



Task Force 2
Our Common Digital Future: Affordable, Accessible
and Inclusive Digital Public Infrastructure



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TOWARDS CHILD-CENTRED AND FUTURE-READY INCLUSIVE DIGITAL PUBLIC INFRASTRUCTURE

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Abstract



Digital public infrastructure (DPI) has the potential to enable an inclusive digital transformation of societies, including for children. However, this outcome is not inevitable unless current approaches to digital inclusion change and become more holistic. In a review carried out with the London School of Economics, UNICEF examined select digital inclusion policies from five regions and 17 countries (including 10 G20 members and two G20 guest countries) and


found that, overall, they were not sufficiently child-centred, focused on inequalities, or future-ready. However, we identified promising practices and opportunities for improvement. Drawing on the findings, this policy brief offers three recommendations to the G20 for an effective DPI: develop inclusive digital policies for and with children; take a holistic approach to deal with child digital inequality; and better anticipate the effects of emerging technologies and democratise their associated benefits.



The Challenge




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The development of digital public infrastructure (DPI) is essential to digital transformation. It comprises solutions and systems that enable society-wide functions, including forms of digital identification and verification, digital payments and money transfers, and data exchange as well as sector-specific solutions (such as in health or education).¹ The building blocks of DPI—the software, platforms or technology protocols, including digital public goods (DPGs)—should ideally be interoperable and reusable across different scenarios. These characteristics facilitate the development of digital solutions by public- and private-sector stakeholders that can benefit as many segments of society as possible.² DPI thus acts as both common, shared infrastructure to use and an enabler to build upon. Effective DPI requires taking a broad ecosystem view (for maximum reusability) and following an inclusive-by-design approach, both on how systems are developed and for whom. However, DPI is ‘not inherently inclusive’, and when designed without consideration for a wide range of stakeholders can lead to their exclusion, misuse of their data, open security vulnerabilities, or the possibility of

surveillance.³ Inclusive DPI can only be ensured through deliberations and policy frameworks.⁴

Barriers to digital inclusion—such as limited access, low digital skills, or unsafe online spaces—mean children miss the chances to access valuable information, learn, find suitable employment when transitioning from school to work, socialise and voice their opinions via digital platforms—including on how their digital environment should be shaped. These are not simply lost opportunities, they undermine children’s rights—as enshrined in the Convention on the Rights of the Child⁵—to information, education, play, participation, and more. Governments have an obligation to respect, protect, and fulfil the rights of *all* children in the digital environment.⁶ The deliberative method of development of DPI policy frameworks needs to focus on children and youth as they are the largest cohort of users of the Internet. For example, while children or adolescents in least developed countries (LDCs) constitute almost half of the population,⁷ inclusive DPI provides the most promise, though this is also the segment where the largest proportion of children and youth are still offline. In 2022, 75 percent of



15- to 24-year-olds globally were online, while for LDCs it was 48 percent.⁸

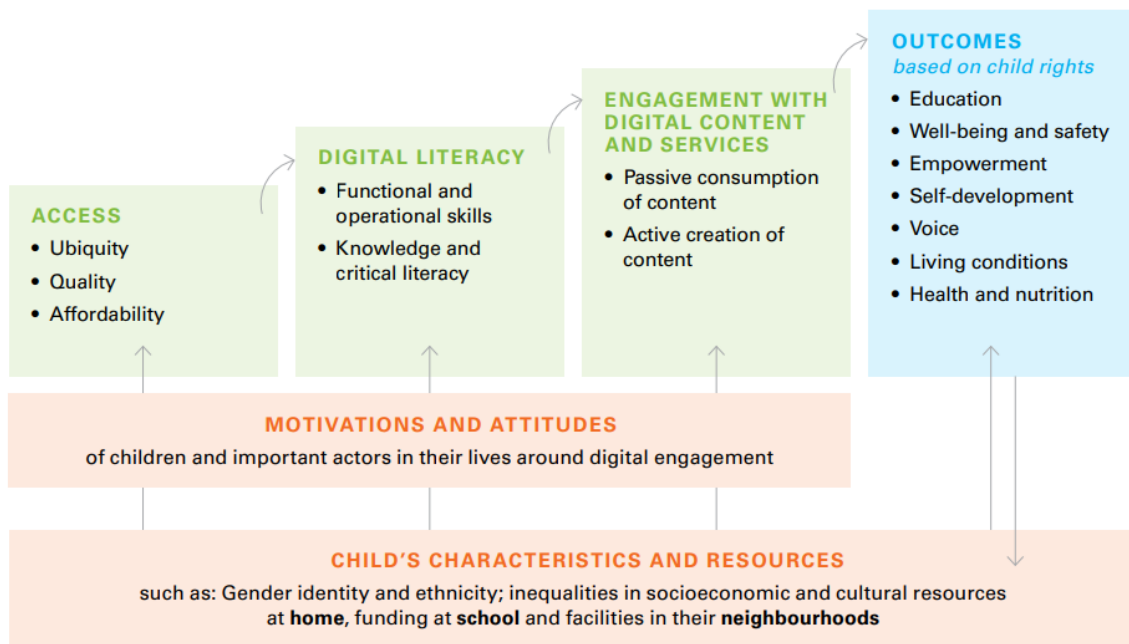
Lack of internet access can stem not only from the lack of DPI (supply) but also from other barriers that prevent children from benefiting from digitisation. It has been well established in the literature that gender, cultural, and social norms are some of the key obstacles to internet access.⁹ ¹⁰ Socio-economic status also matters as even in high-income countries children from poorer families can have limited connectivity and thus a limited opportunity to benefit from online learning.¹¹ In other situations, children's level of digital inclusion may depend on their race, ethnicity, background, or class.¹² Digital literacy and skills are the key prerequisites for the ability to benefit from internet resources and navigate them safely and securely. While global data on digital skills are sparse, one estimate puts less than half (42 percent) of 15- to 24-year-olds on track to acquire basic computer-

