POLICY BRIEF

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Taking Forward Digital Public Infrastructure for the Global South

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ABSTRACT

Digital Public Infrastructure (DPI) has received significant attention for its role in promoting inclusive and effective digital transformation, particularly in the countries of the global South. Elevated onto the global agenda under India's Group of Twenty (G20) Presidency in 2023, DPIs are now considered as key digital solutions for providing essential services like digital identity, financial inclusion, and access to e-governance platforms. Yet, realizing the full potential of DPI in developing countries requires building a policy and regulatory framework that fosters trust, protects rights and addresses persistent digital divides. Robust institutions and governance mechanisms are equally essential to ensure that DPI adoption is inclusive, equitable and aligned to national priorities.

This paper provides a snapshot of the recent policy and regulatory developments on DPI, as well as the relevant stakeholders at the national and international levels. It then considers the challenges of the digital divide for developing countries and briefly presents some national experiences on the use of DPIs for increasing financial inclusion and promoting e-governance. The paper concludes by offering some recommendations to fully harness the benefits of DPI for accelerating sustainable development and digital transformation in the countries of the global South.

KEYWORDS: Digital Public Infrastructure (DPI), Global South, Digital Transformation, Digital Divide, Group of Twenty (G20), Sustainable Development, United Nations (UN), Financial Inclusion, E-Governance

KEY MESSAGES

- Digital Public Infrastructure (DPI) has become a key solution for digital transformation, and with its importance being recognized for enhancing financial inclusion and e-governance in the Global South.
- Realizing the full potential of safe, secure and interoperable DPI requires implementing local context-oriented policy and governance frameworks that can build trust, safeguard rights, and close persistent digital divides.
- Knowledge-sharing, capacity building and human-centric design for DPI, complemented with strengthened international cooperation is essential for driving equitable and inclusive economic growth and sustainable development.

Les Infrastructures publiques numériques («DPI ») ont suscité un vif intérêt en raison de leur rôle dans la promotion d'une transformation numérique inclusive et efficace, en particulier dans les pays du Sud. Placées à l'ordre du jour mondial sous la présidence de l'Inde au sein du Groupe des Vingt (G20) en 2023, les infrastructures publiques numériques sont désormais considérées comme des solutions numériques essentielles pour fournir des services fondamentaux tels que l'identité numérique, l'inclusion financière et l'accès aux plateformes d'administration en ligne. Toutefois, pour exploiter pleinement le potentiel des DPI dans les pays en développement, il est nécessaire de mettre en place un cadre politique et réglementaire qui favorise la confiance, protège les droits et combatte la fracture numérique persistante. Des institutions et des mécanismes de gouvernance solides sont également essentiels pour garantir que l'adoption des DPI soit inclusive, équitable et alignée sur les priorités nationales.

Cette étude présente un aperçu des récentes évolutions politiques et réglementaires en matière de DPI, ainsi que des parties prenantes concernées aux niveaux national et international. Elle examine ensuite les défis posés par la fracture numérique pour les pays en développement et présente brièvement cer-

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taines expériences nationales en matière d'utilisation des DPI pour accroître l'inclusion financière et promouvoir la gouvernance électronique. L'étude présente enfin quelques recommandations visant à tirer pleinement parti des avantages des DPI pour accélérer le développement durable et la transformation numérique dans les pays du Sud.

MOTS-CLÉS: *Les infrastructures publiques numériques («DPI »), Les pays du Sud, La transformation numérique, La fracture numérique, Le Groupe des Vingt (G20), Le développement durable, Les Nations Unies, L'inclusion financière, La gouvernance électronique, Les multipartites*

La Infraestructura Pública Digital (DPI) ha recibido una gran atención por su papel en la promoción de una transformación digital inclusiva y eficaz, especialmente en los países del Sur Global. Tras su incorporación a la agenda mundial bajo la Presidencia del Grupo de los Veinte (G20) de la India en 2023, la DPI se considera ahora una solución digital clave para proporcionar servicios esenciales como la identidad digital, la inclusión financiera y el acceso a plataformas de gobernanza electrónica. Sin embargo, para aprovechar todo el potencial de la DPI en los países en desarrollo es necesario crear un marco normativo y regulatorio que fomente la confianza, proteja los derechos y aborde las persistentes brechas digitales. También es esencial contar con instituciones y mecanismos de gobernanza sólidos para garantizar que la adopción de la DPI sea inclusiva, equitativa y acorde con las prioridades nacionales.

Este documento ofrece una visión general de la evolución reciente de las políticas y la normativa sobre las DPI, así como de los actores relevantes a nivel nacional e internacional. A continuación, examina los desafíos de la brecha digital para los países en desarrollo y presenta brevemente algunas experiencias nacionales sobre el uso de las DPI para aumentar la inclusión financiera y promover la gobernanza electrónica. El documento concluye con una serie de recomendaciones para aprovechar plenamente las ventajas de las DPI con el fin de acelerar el desarrollo sostenible y la transformación digital en los países del Sur global.

PALABRAS CLAVES: *La Infraestructura Pública Digital (DPI), Los países del Sur global, La transformación digital, La brecha digital, El Grupo de los Veinte (G20), El desarrollo sostenible, Las Naciones Unidas, La inclusión financiera, La gobernanza electrónica, Los múltiples partes*

1. Introduction

Digital Public Infrastructure (DPI) has assumed global salience in the last couple of years as a key enabler for accelerating sustainable development and digital transformation in countries. DPI as a set of foundational digital systems was brought into the global spotlight by India's Group of Twenty (G20) Presidency in 2023, and has been taken up by many countries, particularly in the global South.

The proven role of DPIs in empowering citizens through increasing financial inclusion, promoting e-governance and effective service delivery has resonated in many developing countries for increasing digitalisation and transitioning into digital economies, underscoring the importance of DPIs to "accelerate global economic growth, support the transition to sustainable and green economies, and grow accessibility and public trust in institutions"[1].

This is also reflected at the multilateral level in the United Nations (UN) Global Digital Compact (GDC), which was adopted as an annex to the outcome document of the Summit of the Future[2], held in September 2024. The Compact recognizes the potential of DPIs in promoting digitalisation and achieving the Sustainable Development Goals (SDGs), emphasising that digital public goods and DPIs are "key drivers of inclusive digital transformation and innovation"[3].

Noting the role of DPIs as enablers of economic growth and inclusion, the G20 has also emphasised that "leveraging digital technologies for economic activities often necessitates certain basic functions. These can include the ability to identify and authenticate individuals and businesses and secure and seamless flow of money and information. Digital public infrastructure can fulfil these core functionalities through interoperable digital systems, such as: digital identification document (ID), digital payment systems, and data sharing mechanisms with consent wherever applicable…"[4].

