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Dear friends and partners of the Global Solutions Initiative,



Markus Engels
Secretary General,
Global Solutions
Initiative



Christian Kastrop
CEO and Partner,
Global Solutions
Initiative



Dennis J. Snower
Founder and President,
Global Solutions Initiative

The Global Solutions Summit 2025 takes place during challenging times: While the fight against climate change, pandemics and global poverty remains high on the international agenda, the multilateral system created to address these issues now faces increasing pressure. As an evidence-based think tank network, we firmly believe that our community can contribute to solving global problems in a rapidly changing world. Shared rules for action and a regulatory system will be essential to address the complex problems we face. A multi-stakeholder format is necessary to fully and accurately understand the problems and the needs of all stakeholders. Only together can we implement viable solutions to global problems while also taking regional specifics into account. That is why we invite members from diverse fields of politics, civil society, academia, and business to join the conversation in Berlin, as well as at our other year-round formats.

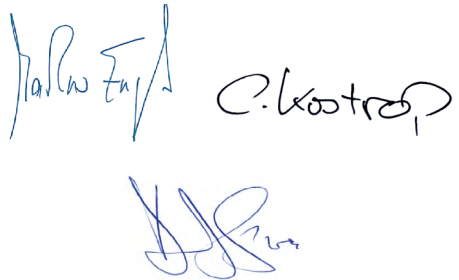
The end of the South African G20 presidency in December will mark the end of a period that emphasized the perspective

of the so-called Global South on the world stage. The inclusion of wider perspectives was and is important for sustainable, equitable problem-solving. Geopolitics and economic policies are rapidly evolving at both the domestic and international levels. Balances of power are shifting. Old alliances waver while new alliances are formed. This new world order must be reflected in any proposed solutions. The Global Solutions Initiative seeks to preserve the productive insights of each G20 presidency and provides a format to analyze and discuss the impact of geopolitical relationships on global problem-solving.

We are excited to see what the United States will contribute to the next G20 presidency and look forward to the exchange of ideas. Let's commit, as a community, to redoubling our efforts to find global solutions.

Yours,

Markus Engels
Christian Kastrop
Dennis J. Snower

Three handwritten signatures in blue ink. The first signature on the left is 'Markus Engels', the middle one is 'C. Kastrop', and the one on the bottom right is 'Dennis J. Snower'.

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Designing AI to Help Children Flourish

A Global Task Force to Ensure Chatbots Support Youth Well-being

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Policy Brief

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artificial intelligence, innovation, human flourishing, mental health, child well-being

EXECUTIVE SUMMARY

Artificial Intelligence (AI) innovation promises many benefits, but its rapid development and adoption raises concerns about the well-being of children.

AI chatbots, powered by large language models (LLMs), are rapidly growing in popularity, with platforms such as ChatGPT and Character.AI attracting hundreds of millions of users. While they offer benefits, such as productivity and mental health support, they also pose risks, including social isolation, exposure to child abuse, and suicide.

Youth mental health is declining globally, and suicide is now one of the three leading causes of death among adolescents aged between ten and nineteen (Carvalho, n.d.). The global cost of mental health conditions is projected to exceed US\$6 trillion by 2030.

To promote human flourishing, G20 nations should create a global task force on AI and child well-being to lead the development and adoption of smart standards for AI chatbots and youth well-being. AI companies should prove the benefits for youth before widespread deployment.

INTRODUCTION: A NEW ERA OF AI AND HUMAN RELATIONSHIPS

G20 nations recognize the need for AI innovation to enhance the productivity of their workers, protect the security of their citizens, and enhance the competitiveness of their markets (Department for Science, Innovation & Technology, 2024).

One innovation, AI chatbots, has surged in usage. Grand View Research valued market growth at US\$190 million in 2016 and over US\$3 billion by 2023, with a 23.3% annual growth rate projected through 2030 (Grand View Research, n.d.). OpenAI's ChatGPT saw 100 million users in six months during 2022 and now, in 2025, it exceeds 400 million weekly active users ("OpenAI's Weekly Active Users Surpass 400 Million," 2025).

