From Brazil to the world: Open digital infrastructure for climate cooperation

By **Camila Nadalini de Godoy**, **Raphael Pouyé** & **Chloe Teevan**

Funded by the European Union

March 2026

In a context of geopolitical fragmentation and growing concentration of technological power, this paper argues that digital cooperation for climate can lead to new international alliances by anchoring cooperation in shared, collectively governed digital infrastructure.

It examines how Digital Public Infrastructure (DPI) and Digital Public Goods (DPGs) can translate climate commitments into verifiable outcomes. Finally, it situates an EU–Brazil partnership as a pragmatic coalition starter, demonstrating how climate-focused digital cooperation can diversify partnerships, align regulatory power and financing with implementation, and strengthen collective resilience in a changing global order.

The world is facing a climate emergency of unprecedented scale, just as the multilateral order breaks down.

Table of contents

List of boxes

List of figures

Acknowledgements

The authors would like to thank Fabro Steibel, Celina Bottino, Sérgio Branco, Renata Guedes, Gabriella da Costa and Thaise Pimentel (Institute for Technology and Society – ITS Rio); Francisco Gaetani, Guilherme Almeida, Giovanna Aguiar and Henrique Vilhena Dolabella (Brazilian Ministry of Management and Innovation in Public Services – MGI); Ana Paula Podcameni and Laura Escudeiro (Centro Brasileiro de Relações Internacionais – CEBRI); Jameson Voisin, Liv Marte Nordhaug, Lea Gimpel, Max Kintisch, Kirti Pandey and Ruth Schmidt (Digital Public Goods Alliance – DPGA); Nicholas Gates (Open Forum Europe); Luca Belli (CyberBRICS and Fundação Getulio Vargas – FGV Direito Rio); Pedro Saliba (Data Privacy Brasil); Fabrícia Sterce and Lennon Medeiros (Visão Coop); and Laryssa Nunes, Bruno Sousa and Thiago Nascimento (Instituto Decodifica) for their research contributions, insights and valuable exchanges throughout the development of this discussion paper.
We are also grateful to colleagues at ECDPM for their constructive feedback and input at different stages of the research. The views expressed in this paper are those of the authors and do not necessarily represent those of ECDPM or any other institution. Any errors or omissions remain the responsibility of the authors. For comments and feedback, please contact cndg@ecdpm.org or cte@ecdpm.org.

1. Introduction

A decade after the Paris Agreement, the world is facing a climate emergency of unprecedented scale. More than 3.6 billion people are already vulnerable to its impacts, while extreme weather events are accelerating (Lemos and ITS Rio, 2025; UNDP, 2025). Risks to food security, livelihoods, and global stability continue to grow, as the world remains off track to limit global warming to below 2ºC.

Meanwhile, the world is navigating a turbulent geopolitical moment, with institutions, treaties and regulations that once formed the backbone of international cooperation now struggling to function effectively. As power struggles intensify and trust between countries erodes, traditional forms of multilateralism no longer offer the same promise of collaboration they once did, often stalled by competition and renewed protectionism (Komaitis, 2025). The global order is shifting, and collective action on climate is becoming harder to coordinate just as it becomes more urgent.

The digital sphere has become its own arena of strategic competition and power concentration. A handful of major technology firms, mostly based in the United States and China, now shape much of the development and deployment of digital infrastructure and artificial intelligence (AI) systems that sustain modern economies and societies. Their influence is growing faster than governments can keep up, and with little public oversight, raising critical questions about national sovereignty, data security, democratic accountability and the capacity of states to direct technological innovation towards public interest rather than private profit. As a result, many countries find themselves caught between competing powers or locked into proprietary systems they do not own, control or fully understand (Schoemaker and Kirk, 2025).

In parallel, the convergence between digital transformation and environmental sustainability has become the basis for what is known as the twin transition, a strategic approach increasingly used to align green and digital priorities through a shared development and geopolitical lens (Bilal, 2024; Bilal et al., 2024; Bilal and Teevan, 2024; Muench et al., 2022; Teevan et al., 2025). The concept of the twin transition highlights that each of these agendas shape the feasibility, direction, and long term resilience of the other. This concept acknowledges that digital technologies (when inclusive, open and well-designed) have the potential to accelerate climate goals (in a process known as "*greening by digital*"), while the climate imperative demands rethinking how digital systems themselves are built, governed and deployed (aka "*greening of digital*") (Farooqi and Vora, 2023; UNDP, 2025). Rather than treating these as parallel challenges, the twin transition embeds sustainability as a cross-cutting principle for innovation and infrastructure development.

At a time when both the green and digital transitions face growing political resistance, this integrated perspective may be emerging as a way to defend and rebuild international cooperation, based on shared infrastructure, green innovation and open, secure technologies for environmental resilience. Partly in response to shifts in the United States' climate and trade policy, a range of global actors, such as the European Union, India, Japan and South Africa, are expanding avenues for cooperation through strategic partnerships and trade agreements (Medinilla et al., 2025; Bilal and Teevan, 2024). The EU–Mercosur agreement, for instance, signals a renewed geopolitical interest in strengthening ties with Latin America as part of a broader effort to diversify partnerships in a changing global order.

Within this landscape, Brazil stands out as a potential ally for the European Union, as illustrated by the organisation of an EU–Brazil Investment Forum and the broader intensification of bilateral relations. Brazil's digital innovation and vast environmental assets, combined with its experience in climate-relevant Digital Public Infrastructure (DPI) and Digital Public Goods (DPGs), offer concrete examples of how digital systems can translate environmental commitments into verifiable outcomes (Duarte, 2024). In a context where countries are rethinking both technological and ecological dependencies, Brazil is emerging as a possible partner for co-developing interoperable digital public infrastructure for climate action.

This paper argues for the formation of new alliances that combine digital cooperation with climate ambition. Rather than offering a final blueprint, this paper is intended as a conversation starter—or, more aptly, a "coalition starter"—for a geopolitical moment where multilateralism is under strain. This approach points to a renewed model of international cooperation, where collectively governed digital systems make it possible for countries to act together on global challenges.[1]

[1] The analysis builds on work undertaken by Raphaël Pouyé, at ECDPM on the evolution of digital partnerships in a changing geopolitical context and on collaborations established through a Global Fellowship at ITS Rio in 2025.

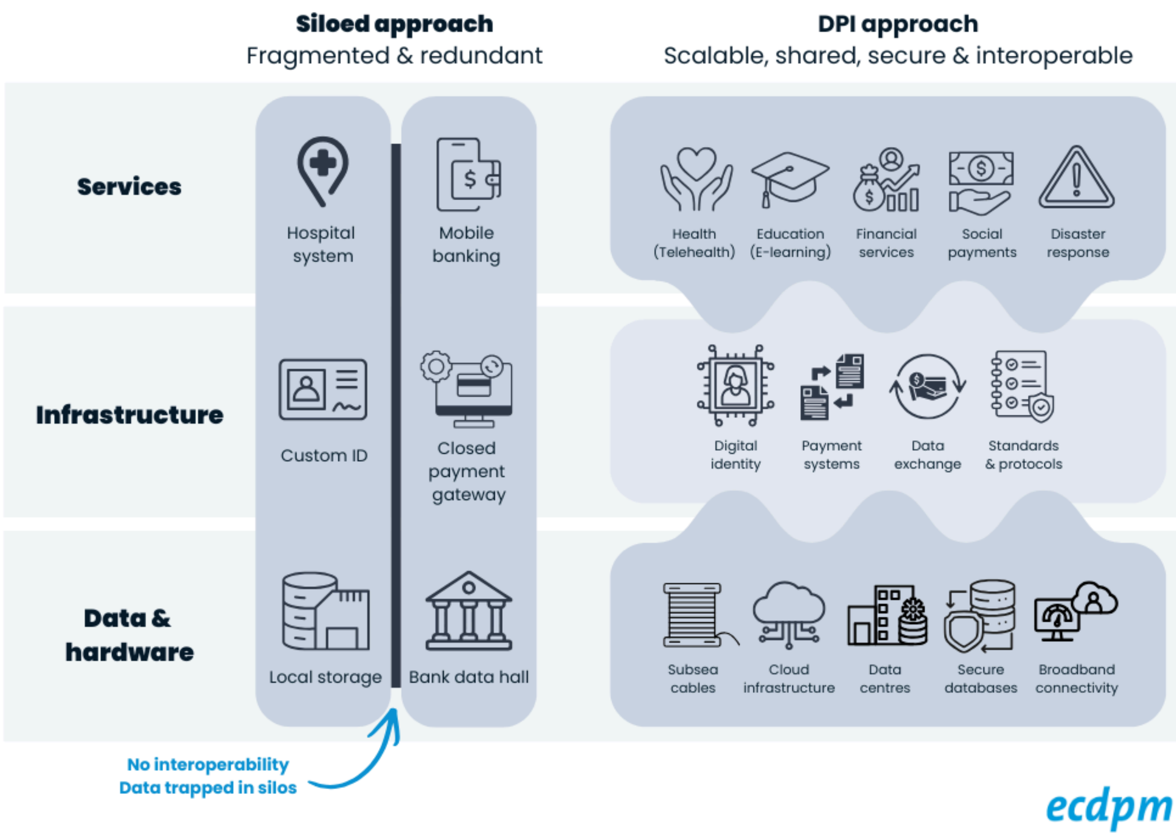
2. Understanding the framework

Digital Public Infrastructure (DPI) consists of shared digital systems that are secure, interoperable and can be built on open standards to provide equitable access to public and private services at scale (G20, 2023). These systems are the basic rails that other services run on. Just as roads, power grids and water networks allow entire economies to function, DPIs enable essential digital services to flow reliably and reach everyone.

For instance, a national digital identity allows people to prove who they are anywhere, whether accessing healthcare, opening a bank account or receiving social benefits. A payments system enables any bank or digital wallet to transact with any other, reducing costs and making commerce work at scale. A data exchange layer lets different government systems "talk" to each other so that, for instance, birth records, school enrolment and vaccine registries can be connected without duplicating work. These are not just connectivity tools, they are examples of DPIs that coordinate interactions across sectors of society.

Over the past few years, the debate on developing a digital public infrastructure (DPI) has expanded to encompass the full "stack", from hardware such as subsea cables, data centers and cloud infrastructure to logical layers including standards, protocols, and middleware and service layers such as registries and sectoral platforms. DPI therefore functions as the intermediary layer, between hardware and data, at the base, and services at the top (UNDP, 2025).

Figure 1: The DPI Approach: Siloed vs DPI Approach



Source: ECDPM, drawing from Mazzucato (2025) and UNDP (2025)

Digital Public Goods (DPGs) sit within or alongside DPIs and refer to specific open source softwares, open data, open standards and open AI systems that meet privacy, do no harm and legal safeguards while advancing the Sustainable Development Goals (SDGs) (DPGA, 2025a). Essentially, DPIs are the shared foundational infrastructures and DPGs are the reusable components (tools, codes, datasets) that make digital solutions extensible, auditable and adaptable over time.

In the 21st century, digital systems for vaccine distribution, social welfare, identity records, payments and medical data are recognised as critical public infrastructure (Mazzucato et al., 2024). Currently, more than 50 countries already have active digital identity systems, 90 have digital payments and 100 have data exchange platforms (UNDP, 2025). The UNDP estimates that by 2030, a DPI approach could lead to a 20-33% potential growth acceleration through financial DPI, a circa 4% carbon emissions reduction through carbon trading DPI and a 28-42% increase in access to justice through digital case management (UNDP, 2023).

