



Digital
Public
Goods
Alliance



Bold Investments for Digital Public Infrastructure: Quantifying the Human & Economic Impact

An analysis of selected countries & sectors

Executive Summary

September 13, 2022

This executive summary discusses key results and insights from an analysis of the human and economic impact of digital public infrastructure built on digital public goods. The analysis was conducted by the United Nations Development Programme (UNDP) and the Digital Public Goods Alliance (DPGA) with Dalberg Advisors. A comprehensive report will be released in the fall of 2022.

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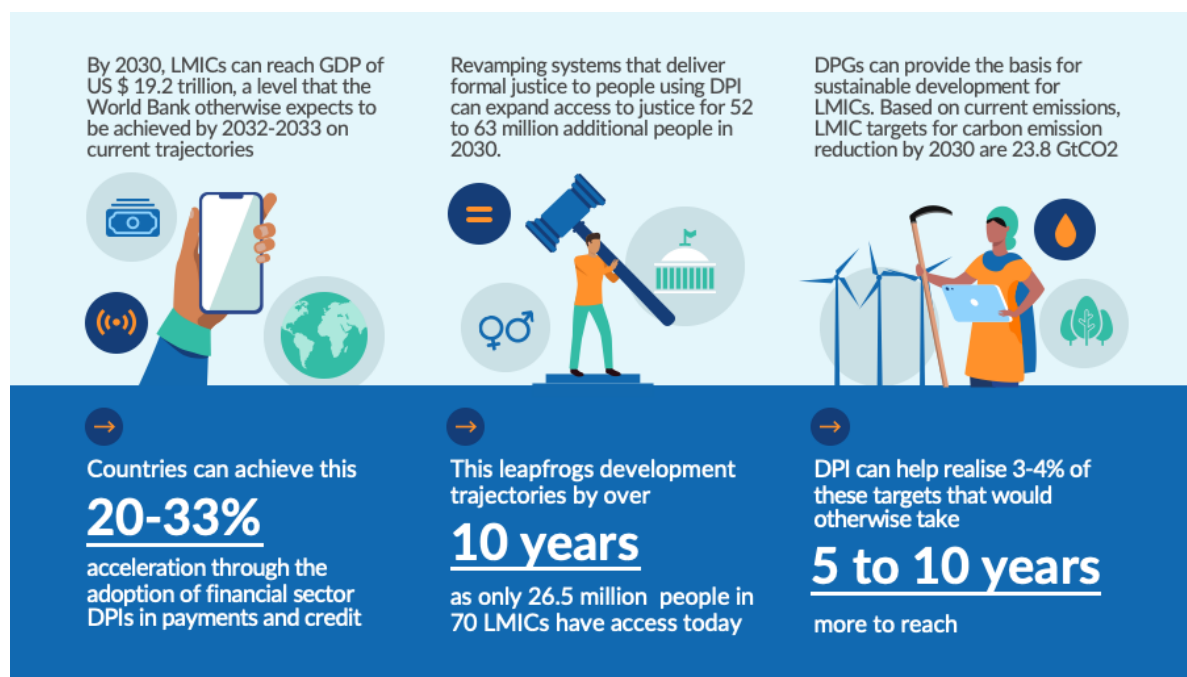
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Digital constitutes a rapidly increasing proportion of society’s commercial, social and civic lives. Much like physical infrastructure such as railways, the digital world requires inclusive and shared digital public infrastructure (DPI) to function effectively. While market dynamics are being leveraged to shape today’s digital world, they do not tend to build inclusive digital public infrastructure -- sometimes resulting in the provision of digital services that neglect already marginalized groups. Moving forward, it is imperative that countries invest in intentionally developing inclusive digital public infrastructure (DPI).

DPI can be thought of as an approach, regulation and a technology-layer to create uniformity in which regularly-occurring digital tasks take place. The standards and specifications for carrying out instant digital money transactions, or how authentication works for national digital ID when opening a bank account are two everyday examples. DPI provides uniformity in which such digital events take place, and provide open modules for others to create new applications and digital services in extension. As with digital public goods (DPGs), governance and sources of funding prevent DPI from centralizing power. Yet unlike DPGs that provide technical solutions for specific problems, DPI more broadly focuses on catalyzing innovation through the minimum needed interoperability.

The report discusses sector-based DPI, which is a DPI-enabled end-to-end digital service or workflow for a specific sector. Sector-based DPI consists of context-specific verticals made up of digital public goods, open-source software, and in some cases proprietary solutions, which offer a cost-effective path for countries to adopt and adapt new technologies. As with foundational DPI (such as digital ID, digital payments and data exchange), sector-based DPI unlocks tremendous human and economic value through open design principles, open interfaces and open standards, with a view to catalyzing innovation and creating end-to-end digital workflows.