related skills, such as the ability to copy or move a file or folder or send an e-mail with attached files.¹³ While such activities are more geared to workplace settings, taking a broader view of digital skills—including digital content creation and safety skills—data show that only 69 percent of 16- to 19-year-olds in the European Union (EU) had basic overall digital skills in 2021.¹⁴ ¹⁵

The biggest challenge for policymakers is how to ensure that DPI policies embody principles of inclusion and equality, as we move away from a simple understanding of a digital divide based on access alone. Furthermore, how can they ensure that these policies provide due consideration to children and their needs, taking into account their circumstances and immediate environments? UNICEF developed a child-centred digital equality framework to guide digital inclusion and equality policies and strategies.¹⁶



Figure 1: A child-centred digital equality framework



Source: Helsper and Vosloo, 2022



The G20's Role

2





Analysis of digital inclusion policies in G20 countries through the child's lens: Key findings

Building on UNICEF's work on digital inclusion for children—as reflected in previous T20 inputs on closing the digital learning and digital literacy gender gaps—our review (forthcoming), carried out with the London School of Economics, used the above framework to examine select digital inclusion policies from five regions and 17 countries. These locations were selected to represent different scenarios, varied internet diffusion, and pre-existence of inequalities. The review assessed to what extent the policies were child-centred, dealt with inequalities at the levels and domains presented in the framework, and were inclusive of different stakeholder groups. It also considered how policies cover frontier technologies. Included in the review were nine G20 member countries (Brazil, China, India, Indonesia, France, Mexico, Saudi Arabia, South Africa, and the UK), the EU, and two guest countries (Egypt and the United Arab Emirates). Overall, the majority of digital inclusion policies did

not mention children explicitly (except for education) and did not sufficiently deal with inequalities in their lives that prevent them from benefiting from digital opportunities. Furthermore, the policies were not found to be as future-ready as they could be because they rarely grapple with the potential positive and negative effects of some frontier technologies. The findings in the review were derived from policy documents and did not necessarily reflect their actual implementation.

Since digital inclusion policies drive the development of DPI, tackling the above challenges will facilitate a more effective and trustworthy DPI that contributes to digital equality. While in our review no policy covered all aspects of digital equality, the G20 member and guest countries included in this review showed promising and sometimes unique practices—as illustrated below—to inspire future policies. Our review also revealed gaps and opportunities for policy change.

To what extent are children referenced in digital inclusion policies?

Policies that prioritise children should focus on upholding their rights. They should explicitly mention children as



a distinct user group and reference key stakeholders in their lives, such as parents, guardians, caregivers, and teachers. Digital policies should not treat children as a homogenous group (a common approach) but rather acknowledge their varied characteristics, environments, and developmental stages.

