

# **BEYOND DIGITAL PUBLIC INFRASTRUCTURE: A G20 STRATEGY FOR SUSTAINABLE AI INNOVATIONS**



**An informal engagement  
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# **Beyond Digital Public Infrastructure: A G20 Strategy for Sustainable AI Innovations**

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## **Diagnosis of the Global Policy Challenge, Threat, and Opportunity**

Artificial intelligence (AI), digital public infrastructure (DPI), advanced data systems, robotics, digital twins, and other emerging technologies are rapidly becoming foundational infrastructures for economic competitiveness and public governance. Their significance for sustainability is equally profound. When embedded in energy, transport, buildings, agriculture, water, and industrial systems, these new technologies can improve resource efficiency, enable real-time monitoring, optimize infrastructure, support circular business models, and strengthen climate resilience.

The opportunity, however, is accompanied by a widening structural divide. The countries and firms that control computing capacity, data, advanced chips, cloud infrastructure, and frontier AI models are increasingly able to capture the productivity and innovation gains associated with AI. Meanwhile, many developing economies in the Global South lack affordable connectivity, interoperable data systems, computing infrastructure, digital skills, and financing. The result is a risk that the AI revolution will reinforce rather than reduce global technological and developmental inequalities.

This challenge is particularly important for the developing countries of Asia, Africa, and Latin America. The digital transformation does not begin from a level playing field. As the T20 communiqués and G20 summit statements of Indonesia (2022) and India (2023) noted, the adoption and use of digital technologies vary considerably across countries, demographic groups, industries, and firm sizes (Table 1).

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Table 1. Digitalization Index of Asia-Pacific Economies

| Country           | Agriculture Digitalisation Index | Availability |             |             |                                           | Affordability  |               |                     |            |                                | Enabling Environment |                       |              |                       |                                          |
|-------------------|----------------------------------|--------------|-------------|-------------|-------------------------------------------|----------------|---------------|---------------------|------------|--------------------------------|----------------------|-----------------------|--------------|-----------------------|------------------------------------------|
|                   |                                  | 2G coverage  | 3G coverage | 4G coverage | Digital Agriculture Availability Subindex | Mobile tariffs | Handset price | Mobile-specific tax | Inequality | Digital Affordability Subindex | Market Access Index  | Access to electricity | Basic skills | Online Services Index | Nondigital Enabling Environment Subindex |
|                   |                                  | (%)          | (%)         | (%)         |                                           |                |               |                     |            |                                |                      |                       |              |                       |                                          |
| Australia         | 86.6                             | 51.4         | 96.9        | 88.8        | 84.6                                      | 82.5           | 100.0         | 87.5                | 69.3       | 86.1                           | 65.0                 | 100.0                 | 97.2         | 94.7                  | 89.2                                     |
| Brunei Darussalam | 81.2                             | 96.6         | 95.3        | 90.7        | 93.7                                      | 59.7           | 71.0          | 97.5                | 54.6       | 69.6                           | 94.0                 | 100.0                 | 63.2         | 63.5                  | 80.2                                     |
| Cambodia          | 71.6                             | 99.7         | 97.8        | 77.6        | 90.1                                      | 48.6           | 36.8          | 76.2                | 76.8       | 56.2                           | 96.3                 | 91.6                  | 40.9         | 45.3                  | 68.5                                     |
| China             | 59.6                             | 62.9         | 12.1        | 14.5        | 23.2                                      | 78.7           | 63.7          | 86.9                | 44.0       | 68.9                           | 91.5                 | 100.0                 | 64.7         | 90.6                  | 86.7                                     |
| India             | 62.3                             | 87.2         | 35.1        | 17.6        | 38.5                                      | 71.8           | 61.8          | 66.3                | 65.5       | 66.4                           | 99.6                 | 95.2                  | 48.0         | 85.3                  | 82.0                                     |
| Indonesia         | 56.4                             | 62.6         | 48.5        | 11.7        | 36.6                                      | 64.0           | 37.9          | 85.9                | 62.3       | 60.2                           | 64.1                 | 98.5                  | 59.3         | 68.2                  | 72.5                                     |
| Japan             | 83.6                             | 3.4          | 93.0        | 90.6        | 74.1                                      | 72.9           | 87.1          | 87.5                | 96.8       | 84.8                           | 99.0                 | 100.0                 | 77.6         | 90.6                  | 91.8                                     |
| Korea Rep.        | 83.1                             | 11.6         | 98.9        | 99.9        | 81.8                                      | 71.0           | 68.1          | 81.4                | 62.0       | 70.4                           | 99.9                 | 100.0                 | 88.8         | 100.0                 | 97.2                                     |
| Lao PDR           | 50.2                             | 84.8         | 70.0        | 14.7        | 50.8                                      | 40.0           | 40.2          | 46.9                | 61.8       | 45.8                           | 55.8                 | 97.9                  | 42.7         | 19.4                  | 54.0                                     |
| Malaysia          | 75.9                             | 87.7         | 83.9        | 78.7        | 82.6                                      | 69.3           | 45.1          | 93.2                | 38.8       | 60.7                           | 85.5                 | 100.0                 | 66.7         | 85.3                  | 84.4                                     |
| Myanmar           | 44.1                             | 39.1         | 19.8        | 0.8         | 16.1                                      | 61.7           | 37.8          | 89.6                | 62.8       | 60.3                           | 92.0                 | 66.3                  | 39.7         | 25.9                  | 56.0                                     |
| New Zealand       | 88.7                             | 82.5         | 91.3        | 93.1        | 90.3                                      | 78.4           | 93.8          | 81.3                | 71.5       | 82.2                           | 90.4                 | 100.0                 | 90.7         | 92.9                  | 93.5                                     |
| Philippines       | 59.9                             | 88.0         | 57.0        | 14.1        | 46.0                                      | 43.8           | 46.1          | 85.0                | 42.3       | 52.4                           | 94.9                 | 94.9                  | 62.2         | 72.9                  | 81.2                                     |
| Thailand          | 84.2                             | 99.8         | 99.7        | 99.6        | 99.7                                      | 74.6           | 53.4          | 91.3                | 53.0       | 67.3                           | 99.0                 | 100.0                 | 64.5         | 79.4                  | 85.7                                     |
| Vietnam           | 69.7                             | 93.7         | 85.3        | 45.4        | 71.0                                      | 56.2           | 33.1          | 91.3                | 67.3       | 58.5                           | 95.7                 | 100.0                 | 57.3         | 65.3                  | 79.6                                     |