The UN Global Digital Compact (GDC) views DPIs and DPGs as key drivers of inclusive digital transformation, provided they are built in safe, inclusive and interoperable ways. It also notes that multiple implementation models can coexist and must be adapted to different contexts, according to local needs, capacities and priorities (UN, 2024). However, these systems are not value-neutral, as their benefits hinge on governance and design choices that either reinforce existing power structures or promote broader common good.

Drawing on this, Mazzucato et al. argue that for DPI to genuinely serve the public interest, focus must go beyond the services produced, but to the processes and relationships that shape them. This involves following five pillars: (1) clear purpose and directionality to orient investment and policy; (2) co-creation and participation that set rules for collaboration and co-investment across public, private and civic actors; (3) collective learning and knowledge-sharing to build long term capability and capacity; (4) access for all and fair distribution of benefits to ensure equal and inclusive growth; and (5) transparency and accountability to sustain citizens' trust in the initiatives (Mazzucato et al., 2024).

When DPIs and DPGs commit to these pillars, they do more than digitize services and enable remote, paperless, and presenceless service delivery. They have the potential to facilitate access, lower costs, and build local ownership, thereby reducing exclusion and the concentration of power. This means that the crucial choice for countries is between deploying DPIs mainly as service-delivery channels in partnership with big tech, which risks deepening dependency, or designing them as open, public interest infrastructure that challenge monopolies, foster competition and enable local innovation.

In order to guarantee these digital systems' alignment with the public interest, the Digital Public Goods Alliance (DPGA) has worked on developing a standard with technical, legal, and social criteria for DPGs (DPGA, 2025a). Recent efforts particularly targeted the need for scalable and open solutions for climate action, with the DPGA proposing a specific framework to identify DPGs that can support mitigation, adaptation, and monitoring (Pandey and Schmidt, 2025). This framework emphasises that DPGs for climate must be globally relevant, technically robust, and focused on empowering local communities, with examples including open geospatial data platforms, early warning systems, and weather and emissions monitoring tools, all of which can be adapted and reused by different countries to accelerate environmental responses.

Supported by open source technologies with clear documentation and privacy safeguards, DPIs and DPGs can play a central role in reducing dependency on proprietary systems and strengthening collective digital capacity. By providing reusable components that countries can adapt and govern together, they enable interoperability and build the institutional trust that resilient digital systems require (Gimpel, 2025). Developed and maintained by communities, these systems could contribute to the digital commons, a shared pool of digital resources created for public benefit, serving as a counterbalance to the increasing power of big tech (Avila et al., 2024). The digital commons could allow different providers to plug into the same system on equal terms, fostering participation in technology development, opening up markets and helping ensure that technological progress remains a shared public asset. Taken together, these attributes could form the basis of strategic digital autonomy, i.e., the ability of nations to maintain control over critical systems while remaining open to collaboration and co-innovation.

3. Brazil's case to co-lead a global digital coalition for climate

3.1. The evolution toward collaborative digital sovereignty

The global digital ecosystem has been increasingly dominated by a few firms from China and the United States, creating deep dependencies worldwide. This concentration is also physical and industrial, as China controls about 90% of global rare earth refining capacity, which is essential for hardware, while US-based giants like Amazon, Microsoft, and Google collectively control roughly 70% of the global cloud market. At the same time, 70% of foundational AI models have been developed in the United States and 15% in China (Bria et al., 2025). This imbalance creates strategic vulnerabilities for all nations, forcing governments to rely on external supply chains for the chips, data centers, and platforms that underpin their economies.

These dependencies undermine national sovereignty, generating high energy costs, innovation gaps and a lack of bargaining power vis-a-vis big technology companies. Redressing this disparity demands diversifying digital supply chains, pooling resources and co-developing alternatives that uphold public values and reduce vendor lock-in.

Amidst intensifying technological competition and eroding multilateral coordination, early national strategies tended to frame digital sovereignty primarily in terms of economic security—protecting domestic industries, data, and infrastructure from foreign control. With time, a more sophisticated understanding is emerging: digital sovereignty is less about self-sufficiency than about *smart interdependence*, the strategic ability to decide what to build, reuse, or adapt and which dependencies to accept, under what conditions and for how long (Baums et al., 2025; Bracken, 2025; Gimpel, 2025). In practice, such sovereignty is more effectively achieved through structured cooperation than through isolation.

This evolving approach to smart interdependence is increasingly seen as a practical path towards strategic digital autonomy, based on a more collaborative model of sovereignty. It is a shift that recognises that no single country can develop all the technologies or set all the rules needed to thrive in the digital age alone, especially while tackling global challenges like climate change. By teaming up, countries could enhance their collective resilience and autonomy in the face of overwhelming big tech power or geopolitical pressure (Medinilla et al., 2025; Bracken, 2025; Gimpel, 2025; Benson et al., 2025). Strengthening autonomy then becomes a matter of mapping dependencies and making deliberate, evidence-based choices about technologies and suppliers instead of inheriting them through convenience or vendor lock-in.

This understanding aligns with Brazil's recent propositions regarding Digital Public Infrastructure for Climate, which were further advanced while hosting COP30 in Belém in November 2025. During the event, Brazil positioned climate as a domain where international cooperation could be operationalised through a climate-focused DPI and DPGs coalition, channeling political and financial capital toward collective solutions. Brazil invited different stakeholders to join forces around climate-relevant systems already working in different contexts, identifying what could be adapted and reused across borders, with financing aligned so that shared data triggers real enforcement and decision making at scale (Lemos and ITS Rio, 2025; COP30, 2025a; COP30, 2025b).

Following this perspective, open and interoperable digital systems could translate climate commitments into verifiable outcomes, reducing transaction costs and information asymmetries while increasing the capacity of institutions to detect non-compliance, direct resources and coordinate responses. Digital climate governance could also shift global power dynamics, with countries being able to generate, validate, and control environmental data and digital solutions, better positioned to shape carbon markets, issue early warnings, demonstrate environmental regulatory compliance, coordinate cross-border action, and attract sustainable investment.

The architecture of digital infrastructure for climate (who owns it, who accesses it, who maintains it) will influence the distribution of political and economic benefits in the green transition. This is also where the logic of the twin transition becomes even more concrete, as it requires addressing the environmental costs of digital systems themselves (e.g. rising energy consumption, electronic waste and reliance on critical raw materials), while harnessing their potential for solving problems in real time and with transparent governance at scale. In this sense, Brazil's recent efforts to combine policy with data-driven, public interest digital platforms indicate that approaching environmental environmental challenges in this way can be feasible and scalable, placing the country in a strong position to inspire a global digital coalition for climate (Duarte, 2024; Lemos and ITS Rio, 2025).

3.2. Why Brazil, why now

As Latin America's largest economy and a prominent actor in global governance forums such as the G20, BRICS and COP30, Brazil is positioning itself to lead a new model of inclusive and sustainable development. This ambition comes after a decade of economic stagnation, weakened industrial capacity, high inequality and environmental degradation, particularly in the Amazon (Mazzucato, 2025). During that period, the state retreated from an active role in directing development, often under the sway of fiscal austerity and pro-market reforms emphasising efficiency and deregulation, which left strategic tools such as public investment, procurement and the governance of state-owned enterprises underused. Now, the current administration is seeking to redirect economic transformation by placing public interest, industrial policy and environmental justice at the centre of its agenda.

The country's socio-economic context remains challenging. Structural inequality, food insecurity, underinvestment in public services and vulnerability to global supply chains persist. At the same time, the country continues to face deforestation, land-use change and agriculture-driven emissions, with land-use and livestock together accounting for more than half of the national greenhouse-gas profile (Mazzucato, 2025). Yet Brazil's biodiversity, renewable energy resources, established social protection institutions and maturing digital public infrastructure provide important foundations for inclusive growth and, potentially, the twin transition.

DPI has become particularly central to the current administration's agenda. Rather than building a single stack from scratch, Brazil has adopted a "brownfield" approach that treats DPI as system transformation, upgrading and stitching together existing systems through cross-ministerial collaboration (Teevan et al., 2025; Mazzucato, 2025). The 2024 National Strategy for Digital Government (NSDG), grounded in the Decree No. 12.069/2024 and the principles of Law No. 14.129/2021, emphasises inclusive access, interoperability and secure data reuse, while reducing fragmentation across federal, state and municipal levels (Almeida and Martins, 2025). Coordinated by the Ministry of Management and Innovation in Public Services (Ministério da Gestão e da Inovação em Serviços Públicos, MGI), Brazil's approach explicitly ties digital transformation to social, economic and environmental missions, all aligned through thematic plans—such as the Ecological Transition Plan, the New Brazilian Industrial Policy (Nova Indústria Brasil), the New Growth Acceleration Plan (Novo PAC) and the National Climate Plan—and involving civil society in governance (Mazzucato, 2025).

These domestic initiatives also complement Brazil's engagement in the global "50-in-5" advocacy campaign, which encourages 50 countries to design, implement, and govern foundational DPI components by 2028 (Duarte, 2024; 50in5, N.d.). By joining this campaign, Brazil intends to develop technologies that are accessible, secure and can seamlessly work together, framing them as relevant instruments to address the country's current priorities, such as social inclusion, combating hunger, sustainable and inclusive development and reforming global governance (50in5, 2024).

Box 1: Brazil's main DPI Initiatives

Gov.br (digital identity): operated by MGI's Secretariat for Digital Government, Gov.br is a national identity platform that authenticates users via multiple existing registries (such as the Brazilian individual taxpayer number), enabling secure access to different government services with one login. This system, which has more than 160 million users and gives access to a native e-signature and over 4.200 public services, is undergoing changes to unify all identity issuers and ensure unique citizen records based on biometric information (50in5, 2024; Mazzucato, 2025).

Conecta Gov.br (data exchange): also launched by MGI's Secretariat of Digital Government, the Conecta Gov.br automates and secures the sharing of information across government systems. This way, citizens do not have to resubmit data, thereby simplifying services and reducing fraud (50in5, 2024; Mazzucato, 2025).

Pix (digital payments): developed by the Central Bank of Brazil, Pix is the real time low cost national payments system. It enables individuals, companies and government entities to perform instant transfers via mobile apps, simple keys or QR codes. It supports bill payments, cash withdrawals and is settled in seconds. It already has been adopted by 153 million individuals and 15 millions companies, extending financial services to previously unbanked populations. Now, it is being improved to avoid frauds and expand its access and interoperability (50in5, 2024; Mazzucato, 2025).

Cadastro Ambiental Rural (CAR): established by the 2012 New Forest Code to protect and restore forest areas on rural land, CAR is Brazil's Rural Environmental Registry, a public law electronic registry of rural properties with more than 7 million properties and around 700 million hectares by 2024. It provides land mapping and access to credit and public programs, currently being reframed as a DPI to also support land-use monitoring and sustainable management (50in5, 2024; Mazzucato, 2025).

Source: ECDPM, drawing from 50in5 (2024) and Mazzucato (2025)

By embracing DPI and mission-oriented strategies at home while advocating for accessible, interoperable, secure and ethical technologies abroad, Brazil aims to transition from isolated systems toward unified infrastructures that integrate policy implementation within and across borders. This intends not only to reduce redundancy and operational costs but also to enhance resilience and the quality and accessibility of public services, as well as increase open government, citizen engagement and collaboration among stakeholders, enabling faster responses to economic and environmental crises.