The analysis estimates the economic and human impact of three sector-based DPI related to finance, justice and climate in 70 selected Low- and Middle-Income Countries (LMICs)¹. These three sectors showcase the impact (despite diverse stages of digital development and maturity); the current use of uniform solutions and standards; and the outcomes they enable for people and the environment. Regardless of each country’s baselines in these sectors, adopting a sector-based DPI approach will benefit their digital transformations, and positively impact how far they reach, and how fast they are adopted.



Using DPG-based DPI, LMICs can leapfrog traditional development trajectories to improve sector-specific and macro-level outcomes through improved service delivery. Widespread adoption of such systems can through inclusive, open, digitalization accelerate start economic growth, increase access to justice, and support mitigation efforts.

Within the financial sector, DPG-based approaches can accelerate and deepen the penetration of digital financial services across LMICs to reduce unequal access and usage. As of 2021, nearly 1 in 3 adults still lack access to a bank account,² nearly 100 million individuals continue to receive social protections in cash, and Micro Small and Medium Enterprises continue to face financial constraints, to the tune of nearly US\$5.2 trillion³. Countries have started to experiment with the use of DPI to address these gaps, as seen in Togo (utilising DPI to expand access to accounts and direct benefits⁴), Brazil (a real-time interoperable payment rail was recently introduced⁵), and India (experimenting with open credit networks that allow improved credit risk profiling and disbursement⁶). DPG-based DPI allow for faster adoption, customization for local contexts, and increased efficiencies compared to proprietary solutions. As a result, **DPG-based DPI in the financial sector can unlock economic growth; expand access to financial services such as digital payments and credit; and reduce leakages in direct benefits improving economic resilience for at-risk households.**

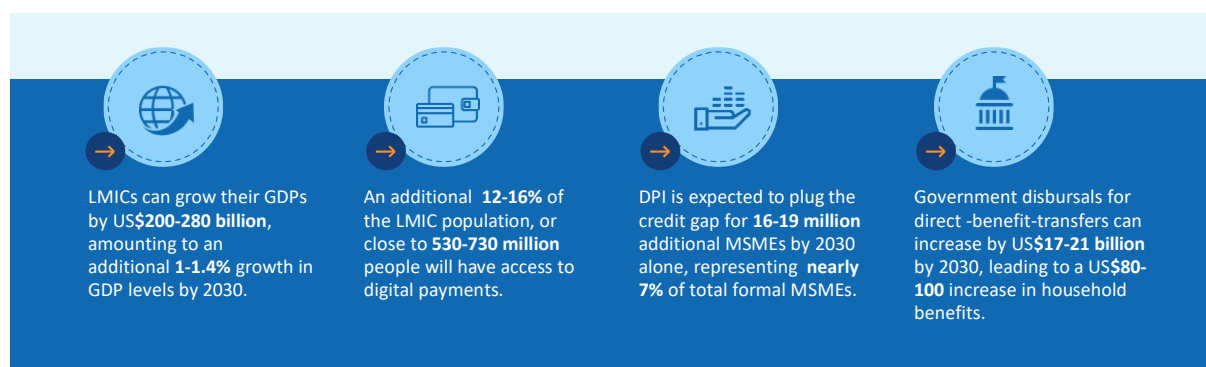


Figure 1: Impact of DPG-based DPI in the financial sector

Within the justice sector, DPG-based DPI can make digital transformation easier which has been historically slow to evolve. Only approximately 9 percent of the 1.5 billion⁷ people that need access to formal judicial processes and support can do so across the 70 LMICs in the scope of this study. DPI in this sector take longer to develop and deploy, because they must adhere to specific legislative requirements and processes in each country. However, countries have started to use DPG-based judicial solutions such as integrated court management solutions⁸ - that support judicial processes such as scheduling of dockets and trials, and online dispute resolution mechanisms⁹ - alternate conflict resolution mechanisms that leverage digital tools and platforms. **DPG-based DPI can lower legal costs, shorten the average time taken for civil cases, and expand throughput of the current judicial systems. In addition, it can lead to increased transparency, reduce corruption, and improved business and civic environment.**