The DPI-based systems that have developed in recent years can be classified across three categories: digital identity systems, digital payment systems and data exchange systems. These systems could be considered as 'core DPI' that carry out essential functions[5], while being part of a broader digital ecosystem (see Figure 1). An online resource mapping of DPIs currently shows 57 countries with digital identity systems, 93 countries with digital payment systems, and 103 countries with data exchange systems[6].

1 India's G20 Presidency and United Nations Development Programme (UNDP), *Accelerating the SDGs through Digital Public Infrastructure*, August 2023. Available from https://www.undp.org/sites/g/files/zskgke326/files/2023-08/undp-g20-accelerating-the_sdgs-through-digital-public-infrastructure.pdf.
2 United Nations (UN), "Summit of the Future", 2024. Available from https://www.un.org/en/summit-of-the-future.
3 UN, Global Digital Compact (GDC), para. 16. Available from https://www.un.org/global-digital-compact/sites/default/files/2024-09/Global%20Digital%20Compact%20-%20English_0.pdf.
4 G20, G20 Digital Economy Ministers Meeting Outcome, Annex 1 - G20 Framework for Systems of Digital Public Infrastructure, 2023.
5 UNDP *et al.*, DPI Playbook, 2023. Available from https://www.undp.org/sites/g/files/zskgke326/files/2023-08/undp-the-dpi-approach-a-playbook.pdf.
6 Institute for Innovation and Public Purpose, UCL, Global State of DPI (October

What is DPI?

Under India's G20 Presidency in 2023, the outcome document of the G20 Digital Economy Ministers Meeting described DPI as *"a set of shared digital systems that should be secure and interoperable, and can be built on open standards and specifications to deliver and provide equitable access to public and/or private services at societal scale and are governed by applicable legal frameworks and enabling rules to drive development, inclusion, innovation, trust, and competition and respect human rights and fundamental freedoms."*

DPIs have been characterised as an enabler of state capability, public service delivery, and digital sovereignty, emphasising that DPIs can play a transformative role in developing countries by providing essential services like digital identity, financial inclusion, and access to e-governance platforms[7]. For instance, DPI-based digital ID systems can be a key driver for achieving SDG Target 16.9 on providing legal identity for all. The Organisation for Economic Co-operation and Development (OECD) has also observed that, "when it comes to developing countries, DPI offers an opportunity to leapfrog progress from a less advanced starting point, compared to the trajectory of progress in developed countries… [that] often have a significant number of ageing DPI systems and legacy technology that is both expensive and complex to operate and even more expensive to transition from. In contrast, the relative technological greenfield of developing countries means they can move more directly and quickly to efficient and streamlined solutions"[8].

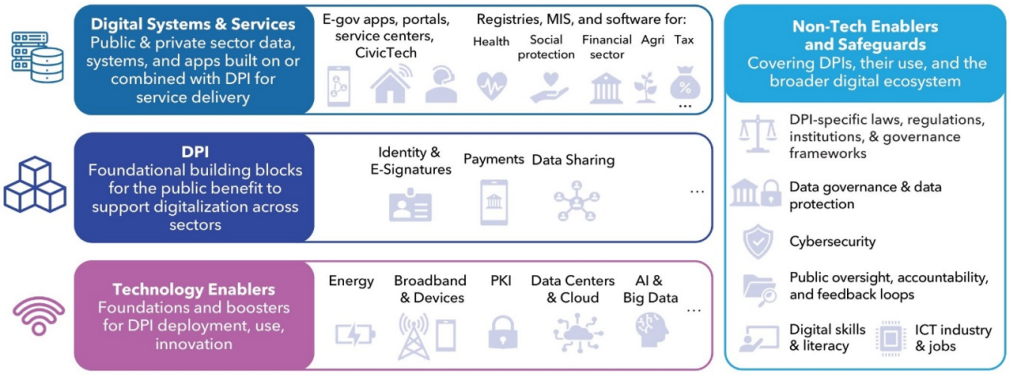
DPIs, like any other digital solutions, can provide citizens with substantial socio-economic benefits but also carry their own risks. Responsible, effective and ethical data governance and policy frameworks need to be put in place so that these solutions can effectively empower societies and individuals to mitigate risks and align their benefits to sustainable development needs, ensuring that no one gets left behind.

This paper seeks to provide a snapshot of the more prominent policy developments regarding DPIs from the recent past. It does not include, however, a comprehensive assessment of all DPI-related initiatives globally. Following the introduction, section 2 looks at some policy developments at the UN and G20, as well as multistakeholder initiatives on DPIs. Section 3 then considers the challenges and opportunities for developing countries in their digital transformation, and how DPI-based solutions can support these efforts. The final section provides some considerations for the ways forward to harness DPIs for building a safe and inclusive digital future for all.

2. Policy developments on DPI

The increasing relevance and recognition of the positive impacts of DPIs for societies has prompted the development of policy frameworks and initiatives that orient DPIs towards public purpose and benefit, and ensure they are intentionally designed in a manner that serves the needs of people and societies where they are implemented[9]. Increasing collaboration among all stakeholders is key for creating such policy frameworks. While the UN and its specialized agencies, as well as the G20 have taken forward the development of principles and policy recommendations on DPIs, the role of other international organisations, technical bodies, civil society and the private sector has been relevant in their effective implementation.

Figure 1 – Locating DPI within the digital ecosystem



Source: World Bank

2024). Available from https://dpimap.org (accessed 8 August 2025).
7 UNDP, "5 facts you need to know about Digital Public Infrastructure", 30 September 2024. Available from https://www.undp.org/egypt/stories/5-facts-you-need-know-about-digital-public-infrastructure.
8 OECD, "Digital public infrastructure for digital governments", OECD Public Governance Policy Papers, No. 68 (Paris, OECD Publishing, 2024). Available from https://www.oecd.org/en/publications/digital-public-infrastructure-for-digital-governments_ff525dc8-en.html.

9 J. Clark, G. Marin, O.P. Ardic Alper, G.A. Galicia Rabadan, "Digital Public Infrastructure and Development: A World Bank Group Approach", Digital Transformation White Paper, Volume 1 (Washington, DC, World Bank, 2025).