3.3. Brazil's domestic digital systems for climate

While deforestation rates in Brazil have fallen since 2023, the country still faces major environmental issues, with scientists warning that the Amazon rainforest is approaching a tipping point (Mazzucato, 2025). In response, the current Brazilian administration has vowed to accelerate a low-carbon transition, scaling agricultural subsidies tied to sustainable land use and deploying digital tools that improve land management, environmental compliance and evidence-based policymaking.

3.3.1. Cadastro Ambiental Rural (CAR) and Rede CAR

At the centre of these efforts is the Cadastro Ambiental Rural (CAR), which is, as previously mentioned, a public law electronic registry that collects and organises geospatial information on rural properties. CAR was established by the 2012 Forest Code, also known as the Law No. 12.651/2012 on the protection of native forests, the main environmental federal law that requires rural landowners to preserve a portion of native vegetation on their property, balancing agriculture and livestock production with the protection of water resources, soil, air and biodiversity (Grantham Research Institute, n.d.). For this reason, all landowners must register their properties through a georeferenced online system, providing: (a) personal identification, (b) proof of ownership and (c) georeferenced data on the perimeter of their property, native vegetation, permanent-preservation areas and other environmentally sensitive zones. This information flows into a national database that links land title records with environmental data, enabling monitoring, enforcement and planning.

The system is hosted in Sicar, Brazil's national Rural Environmental Registry system (Sistema de Cadastro Ambiental Rural), which manages CAR records, monitors restoration and suppression of native vegetation and provides public access to information. CAR also integrates data from other agencies to keep its information aligned with the latest official information on, for example, Indigenous lands, conservation units and environmental monitoring (Duarte, 2024; UNDP, 2025; Mazzucato, 2025).

Through a partnership with the DPGA, CAR's architecture is evolving into modular, open components aligned with the DPGA's DPG standard for climate action (Pandey and Schmidt, 2025). Launched during COP30, the first module available is the Rural Environmental Registry's registration module (RER-RM), an open source, configurable solution that uses open standards for multilingual access and better integration with national systems, such as other environmental and land management platforms and gov.br. This could advance forest monitoring and restoration planning, as well as facilitate rural credit access and environmental service payments.

By modularising CAR, Brazil hopes to make its components reusable for different needs and across multiple contexts, including internationally. The design aims to improve land-use transparency, support local management and enhance monitoring through interoperable, verifiable data. This way, CAR could become a relevant tool for supply-chain traceability and compliance for agricultural commodities in Brazil and abroad (Duarte, 2024; UNDP, 2025; Mazzucato, 2025).

One of CAR's current challenges is the fact that it relies on self-reported data from landowners, requiring state officials to verify the accuracy of submissions. Due to capacity gaps at the local level, a large share of records remain unvalidated, limiting their legal and operational value. Also, the system is not yet interoperable with all government platforms, which reduces its effectiveness for enforcement agencies, regulators and supply chain actors (Mazzucato, 2025; UNDP, 2025). For this reason, "Rede CAR" (CAR Network) was recently developed: launched in August 2025, it is supposed to be a national network connecting different levels of government to exchange practices, co-develop integrated solutions and advance data validation processes. Rede CAR seeks to facilitate information exchange, address inconsistencies and strengthen cooperation among states, thereby looking to improve data quality and transparency, as well as increase CAR's capacity for interoperability and enforcement (MGI, 2025).

3.3.2. MapBiomas, DETER and the Amazon Rainforest Evolution Index

There are other initiatives that complement CAR. For instance, the National Institute for Space Research's (Instituto Nacional de Pesquisas Espaciais, INPE) Deforestation Detection System (DETER), developed in 2004 as part of the National Action Plan to Prevent and Control Deforestation in the Legal Amazon (PPCDAm), processes satellite imagery every 15 days to identify deforestation hotspots. It provides georeferenced alerts that allow the Brazilian Institute for the Environment and Renewable Natural Resources (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis, IBAMA), to act as the national environmental police and law enforcement authority in a more timely manner (Climate Policy Initiative, 2013; INPE, N.d.). Through PRODES, a system that calculates the official annual deforestation rate with high precision and TerraBrasilis, a platform that presents these data in visual dashboards, INPE is able to compile and communicate information for policy reporting more effectively (Terrabrasilis, N.d.; Lemos and ITS Rio, 2025).

Prior to DETER, environmental monitoring depended on voluntary reports, making it difficult to locate and access deforestation spots. Yet, while DETER has improved the situation, the current system still operates largely as a stand-alone tool, with limited integration with other platforms, including CAR. Therefore, there is scope to improve data interoperability and strengthen follow-up on alerts. Connecting DETER's near real time data with land ownership records and monitoring platforms would enhance accountability and provide high integrity, transparent measurement, reporting and verification for nature-based climate projects (Lemos and ITS Rio, 2025).

Civil society innovators are also filling data gaps. Another DPG for climate recognised by DPGA is MapBiomas, a civil society network that produces annual licensed maps of land cover and land use with transparent methods and open datasets (DPGA, 2025b; MapBiomas, N.d.). It is now active beyond Brazil, in 14 countries across Latin America and in Indonesia, where it supports and advances sustainable management and conservation of natural resources in different contexts.

Besides enabling governments, civil society and businesses to monitor deforestation, identify carbon sinks and inform climate mitigation and adaptation strategies, MapBiomas demonstrates how DPGs can travel beyond national borders in ways that allow other countries to adapt them to their own environmental needs. Nonetheless, the DPGA framework points out that MapBiomas could advance its modularity to allow for more customisation, and develop a structured monitoring and evaluation framework for climate-specific indexes (Pandey and Schmidt, 2025). Scaling its methods beyond large cloud platforms, such as Google Earth Engine, and measuring the environmental footprint of its processing infrastructure are additional areas for improvement.

Similarly, the Amazon Rainforest Evolution Index (AREI), created by the CERTI Amazônia Institute, aggregates complex environmental datasets (such as from the Brazilian Institute for Geography and Statistics (IBGE) and MapBiomas) into AI-ready tools. For example, its platform supports local planning and monitoring across Brazil's nine Amazonian states, including 772 municipalities and over 60% of the country's territory (New Commons Challenge, 2025; NYU, 2025). By presenting information at the neighbourhood scale in a user-friendly visual way, the platform allows communities, researchers and authorities to understand environmental change without specialized training, guiding sustainable development decisions. This democratisation of data could enable more informed participation in land-use planning and conservation decisions. However, again, the tool's effectiveness can still be improved if formally linked to official public systems.

In summary, these initiatives are part of a growing digital ecosystem that showcases how Brazil's domestic solutions for climate governance can operate effectively at scale. DETER provides rapid deforestation alerts but requires greater integration with land registry data to strengthen enforcement; MapBiomas offers high-resolution open data that supports monitoring, mitigation and adaptation across multiple countries, but its architecture could be more modular and its climate impacts more systematically quantified; and AREI makes complex environmental data intelligible for local actors, yet it could be improved through sustained collaboration with government platforms. If these tools adopt common design principles (such as modularity, minimalism, interoperability and user-centred design) , then integrating them with state-led CAR and other public digital systems could position Brazil as the international reference for DPI for climate, while simultaneously better operationalising the twin transition (Mazzucato, 2025).

3.4. Brazil's international initiatives for climate

Brazil's COP30 presidency framed its domestic digital systems for climate as a driver of global climate cooperation. In Belém, the government announced complementary proposals that combine digital systems with innovative finance and participatory approaches, while also introducing operational strategies and a methodology to identify and curate solutions globally. These initiatives include: a performance-based finance mechanism that uses transparent registries and satellite data to reward forest conservation (the Tropical Forests Forever Facility); an open platform to submit local climate projects from all over the globe (the Global Mutirão); a three-year Plan to Accelerate Solutions (PAS) designed to assemble a coalition around climate-relevant DPI and DPGs; and a long term vision for a modular, multi-layer Climate DPI and ClimateStack under collaborative governance. Together, these initiatives reflect Brazil's intent to translate its national digital climate experience into a broader model for multilateral cooperation.

3.4.1. The Tropical Forests Forever Facility (TFFF) and the Global Mutirão

The Tropical Forests Forever Facility (TFFF) and the Global Mutirão were officially presented during COP30. The TFFF, to be managed by the World Bank, seeks to mobilise long term funds to reward countries for conserving tropical forests, being designed as a "pay-for-standing-forest" mechanism, with payouts based on remote-sensing data of forest cover and carbon stocks (Recessary, 2025; COP30, 2025a). This means that the accountability of this climate finance instrument depends on transparent digital registries and satellite monitoring, such as CAR. Through them, TFFF could track who preserves the forest and what the results are, handing out payments.

If properly implemented and linked to existing digital systems, this performance-based model could support adaptation (advancing climate, hazard and ecosystem data), mitigation (through transparent monitoring of emissions, renewable energy planning, and forest carbon accounting) and biodiversity protection (via species and ecosystem data, community monitoring and conservation modeling). The TFFF's design also introduces features intended to rebalance the governance structure, including forest and sponsor countries participating on equal footing, a dedicated share of at least 20% of resources to Indigenous peoples and local communities, and a hybrid public–private capital structure to scale up and stabilise conservation incentives despite political shifts.

At COP30, more than 50 countries endorsed an initial declaration with pledges exceeding US$ 5.5 billion, and a medium-term goal of reaching US$ 125 billion. Although not yet operational, the TFFF already represents an interesting shift of mentality by remunerating preservation instead of penalising deforestation (COP30, 2025a).

Alongside TFFF, the Brazilian Presidency proposed another international collaborative initiative, the Global Mutirão, a people-powered online platform for participatory climate action on the COP30 website. Rooted in the Indigenous Tupi-Guarani concept of "mutirão" (meaning collective effort, joining forces for a shared task), this open platform invites individuals, groups and organisations worldwide to submit local climate projects, which could be used to inform national and international strategies. In practice, the Mutirão is intended as a way of bridging scientific evidence and everyday community experience to avoid top-down solutions and strengthening data democracy and local ownership (COP30, 2025b).

By combining digital infrastructure, collective intelligence and cooperative finance to scale climate action across borders, Brazil aims to prove that multilateralism can reinvent itself and deliver results in the face of global challenges (COP30, 2025a).

3.4.2. The Plan to Accelerate Solutions (PAS)

Co-led by a secretariat formed by the Ministry of Management and Innovation in Public Services, DPGA and the Institute for Technology and Society (ITS Rio), another initiative presented during COP30 was the Plan to Accelerate Solutions (PAS), a tactical three-year (2025-2028) strategy for developing a climate-relevant DPIs and DPGs coalition. PAS' objective is to mobilise governments, civil society and international partners around a common effort, mapping what already works, identifying gaps, aligning safeguards and standards, and publishing a climate-relevant catalogue of digital systems that countries can use as a practical roadmap (COP30, 2025c).

The plan builds on DPGA's calls for collaborative action, its standard and its DPGs for climate's criteria, which have already supported the recognition of emerging climate-related DPGs from all over the world (Pandey and Schmidt, 2025; DPGA, 2025a; DPGA, 2025c). With that, PAS wants to offer a repository with more than 20 open source tools to at least 30 countries that can apply these innovations across issues like disaster response, energy, water, and agriculture.

By coordinating this ecosystem, PAS secretariat intends to address capacity gaps, policy alignment, inclusive governance and privacy risks. As a precept, the plan follows the same logic of the Brazilian brownfield approach, making it easier for stakeholders to adapt proven components and expand its use cases through innovation challenges. For example, Brazil has already committed CAR as its first contribution, signalling how proven components (like its new RER-RM) could be reused (Pandey and Schmidt, 2025). The secretariat's role is to coordinate contributors, align technical standards and safeguards, and pilot systems in priority sectors. By 2028 it intends to assemble a core set of open, low cost, easy to adapt DPIs and DPGs, backed by a knowledge network and regular progress monitoring, that countries worldwide can adopt.