Key constraints include inadequate and expensive connectivity, lack of trust, skills shortages, limited access to finance for smaller firms, barriers to resource reallocation, and weak interoperability of sustainability standards. Yet these constraints coexist with an important opportunity: developing economies can leapfrog resource-intensive development pathways and deploy digital technologies directly in support of circular, low-carbon, and resilient economic systems.

AI also presents a sustainability paradox. It can optimize electricity systems, predict climate and disaster risks, reduce industrial waste, and improve water management. At the same time, rapidly expanding AI infrastructure increases the demand for electricity, water, critical minerals, data centers, and computing hardware. UNESCO has warned that generative AI's energy footprint is growing rapidly and more efficient model design and deployment could substantially reduce energy consumption. Similarly, international policy frameworks increasingly recognize that digital technologies can advance environmental sustainability while also contributing to emissions, energy demand, raw material extraction, water use, pollution, and electronic waste.

The central policy challenge for the G20 is therefore no longer simply how to regulate AI risks or promote digital innovation. It is how to create a global governance framework that ensures AI and digital transformation become net-positive forces for deep sustainability. This

requires connecting three agendas that are too often pursued separately: AI governance, digital public infrastructure, and sustainable development.

The timing is particularly important for the U.S. G20 Presidency. The T20 U.S. agenda explicitly identifies “Boosting Innovative Technologies, including Artificial Intelligence” as a priority, while the broader U.S. G20 agenda focuses on pioneering new technologies and innovation. The United States is therefore well positioned to move the G20 debate from general principles toward practical international cooperation which links AI innovation with measurable environmental and development outcomes.

## Assessment of Current G20 Responses

The G20 has progressively recognized the importance of AI, DPI and sustainable digital transformation. The G20 AI Principles provide an important normative foundation, emphasizing inclusive growth, sustainable development, and well-being, alongside human rights, fairness, transparency, and accountability. The 2024 G20 Digital Ministerial Declaration further recognized safe, secure, and trustworthy AI as a potential catalyst for inclusive sustainable development and inequality reduction, while acknowledging unequal access to the infrastructure, skills, and other resources necessary to benefit from AI.

Recent G20 discussions have also strengthened the recognition of DPI. The 2025 Digital Economy Working Group reaffirmed that secure and interoperable digital public infrastructure can support inclusive, resilient, and sustainable digital transformation and can foster innovation, competition, and public service delivery when supported by effective governance and institutional capacity. This direction strongly aligns with the rationale illustrated in Fig 1 , which identifies DPI , AI and trusted data flows as important enablers of a transition toward circular and low-carbon development.