2.1. United Nations and its specialised agencies

The UN and its specialised agencies have supported countries' initiatives on digital transformation in the last few years, including in relation to DPIs. For instance, the UN Secretary-General's (S-G) Roadmap for Digital Cooperation[10] included key actions for global digital transformation. In 2023, DPI was identified as "a critical accelerator of the SDGs"[11] and was selected as one of twelve high impact initiatives. The UN High Impact Initiative on DPI[12] aims to catalyse collective action to support DPI implementation and strengthening in 100 countries[13]. This initiative has identified five key pillars in support of this objective that include Universal Safeguards; Innovations for Last Mile Inclusion; Affordable, safe, and scalable technologies; Sustainable and green infrastructure; and Financing[14].

Alongside the adoption of the GDC, the UN also launched the Universal DPI Safeguards Framework, which was developed through a multistakeholder process under the stewardship of the then Office of the Secretary-General's Envoy on Technology (OSET) and the United Nations Development Programme (UNDP). The Framework was created through a global multi--stakeholder effort to mitigate possible risks to users in order to ensure that DPI is safe, inclusive, and effective[15]. Offering practical, rights-based guidance, the Framework addresses the governance, design, deployment, and use of DPI by identifying risks and proposing key safeguards across different stages of the DPI life cycle. The UN Office for Digital and Emerging Technologies (ODET)[16] has also organized the UN Open Source Week[17] from 16-20 June 2025 to facilitate global dialogue and collaboration on innovative solutions based on open source and DPI. The event also featured the first ever UN DPI Day[18], held on 19 June, which was co-sponsored by the governments of Dominican Republic and Nigeria.

The International Telecommunication Union (ITU) and UNDP have been at the forefront of the UN's work on DPIs and digital capacity development, among others, through the Joint Facility for Global Digital Capacity[19]. At the ITU, a resolution was adopted at the World Telecommunication Standardization Assembly, held in New Delhi in October 2024 on 'Enhancing standardization activities on digital public infrastructure'[20], which provides important mandates for its future work on DPI. The ITU is also collaborating with the World Health Organisation (WHO) on developing the DPI Reference Architecture for National Digital Health Transformation, aiming to provide guidance for countries to develop and implement DPI-based national digital systems for health that encompass elements such as a digital reference architecture, technical specifications, and implementation considerations for leveraging health-specific DPI building blocks[21]. The UNDP has also identified DPI as a key enabler of digital transformation[22] and has supported its adoption through initiatives such as the Model Governance Framework for Digital Legal Identity System, which was developed as a resource for using DPI to create rights-based, inclusive, digital identity systems[23]. The roadmap for implementation of the GDC to be published by the ODET is also expected to provide guidance on how the UN will support the work on Digital Public Goods (DPGs) and DPIs going forward.

2.2. G20

The Indian G20 Presidency in 2023 pioneered the work on DPI under the ambit of the G20. The G20 New Delhi Leader's Declaration recognizes that "safe, secure, trusted, accountable and inclusive digital public infrastructure, respectful of human rights, personal data, privacy and intellectual property rights can foster resilience, and enable service delivery and innovation"[24]. The leaders endorsed the G20 Policy Recommendations for Advancing Financial Inclusion and Productivity Gains through Digital Public Infrastructure, taking note of the significant role of DPI in helping to advance financial inclusion in support of inclusive growth and sustainable development[25]. They further welcomed the G20 Framework for Systems of Digital Public Infrastructure[26] which is a voluntary framework for the development, deployment and governance of DPI; as well as the Global Digital Public Infrastructure Repository (GDPIR) initiative which would be a virtual repository of DPI shared by G20 members and beyond[27].

The successive G20 Presidencies of Brazil and South Africa have taken forward this momentum on DPIs. Most notably, a joint communiqué was issued in November 2024 by the then G20 Troika countries (India, Brazil and South Africa) on the 'Declaration on Digital Public Infrastructure, AI and Data for Governance', which was endorsed by several G20 countries, guest

10 UN, Report of the Secretary-General, Road map for digital cooperation: implementation of the recommendations of the High-level Panel on Digital Cooperation, A/74/821, 29 May 2020.
11 UNDP, "UN Digital event mobilizes global leadership and US$400 million to support digital public infrastructure", 18 September 2023. Available from https://www.undp.org/press-releases/un-digital-event-mobilizes-global-leadership-and-us400-million-support-digital-public-infrastructure.
12 International Telecommuincation Union (ITU), "UN High Impact Initiative: Digital Public Infrastructure". Available from https://www.itu.int/initiatives/sdgdigital/digital-public-infrastructure/.
13 UN, "Keeping the SDG Promise: 2024 Update on the High Impact Initiatives at the High-Level Political Forum for Sustainable Development", p. 8. Available from https://sdgs.un.org/sites/default/files/2024-07/Keeping%20the%20SDG%20Promise%20-%20HII%20Snapshot.pdf.
14 UN, "Digital Public Infrastructure : Scaling inclusive and open digital ecosystems for the SDGs", September 2023. Available from https://hlpf.un.org/sites/default/files/2023-09/Digital%20Public%20Infrastructure%20Brochure.pdf.
15 Universal DPI Safeguards Framework. Available from https://www.dpi-safeguards.org/.
16 The Office of the UN Secretary-General's Envoy on Technology transitioned into a new UN Office for Digital and Emerging Technologies (ODET) as of 1 January 2025. See https://www.un.org/digital-emerging-technologies/content/press-release-new-un-office-digital-and-emerging-technologies.
17 UN ODET, "UN Open Source Week 2025". Available from https://www.un.org/digital-emerging-technologies/content/open-source-week-2025
18 UN WebTV, "Digital Public Infrastructure Day (DPI Day), UN Open Source Week 2025", 19 June 2025. Available from https://webtv.un.org/en/asset/k1v/k1vq934jz6.
19 Joint Facility for Global Digital Capacity. Available from https://digital-capacity.org/joint-facility/.
20 ITU, "WTSA-24 Draft Proceedings", 2024, p. 222. Available from http://handle.itu.int/11.1002/pub/8245a882-en.
21 See https://build.fhir.org/ig/WorldHealthOrganization/smart-ra/index.html.
22 UNDP, Digital Transformation Framework. Available from https://www.undp.org/digital/transformations.
23 UNDP, Model Governance Framework for Digital Legal Identity System. Available from https://www.governance4id.org/.
24 G20 New Delhi Leaders' Declaration, adopted in New Delhi, India, 9-10 September 2023.
25 *Ibid*., para. 21.
26 G20 Framework for Systems of Digital Public Infrastructure, 2023. Available from https://g7g20-documents.org/fileadmin/G7G20_documents/2023/G20/India/Sherpa-Track/Digital%20Economy%20Ministers/2%20Ministers%27%20Annex/G20_Digital%20Economy%20Ministers%20Meeting_Annex1_19082023.pdf.
27 *Ibid*., para. 56.