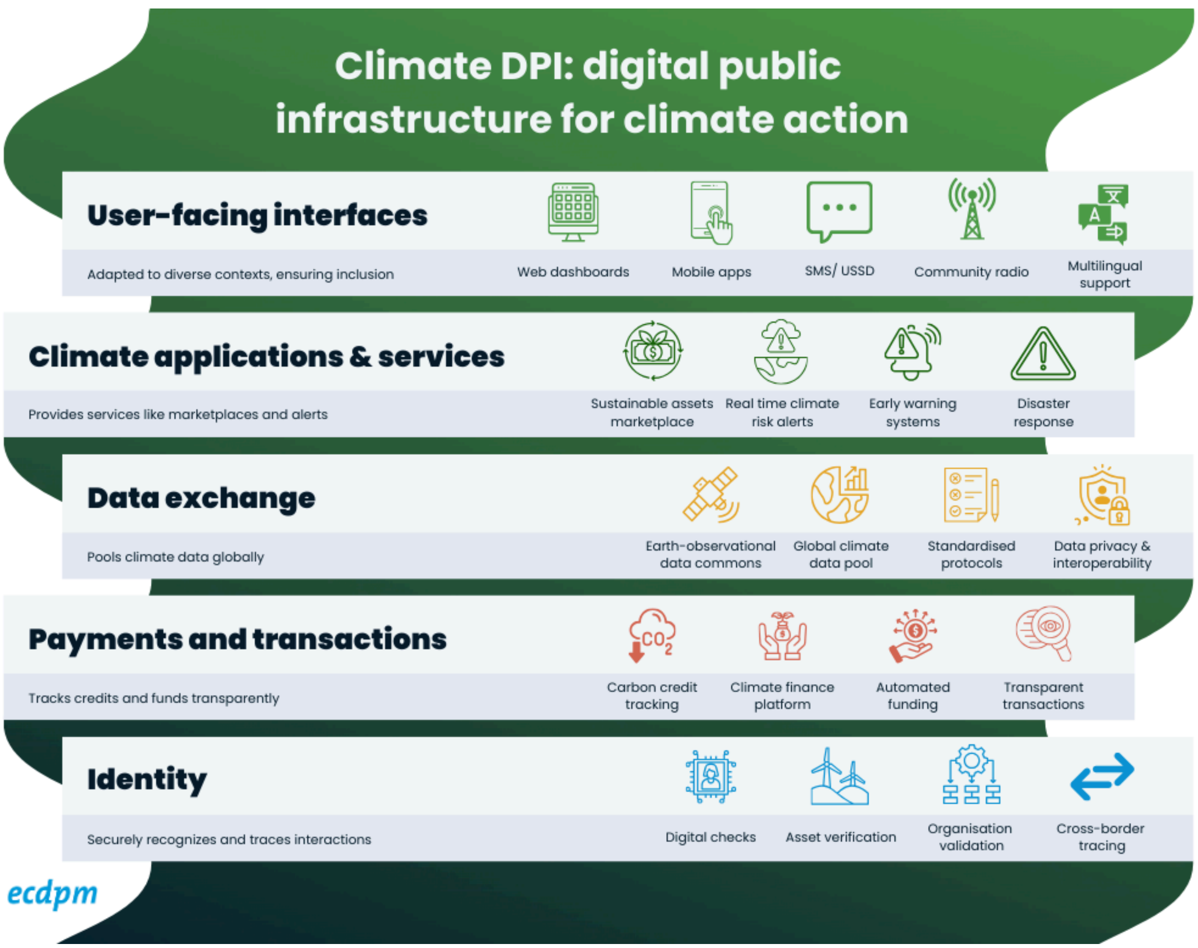
3.4.3. Climate DPI and ClimateStack

PAS acts as a short term enabler for what Ronaldo Lemos and ITS Rio have been calling Climate DPI and ClimateStack (Lemos and ITS Rio, 2025). Commissioned by the COP30 Presidency, the Global Digital Public Infrastructure for Climate, or Climate DPI, was developed to consolidate digital tools, climate finance platforms and participatory infrastructure under a unified long term vision and collaborative international governance. It composes an open, multi-layer architecture that tries to make climate action faster, more transparent and interoperable, forming a ClimateStack.

At its core, Climate DPI means repurposing society's foundational digital rails (identity systems, payment networks, data exchanges, etc.) to serve climate objectives. Across all layers, Climate DPI would be guided by principles of interoperability, openness, security, scalability and adaptability, ensuring it can evolve over time while serving as a resilient digital structure for global climate cooperation.

To show how Climate DPI would function in practice, the identity layer could enable the secure digital checks of people, organisations and assets involved in climate action, such as smallholder farmers, project developers or renewable energy sites, helping verify eligibility and trace transactions across borders. The payments and transactions layer could host a digital platform for climate finance to track carbon credits and fund initiatives transparently and automatically. A third one for data exchange could establish a shared earth-observation data commons with standardized protocols to pool climate and environmental data globally, ensuring quality, privacy, and interoperability across systems. Above these, there would be climate applications and services layer to provide, for instance, sustainable assets marketplaces or real time climate-risk alert systems for early warnings and disaster response. These tools can be made accessible through user-facing interfaces adapted to diverse contexts, including web dashboards, mobile apps, SMS or community radio, with multilingual support to ensure inclusion.

Figure 2: Climate DPI: Global Digital Public Infrastructure for Climate



Source: ECDPM, drawing from Lemos and ITS Rio (2025)

Countries could then plug into the Climate DPI, deploying modules they lack and interoperating with others, in an analogous model to how other technology stacks work. The ClimateStack would be the proposed architecture that allows Climate DPI to scale flexibly. It would also use a layered framework, emphasising the "full stack", as we have mentioned before: at the bottom would be physical foundations (global and national data centers, cloud infrastructure and cables) with green principles (e.g. energy efficiency and renewable power) to keep the system sustainable (following the twin transition' greening of digital). Above that would be the logical, services and application layers, providing the common set of climate protocols and utilities (greening by digital) that form the Climate DPI (Lemos and ITS Rio, 2025; Farooqi and Vora, 2023).

Box 2: Brazil's Climate DPI and ClimateStack

Taking the Brazilian initiatives and digital systems as a practical example, Brazil is already developing its Climate DPI and ClimateStack. With the intent to align registries and identity systems (e.g. CAR's RER-RM connection with gov.br), data and monitoring systems (e.g. DETER, MapBiomas and AREI), finance (e.g. TFFF) and services (e.g. Global Mutirão, PRODES and TerraBrasilis), the country could achieve a more interoperable, inclusive and data-driven climate digital governance.

At the infrastructure layer, Brazil has also made strong progress, with the majority of Brazilian households having internet access and major global data centers and cloud providers operating across the country (CGI.br, 2025; Butler, 2024). The government has sought to strengthen international and domestic connectivity by expanding submarine cables and rural broadband projects (IDB, 2025). Launched in 2021, EllaLink, a submarine fiber-optic cable linking Brazil directly to Europe, provides a low latency, high capacity connection intended to reduce reliance on traditional North Atlantic data routes (MCOM, 2021; European Commission, nN.d.-b).

To ensure more domestic data infrastructure, Brazil has also introduced tax incentives and regulatory reforms. One example is the ReData initiative (the Regime Especial de Tributação para Serviços de Data Centers, aka Special Tax Regime for Data Center Services), launched under the New Brazilian Industrial Policy. This special tax regime was designed to exempt information and communications technology (ICT) equipment for data centers from certain taxes for a five-year period in exchange for commitments to invest in research and development and to expand domestic service provision, as well as to meet renewable-energy use and water-efficiency standards (MDIC, 2025). Established in September 2025 by a

Provisional Presidential Measure—a legal instrument that allows the Brazilian President to enact laws immediately for a limited period without prior Congressional review—ReData now awaits legislative approval to be fully implemented. The measure expired in February 2026 and has since been converted into draft legislation currently under consideration in Congress.

Additionally, Brazil's federal government has launched a Brazilian Artificial Intelligence Plan (PBIA) for 2024-2028. The plan is organised around five strategic axes—AI infrastructure and development, diffusion and training, public services, business innovation and regulatory support—to develop domestic AI capabilities. Within the infrastructure axis, Brazil seeks to invest in a supercomputer and renewable-powered data centers, aiming to create a network of AI excellence centers and developing national processors and software stacks. Thus, PBIA intends to complement climate digital governance by expanding computational capacity, improving digital literacy and professional qualification, developing AI models in Portuguese and their use in public services, while also fostering more sustainable data infrastructures (MCTI, 2024).

Brazil generates a high share of its electricity from renewable sources—about 80–85 %, rising to 93.1 % at times (Lemos, 2025). This gives it an advantage when powering energy-intensive AI applications and data centers. Yet significant challenges remain. Debates over the greening of digital are intensifying, highlighting concerns about the environmental impacts of these structures, particularly regarding the use of water and energy, and their adverse effects on local traditional communities (Bioni et al., 2025). At the same time, broadband coverage in remote areas is still uneven and often unprofitable for private investment, leaving such projects mostly dependent on public subsidies. And, regionally, Latin America suffers from gaps in computing infrastructure and a shortage of technology professionals. Closing these gaps will require governments, industry and academia to work together to share resources and broaden access.

To turn this structure into a global framework, it would require an inclusive governance model that could be developed under the mandate of the already existing international climate process. Lemos and ITS Rio call for a UNFCCC/COP mandated body, such as a taskforce or a commission, to co-design and oversee the Climate DPI, as well as ensure broad legitimacy and participation. This high-level body would report to COP meetings and ensure strong privacy, ethics safeguards and that climate-vulnerable countries have a voice. Under it, the proposal includes an International Advisory Board of senior government, UN and civil society representatives and a Technical Steering Committee of experts (in climate science, data, digital services, etc.) that would guide standards, resolve disputes and ensure technical robustness. Moreover, a Global Technology Alliance would coordinate private sector contributions in line with the DPI's needs (e.g. the establishment of cloud credits, open source tools and data labs in developing countries, physical structure deployments, and capacity building training), reducing working in silos, overlapping, over-targeting or neglecting specific regions (Lemos and ITS Rio, 2025).

Lemos and ITS Rio suggest that existing successful precedents in other domains (like the Global Alliance for Vaccines and Immunisation, Gavi) could set a model for building alliances of governments, international organisations, tech partners and civil society, as no single player would be capable of providing all the pieces of this system. The idea is to follow a roadmap of pilot projects that would lead to full global rollout within approximately five to ten years, leveraging existing climate finance (e.g. multilateral funds, carbon markets) and public–private partnerships to cover costs, avoid vendor lock-in and build local capacity.

In summary, Climate DPI and ClimateStack could offer a comprehensive approach to boost climate action. By establishing internationally governed digital rails, this system aspires to curb duplication, enhance transparency, and accelerate cross-border mitigation and adaptation efforts. Although implementation poses financial and complexity challenges, the design remains modular and inclusive. The ultimate success of this initiative will depend on multiple factors. Ensuring that Climate DPI and ClimateStack remain resilient to political shifts and bureaucratic sluggishness often associated with bodies like UNFCCC will be a crucial one (Intepe, 2025; European Parliament, 2025).