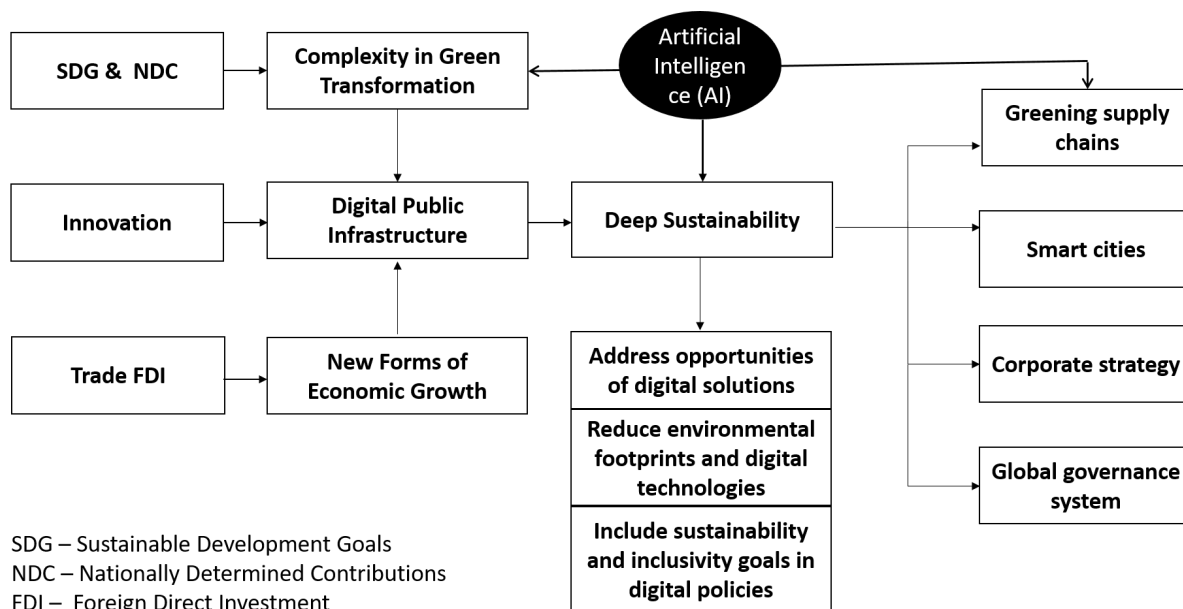


Fig 1. Interlinkages among AI, Digital Public Infrastructure, Data flows among the domains of Sustainability

Nevertheless, three important gaps remain.

First, current international AI governance remains insufficiently connected to sustainability outcomes. Existing discussions appropriately focus on safety, privacy, bias, transparency, and human rights, but environmental sustainability is often treated as a secondary consideration. There is no common G20 framework for assessing whether AI systems deliver measurable climate, resource-efficiency, circularity or resilience benefits relative to their energy and material footprints.

Second, the G20 has not adequately connected AI cooperation with DPI investment and access. AI capability depends on a broader “AI stack” comprising connectivity, data, cloud and computing infrastructure, skills, institutions, and applications. The OECD similarly emphasizes that sustainable and interoperable AI ecosystems require data, technologies, computing and connectivity infrastructure, as well as mechanisms for sharing knowledge. Yet international cooperation remains fragmented, with separate initiatives addressing infrastructure, AI governance, data, and development finance.

Third, implementation mechanisms remain weak. G20 declarations have increasingly articulated common principles, but developing countries still face major constraints in converting those principles into deployable AI applications. The Global South requires affordable infrastructure, technical capacity, trusted data systems, interoperable standards, and financing for locally relevant applications. Without these foundations, AI governance may become a system designed primarily by technologically advanced economies and implemented unevenly elsewhere.

The G20 should therefore shift from a predominantly principle-based approach toward a practical framework for AI-enabled deep sustainability, combining common measurement, shared digital infrastructure, and targeted international financing.

## **Recommendations for the U.S. G20 Presidency**

### **Launch a G20 “Sustainable AI and Digital Public Infrastructure Compact”**

The U.S. G20 Presidency should launch a voluntary G20 Sustainable AI and Digital Public Infrastructure Compact that links the development of AI ecosystems with measurable public-interest and sustainability outcomes.