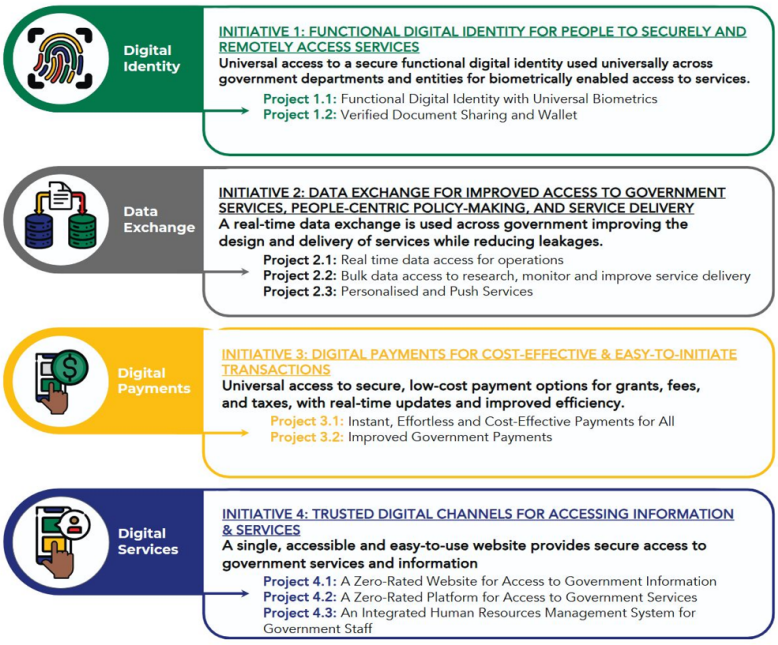
countries and international organizations[28]. The Declaration emphasises that "well-designed DPI augmented by artificial intelligence (AI) can enable the use of data for development, creating new jobs and delivering better health and education outcomes. Their adoption by G20 countries more widely has the potential to radically transform the lives of citizens thereby renewing their faith in vibrant democratic principles"[29].

The 2024 G20 Rio de Janeiro Leaders Declaration, adopted under the Brazilian G20 Presidency, acknowledged the contribution of DPI to "an equitable digital transformation and recogniz[ed] the transformative power of digital technologies to bridge existing divides and empower societies and individuals including all women and girls and people in vulnerable situations". The G20 Maceió Ministerial Declaration on Digital Inclusion for All[30] also made reference to DPIs and welcomed the G20 General Principles on the Governance of Digital Identity, which aims to promote DPIs for digital identification as a mechanism to reach SDG target 16.9. Furthermore, in the G20 Health Ministerial Declaration on Climate Change, Health And Equity, and on One Health, reference was also made to promoting the development of DPI for health adapted to climatic and environmental conditions[31].

Under the current South African G20 Presidency, discussions on DPI have been central to the work of the G20 Digital Economy Working Group (DEWG) which is considering, *inter alia*, how to measure the value of DPI, focusing on its role in unlocking long-term sustainable development[32]. The G20 Guidelines for Integrated Governance of DPI[33], which is an expected outcome of the DEWG under the South African G20 Presidency, will serve as a resource to support countries in designing, coordinating, and aligning DPI with their national institutional arrangements and sustainable development objectives.

The South African government's priorities on DPIs at the G20 are also reflected in its initiatives at the national level, such as the Roadmap for the Digital Transformation of the South African Government (2025-2030), which sets out the country's national plan to "transform how government services are designed, delivered, and experienced by people and organisations. It focuses on four key initiatives grounded in DPI to ultimately transform service delivery"[34] (see Figure 2). The Roadmap also highlights the importance of international cooperation for advancing digital transformation, as it notes that its new approach to digital transformation takes inspiration from successful peers such as India and Brazil.

Figure 2 – South African Roadmap Initiatives and Projects



Source: South Africa's Roadmap for the digital transformation of government

28 Declaration on Digital Public Infrastructure, AI and Data for Governance - Joint Communiqué by the G20 Troika, November 2024. Available from https://www.mea.gov.in/bilateral-documents.htm?dtl/38551/Declaration+on+Digital+Public+Infrastructure+AI+and+Data+for+Governance++Joint+Communiqu233+by+the+G20+Troika+India+Brazil+and+South+Africa+endorsed+by+several+G20+countries+guest+countries+and+international+organizations.
29 *Ibid.*
30 G20 Maceió Ministerial Declaration on Digital Inclusion for All, adopted 13 September 2024.
31 G20 Health Ministerial Declaration on Climate Change, Health And Equity, and on One Health, adopted in Rio de Janeiro, 31 October 2024, para. 19.

32 Robert Opp and Keyzom Ngodup Massally, "South Africa sets its ambitious G20 agenda for digital public infrastructure and AI", UNDP, 8 April 2025. Available from https://www.undp.org/digital/blog/south-africa-sets-its-ambitious-g20-agenda-digital-public-infrastructure-and-ai.
33 G20, Digital Economy Working Group under the South African G20 Presidency. Available from https://g20.org/track/digital-economy-2/.
34 South Africa's Roadmap for the Digital Transformation of Government, 2025.

2.3. Global DPI Summits and Multi-Stakeholder Initiatives

The role of non-State stakeholders such as international organisations, civil society, digital and technology companies, and academia has been significant in recent initiatives on promoting digital transformation and DPI. This is reflected in the UN S-G's Roadmap, which specifically included the creation of a Multi-S-takeholder Network to promote holistic, inclusive approaches to digital capacity development. The focus on multi-stakeholder cooperation has also been included as a principle in the GDC, which states that "Governments, the private sector, civil society, the technical community, academia and international and regional organizations, in their respective roles and responsibilities, are essential to advance an inclusive, open, safe and secure digital future. Our cooperation will be multi-stakeholder and harness the contributions of all"[35];

Multistakeholder engagement has also been evident during various events on DPIs, such as the Global DPI Summit, which brings together key stakeholders in the DPI ecosystem from countries around the world to showcase the progress that countries are making in their DPI ecosystems, as well as to provide space for potential partnerships that countries can draw upon for their DPI implementation.

As part of India's G20 Presidency, the Global DPI Summit[36] was organised in June 2023 to bring together global stakeholders to share their technical expertise, know-how and good practices on DPI. It further showcased the DPIs of G20 members and invited countries and their impact on the national and global digital economy[37]. In 2024, the Global DPI Summit took place in 2024 in Cairo, Egypt[38]. It was organized by Egypt's Ministry of Communications and Information Technology and co-hosted by Co-Develop, the ITU, the OSET, UNDP, and the World Bank. This year, the Summit is scheduled to take place on 4 - 6 November 2025 in Cape Town, South Africa[39].