4. Governance, politics and the continuity of the global digital coalition for climate

4.1. The risks of leadership dependence and the need for collective responsibility

As the host of COP30 and a vocal advocate for a new environmental multilateralism, Brazil has positioned itself as an aspiring candidate to lead the digital agenda for climate. However, even as the country advances its ambitious programme of linking digital infrastructure with climate policy, domestic tensions reveal how fragile progress can be. Recent federal decisions regarding offshore oil drilling at the mouth of the Amazon, as well as congressional efforts to weaken Indigenous land rights and environmental protections, show the contradictions that persist between Brazil's international narrative and its domestic policies (Agence France-Presse, 2025; WWF, 2025; Galey, 2025).

Brazil's situation also reflects a wider international pattern. In the United States, data removal under the current administration illustrates how quickly public datasets and evidence can disappear when priorities change (Cormier, 2025). In Europe, a right-of-centre majority in the European Parliament has pushed to roll back elements of the Green Deal, delay deforestation-free supply chain rules and relax car-emissions standards (Niranjan, 2025). Further "simplification" measures around the EU's green agenda are expected in early 2026, following the so-called "digital omnibus" focused on "simplification" of the EU's digital regulations in November 2025 (European Commission, 2025a, Kamath and Teevan 2025). And with a new national election due in 2026, Brazil faces another possible conservative shift that could deprioritise environmental programmes, as occurred in 2019 when, for instance, the government interfered at INPE after it publicly reported rising Amazon deforestation (Phillips, 2019).

The task ahead is to ensure that these tools evolve into lasting public assets, shielded from short term interests and capable of sustaining transparency, participation and trust regardless of who holds power. For this reason, the coalition's architecture must be designed not only for technical efficiency but also for political resilience.

Open, distributed systems—where datasets, standards and digital services are reusable, co-owned, decentralised across multiple databases and verifiable across jurisdictions—can act as safeguards against national reversals. Global alliances grounded in such principles help ensure that no single government can erase shared progress. Cooperation thus becomes a form of democratic insurance: if a government stops reporting deforestation data, for example, satellite providers, civil society observatories and international partners could continue generating and validating the information. Integrating non-state data producers, including Indigenous communities, citizen science platforms and academic networks into the digital coalition for climate ecosystem would add a second level of insurance, as it could allow state-supplied data to be audited in real time, improving the integrity of information and challenging official narratives.

Ultimately, turning climate-relevant digital infrastructure into a collective responsibility is essential to avoid over-dependence on specific leaderships and to preserve public value across political cycles. Achieving this will require actively embracing a model of smart interdependence, in which each country could retain control over its registries and data (such as land tenure or citizen IDs), while agreeing to expose standardised interfaces for data verification and exchange. This mirrors systems like Estonia's data interoperability layer X-Road, which enables secure data exchange without creating a centralized world database (UNDP, 2025). A multi-stakeholder coalition spanning countries, private sector and civil society actors, grounded in shared principles, mutual oversight and interoperable systems, could be the solution to make this infrastructure resilient while expanding its benefits worldwide.

4.2. The technical foundations: A 'Global Shelf' of DPIs and DPGs for climate

Beyond Brazilian initiatives, there is already a global shelf of digital systems for climate from which a collaborative ClimateStack and Climate DPI can be built, even if they were not originally designed for that. From state-led programmes to community initiatives, what is missing is exactly this coordination that could establish common standards and protocols, connect them together and align them with national and multilateral climate priorities.

4.2.1. Earth-Observation Data Solutions

Following the stack logic, to start, Climate DPI and ClimateStack would depend on earth-observation data. Europe's programme Copernicus already provides openly accessible satellite imagery and in-situ measurements for land, atmosphere, oceans and climate (European Commission, n.d.–d). Its Climate Change Service specifically offers free and open access to climate data and tools, ensuring that scientists, planners and citizens can draw on the best available information for adaptation and mitigation (Copernicus, n.d.).

Copernicus also has established regional hubs in the Philippines and works with Africa through the GMES & Africa programme, managed by the African Union Commission and the African Space Agency (PhilSA, n.d.; AfSA, n.d.). GMES & Africa aims to enhance institutional capacity across more than 40 African countries by transferring earth-observation technologies for water, natural resources and coastal monitoring, with emphasis on joint Africa–EU governance. These programmes show how open-access remote-sensing infrastructure can be scaled and federated across continents.

As another example, France is building a national geospatial DPI. Conceived by the Institut géographique national (IGN) through an open consultation, GéoCommuns intends to give France the digital mapping tools to understand its territory amidst ecological and digital changes (IGN, 2022; IGN, n.d.). It is built around continuous observation of the territory and participation in the digital commons, with a focus on understanding agricultural and environmental usage, needs and trends rather than commercial ones. Through the GeoCommons Factory, IGN develops data, tools and open digital services under shared governance. With the Geoplatform, it provides a space for public and private partners to host and share geodata. By opening its data and source code and enabling authorised partners to contribute to national databases, GéoCommuns seeks to empower a wide ecosystem of actors and reduce dependence on proprietary digital giants.

Other regional programmes could complement this data ecosystem and offer models based on public–private partnerships. For instance, Digital Earth Africa (DE Africa) combines public, philanthropic and private-sector support to convert satellite data into analysis-ready open products for the continent, supporting more than 50 governments ministries to manage land, crop health, water, agriculture and coastal changes (Digital Earth Africa, n.d.; Amazon, 2025). At the city level, in Nigeria, the PLACE Foundation's PLACE Hub is building a community-driven spatial data infrastructure, designed to capture ultra-high-resolution aerial and street-level imagery and support responsible AI in urban planning, disaster response and infrastructure development (New Commons Challenge, 2025). These solutions illustrate how data and open source platforms generated by multiple actors can strengthen the public value of digital ecosystems, filling data gaps and feeding into a global data commons.

Finally, the Global Earth Observation System of Systems (GEOSS), led by the Group on Earth Observations, is an intergovernmental effort that includes over one hundred members across Africa, the Americas, Asia, Oceania and Europe to coordinate and integrate existing observation systems. It seeks to stitch together dozens of systems into a single "system of systems" covering weather, climate, water, energy, ecosystems and biodiversity worldwide (ESA, 2005). By enforcing interoperability and shared standards, GEOSS aims to combine thousands of instruments (from satellites to ground sensors) into one portal, and many other new solutions (GEO, n.d.). Even so, it explicitly acknowledges that current observation systems suffer from gaps, inadequate long-term data archiving and weak coordination. This underscores the very coordination problem that a Climate DPI proposes to solve.

4.2.2. Registries, Data Exchange and Marketplaces

A second set of solutions relates to the foundational DPI systems, such as identity, payment and data exchange systems.

The Nature ID concept proposed by UNDP portrays how DPI could synthesise environmental, administrative and local datasets. Rather than creating a centralised repository, Nature ID offers to function as an interoperability layer that links remote sensing data, administrative records and Indigenous observations to specific identifications, enabling data on natural assets to be verified and shared securely, as well as providing a more holistic view of environmental information (UNDP, 2025).

Regional tools such as the Atlas of Climate Adaptation in South Asian Agriculture (ACASA) offer granular-scale information on climate hazards, exposure, vulnerability and impacts on key commodities, providing adaptation options for future scenarios. ACASA supports investment targeting, decision making and policy formulation (Gangopadhyay, N.d.; ACASA, N.d.). This kind of platform functions as an adaptation intelligence registry that could also be plugged into a global stack.

Similarly, there is the Global Biodiversity Information Facility (GBIF), an international network and data infrastructure funded by governments that provides open access to data on all types of life. It aggregates occurrence data from museums, DNA barcodes, citizen observations and other sources under open licences, using common standards, and makes them freely accessible for research and policy involving biodiversity, change monitoring and conservation planning globally (GBIF, n.d.).

Now, regarding transactions, India's Unified Energy Interface (UEI), built on the open source Beckn protocol, aims to do for energy transactions what open, interoperable protocols did for payments in the country. UEI lets any energy provider and consumer (solar, wind, battery storage, EV charging) discover each other and contract services through standardized messages, unifying a fragmented market without a platform gatekeeper (UEI, n.d.). By enabling energy transactions, UEI could serve as a model for climate-finance modules that handle payments for carbon credits or distributed renewables.

The MET Norway Weather API is a DPG operated by the Norwegian Meteorological Institute, which provides free weather forecasts for any location worldwide. Demonstrating its utility, it has been claimed to be particularly valuable to increase food security and safety for farmers and fishermen in Africa (MET Norway, n.d.).

Another example is the Food and Agriculture Organisation of the United Nations (FAO)'s Hand-in-Hand Geospatial Platform, an open access portal built to support poverty and hunger reduction initiatives. It aggregates millions of geospatial and socio-economic data layers from FAO and other public sources, offering indicators on food security, agriculture, natural resources and socio-economics aspects. Users can combine datasets to monitor water stress, map crop yields or compare livestock densities. By integrating FAO statistical data and specialized indices, the platform guides targeted agricultural interventions and has already been used by more than 65 countries (FAO, n.d.).

The Climate Mobility Case Database, developed by the Global Strategic Litigation Council and partners, uses AI to translate global case law on climate-related displacement into an open multilingual knowledge base that supports rights protection and policy reform (GSLC, n.d.).

In summary, these platforms form the technical foundations on which a global ClimateStack and Climate DPI could be built. Although not all are labelled as DPGs yet, by investing in open standards, licences and functions aligned with the public interest, they could become such. By coordinating and financing together, countries can maximize the public value of existing digital systems, adopting modules as needed, maintaining ownership over specific data and avoiding duplication of effort to accelerate climate action.

4.3. The geopolitical angle: Potential international partnerships to launch the global digital coalition for climate

The growing proliferation of these digital initiatives for climate indicates favourable conditions for a global coalition, but besides becoming technically intertwined, they also have to be collectively governed. The remaining question is how to assemble this governance framework in the current geopolitical context. While the Brazilian proposal of a universal Climate DPI aims to be open to all and connected to the UNFCCC structure, its political genesis could be pushed and strengthened by early partnerships that prove the value of smart interdependence and collaborative sovereignty. This section examines the current landscape of digital dependence and diversification, the proliferation of global initiatives that could prefigure a formal climate-digital coalition and why a Brazil–EU partnership could inspire a wider alliance, without reducing the endeavour to a bilateral project.

4.3.1. Brazil, the EU and other global actors diversifying digital international partnerships

As previously discussed, there is growing concern about global dependencies on a few big tech players from the US and China. In this context, conversations about digital sovereignty and the tech stack are emerging globally, and there is a growing focus on bilateral and multilateral cooperation between countries and regions on technology as on other issues. Some interesting examples of both bilateral and multilateral cooperation—often led by Global Majority countries—are emerging as countries seek to diversify economic dependencies and gain leverage.

In the digital sphere, India's leadership on digital public infrastructure, notably through its G20 presidency in 2023, was a particularly significant example, and one that began to build an international coalition around DPI at large (Teevan et al. 2025). Brazil later built on this momentum with its own G20 presidency in 2024, adapting the DPI concept to work domestically and using the G20 and later COP30 to showcase its own leadership on climate and inclusive DPI.

India and Brazil have both identified digital transformation as a strategic national priority, reinforcing it through a Memorandum of Understanding (MoU) to share large-scale digital solutions (such as integrating a digital wallet for government documents into CAR using modules from MOSIP), and a joint high-level technology roadmap covering collaboration on DPI, AI, and cybersecurity (MEA India, 2025; 50in5, 2024). Brazil has also formed a bilateral partnership with Norway to improve Brazil's

DPI and open data for climate and the green transition. As part of the Norway-Brazil strategy, both countries are collaborating on technical exchanges and capacity building for the architecture refactoring of the CAR system (Sicar) and the development of new modules (50in5, 2024; Norwegian Government, n.d.).

