; 3) Digital participatory governance: digital initiatives such as digital participatory platforms and e-petitions designed to facilitate two-way interaction between citizens and government; and 4) Governance in a digital world: external digital factors that impact governance, such as misinformation, unwarranted surveillance by governments and corporations, and cyberattacks, among many others.

Using this typology, we reviewed and presented best practices emerging from past and present projects, including some GIZ projects, as well as the associated challenges. In the case of digital in government, Cote d'Ivoire, Ethiopia, Senegal, Pakistan, Mozambique, Burkina Faso, Mali, Afghanistan, Mauritania, and Niger are doing worse than other partner countries of the German Development Cooperation. There is a significant digital divide in terms of public Internet infrastructure. Low- and middle-income countries are lagging in digital infrastructure and country readiness, which limits the potential of digitalisation within government departments, while higher-income countries are leveraging maximum benefits. Under digitalisation of government services, we found that GIZ partner countries in Africa are particularly lagging in online service delivery; even within countries, there is a persistent digital divide across different segments of the population. This indicates that without a proper understanding of the multi-dimensional nature of the digital divide, the digitalisation of government services can not only obstruct the materialisation of digital dividends, but also threatens to exacerbate and perpetuate existing socio-economic divides. Digital participatory governance initiatives have overall failed to deliver. Participation rates remain low due to a low awareness of such platforms, low ownership rates for digital devices, as well as poor ability and digital skills to use these platforms. This is especially true for rural communities, women, and marginalized sections of society. While open data initiatives can potentially facilitate accountability and transparency in governance, increase the productivity and efficiency of agencies and promote public participation, they can also re-produce existing economic and social inequalities due to the underlying politics of such initiatives. Moreover, data itself is not neutral; social structures are inherent in open data and subsequently affect who is captured in the data, its analysis and interpretation.

Below, we summarize key findings of the study and recommendations emerging from the study for GIZ's RBSP:

1. To expand the Sustainability Governance pillar of the RBSP, in alignment with the principle of 'Leaving No One Behind', digital governance projects should be problem-driven and citizen-centric, and should incorporate an assessment of the digital access and capabilities of target populations. The Development Cooperation should support digital governance projects that

provide a package of 'offline models of use' parallel to 'online models of use' for segments of the population that are unable to connect or are less digitally connected. Implementation of such projects must be accompanied by demand-generating interventions (such as advertising campaigns, online and offline outreach activities) and done in partnership with local communities and intermediaries who can leverage social networks to accelerate uptake and scaling.

2. Digital governance projects need to 'think' and 'act' politically. Political economy analysis must be actively embedded in the design and implementation process for effective scaling so that programme designers, project implementers and digital governance solution designers can make decisions in keeping with local politics and power relations. This is particularly relevant in the context of *Recover Forward*, which requires political buy-in from all key stakeholders. Project timeframes need to provide space for implementation teams to build the necessary relationships. The German Development Cooperation has a role to play in 'sensitizing' governments and stakeholders in partner countries to the complex power relations at play at the international level.

3. To incorporate a clear sustainability architecture that focuses on the 'whole-of-government' approach, GIZ should help partner countries develop clear national policy frameworks, with a single vision driving the digital transformation of the public sector towards SDG attainment. SDG implementation is a shared responsibility and requires an integrated approach, but the existence of several digital policies, multiplication of strategies and fragmented ICT responsibilities blurs institutional governance and leads to unclear whole-of-government visions. Under RBSP, GIZ should offer technical assistance to partner countries in creating coordination processes or multi-sectoral mechanisms in order to improve cooperation across ministries and stakeholders and to leverage digitalisation for meeting SDG goals.

4. For effective localisation of the 2030 Agenda, international development programmes need to create institutional and technical capacity and sustainability among sub-national stakeholders— including local governments, implementing intermediaries and domestic digital service providers. GIZ should support digital governance projects that co-create value through digital collaboration between local governments and citizens using crowdsourcing, hackathons, and innovation competitions, whilst ensuring that such technical engagements are inclusive. To support maintenance and repair as well as incremental upgrades in the components, features and applications, international development cooperation should prioritize digital governance projects that are implemented in partnership with local tech providers, in addition to investing in capacity-building activities for local tech providers to increase their competitiveness. German Development Cooperation should also offer technical assistance to partner countries on new models of management that ensure the economic sustainability of implementing intermediaries at the sub-national level. This is well illustrated in the case of the e-Gram project, aimed at delivering essential citizen services in rural India by setting up information kiosks at the village level. Some e-government services are seasonal while others are low in demand, disincentivising village-level entrepreneurs from making heavy investments in kiosks. Eventually, a public-private partnership (PPP) model was found to be more effective for the economic sustainability of information kiosks (Malodia et al., 2021).

5. Data collection for the evidence-based design of SDG interventions can be improved by supporting new digital collection methods such as open data, citizen-generated data, and big data. These methods could also be combined with other innovative digital data collection methods such as open earth observation data and satellite imagery. <u>Digital Governance projects relying on crowdsourced data, big data or open data should account for underlying social structures</u> and power relations that affect whose realities and interests the data reflect. This will ensure that digital-data-informed decisions do not exacerbate social or economic divides. <u>The German Development Cooperation and programmes such as the Recover Better Support Programme should direct their investment and support towards strengthening the capabilities of local 'infomediaries'</u>—data intermediaries that can turn data into actionable information.

6. Incorporate Adaptive Management as a cross-cutting pillar in international assistance programmes such as the Recover Better Support Programme. <u>For effective scaling beyond the pilot stage, Digital Governance projects must provide space to navigate political economy dynamics and contextual peculiarities and be able to adapt iteratively based on ongoing learnings. There should be a formal process at GIZ for documenting lessons learnt from existing projects and formal mechanisms/guidance on adapting projects based on ongoing learnings.</u>

Beyond the recommendations for the RBSP, an additional important area of recommended engagement for the German Development Cooperation is 'governance in a digital world'. As discussed in Section 4, social, economic and political life increasingly takes place on or is mediated by digital platforms. Thus, it is important to consider challenges associated with digitisation—including biases in algorithmic decision-making, misinformation, unwarranted surveillance by governments and corporations, the consolidation of the Internet economy by a handful of companies, etc. These trends often disproportionately affect developing countries. For example, the recent 'Facebook Papers' leak revealed that Facebook purposely underinvests in its content moderation capabilities in developing countries, leaving their citizens more exposed to misinformation (Elliot et al., 2021). Addressing these challenges will require interventions at the international systems level and collaboration amongst a wide range of actors, such as multi-lateral organisations, Internet governance fora, private companies, civil society, and citizens themselves.

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