Multistakeholder initiatives on DPIs such as the 50-in-5 Campaign, the Digital Public Goods Alliance, GovStack, and the Modular Open Source Identity Platform (MOSIP), among many other examples also show how synergies among stakeholders from different regions, as well as between the public and private sector, are being harnessed to promote the adoption of safe, inclusive and effective DPIs. However, developing and least developed countries continue to face some persistent challenges in this regard, which are explored in the following section.

35 GDC, para. 8(k).
36 Global DPI Summit under India's G20 Presidency, 12-13 June 2023. Available from https://dpi.negd.in/.
37 Report of the Global DPI Summit under India's G20 Presidency, 2023.
38 UNDP, Global DPI Summit Outcome Statement, 17 October 2024. Available from https://www.undp.org/digital/news/global-dpi-summit-outcome-statement.
39 Global DPI Summit, 4 - 6 November 2025, Cape Town, South Africa. Available from https://www.globaldpisummit.org/.

3. Challenges and opportunities

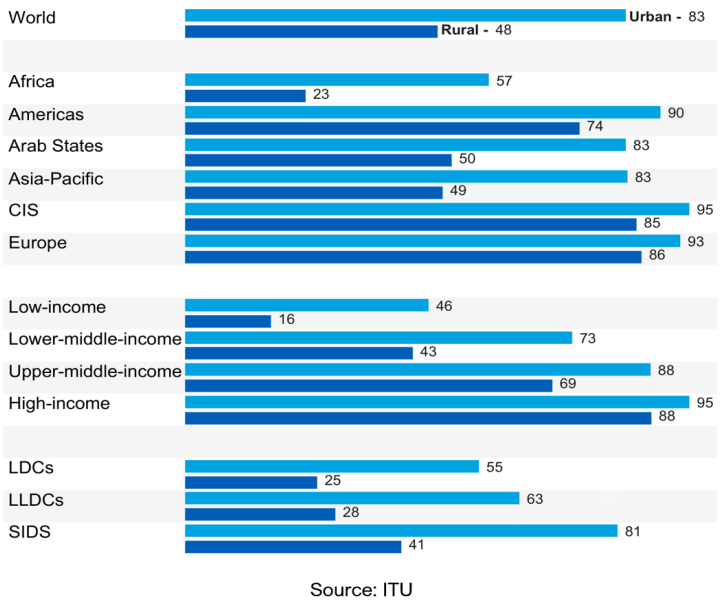
For developing and least developed countries, there are several barriers to an inclusive and effective digital transformation. The challenges of the 'digital divide' are clearly identified in the UN S-G's Roadmap as follows,

"First, installing traditional broadband connections is costly, and countries often face difficulties in financing the fibre-optic cables required. Second, market dynamics are often not favourable. Lower purchasing power in the least developed countries is a limiting factor for connectivity providers and, although wireless technology may help to spread broadband coverage further, faster and more cheaply, companies do not have the incentives to pursue this. Finally, the lack of digital skills can also limit the adoption of digital tools"[40].

These persistent digital divides create inequalities within and across countries. For instance, ITU notes that "in high-income countries, 93 percent of the population uses the Internet, approaching universality. This contrasts starkly with the situation in low-income countries, where only 27 percent of the population is online"[41]. Another divide in internet access is in urban and rural areas, as globally, 83 percent of the urban population uses the internet, as compared with 48 percent of the rural population (see Figure 3).

Even in places where internet connectivity is notionally available, it remains beset by quality of access challenges, such as low bandwidth and weak or congested networks still based on older 2G or 3G technologies. The associated costs of internet access, such as the cost of devices and data plans can also be a barrier for many people, especially in low-income countries. For instance, in 2024, mobile internet costs in Africa were 14 times higher than in Europe[42].

Figure 3 – Percentage of individuals using the Internet in urban and rural areas, 2024



Source: ITU

40 UN S-G Roadmap for Digital Cooperation (2020), p. 5
41 ITU, *Facts and Figures Report 2024*, p. 2.
42 *Ibid.*

Another challenge is that of digital literacy, since many people, especially those living in developing and least developed countries, still lack the foundational skills required to access and effectively use digital technologies, devices and applications. This is reflected in the GDC, which recognises "the importance of digital skills and lifelong access to digital learning opportunities, taking into account the specific social, cultural and linguistic needs of each society and persons of all ages and backgrounds" [43].

The persistent digital divides of connectivity, affordability and literacy need to be effectively addressed for facilitating the equitable adoption of DPIs by the whole of society. This requires building out the physical infrastructure and lowering the cost of access for internet connectivity, especially in rural areas. This must be paired with digital literacy initiatives and public engagement which can build trust in users for the wide adoption of DPIs. This would further enhance the role that DPIs are already playing for increasing digital financial inclusion and promoting localised e-governance solutions, as explored below.

3.1. Digital financial inclusion

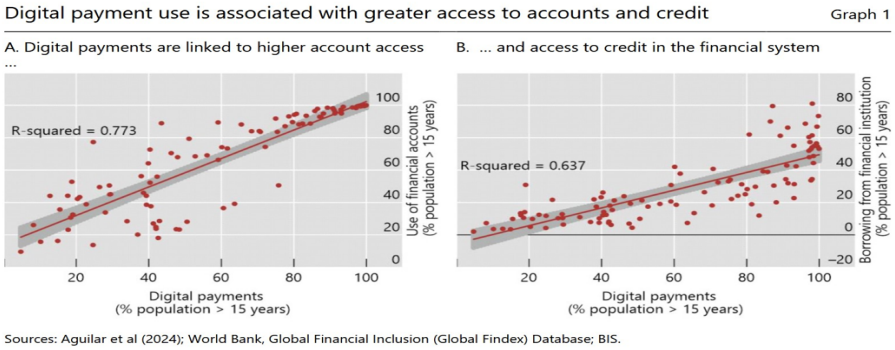
For financial inclusion, digital payment solutions have increasingly gained prominence in recent years, especially since the COVID-19 pandemic. Increase in digital payments have been associated with greater access to transaction accounts and credit from financial institutions, thus acting as a key driver for financial access and a gateway to broader financial inclusion[44] (see Figure 4).