Alongside wider international fora like the G20 and COP30, Brazil's BRICS' presidency in 2025 similarly prioritised digital cooperation. The bloc has launched working groups and declarations of cooperation, such as the evolving BRICS Focus Group on Digital Public Infrastructure, the AI Study Group and the Declaration on Cooperation in Science, Technology and Innovation (Blanchet, 2025; Souto, 2025). While most initiatives from the BRICS remain centered on information exchanges and joint statements, they point to a clear intent of fostering a more inclusive digital transformation and governance, where Global South nations retain mastery over their technologies (Jiang and Belli, 2024).

Similarly, the European Union (EU) is also shifting its approach to meet the new geopolitical realities, moving from being a reference as a regulator to becoming an international strategic partner in digital infrastructure. Rather than simply exporting its norms, Europe is beginning to invest in co-developing the building blocks of digital infrastructure with like-minded partners to secure its economic future (EC 2025, Medinilla et al., 2025). This approach showcases Europe's evolving foreign economic policy, as well as the fact that tech sovereignty in a multipolar world is best pursued through smart interdependence rather than isolation.

This shift is evident in the EU–India Trade and Technology Council (TTC), which serves as a channel to advance tech cooperation across multiple areas, such as semiconductors, DPI, and AI governance (Teevan and Kamath, 2025a). Europe offers its expertise in regulation and secure connectivity, while India brings operational experience with large-scale DPIs, such as its digital ID Aadhaar, and its Universal Payments Interface (UPI), and a large tech workforce. Through the alignment of these strengths, the partnership aims to develop globally scalable solutions while diversifying away from single-vendor dependencies (European Commission, 2025b).

Parallel to this, the EU–Latin America and Caribbean (LAC) Digital Alliance, launched in 2023, promotes shared values on digital governance and open data for climate monitoring (European Commission, n.d.-a). A centerpiece of this cooperation is the BELLA Programme (Building the Europe Link to Latin America), which invests in submarine cable infrastructure and satellite-based earth observation tools (European Commission, n.d.-b). Establishing a direct, high-capacity data route between the two regions, bypassing traditional hubs in North America, allows BELLA to strengthen the digital sovereignty of both continents and support the secure exchange of Copernicus earth observation data, especially relevant for climate resilience.

The EU-LAC Digital Alliance increases regulatory convergence, research exchange, and capacity building. Specifically, the EU-Brazil cooperation is further developed by the EU-Brazil Digital Dialogue, which happens since 2007 and in its 13th edition in 2025 emphasised connectivity, AI, and data governance as fundamental pillars of the strategic partnership (European Commission, 2025c).

Similarly, the EU is scaling up efforts with the African Union (AU) to support cross-border interoperability and regional integration. The EU backs the expansion of regulatory frameworks for secure data sharing, as well as the development of solutions such as interoperable IDs and e-payment systems to improve public services across borders and the African Continental Free Trade Area (AfCFTA) (Teevan and Musoni, 2024). While technical and governance challenges remain, this cooperation lays the groundwork for a shared EU-AU digital ecosystem grounded in sovereignty, openness and mutual investment in digital infrastructure.

Concurrently, wider initiatives, like Apertus, an open AI language model involving Switzerland, Austria, Singapore, Norway and Australia, demonstrate how global partners can come together around shared infrastructure without needing to establish formal treaties and blocs (Taylor and Tan, 2025). Apertus builds open systems that others can audit, improve and adapt, with all code and data fully transparent. Such projects move toward a model of public interest AI platforms that could be adopted and co-governed by many countries at once.

Taken together, these partnerships show new forms of thinking geopolitics, instead of accepting the current big tech oligarchy. Emerging and established powers are seeking alternative blocs around open technology. Overall, it reinforces that achieving strategic digital autonomy today depends on the countries' ability to build resilient partnerships and diversify dependencies. As governments pursue trusted infrastructure and open technologies, sovereignty becomes less a matter of control than of choice, which means shaping interdependence on one's own terms. Done well, these collective efforts could reduce reliance on dominant suppliers and open up credible paths for countries to co-lead in developing inclusive and trusted global digital systems.

4.3.2. Europe's strategic shift and the possibilities of new digital alliances

Diving specifically into the European Union's context, the bloc today confronts a digital competitiveness gap that the Draghi Report urges to be addressed through a refocus of collective efforts (European Commission, 2024). Notably, no new EU tech champions have emerged in recent decades, in contrast to the United States, where multiple firms have surpassed €1 trillion in market value. Behind this diagnosis is the reality that EU firms are heavily dependent on foreign technology, mostly from the United States and China, for over 80% of its digital products, services, infrastructure and intellectual property (Bria et al., 2025, Teevan and Pouyé, 2024). Such dependencies on cloud platforms, AI tools, and data services outside Europe are now seen as an existential risk to the EU's productivity, sovereignty and its ability to deliver on the twin transition and the Green Deal (European Commission, n.d.-c). The upshot is that Europe must overcome its structural handicaps if it is to grow its economies, meet its climate goals and retain a measure of technological autonomy (Medinilla et al., 2025; Bilal and Teevan, 2024).

Internally, the EU and national capitals have responded with an agenda combining 'simplification' and industrial policy, but not always in parallel. This is based on a growing sense that regulatory power alone is insufficient to secure resilience and that the EU should shift from a largely defensive stance toward a proactive strategy. On the one hand, EU leaders have sought to simplify the EU's digital rulebook, launching a "digital omnibus" review package in late 2025 aimed at streamlining the GDPR, Data Act, Cyber Resilience Act, AI Act and other digital laws, arguing this is necessary to reduce complexity and foster investment (Teevan and Kamath, 2025b). In tandem, the EU is due to propose a "28th regime" to enable businesses to operate across the 27 EU member states, thereby tackling the more intractable issue of continued regulatory barriers to doing business across borders within the EU (European Commission, 2025d). On the other hand, at the Digital Sovereignty Summit in Berlin, Germany and France spearheaded a European declaration committing to reduce reliance on non-European technologies and to invest more decisively in shared digital infrastructures through public and private capital, including cloud and data capabilities.

This agenda is the EU's attempt to both unblock innovators and build a more home-grown alternative to dominant global powers. However, critics warn that the simplification push risks weakening hard-won rights that sustain Europe's digital model, which were designed precisely to manage systemic risks, ensure legal certainty, increase compliance and correct market power asymmetries (Bradford, 2024; European Parliamentary Research Service, 2025). Proponents counter that the core constraint on European scale-ups is not the volume of regulation, but fragmented and uneven enforcement across member states. From this perspective, competitiveness gains will depend less on deregulation itself than on the EU's ability to ensure regulatory coherence, invest strategically, and build external partnerships—moving beyond the "Brussels effect" towards shared infrastructure, implementation capacity and co-development with partners (Teevan and Kamath, 2025b).

Central to this evolving agenda is the concept of digital sovereignty, and notably of sovereign digital infrastructure for Europe, covering everything from connectivity and data centers to AI applications and digital platforms (Teevan et al., 2025; Bria et al., 2025). Although already supported by concrete projects, like the EU Digital Identity Wallet and interconnected data spaces for industry, building sovereign digital infrastructure still relies heavily on member states, exposing a fragmentation in EU industrial policy. At the same time, there is a growing recognition in Brussels and in national capitals that Europe cannot build a full technology stack in isolation, and that internal consolidation must be complemented by international partnerships capable of co-developing infrastructure and standards aligned with European values (Medinilla et al., 2025; Teevan and Kamath, 2025b).

Taking this into consideration, these internal shifts of deregulation and tech industrialism are now being explicitly tied to Europe's external strategy. In mid-2025, the EU published a new International Digital Strategy that frames the region's commitment to scaling up global partnerships. The strategy articulates a "Team Europe" approach, combining EU and member state digital solutions, regulatory expertise and investment instruments to support mutual capacity building with partners, instead of one-sided technology transfers (Teevan and Kamath, 2025b; European Commission, 2025e; European Commission, 2025f). In doing so, Brussels is, once again, aiming to move beyond the traditional "Brussels Effect", acknowledging that, by forging smart global collaborations, the EU seeks to secure critical resources and value chains while continuing to advocate for a free and open internet (Bilal et al., 2024).

Within this framework, the EU is deploying the Global Gateway (GG): launched in 2021 as the EU's first international connectivity and investment strategy, GG aims to mobilise up to €300 billion in public and private finance for sustainable infrastructure in partner countries, especially in underserved regions. Conceived as the external dimension of the EU's twin transition, its digital pillar focused on backing secure connectivity, cloud and data infrastructure, as well as cooperation on standards, cybersecurity and data governance, extending Europe's democratic principles, data protection and open markets aligned with SDGs beyond its borders (Teevan et al., 2025). However, conceived before the acceleration of the global tech race, the GG remained only a partial offer: it did not fully connect Europe's internal digital frameworks and open-source assets to a coherent external strategy that builds mutual capacity rather than dependency (Bilal et al., 2024; Teevan et al., 2025). The International Digital Strategy can be read as an endeavor to close this gap, providing clearer political direction and prioritising fewer, more strategic partnerships.

This is already evident, for instance, in the EU's growing commitment to developing a stronger partnership with India, including goals around digital public infrastructure, industrial value chains and standards in the New Strategic EU-India Agenda and the the EU-India TTC (European Commission, 2025f; European Commission, 2025g; Teevan et al., 2025; Medinilla et al., 2025). Although implementation challenges persist, this approach reflects a more pragmatic understanding of strategic digital autonomy, rooted in diversification and alliance-building.

Climate action offers a next vertical through which to extend this logic. It is a domain where Europe's regulatory ambition intersects directly with the need for reliable, interoperable data systems, and where digital infrastructure could deliver climate outcomes. Given Brazil's recent initiatives, the country emerges as a particularly relevant player, as it combines advanced operational climate data systems with governance approaches compatible with European norms, making it well positioned for a Climate DPI partnership.

5. Practical steps to build an EU-Brazil digital alliance on climate

There are several strategic drivers for an EU-Brazil digital alliance on climate. First, it aligns with growing concerns on both sides about over-reliance on US tech ecosystems, offering a low-friction entry point to diversify technological partnerships and solutions. The climate domain can serve as a strategic backbone for building new alliances, shaping standards, and investing in open, interoperable infrastructure aligned with shared values (Benson et al., 2025).

By co-developing climate data infrastructure, Europe and Brazil can invest in alternatives to the closed data ecosystems of major tech giants in a sector where it can lead without competing directly on generative AI or hardware, gradually reducing dependencies and asserting more control over strategic sectors. Climate data, monitoring and verification thus become a practical lab for building sovereign digital infrastructure, based on local solutions built by the European and Brazilian tech ecosystems. This ties in directly with the EU tech business offer under the new EU International Digital Strategy, albeit with a stronger focus on coinvestment and cocreation.

A EU-Brazil Climate DPI partnership would also strengthen Europe's engagement in Latin America. Unlike hegemonic powers, Brazil's emphasis on a more collaborative model of sovereignty, open standards and multilateralism, combined with its longstanding diplomatic role, makes it a comparatively low-risk partner for co-development of digital technologies and for reforming and sustaining multilateral governance structures. Existing frameworks such as the EU–Brazil Digital Dialogue and the EU–LAC Digital Alliance already provide political space for cooperation, and a Climate DPI focus could give these mechanisms a concrete flagship initiative to translate commitments into reality.