Policies from several countries reviewed point towards such child-centred digital inclusion. For example, the European Commission's broad suite of policies on digital inclusion focus on children specifically in a number of ways. These policies are especially strong in promoting basic digital skills and competencies from an early age (not only from secondary school as is with many country policies). The provision of digital literacy and education is seen as key to preparing children to critically navigate online disinformation. Overall, the policies position children as active agents who should be empowered to make safe and informed choices and express their creativity online. Indonesia's policies, however, focus on children with a strong safety-oriented approach, using that as a

lens to consider how digitisation may affect children. Children's well-being is understood in the backdrop of the 'seven harms of internet use'.^a An emphasis of the country's national digital literacy effort is to combat online radicalisation through promoting diversity.

In Brazil, almost all recent policies around digitisation mention children. Girls are a priority for inclusion in science, technology, engineering, and mathematics (STEM) programmes, and there is discussion around the regulation of personal data protection of children and adolescents. In Mexico, the most recent Digital Education Agenda explicitly mentions children and their rights, and the youth (not only by proxy through schools and teachers, which is more common in policies). In a welcome approach, the Agenda takes an ecological perspective that considers different spheres of influence around children, for example their homes, neighbourhoods, schools, clubs, and local organisations. What is unique to Mexico is an update to the constitution around the right to education, which now calls for digital education as a necessary provision

a The seven harms of internet use are sexual abuse and pornography, other abusive content/abuse, addiction, personal data breach, fraud, cyberbullying, and human trafficking.



to ensure this right. Policies from the United Arab Emirates also notably take an ecological approach that targets parents, the community, and educators as stakeholders important for children's digital inclusion. A uniquely specific initiative comes out of Egypt's digital inclusion policies: the Technological Development of Orphanages that supports orphanages for girls and the supervisors through equipment and digital literacy training.

Collectively, these policies point the way to explicitly referencing children in policies for digital inclusion and the development of DPI as well as stakeholders around them. France's policies take the multistakeholder approach even further and provide actions for a range of government ministries and departments, the telecommunications and tech industry, the media, and NGOs. Overall, though, we did not see policies calling for the active inclusion of children and key stakeholders in their lives, such as parents, guardians, and teachers, as participants in policy design and implementation. Only through meaningful inclusion of and for children can their needs, wants, and rights be effectively met in the digital environment.

How are inequalities in children's lives mentioned?

The key aim of digital inclusion policies should be to empower and safeguard children by removing barriers to digital access and use, and dealing with the inequalities in children's lives that hamper their digital inclusion. China's digital inclusion policies stand out for mentioning inequalities among children, including girls, those without family care, and children with disabilities. One way the policies aim to tackle inequalities is through digital literacy training targeted at those groups. In Saudi Arabia, policies call for the provision of free-of-charge access to government-provided services and distance-learning platforms. These policies take a broadly inclusive approach by emphasising ways to overcome gender inequalities and promoting local culture and heritage through the support of Arabic content creation.

India's digital inclusion policies are accompanied by large-scale initiatives and infrastructure that affect children. The India Stack platform offers scholarships to children from minorities and children with disabilities, paid directly to beneficiary accounts. BharatNet is the world's largest rural




broadband project, and Diksha is the world's largest open-source learning management system. India's digital inclusion policies span a range of ministries, in contrast to other countries where they are siloed in the ministry for Information and Communication Technology (ICT). This provides the opportunity to potentially affect a variety of aspects of children's lives. We found that, overall, countries from the Global South tend to correctly consider a range of intersectional inequalities which are not generally considered in research or policymaking elsewhere. These include obstacles faced by migrant women or poor families living in rural areas, besides focussing on gender, income or location in general.

Despite the practices from these countries, overall, a key gap is that most policies still focus on increasing digital inclusion rather than tackling digital inequalities. Many take a 'build it and they will come' approach—such as developing infrastructure and publishing content—as the only drivers towards inclusion. Success might be measured with key performance indicators (KPIs) around digital opportunities, for example, number of youth trained in digital skills or devices provided. It may be possible

that DPI development exhibits similar approaches around opportunities provided versus outcomes achieved. While providing such opportunities is a critical contribution to dealing with digital inequality, there also needs to be a focus on the effects of digital interventions on children. Improvements in the quality of education, level of well-being, civic participation, and reduction in discrimination or disinformation are examples.

How are digital inclusion policies forward-looking?