A recent World Bank report has similarly highlighted the foundational role of digital connectivity in enhancing financial inclusion and economic opportunities, noting that "digital connectivity, ownership of mobile phones, and internet use, as well as the resulting availability of mobile money and other digitally enabled financial services… [led to] rapid increases in financial account access and usage. In 2011, 51 percent of the world's adults had financial accounts; as of 2024, that share had risen to 79 percent, with half of those accounts being digitally enabled"[45].

The adoption of DPI-based fast payment systems (FPS) has supported this increase in financial inclusion, especially in developing countries. Two important success stories in this context are those of Pix in Brazil and Unified Payments Interface (UPI) in India, which together represent more than 60% of all real-time transactions worldwide[46].

Pix[47] is an FPS created and managed by the Central Bank of Brazil (BCB) that "enables its users, including people, companies and governmental entities to send or receive payment transfers in few seconds at any time, including non-business days"[48]. It is currently the most popular means of payment in the country, and is used by at least 76 percent of the population[49]. The BCB adopted a DPI approach for Pix, that has enabled its adoption by over 800 financial institutions, including large banks, credit cooperatives and payment institutions to participate in the digital payment ecosystem. It has reduced transaction costs, streamlined government payments and accelerated financial inclusion[50], with one commentator calling it "the best thing the government has ever done for Brazil's poorest by far"[51].

Figure 4 – Digital payments use correlation with access to accounts and credit



Source: BIS

43 GDC, para. 12
44 José Aurazo, Carlos Cantú, Jon Frost, Anneke Kosse and Carolina Velásquez, "A revolution in digital payments: faster, user-friendlier and cheaper", BIS Papers, No. 152, December 2024. Available from https://www.bis.org/publ/bppdf/bispap152_b_rh.pdf.

45 Leora Klapper, Dorothe Singer, Laura Starita, and Alexandra Norris, *The Global Findex Database 2025: Connectivity and Financial Inclusion in the Digital Economy* (Washington, DC, World Bank).
46 Leandro Carmo and Rashmi Satpute, "Why Brazil and India are leading the global digital shift through payment innovation", Future Nexus, 24 June 2025. Available from https://www.heyfuturenexus.com/opinion-why-brazil-and-india-are-leading-the-global-digital-shift-through-payment-innovation/.
47 Banco Central do Brasil, "Pix - About". Available from https://www.bcb.gov.br/en/financialstability/pix_en.
48 *Ibid.*
49 Banco Central do Brasil, "Pix is now the most used payment method in Brazil", Press Note, 1 March 2025.
50 Co-Develop, Brazil Case Study, November 2024. Available from https://www.codevelop.fund/brazil.
51 Vitoria Barreto, "How Brazil's innovative 'Pix' payment system is angering Trump and Zuckerberg", France 24, 31 July 2025. Available from https://www.france24.com/en/americas/20250731-how-brazil-innovative-pix-payment-system-is-angering-trump-zuckerberg.

Similarly, India's UPI is a FPS developed by the National Payments Corporation of India in 2016, and is regulated by the Reserve Bank of India. It facilitated the development of applications by third parties that promoted interoperability and common standards across banking institutions. The UPI system now serves 491 million individuals and 65 million merchants, connecting 675 banks on its platform. It also accounts for 85 per cent of all digital transactions in India[52]. Its identified success factors include the ease of development of these payment applications, easy use and zero-transaction fees for end-users, strict data protection rules, active private sector partnership and adept regulation[53].

It is also noteworthy that combining UPI with India's digital ID system, *Aadhar*, led to the opening of a large number of bank accounts which considerably improved access to financing and formalization of the economy. The increasing cross-border acceptance and interoperability of UPI with other countries' FPS[54] could also help lower the cost of international transfers and remittances[55]. Another somewhat under-appreciated feature of UPI is that it allows for offline payments, i.e. users can make transactions even without internet access, just by dialling and selecting different options on an interactive voice response number. Such features have helped in bridging the access gap, thereby enhancing financial inclusion for persons[56] using feature phones or living in rural, remote or low-connectivity areas.

The experiences of Pix and UPI illustrate how the countries' priority for financial inclusion led to the design of payment platforms that were accessible to even the smallest micro-merchants, filling a gap for digitising formerly cash-based, low value transactions. These platforms were also designed for financial inclusion and diversity, and their widespread adoption continues to result in fostering small business growth, enhancing users' access to credit and other financial services, while increasing transparency and security by improving payment traceability, among others[57]. Both use-cases provide credible experiences that can be incorporated by other countries while designing and implementing their own digital payment DPIs.

52 Press Information Bureau, "India's UPI Revolution: Over 18 billion Transactions Every Month, A Global Leader in Fast Payments", 20 July 2025. Available from https://www.pib.gov.in/PressNoteDetails.aspx?id=154912&NoteId=154912&ModuleId=3.

53 José Aurazo, Carlos Cantú, Jon Frost, Anneke Kosse and Carolina Velásquez, "A revolution in digital payments: faster, user-friendlier and cheaper", BIS Papers, No. 152, December 2024. Available from https://www.bis.org/publ/bppdf/bispap152_b_rh.pdf.

54 Menaka Doshi, "India's UPI Reaches Paris, Singapore and UAE", Bloomberg, 15 February 2024. Available from https://www.bloomberg.com/news/newsletters/2024-02-15/india-s-upi-payments-reaches-paris-singapore-uae-marking-global-ambitions.

55 See: Danish, *Reducing the Cost of Remittances – A Priority for the Global South*, South Centre Research Paper, No. 219, 16 June 2025. Available from https://www.southcentre.int/research-paper-219-16-june-2025/.

56 A. Mallik, C. Tran and A. Twagirumukiza, "USSD Digital Wallet," 2020 Intermountain Engineering, Technology and Computing (IETC), Orem, UT, USA, pp. 1-5.

57 K. Chandra, A. Jayakrishnan, R.B. Fernandes, C.B. de Paulo, P. Boéchat and S. Kashyap, "From Brasilia to Bombay: The Unlikely Twins Leading a Global Open Finance Revolution", Centre for Digital Public Infrastructure (CDPI), 20 September 2024. Available from https://cdpi.dev/wp-content/uploads/2024/09/DPI-for-Open-Finance-A-case-study-on-UPI-Pix-1.pdf.

3.2. Promoting localised e-governance

For developing countries, many of the digital solutions that are available may not be adapted to their national contexts or requirements, due to not being available in local languages, being misaligned with local data governance laws and policies, or limitations in understanding of their uses and benefits among the target groups. This can result in low levels of adoption or trust in these digital solutions.