Co-design a global digital coalition for climate for political resilience and collective governance

The EU and Brazil should partner to design the architecture of a global digital coalition for climate (GDCC), with the aim of strengthening political resilience by ensuring that digital tools become enduring public assets protected from short term political interests. This necessitates a model of smart interdependence where nations retain authority over their specific registries and data, but commit to exposing standardized interfaces for secure data verification and exchange.

Safeguards against national policy reversals can be built through a combination of open, distributed systems, institutional anchoring in existing international frameworks and organisations to ensure legitimacy and continuity, and the integration of non-state data producers such as Indigenous communities, civil society and academic networks to enable real-time auditing of official data. Engaging market actors and the private sector as contributors—through the provision of infrastructure, technical expertise, open-source tools and financing—would also be essential to scale and sustain these systems, provided participation aligns with public interest principles and avoids new forms of dependency or lock-in. Turning climate-relevant digital infrastructure into a collective, multi-stakeholder responsibility is critical for maintaining public value and sustaining transparency and trust across political cycles.

Coordinate the 'global shelf' of DPIs and DPGs to build a unified ClimateStack

The EU and Brazil should work together to coordinate the technical foundation for a collaborative ClimateStack and Climate DPI. Such a 'global shelf' of digital systems already exists, but there is currently a lack of coordination mechanisms to share best case examples and to support adapting solutions to local contexts. The missing piece is the establishment of common standards and protocols to connect these existing systems and align them with national and multilateral climate priorities. The foundational layer should integrate open-access Earth-Observation Data Solutions, such as Europe's Copernicus program and African initiatives like Digital Earth Africa, to provide accessible satellite imagery and geospatial data. Middle and top layers need to leverage existing solutions, including the UNDP's Nature ID concept for verifying natural assets, India's Unified Energy Interface (UEI) for energy transactions, and registries like the Global Biodiversity Information Facility (GBIF) for biodiversity data.

Climate DPI as a means to enforce EU environmental regulations

The EU and Brazil could work together to project how climate DPI could be used as a practical way to enforce major environmental policies, such as the EU Deforestation Regulation (EUDR), which requires companies placing commodities on the EU market to verify that their supply chains are not contributing to deforestation. While the EU has established a robust legal framework, it lacks the data and systems to enforce it efficiently outside its borders. Brazil's technologies, specifically CAR and DETER, could be adapted to provide the verifiable interoperable data needed for compliance. In practical terms, interfacing EU customs and due-diligence processes with Brazil's state-led digital registers and public data would allow an EU buyer to verify whether, for instance, soy or beef is deforestation-free under the new EUDR.

Tying the ClimateStack with EU economic diplomacy and the EU tech business offer

The GDCC could be the basis for bringing together economic diplomacy instruments from both the climate and digital areas, increasing the credibility of the twin transition concept. For instance, the EU's Clean Trade and Investment Partnerships (CTIP), such as the one with South Africa, which supports trade and investment in clean supply chains and decarbonisation, was designed to demonstrate how such agreements can be aligned with climate goals (European Commission, 2025h). Incorporating digital climate reporting and verification requirements into future CTIPs or similar agreements, like the EU–Mercosur accord, would attach DPI to environmental commitments and could reap substantial economic costs and benefits.

Meanwhile, as previously mentioned the EU's International Digital Strategy sets out to build a tech business offer. Sustainability should be at the heart of this offer, with meaningful analysis of the climate impact of technologies, as well as a dedicated category for those that actively support the green transition—particularly in areas such as climate resilience and biodiversity protection.

Putting reciprocality at the heart of the EU-Brazil partnership

The EU can demonstrate that the EU-Brazil partnership is a two-way street by supporting Brazil's leadership efforts to coordinate and build a global digital coalition for climate. The topic should be discussed as part of the EU-Brazil Digital Dialogue, which provides the strategic policy guidance for EU-Brazil digital cooperation. This cooperation is key to advance digital autonomy on both sides, allowing co-development of climate data infrastructure as an alternative to proprietary tech ecosystems and using it as a practical application of their sovereign digital infrastructure and, in the EU case, of its International Digital Strategy.

For the EU, collaboration with Brazil could enable more credible, lower-cost enforcement of green measures and strengthen its geopolitical position in the Global South. For Brazil, co-developing Climate DPI would attract investment, reinforce its leadership in digital climate governance and support the internationalisation of its public interest digital systems. Both parties would advance a model of democratic, multilateral digital governance grounded in shared oversight and interoperability.

Building the EU-Brazil alliance as the basis for a global digital coalition for climate

An EU-Brazil Climate DPI partnership could form the basis of a new international coalition. As countries across Africa, Latin America and Asia develop their own climate data systems, a jointly governed framework legitimised by Europe and Brazil could offer a scalable, inclusive alternative. Europe would contribute with regulatory power, standards and Global Gateway financing, and Brazil would contribute with operational experience, including platforms such as Pix, Gov.br, DETER, TerraBrasilis and CAR, alongside proposals such as PAS, TFFF, Global Mutirão and the ClimateStack. Together, they could bridge the persistent gap between policy ambition and implementation, such as EU's commitments under Global Gateway and the G20, which call for inclusive digital and climate infrastructure with the Global South.

Importantly, an EU–Brazil alliance would be complementary to other international partnerships, not competing with the EU-India collaboration, for example. IndiaStack is often held up as a model for general-purpose DPI (digital ID, payments, data exchange), while Brazil's ClimateStack could bring domain-specific expertise in climate and environmental governance (Teevan and Kamath, 2025a; Teevan and Kamath, 2025b; Teevan et al., 2025; Medinilla et al., 2025). Both are needed, as they provide Europe and Brazil with diversified collaborations across different layers of the digital stack, reducing concentration risk and reinforcing a multipolar perspective to digital sovereignty.

6. Conclusion

Nearly a decade after the Paris Agreement, global climate action remains misaligned with the scale and urgency of the challenge. The constraint is no longer a lack of ambition or technological solutions, but the fragility of the institutional and informational foundations that sustain cooperation over time. In a geopolitical context marked by eroding trust, power concentration, commercial tensions and political volatility, climate digital governance increasingly depends on whether shared infrastructure can provide continuity, transparency and enforceability beyond political cycles and shifting alliances.

The convergence between digital transformation and climate policy, represented by the twin transition, could offer an opportunity to address this gap and reimagine this ecosystem. If designed as open, interoperable and publicly governed systems, DPI could translate climate commitments into verifiable results, reduce information asymmetries, lower transaction costs and strengthen institutional capacity across borders. In this sense, digital infrastructure could be not just an enabler of climate action, but a core component of its governance architecture.

The Climate DPI, ClimateStack, TFFF and PAS proposals illustrate how this approach could work in practice. By embedding transparency, co-governance and verifiable data integrity into their design, these initiatives seek to make global commitments actionable, traceable and resilient. Protecting climate-relevant data from deletion, fragmentation or manipulation through open repositories, shared standards, and joint custodianship is therefore a technical challenge, as well as a political commitment to shared responsibility and evidence-based decision making.

Ensuring the durability of these structures requires moving beyond siloed initiatives or leadership-driven agendas. It requires the support of a larger number of countries willing to invest in smart interdependence and public value, balancing autonomy with cooperation in order to advance the Climate DPI and ClimateStack. Such alliances could bind together diverse democracies and partners committed to climate action, including the private sector, academia and civil society.

Institutionalising this vision will require a deliberate political and institutional process. Brazil's operational experience with climate-relevant digital systems, combined with the European Union's regulatory capacity, financing instruments and evolving external digital strategy, could provide a credible jumpstart for such a global digital coalition for climate. Relying on existing international frameworks such as the UNFCCC, EU-LAC Digital Alliance, the EU–Brazil Digital Dialogue and other economic agreements, the EU–Brazil Climate DPI partnership would not be an end in itself, but a means to demonstrate how digital infrastructure can align climate ambition with implementation, while offering a democratic alternative to dominant proprietary ecosystems.

By design, the Climate DPI and ClimateStack proposals intend to be modular and reusable, allowing other countries in Africa, Latin America and Asia to adopt, adapt and co-govern components according to their own priorities and capacities. Over time, integrating climate-relevant DPIs and DPGs into climate finance mechanisms, trade frameworks and reporting cycles could help normalise compliance and cooperation, ensuring that data, policy and finance remain connected within a shared ecosystem of accountability, and attracting new members to this digital coalition for climate.

COP30 in Brazil may have inaugurated this discussion by envisioning how digital infrastructure could sustain collective environmental progress. The months that follow, including the deliberations at SB64 in Bonn, will test whether governments, international organisations and civil society can translate this idea into institutional reality. Ultimately, the choice facing the international community is between fragmented short-lived efforts and a coordinated informed approach to climate governance. Through smart interdependence and digital public infrastructure treated as a shared public asset, climate-focused digital cooperation could become a foundation for democratic, resilient and effective climate action in a changing global order.

An EU–Brazil digital partnership could serve as a spearhead for a global digital coalition for climate, in a spirit of reciprocity and shared responsibility. Such a partnership would demonstrate how data networks can be governed for the public interest and aligned with collective climate objectives. It would offer a credible model for international cooperation in a fragmented digital landscape. Scaled beyond the bilateral level, it could support a greater coalition across regions, positioning Climate DPI as a practical expression of the twin transition.

References

50in5. (N.d). 50-in-5 Campaign. 50in5.

50in5. (2024). Brazil. 50-in-5.

ACASA. (N.d). Atlas of Climate Adaptation in South Asian Agriculture. ACASA.

African Space Agency. (N.d.). GMES and Africa. African Space Agency (AfSA).

Agence France-Presse. (2025). Brazil greenlights oil drilling in Amazon as environmentalists raise alarm. The Guardian.

Almeida, E. C. and Martins, P. B. L. (2025). Digital Identity and Digital Public Infrastructure. Data Privacy Brazil.

Amazon. (2025). How open data is supporting more sustainable development in Africa. Amazon Sustainability.

Avila, R., Chandrasekhar, R., Dulong de Rosnay, M. and Rens, A. (2024). Governing Digital Public Infrastructure as a Commons. SSRN Electronic Journal.

Baums, A. and Kilian, M. (2025). Better Stack (Part 1): 10 Theses to Demystify the Debate on Digital Sovereignty and the EuroStack. GovTech Intelligence Hub.

Belli, L. (2025). Cybersecurity Convergence in the BRICS Countries. Directions Cyber Digital Europe.

Benson, E., Bergmann, M. and Steinberg, F. (2025). The Transatlantic Tech Clash: Will Europe "De-Risk" from the United States? Center for Strategic and International Studies (CSIS).

Bilal, S. (2024). The need to bridge the EU's internal and external actions for geostrategic and development ambitions. ECDPM Commentary. Maastricht: ECDPM.

Bilal, S. and Teevan, C. (2024). Global Gateway: Where now and where to next? ECDPM Discussion Paper 368. Maastricht: ECDPM.

Bilal, S., Teevan, C., and Tilmes, K. (2024). Financing Inclusive Digital Transformation through the EU Global Gateway. ECDPM Discussion Paper 370. Maastricht: ECDPM.

Bioni B., Rielli, M. and. Zanatta R. (2025b). COP30: Why local communities must have access to environmental information in data centre development. Data Privacy Brazil.

Blanchet, A. (2025). Artificial Intelligence governance in BRICS: Cooperation and development for social inclusion. BRICS Brasil 2025.

Bracken, M. (2025). Our View on Digital Sovereignty. Public Digital.

Bradford, A. (2024). The False Choice Between Digital Regulation and Innovation. Northwestern University Law Review, Vol. 119(2), pp. 377–453.