Since technology development and use are unevenly distributed around the world, emerging technologies risk aggravating existing inequalities as benefits and risks are not the same for all.¹⁷ Policies should aim to tackle this imbalance today as well as anticipate new technological effects. South Africa is well known for its policy around the emergent fourth industrial revolution (4IR). The policy draws a link between digital and historical inequalities and, further, emphasises the potential benefits and risks of the 4IR for women and youth. To prepare children and youth for a changing digital landscape, it adds arts, innovation, and entrepreneurship to STEM. These additions (to make



STEAMIE) are complemented by the development of relevant competencies—such as creative and critical thinking—and foundational digital skills, all included in the curriculum from early-stage education. A key goal of the policy’s envisaged digital future is for youth to become content creators not only content consumers, and job creators (for example, entrepreneurs and business leaders) not just job fillers (e.g. employees and ad-hoc workers). The United Kingdom’s broad suite of recent digital inclusion policies incorporate emerging technologies and concerns, such as artificial intelligence (AI) and the collection of personal data, and stands out for referencing their risks to children. We found that key

digital inclusion policies in the Middle East and North Africa (MENA) region explicitly link emerging technologies to the benefits and potential risks for youth unemployment, but also to their ability to empower and involve youth in policymaking. From that region, Egypt has a dedicated AI strategy to develop and upskill the country’s youth.


Overall, though, we found that the opportunities and risks which emerging technologies (that could include DPI) bring to children, especially from different environments and with different characteristics (including gender identity and ethnicity), are rarely articulated in policies.



Recommendations to the G20

3





Drawing on promising practices that we found in specific regions and countries we outline the following key recommendations to G20 leaders and policymakers for policy action towards inclusive DPI and digital equality for every child.

Develop inclusive digital policies for and with children


This means prioritising the empowerment and protection of every child in governance efforts by using child rights as the basis for the development and application of equitable digital policies, DPIs, DPGs, and technology standards. Inclusive-by-design entails meaningfully engaging children and key stakeholders in their lives as co-creators in shaping a differently digital future through the development of policies and how they are implemented as DPI and DPGs. Involving the widest possible range of children from different environments and characteristics—such as children with disabilities—will result in more inclusive and accessible DPI, as well as help policymakers understand the diverse needs of children.

Take a holistic approach to addressing child digital inequality

Policymakers should seek to understand the root causes of unequal conditions for children, so that these can be addressed not only through the greater provision of technology but holistically. Policy responses and solutions to digital inequalities are sometimes not digital, such as changing social norms that limit girl's use of technology. In the same way, DPI should be implemented in concert with non-digital social or economic interventions, for example. Policies should support greater accountability through calling for KPIs around developmental outcomes in addition to those for digital opportunities provided.

Better anticipate the impacts of emerging technologies and democratise its benefits

Policies need to reflect the changing digital and governance landscapes—such as emerging and embedded technologies—and their effects on children's digital experiences, development, and well-being. New



technologies need to be leveraged with greater circumspection around their potential benefits and risks. Policymakers should invest in and draw on research for this; for example, knowledge around today's online social gaming and virtual reality activities of children provide cues as to the future of immersive virtual environments and the metaverse. Anticipatory policymaking approaches, such as engaging in foresight—including with children and youth—can help policymakers map out future scenarios. Such approaches will support the development of more future-ready policies and DPI that do not harm children or aggravate inequalities.

In conclusion, DPI alone will not ensure digital transformation that upholds children's rights. An intentionally inclusive approach to underlying policies is required so they are child-centred, focused on equality and future-ready. G20 member and guest countries have an important role in promoting digital equality and DPI within their borders as well as collectively mobilising to provide regional and global leadership. We hope these recommendations can be translated into the design and implementation of impactful DPI for every child.

Attribution: Jasmina Byrne, Ellen Helsper, and Steven Vosloo, "Towards Child-Centred and Future-Ready Inclusive Digital Public Infrastructure," *T20 Policy Brief*, June 2023.