Ensuring effective DPI for developing countries therefore requires context-specific design, effective governance, and sustained institutional capacity, tailored to national priorities. Pilots and use cases play an important role here, since they can clearly demonstrate the benefits of these digital solutions to specific contexts, which in some cases can even help the country to leapfrog legacy systems while maintaining their technical and data sovereignty.

For instance, Bolivia's *Ciudadanía Digital* initiative[58] for promoting e-governance and public service delivery enables users to complete government procedures virtually, receive electronic notifications from public entities, check the status of their procedures and requests, etc. It thus enables citizens' access to digitally delivered government services, and also gives legal validity to digital documents. The initiative operates in a well-defined legal framework, which provides legal certainty and supports effective e-governance by requiring certain sectors to adopt this initiative to ensure transparency in public service delivery[59].

For building trust, Bolivia implemented the initiative through its two main public agencies[60] that are responsible for issuing identity documents, maintaining biometric registries, and managing the civil registry. The Bolivian Agency for Electronic Government and Information and Communication Technologies (*Agencia de Gobierno Electrónico y Tecnologías de Información y Comunicación*, AGETIC) manages the *Plataforma de Interoperabilidad del Estado* which enables cross-sector data exchange and interoperability among state institutions, thereby facilitating the integration of *Ciudadanía Digital* with other government services. The initiative was built on existing systems, using citizens' national ID numbers and biometric records to create secure digital profiles. This could be further adapted to Bolivia's national context, for instance, by providing access to this initiative in local indigenous languages for improving its accessibility.

While new digital solutions for e-governance must be aligned with the national legal requirements, developing countries might not have the necessary policy and administrative frameworks for their smooth incorporation. This is particularly the case with institutions using legacy systems which would need to be modernised and updated. Overcoming institutional inertia and integrating DPI with existing systems requires demonstrating the benefits of the digital solutions to stakeholders

58 Ciudadanía Digital, FAQs. Available from https://ciudadaniadigital.bo/home/preguntas.

59 Ciudadanía Digital, Legal and Regulatory Framework. Available from https://ciudadaniadigital.bo/home/marco-normativo.

60 The Servicio General de Identificación Personal (SEGIP) and the Servicio de Registro Cívico (SERECI) respectively.

across society and getting their buy-in. This could be facilitated through adopting policies that would ensure data privacy and protection and include robust safeguards to protect personal data and user rights. With the fast evolving technological advancements, investing in a high level of cybersecurity would be equally important in this regard to mitigate associated risks.

For example, after a previous attempt to create a physical ID system in the Democratic Republic of Congo faced setbacks and was scrapped[61], the country shifted its focus towards implementing a national digital identification system instead, aiming to be "digitally sovereign, financially inclusive, and resilient to tomorrow's challenges"[62]. The new system, called DRCPass, is expected to include SIM-card registration, access to e-government services and business portals, digital payments solutions, and a digital citizen identity[63]. While the project is being implemented by a Singaporean company, the system is being designed in close collaboration with local stakeholders to facilitate its quick uptake and integration across government departments and services.

This case also shows the importance of solutions that enable governments to access modular, scalable components for DPIs that can be tailored to their own legal, cultural, and technological context. For instance, India Stack[64] is a collection of DPI--based technology products and platforms that are provided through open Application Programming Interfaces (APIs) for building and customising DPIs. As it is open source, free from proprietary technology or intellectual property restrictions, and its ample benefits have been well-demonstrated[65], elements from the India Stack have already been adopted and implemented by other developing countries[66], aiming to combat corruption, increasing efficiency in public service delivery and empowering their citizens[67].

Multistakeholder initiatives can also play a role in reducing the cost and technical barriers to DPI implementation by offering open-source APIs, platforms, and building blocks while enabling governments to retain control over localisation, governance, and ownership. For example, the Modular Open Source Identity Platform (MOSIP)[68] is an open standards-based foundational identity platform that is designed to help countries build and manage their national ID systems. It promotes an adaptable architecture that is open-source, modular, and provides a strong foundation for nations to establish their DPI-based digital IDs, while ensuring privacy, security, and interoperability[69]. It also includes features like *Inji*, which is a mobile app that allows residents to access their digital identities even in remote areas with low internet connectivity. By incorporating and adapting such features that are cognizant of the needs and lived realities of their users, DPIs can be an effective tool for realizing the target of providing legal identification for all.

4. Future directions

The benefits of DPI are shaped by policy and institutional choices, including how these systems are designed, implemented and governed. Robust institutional frameworks and governance mechanisms are essential to ensure that DPI drives equitable and inclusive sustainable development. As the Universal DPI Safeguards Framework notes, DPI-related risks "do not arise purely from technical shortcomings, but also from inadequacy in normative (ethical, legal and regulatory) frameworks, as well as from institutional and organizational ineffectiveness". Therefore, to fully harness the benefits of DPIs, there are several avenues that should be considered by developing countries that would help accelerate their digital transformation and in achieving the SDGs.

• Human centric: It is essential that people are placed at the core of the digital transformation. For this purpose, it is imperative to increase investment in building human resources, especially in developing countries with large youth populations, to support digital skills development and capacities to work in an increasingly digitalised global economy, as digital literacy will be key to the future of work. DPIs should therefore be inclusively and collaboratively developed, with a user-centred and responsive design that can meet the needs and abilities of all peoples. Developing countries will need to foster the requisite technical and design capacity to continue to develop, evolve, and manage the DPI they implement[70]. This needs to be complemented by enhancing the digital capacities of regulatory institutions and providing them training on the latest in technological developments, data protection, and cybersecurity practices[71].

• Setting guardrails: For building safe, inclusive and effective DPIs, countries could consider the voluntary G20 Framework for DPI Systems, which includes principles covering technology, governance and community participation. Similarly, the foundational and operational principles from the Universal DPI Safeguards Framework should be incorporated within building blocks for DPIs, which would ensure trust and coordinated responses throughout the DPI life cycle. This could be complemented by a combination of legal protections for users, institutional