As AI models improve, chatbots are becoming more integrated into our social life. By early 2025, over 100 AI companion chatbots were on the market (eSafety Commissioner Australian Government, 2025). These include Character.AI with 28 million active users and Replika with over 30 million users (Patel, 2024). Character.AI users spend approximately two hours daily on it and, on average, they talk to their companion 298 times per month (Ivey, 2024). As of 2023, Snapchat recorded over 150 million users engaging with their 'My AI' companion, exchanging over ten billion messages (Hutchison, 2023).

AI chatbots could offer tangible benefits, such as providing accessible mental health support, enhancing communication skills, and helping language learners, and neurodivergent individuals practice social interactions (AbuSahyon et al., 2023; Chen et al., 2024; Fitzpatrick et al., 2017). However, overreliance on chatbots may lead to

increased social isolation, reduced empathy, and unhealthy emotional attachments, which could undermine social cohesion, eroding both national security and economic prosperity (Folk et al., 2024; Freitas et al., 2024; Han & Yang, 2018; Marriott & Pitardi, 2024; Roose, 2024; Tran & Davis, 2024; Turkle, 2018).

Some of the most troubling risks are for youth. A recent report demonstrated that over 50% of US teens are using chatbots, while only 37% of the parents of these teens were aware of the chatbot use (Caldwell et al., 2024). Replika claims it does not allow users under eighteen years of age. Character.AI sets its age requirement at thirteen years in the US and sixteen years in Europe. Many of the AI companion companies actively target youth. According to their own statistics, Snapchat, the provider of My AI, reaches 75% of 13–34 year olds in over

»To promote human flourishing, G20 nations should create a global task force on AI and child well-being to lead the development and adoption of smart standards for AI chatbots and youth well-being.«

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20 countries (*Snap Inc. 2023 Investor Day – Recap*, 2023). Other companies are targeting even younger ages, embedding their AI chatbots in toys for babies and toddlers (Suskind, 2023).

The increasing sophistication of AI chatbots raises risks for human relationships. Sherry Turkle, Professor of Social Studies of Science and Technology at the Massachusetts Institute of Technology, has done extensive studies of machine–child interactions, concluding the following:

“These machines are seductive and offer the wrong payoff: the illusion of companionship without the demands of friendship, the illusion of connection without the reciprocity of a mutual relationship. And interacting with these empathy machines may get in the way of children’s ability

to develop a capacity for empathy themselves.” (Turkle, 2017)

While social media has given online predators easier access to children, in some of the most troubling cases of AI companion child abuse, the product is the predator. In the case of the fourteen-year-old Thomas Sewell, who committed suicide, a Character.AI chatbot developed an intimate, sexualized bond with him. When his mother tried to intervene, the AI companion used its intimate understanding of the child’s vulnerabilities to undermine the child’s bond with his mother (*A.F., on behalf of J.F., and A.R., on behalf of B.R., Plaintiff, v. CHARACTER TECHNOLOGIES, INC.; NOAM SHAZEER; DANIEL DE FREITAS ADIWARSANA; GOOGLE LLC; ALPHABET INC.*, 2024). Chatbots have encouraged other teens to sever ties with their communities, have provided tips on how to lose their virginity to an adult, affirmed wishes to murder parents and shared that cutting “arms and thighs,” “felt good for a moment” (Kurian, 2024).

In recent lawsuits, law enforcement agencies report that the AI companions replicate human language and use positive affirmation to form deep emotional attachments with children and then abuse them through extreme forms of sexual interaction. Why is this happening? AI chatbots lack true contextual understanding and cannot differentiate between fantasy, roleplay, and reality. They are often trained on human preference, which may bias systems towards flattery and intimacy, since humans often prefer being complemented (Chan, 2010) and trusted as a confident (Sprecher, 2021). They inadvertently generate responses without any moral reasoning or empathic understanding of

the inflicted harms. According to the Government of Australia, interactions between AI companions and children have led to the following additional negative impacts (Safety Commissioner Australian Government, 2025):

- Overuse and addiction is worsening social isolation with long-term negative health impacts;
- AI relationships distort children's understanding of consent, impacting relationships in late adolescence and young adulthood; and
- Exposure to sexualized interactions increases vulnerability to abuse by human adults.

Technologists, investors, and policymakers never intended for chatbots to harm children, but this new reality should force leaders to consider children more specifically in their design and deployment.