Endnotes

- 1 “Unpacking Concepts & Definitions – Digital Public Infrastructure, Building Blocks, and Their Relation to Digital Public Goods,” Digital Public Goods Alliance, <https://digitalpublicgoods.net/blog/unpacking-concepts-definitions-digital-public-infrastructure-building-blocks-and-their-relation-to-digital-public-goods/>
- 2 Keyzom Ngodup Massally, and Carolin Frankenhauser, “The right way to build digital public infrastructure: 5 insights,” *World Economic Forum*, August 02, 2022, <https://www.weforum.org/agenda/2022/08/digital-public-infrastructure/>
- 3 “The DPG Charter: Key takeaways on norms and principles for safe and inclusive digital public infrastructure,” Digital Public Goods Alliance, updated January 10, 2023, <https://digitalpublicgoods.net/blog/the-dpg-charter-key-takeaways-on-norms-and-principles-for-safe-and-inclusive-digital-public-infrastructure/>
- 4 Jeff Behrends, Joshua Simons, Kevin Troy, and Harshita Gupta, “Digital Public Goods: Guidance for Development, Governance, and Stewardship,” *Justice, Health and Democracy* Impact Initiative, Edmond & Lilly Safra Center for Ethics, Harvard University, July 27, 2021, https://ethics.harvard.edu/files/center-for-ethics/files/dpg_guidance_v2.pdf?m=1630420782
- 5 UN General Assembly, Convention on the Rights of the Child, United Nations, November 1989, <https://www.refworld.org/docid/3ae6b38f0.html>
- 6 Committee on the Rights of the Child, “General Comment no. 25 (2021 on children’s rights in relation to the digital environment,” CRC/C/GC/25, (March 02, 2021), <https://docstore.ohchr.org/SelfServices/FilesHandlerashx?enc=6QkG1d%2fPPRiCAqhKb7yhsqlkirKQZLK2M58RF%2f5F0vEG%2bcAAx34gC78FwvnmZXGFUI9nJBDpKR1dfKekJxW2w9nNryRsgArkTJgKelqeZwK9WXzMkZRZd37nLN1bFc2t>
- 7 United Nations Children’s Fund, “The State of the World’s Children 2023: For every child, vaccination”, UNICEF, April 2023, <https://www.unicef.org/reports/state-worlds-children-2023>
- 8 International Telecommunication Union, “Measuring Digital Development Facts and Figures: Focus on Least Developed Countries,” ITU, March, 2023, https://www.itu.int/dms_pub/itu-d/opb/ind/d-ind-ict_mdd-2023-pdf-e.pdf
- 9 Sonia Livingstone, Anulekha Nandi, Shakuntala Banaji, and Mariya Stoilova, “Young adolescents and digital media. Uses, risks and opportunities in low- and middle-income countries: a rapid evidence review”, *Gender and Adolescence: Global Evidence*, 2017,

<https://www.gage.odi.org/publication/digital-media-risks-opportunities/>

- 10 Daniel Kardefelt-Winther, Moritz Büchi, Rogers Twesigye, and Marium Saeed, “Estimates of internet access for children in Ethiopia, Kenya, Namibia, Uganda and the United Republic of Tanzania”, UNICEF Office of Research, 2022, <https://www.unicef-irc.org/publications/pdf/Estimates-of-internet-access-for-children-in-Ethiopia-Kenya-Namibia-Uganda-and-the-United-Republic-of-Tanzania.pdf>
- 11 Zsuzsa Blaskó, and Sylke V. Schnepf, “Educational inequalities in Europe and physical school closures during Covid-19,” *Fairness Policy Brief Series 4* (2020): https://joint-research-centre.ec.europa.eu/system/files/2020-06/fairness_pb2020_wave04_covid_education_jrc_i1_19jun2020.pdf
- 12 Vikki S. Katz, Carmen Gonzalez, and Kevin Clark, “Digital Inequality and Developmental Trajectories of Low-income, Immigrant, and Minority Children,” *Pediatrics*, vol. 140, Supplement 2, (2017): 132–136, https://vikkikatz.com/wp-content/uploads/2019/10/2017-katz-gonzalez-clark_pediatrics.pdf
- 13 Anna Alejo, and Haogen Yao, “Recovering learning: are children and youth on track in skills development?”, The Education Commission and UNICEF, 2022, https://www.unicef.org/media/123626/file/UNICEF_Recovering_Learning_Report_EN.pdf.pdf
- 14 “How many citizens had basic digital skills in 2021?” *Eurostat*, 2022, <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220330-1>
- 15 “Individuals’ level of digital skills (from 2021 onwards),” *Eurostat*, May 10, 2023, <https://ec.europa.eu/eurostat/databrowser/bookmark/03fb3d0a-ba08-4fe5-87bc-e9699b74306f?lang=en>
- 16 Ellen Helsper, and Steven Vosloo, “Towards a child-centred digital equality framework” (New York, NY: UNICEF Office of Global Insight and Policy, 2022), <https://www.unicef.org/globalinsight/media/2966/file/UNICEF-Global-Insight-Towards-a-child-centred-digital-equity-framework.pdf>
- 17 Human Rights Council, “Possible Impacts, Opportunities and Challenges of New and Emerging Digital Technologies with Regard to the Promotion and Protection of Human Rights,” A/HRC/47/52, Report of the Human Rights Council Advisory Committee, Forty-seventh session, 19 May 2021, <https://undocs.org/A/HRC/47/52>



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