61 Olivia Solon and Tomas Statius, "Congo Cancels $1.2 Billion ID System Contract After Costs Spiral", Bloomberg, 3 September 2024. Available from https://www.bloomberg.com/news/articles/2024-09-03/congo-cancels-1-2-billion-id-system-contract-after-costs-spiral.
62 Ayang Macdonald, "DRCPass digital ID launches as DR Congo finalizes contract with Trident", Biometric Update, 26 June 2025. Available from https://www.biometricupdate.com/202506/drcpass-digital-id-launches-as-dr-congo-finalizes-contract-with-trident.
63 Michael J Kavanagh, "Congo Signs Digital-Identification Deal With Singapore's Trident", Bloomberg, 25 June 2025. Available from https://www.bloomberg.com/news/articles/2025-06-25/singapore-s-trident-signs-digital-identification-deal-with-congo.
64 India Stack. Available from https://indiastack.org/index.html.
65 Yan Carrière-Swallow, Vikram Haksar, and Manasa Patnam, "Stacking Up Financial Inclusion Gains in India", IMF Finance and Development, July 2021. Available from https://www.imf.org/external/pubs/ft/fandd/2021/07/india-stack-financial-access-and-digital-inclusion.htm.
66 Ronak Gopaldas, "Is the digital stack of India a model for Africa?", NTU, 13 December 2024. Available from https://www.ntu.edu.sg/cas/news-events/news/details/is-the-digital-stack-of-india-a-model-for-africa.
67 David Pilling, India points the way to digital access across Africa, *Financial Times*, 18 September 2023. Available from https://www.ft.com/content/3c1504ef-96f7-4656-a5cf-d474123dc31e.
68 "MOSIP Project". Available from https://www.mosip.io/mosip_project.
69 MOSIP Project Documentation. Available from https://docs.mosip.io/1.2.0/.
70 Keyzom Ngodup Massally, Rahul Matthan, and Rudra Chaudhuri, "What is the DPI Approach?", Carnegie Endowment for International Peace, 15 May 2023. Available from https://carnegieendowment.org/research/2023/05/what-is-the-dpi-approach?lang=en.
71 *Ibid*.

oversight, and equity-focused design. The modular and adaptable approaches to DPI should also be reflected in common technical standards that promote their safety and interoperability.

• Maintaining security: For generating user trust and DPI adoption, countries need to develop comprehensive data protection and data governance policy frameworks at the national level. This should be complemented by robust safeguards and complaint redressal mechanisms in case of data breaches or data privacy violations. At the same time, adopting high levels of cybersecurity is critical to boost trust in the DPI, ensure data privacy and guard against malicious actors by mitigating operational risks and fostering cyber resilience[72].

• Knowledge sharing: Increasing collaboration, peer learning and knowledge sharing among stakeholders at the national, regional and multilateral level would help in the formulation and implementation of national strategies on DPIs and digital transformation. There is already considerable experience of such exchanges among developing countries. For instance, a high-level South African delegation visited India to learn from its DPI experiences and gain insights for shaping South Africa's own Digital Transformation Roadmap[73]. At the multilateral level, the organisation of a DPI day at the UN, as held in June 2025, should be formalised and made into an annual event. This could be realized for instance through a resolution at the UN General Assembly, which could further recognise its importance by designating an 'International Day for DPI'. This would also help advance the implementation of the GDC by increasing the exchange of available best practices and use cases of DPIs, and encouraging the formation of partnerships to leverage DPIs for advancing the SDGs.

• Capacity building: Providing technology transfer, technical assistance and capacity building for developing and least developed countries in the digital sector remains vital. Several developing countries have shared their DPI solutions and technical expertise with other nations, with efforts ongoing to ensure seamless integration across platforms and borders. International organisations have also supported these efforts, such as through initiatives like the UNDP's Digital Readiness Assessment[74] which helps countries identify and prioritise digital interventions such as adopting DPIs; and UN Trade and Development (UNCTAD)'s 'eTrade Readiness Assessments' which supports the development of national e-commerce ecosystems[75]. Multistakeholder efforts like MOSIP, and the 50-in-5 campaign[76] (which aims at enabling 50 countries to design, launch, and scale components of their DPIs by 2028) also have a role to play in providing the necessary technical support and capacity building for DPI uptake. These cooperation modalities among stakeholders should be further strengthened.

• Multilateral complementarity: The UN system should be further supported to promote the adoption of DPIs, including through facilitating multilateral discussions on the development and setting of appropriate standards in various technical domains of DPI that can increase their safety and interoperability. Complementing the work and mandates of organisations like the ITU, these discussions could also help in identifying stakeholders that would support the development of DPI ecosystems and open-access common standards across various regions and global South countries, which would promote interoperability among DPIs within the countries and across borders.

• Financial sustainability: Financing and means of implementation for adopting and implementing DPIs remain an important consideration for countries, with several prevailing models[77]. While payment focused DPIs may be able to charge fees to some users (such as large enterprises for business transactions) for their financial sustainability, this is difficult for other DPIs such as digital IDs. Reliance on public financial sources, such as through government funding, development finance institutions, multilateral loans or even bilateral aid could be used in the start-up and early phases, with a clear roadmap towards subsequent financial sustainability. This could be complemented through financing from private sources, with the relevant safeguards built in to ensure data sovereignty[78], data protection and enhancement of public benefit as clear priorities.

• Leaving no-one behind: Finally, it is important to bear in mind that DPIs are only one facet of the digital technologies that are dramatically transforming our world. The goal of the GDC to create an inclusive, open, sustainable, fair, safe and secure digital future for all is only achievable through strengthened international cooperation[79] that closes all digital divides between and within countries and delivers an inclusive digital economy. The GDC implementation roadmap should provide useful guidance in this regard, and its full realization will be important to leave no one behind in the new digital world.

72 J. Clark, G. Marin, O.P. Ardic Alper, G.A. Galicia Rabadan, "Digital Public Infrastructure and Development: A World Bank Group Approach", Digital Transformation White Paper, Volume 1 (Washington, DC, World Bank, 2025).
73 Consulate General of India in Durban, "Brief on India - South Africa Relations", 12 June 2025. Available from https://www.cgidurban.gov.in/india-south-africa-relations.
74 UNDP, "Digital Transformation Framework". Available from https://www.undp.org/digital/transformations.
75 UNCTAD, "eTrade Readiness Assessments". Available from https://unctad.org/topic/ecommerce-and-digital-economy/etrade-readiness-assessments.
76 50-in-5 campaign. Available from https://50in5.net/.

77 David Eaves and Mansi Kedia, "Exploring the Different Financing Models for Digital Public Infrastructure and Why They Matter", Asian Development Bank Institute, Policy Brief No. 2024-6, April 2024. Available from https://doi.org/10.56506/VYDL5566.
78 See e.g., Carlos M. Correa, *Data in Legal Limbo: Ownership, sovereignty, or a digital public goods regime?*, South Centre Research Paper 117, September 2020. Available from https://www.southcentre.int/research-paper-117-september-2020/.
79 Danish, "Advancing International Cooperation under the Global Digital Compact", *SouthViews* No. 285, South Centre, 28 March 2025. Available from https://www.southcentre.int/southviews-no-285-28-march-2025/.

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