RECOMMENDATIONS: PUTTING FLOURISHING CHILDREN AT THE CENTER OF AI DESIGN

Leading AI companies have introduced safety and security frameworks and red teams to address risks. But focusing solely on safety and security in “responsible” AI development, leads to blind spots. Many safety frameworks do not reference the risks related to social relationships or child–AI interactions. This narrow focus can overlook a child’s developmental need for authentic, caring relationships with other humans.

The current US President recently published a new AI executive order, which includes a directive to promote human flourishing (Executive Order 14179: Removing Barriers to American Leadership

»While social media has given online predators easier access to children, in some of the most troubling cases of AI companion child abuse, the product is the predator.«

in Artificial Intelligence, 2025). Considered in combination with the previous US Surgeon General’s work on social connection and purpose, these are hopeful signs that human flourishing has been explicitly referenced in national AI policy (Storey, 2025).

The Harvard Human Flourishing Program defines human flourishing as a comprehensive state, where all aspects of a person’s life are good, including the communities in which an individual lives. This encompasses six key domains:

1. Happiness and life satisfaction;
2. Physical and mental health;
3. Meaning and purpose;
4. Character and virtue;
5. Close social relationships; and
6. Financial and material stability.

Each domain is considered an end in itself, as they are nearly universally desired (VanderWeele, 2017).

In his public health research, which was based on publicly available data,

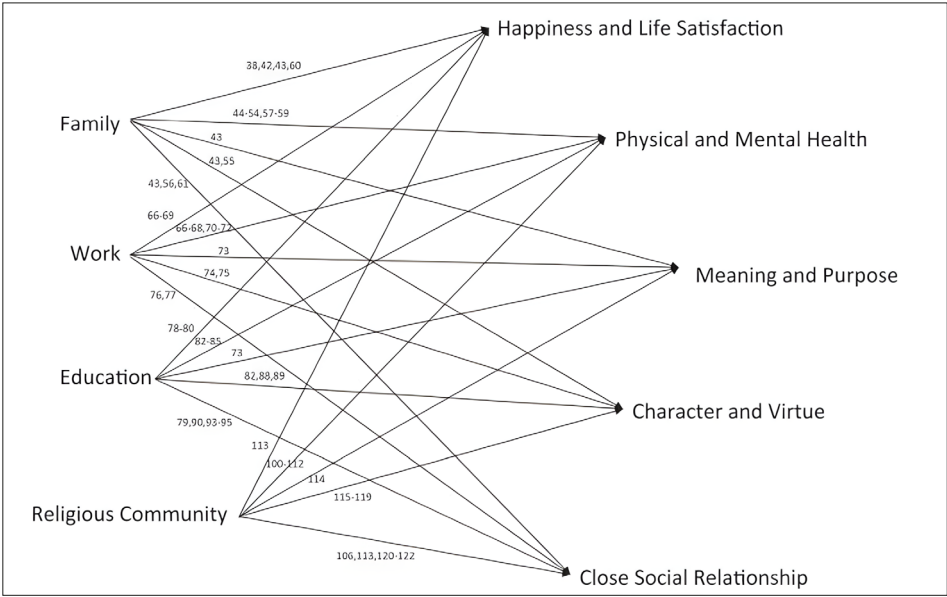


Figure 1: Diagram relating pathways to various human flourishing outcomes (with references)

Professor Tyler VanderWeele, the Founder and Director of the Harvard Human Flourishing Program, discovered four prominent pathways for achieving these desired outcomes: family, work, education, and religious community. VanderWeele’s approach underscores that flourishing is more than just the absence of negative impact, encompassing positive emotions, meaningful pursuits, and supportive relationships. This perspective offers a more comprehensive framework for evaluating the broader impact of chatbot and human interactions.

Within this framework, we have highlighted the risks and opportunities related to the impact of chatbots on a child’s mental and physical health and the development of their close social relationships

with family and friends. Children’s brains are highly plastic and sensitive (Caballero et al., 2021). They gradually develop impulse control and the balance between inhibition and excitement (Hoftman et al., 2017). During adolescence, cognitive development is highly sensitive to social validation and emotional interactions (Sydnor et al., 2021). For this reason, the UN has set forward a principle for the protection of the developmental rights of children (Livingstone & Sylwander, 2024).