The G20 compact should establish a common framework built around three principles. First, prioritizing AI applications that demonstrably contribute to decarbonization, circularity, resource productivity, climate adaptation, and resilience; second, reducing the energy, water, material, and electronic waste footprint associated with AI and digital infrastructure; and third, expanding access to the data, computing, connectivity, skills, and institutional capabilities necessary for developing countries and smaller firms to participate in AI-enabled innovation.

The Compact should not create another universal regulatory regime. Instead, it should develop a practical set of voluntary and interoperable metrics that governments, development banks and technology providers can use to assess AI systems and projects.

**A G20 Sustainable AI Impact Framework** could require participating in public-sector AI projects and major internationally financed digital infrastructure projects to report, where feasible, on expected and actual energy and water use, lifecycle material and e-waste implications, greenhouse-gas and resource-efficiency benefits, contributions to resilience and adaptation, accessibility and inclusion, interoperability and use of open or compatible standards, and safeguards for privacy, security, and human rights. Such a framework would help move the global debate beyond the question of whether AI is “good” or “bad” for sustainability; it would instead encourage governments and investors to identify which applications generate the greatest net public and environmental benefits.

The G20 Compact should initially focus on a limited number of high-impact sectors: energy systems, cities and buildings, water, agriculture, and circular manufacturing. These sectors offer significant opportunities for AI to support real-time decision-making and resource optimization. AI applications in water management, for example, are already being examined for uses ranging from monitoring and analysis to improved management and decision support.

### **Establish a G20 “AI for Deep Sustainability Accelerator”**

The United States should lead the establishment of a G20 AI for Deep Sustainability Accelerator, supported by multilateral development banks, development finance institutions, research institutions, and private technology providers. The Accelerator should address the central implementation gap: countries do not need AI principles alone; they need the capacity to develop, adapt, and deploy AI solutions.

It should operate through four practical functions. First, build interoperable public-interest digital foundations. The Accelerator should support the Global South in strengthening DPI, trusted data governance, and interoperable sectoral data systems. Rather than replicating proprietary systems, G20 cooperation should encourage adaptable architectures that can be locally governed and tailored to national circumstances.

Second, support shared access to sustainable computing and AI tools. Access to computing is becoming an increasingly important determinant of technological capability. The Accelerator should promote partnerships for affordable cloud and computing access for public-interest research, universities, start-ups, and government applications in developing economies, particularly for climate and sustainability challenges.

Third, finance locally relevant demonstration projects. A competitive project facility supported by the World Bank and other international financial institutions like the Asian Development Bank (ADB), African Development Bank (AfDB), and Inter-American Development Bank (IDB) should support scalable AI applications addressing concrete sustainability problems, including renewable-energy integration, climate-risk forecasting, agricultural productivity, water efficiency, urban mobility, industrial resource efficiency, and waste management. Projects should demonstrate measurable sustainability and inclusion outcomes rather than merely technological novelty.

Fourth, build human and institutional capacity. The Accelerator should support training for public officials, regulators, researchers, and small and medium-sized enterprises. Sustainable AI cannot be imported as a finished technology. Countries require domestic capabilities to

evaluate, govern, adapt, and maintain AI systems. The Accelerator should explicitly prioritize South-South and triangular cooperation such as the G5 Epistemic Caucus (G5EC). The G20 should therefore facilitate the exchange of deployable solutions among developing countries rather than treating technological transfer as a one-directional North-South process.

## Epilogue

The United States is uniquely positioned to convene a G20 coalition around this agenda because it brings together several currently fragmented policy communities: AI innovation, digital infrastructure, development finance, energy systems, and climate action. The objective should not be to slow technological innovation through excessive global regulation. Rather, it should ensure that innovation is directed toward solutions that improve long-term economic, environmental, and social outcomes. The U.S. 2026 G20 Presidency can build consensus around a pragmatic proposition that **the world should not have to choose between accelerating AI innovation and achieving sustainability; the governance challenge is to make the AI transition itself sustainable and broadly accessible.**

The U.S. G20 could convene a coalition of multilateral development banks, big tech companies, and research institutions to design the AI for Deep Sustainability Accelerator and announce an initial portfolio of cross-border demonstration projects before the G20 Leaders' Summit. A successful G20 initiative would bridge the gap from building digital systems as ends in themselves to using AI, data, and innovation as shared capabilities to transform economies within planetary boundaries. Such an agenda would give practical meaning to the G20 and G7's commitment to AI "for good and for all" while ensuring that the benefits of the next technological revolution contribute to deeper, more inclusive, and more sustainable development.