Figure 2: Impact of DPG-based DPI in the judicial sector

Finally, sharing open datasets and coordinating cross-border efforts – a key application of DPG-based DPI – can accelerate adaptation and mitigation of climate change. The report focuses on three of many possible climate-technology pathways that can benefit from the development of DPI specifically built on DPGs: i) carbon markets, ii) deforestation prevention, and iii) weather data. All three require sharing and connecting data protected by national interests, security concerns, or in some cases limited due to a lack of investment. Measurement, Reporting and Verification (MRV) systems are used for an arduous process of estimating and reporting the reduction of emissions by mitigating activities. UNDP’s carbon cooperation initiative¹⁰ aims to build DPG-based systems to shorten the amount of time needed to validate and authorise mitigation projects, as well as to connect to buyers more easily. Other data sharing infrastructure such as weather monitoring and geospatial analysis¹¹ can help prevent unsustainable deforestation and protect crops from adverse weather events. **We estimate that DPG-based DPI can lead to reduced carbon emissions, increase in small holder farmer income, reduced deforestation, and reducing the number of people undernourished.**

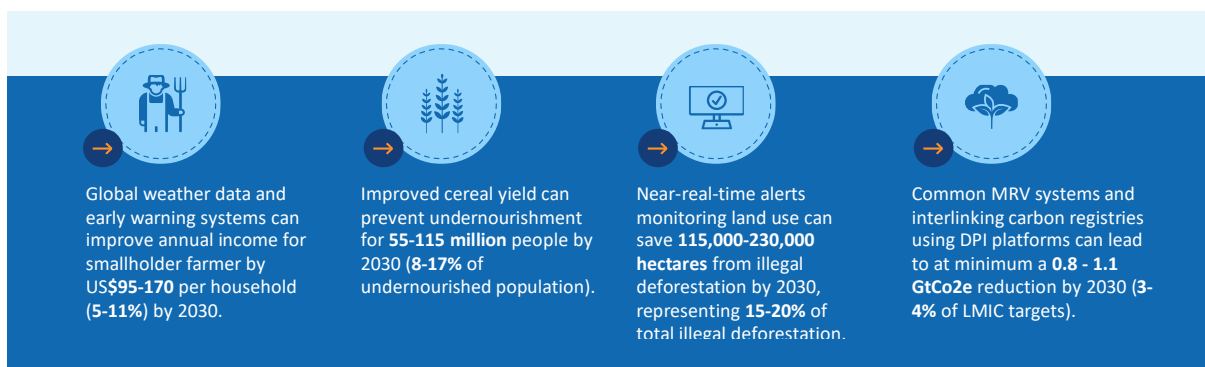


Figure 3: Impact of DPG-based DPI related to Climate

Articulating the potential impact of DPI is part of the broader advocacy effort needed for countries to adopt this approach. Further analysis is required to understand the impact of DPG-based DPI in other sectors, within country specific contexts, and for individual beneficiaries. At the

Methodology

To assess the impact, this report examines the outcomes of eight prioritised impact pathways in finance, justice, and climate in which DPG-based DPIs are currently operating. These pathways are not meant to be exhaustive. We selected and modelled a sub-set of pathways based on their potential and availability of evidence. We quantify and qualify the incremental impact of taking a DPG-based approach compared to the next-best non-DPG based, plausible alternative. For example, the next best alternative for financial services includes real-time digital payment systems, while for justice it is more likely to be offline systems and processes. Our estimates are conservative and are not an academic estimate of the impact DPG-based DPIs can have, but instead is a rigorously grounded real-world estimate of their potential.

same time, complementary work and support is required to build the enabling environment to put this approach into practice, such as capacity building, sharing information and knowledge, and increased investments. Most importantly, achieving these benefits requires governments to adopt a strategic approach to the digitalization of commercial, social and civic lives. Active participation can create trailblazing innovators— as seen in India, Ukraine, Mauritius to name a few. It can also help safeguard against the inherent risks that come with building population-scale systems, for instance privacy violation, fraud and identity theft. The future of good public governance will be increasingly intertwined with governments’ ability to engage meaningfully with the development and management of DPI. DPGs are giving them the opportunity to do so better and with greater success.

¹ The full list of countries covered is detailed in the comprehensive report. The 70 countries shortlisted cover more than two-thirds of the total LMICs population.

² World Bank, [Findex](#), 2021

³ IFC, [MSME Finance Gap](#), 2017

⁴ World Bank, [Novissi Platform](#), 2021

⁵ Banco Central do Brasil, [Pix](#), 2022

⁶ Sahamati, [OCEN and Account Aggregators](#), 2020

⁷ World Justice Project, [Measuring the Justice Gap](#), 2019

⁸ [MIZAN](#) is a case management solution operational in the State of Palestine, supported by the UNDP

⁹ [Consumidor.gov](#) is an ODR solution in Brazil to support consumer disputes

¹⁰ UNDP, [Platform for Voluntary Bilateral Cooperation](#)

¹¹ Examples include [PRISIM](#), [Global Forest Watch](#), and [Met Norway](#)