Bria, F. and Gernone, F., Stiftung, M., and Timmers, P. (2025). EuroStack – A European Alternative for Digital Sovereignty. EuroStack.

Butler, G. (2024). AWS to invest $1.8bn on expanding Brazilian data center operations. Data Center Dynamics.

CGI.br. (2025). 50 milhões de brasileiros já usam IA, mas potenciais benefícios continuam limitados às camadas de maior renda e escolaridade. Comitê Gestor da Internet no Brasil (CGI.br).

COP30. (2025a). Over USD 5.5 Billion Announced for Tropical Forest Forever Facility as 53 Countries Endorse the Historic TFFF Launch Declaration. COP30 Official Website.

COP30. (2025b). COP30 Presidency launches global Mutirão platform to mobilize worldwide climate action. COP30 Official Website.

COP30. (2025c). COP30 Evening Summary. COP30 Official Website.

Copernicus. (N.d.). About Copernicus. Copernicus Programme.

Cormier, Z. (2025). Inside the desperate rush to save decades of US scientific data from deletion. BBC.

CyberBRICS. (N.d.). CyberBRICS Project. CyberBRICS.

Digital Earth Africa. (N.d.). Digital Earth Africa Platform. Digital Earth Africa.

DPGA. (2025a). The DPG Standard. Digital Public Goods Alliance.

DPGA. (2025b). Mapbiomas. Digital Public Goods Alliance Registry.DPGA. (2025c). Calls for Collaborative Actions. Digital Public Goods Alliance.

Duarte, R. (2024). Digital Public Infrastructures & Digital Public Goods for Combating Climate Change: The Brazil Case Study. Data Privacy Brazil.

ESA. (2005). The Global Earth Observation System of Systems (GEOSS). European Space Agency (ESA).

European Commission. (2024). The future of European competitiveness (Draghi Report). European Commission.

European Commission. (2025a). Digital Omnibus Regulation Proposal.

European Commission.European Commission. (2025b). Key outcomes of the second EU-India Trade and Technology Council. European Commission.

European Commission. (2025c). 13th EU-Brazil Digital Dialogue reinforces digital cooperation. European Commission.

European Commission. (2025d). How “Once-Only” is at the heart of a ‘28th Regime’ in the EU’. European Commission.

European Commission. (2025e). The EU sets out its International Digital Strategy. European Commission Press Corner.

European Commission. (2025f). Advancing a global digital future: The new EU’s International Digital Strategy. European Commission.

European Commission. (2025g). New Strategic EU-India Agenda. European Commission/Council of the EU.

European Commission. (2025h). EU and South Africa sign first-ever Clean Trade and Investment Partnership (CTIP). European Commission.

European Commission. (N.d.-a). EU-Latin America and Caribbean Digital Alliance. European Commission International Partnerships.

European Commission. (N.d.-b). BELLA: Building the Europe Link to Latin America. European Commission International Partnerships.

European Commission. (N.d.-c). The European Green Deal. European Commission

European Commission. (N.d.-d). Copernicus: Earth observation. European Commission.

European Parliament. (2025). COP30 outcome: slow progress but insufficient to meet climate crisis urgency. European Parliament Press Room.

European Parliamentary Research Service (EPRS). (2025). Simplifying EU digital laws for competitiveness. European Parliament Think Tank.

EU4Digital. (2025). EU Sets Out Vision for International Digital Strategy. EU4Digital.

FAO. (N.d.). Hand-in-Hand Geospatial Platform. Food and Agriculture Organization of the United Nations (FAO).

Farooqi, S. and Vora, P. (2023). The ‘Twin Transition’: How Digital Public Infrastructure Goes Hand-in-Hand With Climate Goals. Digital Impact Alliance (DIAL).

Galey, P. (2025). How expanding output at Brazil’s state oil company could hurt COP30 climate ambitions. Global Witness.

Gangopadhyay, P. (N.d.). Driving agricultural transformation through digital innovation. Borlaug Institute for South Asia (BISA).

GBIF. (N.d.). What Is GBIF? Global Biodiversity Information Facility (GBIF).GEO. (N.d.). About GEOSS. Group on Earth Observations (GEO).

Gimpel, L. (2025). Five Steps to Enable Digital Sovereignty Using Digital Public Goods. Digital Public Goods Alliance.

Grantham Research Institute on Climate Change and the Environment. (N.d.). Law No. 12.651 on the protection of Native Forests. Climate Change Laws of the World.

GSLC. (N.d.). Climate Database. Global Strategic Litigation Council (GSLC).

G20. (2023). G20 Digital Economy Ministers' Meeting Outcome Document and Chair Summary. Group of Twenty (G20).

IDB. (2025). IDB and AFD groups co-finance $324 million to connect 15 million people in the Amazon region. Inter-American Development Bank (IDB).

IGN. (N.d.). La Démarche GéoCommuns. Institut Géographique National (IGN).

IGN. (2022). IGN, scale up: Strategic Framework. Institut national de l'information géographique et forestière (IGN).

INPE. (N.d.). Programa Amazônia - DETER. Instituto Nacional de Pesquisas Espaciais (INPE).

Intepe, D. (2025). Adaptation is moving up the climate agenda. COP30 must get serious about financing it. World Economic Forum.

Jiang, M. and Belli, L. (2024). Digital Sovereignty in the BRICS Countries. Cambridge University Press.

Komaitis, K. (2025). The Geopolitical Veto: The Rise of the Concert of Networks. Konstantinos Komaitis Blog.

Lemos, R. and ITS Rio. (2025). Digital Public Infrastructure for Climate: The Missing Backbone for Climate Action. Institute for Technology and Society (ITS Rio).

Lemos, R. (2025). How Latin America can set the standards in powering and governing AI. World Economic Forum (WEF).

MapBiomas. (N.d.). The Project. MapBiomas.

Mazzucato, M., Eaves, D., and Vasconcellos, B. (2024). Digital public infrastructure and public value: What is 'public' about DPI? UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2024-05).

Mazzucato, M. (ed.). (2024). State Transformation in Brazil: Designing mission-oriented public procurement, state-owned enterprises and digital public infrastructure to advance sustainable and inclusive growth. UCL Institute for Innovation and Public Purpose. IIPP Policy Report 2024/15. ISBN: 978-1-917384-34-6.

MCOM. (2021). Mais conexão: cabo submarino que conecta o Brasil à Europa é ativado. Governo Federal do Brasil. Ministry of Communications (MCOM).

MCTI. (2024). Plano Brasileiro de Inteligência Artificial (PBIA) 2024-2028. Ministry of Science, Technology and Innovation (MCTI).

MDIC. (2025). MP cria o Redata, que estimula data centers e impulsiona economia digital no Brasil. Ministry of Development, Industry, Commerce and Services (MDIC).

Medinilla, A., Teevan, C. and Karaki, K. (2025). The art of the deal: Securing Europe's economic future through strategic Alliances. Maastricht: ECDPM.

MET Norway. (2025). Weather Data from MET Norway Approved as Digital Public Goods. Norwegian Meteorological Institute.

MGI. (2025). MGI e governos estaduais debatem mudanças que marcam nova etapa de modernização da gestão do Cadastro Ambiental Rural (CAR). Ministry of Management and Innovation in Public Services (MGI).

Ministry of External Affairs of India. (2025). Joint Statement: India and Brazil - Two Great Nations with Higher Purposes. Government of India.

Muench, S., Stoermer, E., Jensen, K., Asikainen, T., Salvi, M. and Scapolo, F. (2022). Towards a green and digital future. Publications Office of the European Union.

New Commons Challenge. (2025). Building the Future of public interest AI: Certi Amazônia Institute and NYU Peace Research Announced as Winners of the New Commons Challenge. New Commons Challenge.

Niranjan, A. (2025). EU rollback on environmental policy: Deregulation and European Green Deal. The Guardian.

Norwegian Government. (2025). The Government's strategy for cooperation with Brazil. Government of Norway.

NYU. (2025). The New Commons Challenge proves the power of data collectives. NYU Tandon School of Engineering.

Pandey, K. and Schmidt, R. (2025). Catalysing Climate Solutions: A Framework for Identifying DPGs for Climate Action. Digital Public Goods Alliance.

Phillips, D. (2019). Brazil space institute director sacked in Amazon deforestation row. The Guardian.

PhilSA. (N.d.). Copernicus Philippines. Philippine Space Agency (PhilSA).

Recessary. (2025). What is the 'Tropical Forest Forever' fund and will it work? Recessary.

Schoemaker, E. and Kirk, T. (2025). It's Time to Talk About How We Actually Do Multi-Stakeholder Governance in Digital Public Infrastructure. Caribou Digital.

Souto, M. (2025). BRICS advocates for Global South leadership in new technologies and innovation. BRICS Brasil 2025.

Taylor, J. and Tan, J. (2025). Public AI Is the New Multilateralism. Project Syndicate.

Teevan, C. and Musoni, M. (2024). EU-AU cooperation on cross-border digital services and trade. ECDPM Commentary. Maastricht: ECDPM.

Teevan, C. and Pouyé, R. (2024). Tech sovereignty and a new EU foreign economic policy. ECDPM Briefing Note 188. Maastricht: ECDPM.

Teevan, C., Pouyé, R. and Kamath, G. (2025). From India Stack to EuroStack: Reconciling Approaches to Sovereign Digital Infrastructure. ECDPM Discussion Paper 384. Maastricht: ECDPM.

Teevan, C. and Kamath, G. (2025a). Von der Leyen in India: A tech sovereignty partnership in the making. ECDPM Commentary. Maastricht: ECDPM.

Teevan, C and Kamath, G. (2025b). Beyond the 'Brussels effect'. ECDPM Briefing Note 204. Maastricht: ECDPM.

UN. (2024). The Global Digital Compact – English Version. United Nations.

UNDP. (2023). Accelerating The SDGs Through Digital Public Infrastructure: A Compendium of The Potential of Digital Public Infrastructure. United Nations Development Programme (UNDP).

UNDP. (2025). The Case for Nature ID. United Nations Development Programme (UNDP).

Unified Energy Interface (UEI). (N.d.). The UEI Alliance. Unified Energy Interface.

WWF. (2025). Congresso Aprova PL da Devastação e Abre Caminho para Destruição Ambiental sem Precedentes. World Wildlife Fund Brazil.

About ECDPM

ECDPM is an independent 'think and do tank' working on international cooperation and development policy.

Since 1986 our staff members provide research and analysis, advice and practical support to policymakers and practitioners across Europe and Africa – to make policies work for sustainable and inclusive global development.

Our main areas of work include:

- EU foreign and development policy
- Migration and mobility
- Digital economy and governance
- AU-EU relations
- Peace, security and resilience
- Democratic governance
- Economic recovery and transformation
- Climate change and green transition
- African economic integration
- Sustainable food systems

For more information please visit www.ecdpm.org

This document has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of the authors and can under no circumstances be regarded as reflecting the position of the European Union. This publication also benefits from the structural support by ECDPM's institutional partners: The Netherland, Austria, Belgium, Denmark, Estonia, Finland, Ireland and Luxembourg.

ISSN1571-7577

HEAD OFFICE
SIÈGE
Onze Lieve Vrouweplein 21
6211 HE Maastricht
The Netherlands *Pays Bas*
Tel +31 (0)433 502 900

BRUSSELS OFFICE
BUREAU DE BRUXELLES
Avenue des Arts 44, 1040
Brussels *Bruxelles*
Belgium *Belgique*
Tel +32 (0)2 882 50 08

info@ecdpm.org
www.ecdpm.org
KvK 41077447