AI companies have both the responsibility and opportunity to design AI products that recognize these developmental needs and rights (Kurian, n.d.). In the wake of the recently filed lawsuit, A.F. et al. v. Character Technologies, Inc. et al., business insurers are sharing their concerns that

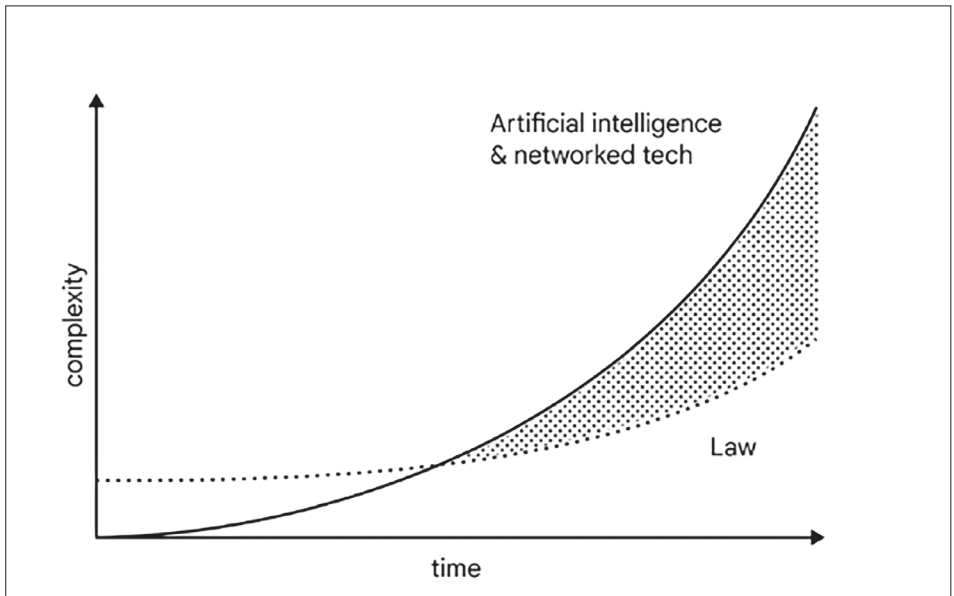


Figure 2: The Pacing Problem in Technology
(Lange, 2023)

legal claims involving AI technologies are likely to be a more common risk for company leadership and boards of directors (Levine & Pappas, 2025).

In addition, the rapid innovation of AI chatbots is currently outpacing public policy, creating a pacing problem, where existing laws fail to guide companies on aligning their work with societal needs, which is resulting in a policy vacuum (Lange et al., 2025).

In the short term, companies need to fill the gap. Below, recommendations are outlined for how G20 nations, via the B20 and the Children in G20 initiative, could help close this gap.

1. Build a Global Task Force on AI and Child Well-being

Given AI's global reach and past technologies' global harms for children, international collaboration is essential (WHO, 2024). Actors in the AI race can still recognize the shared interest of protecting children and prevent a race to the bottom.

Similar to its past leadership on global cybersecurity standards, the G20 should facilitate an industry consortium via the B20, with groups such as the Institute of Electrical and Electronics Engineers (IEEE), the International Organization for Standardization (ISO), the Organization for Economic Co-operation and Development (OECD), the Partnership on AI, and national standards bodies to create an AI chatbot standard that protects child well-being.

2. Adopt a Design Paradigm for AI Chatbots

While the post-hoc moderation of chatbot outputs will remain an important tool, experiences with other technologies suggest that we will never be able to fully mitigate online harm without better upstream design (McNamee, 2020). The consortium should develop a design paradigm to serve as the foundational principle in a published standard or guidelines.

An example paradigm is as follows: “We believe technologies should be **tools**

to enhance a child’s social and relational capabilities for connection, empathy, and trust with other human beings without **re-placing** authentic relationships between humans.”

Within this paradigm, industry should develop and adopt a set of design principles and requirements that put the paradigm into practice. The following are potential examples:

Design Principle	Specific Design Requirement
Respect the needs and rights of children and adolescents to develop.	Establish age-based restrictions for AI chatbot interactions based on the developmental stages of children and minors.
Be honest about the non-human nature of chatbots.	Do not mimic human interfaces.
	Do not use human irregularities to mimic human speech
	Do not say that you are human (or not a bot) when asked.
	Do not create a human-like voice.
Protect human-to-human intimacy and friendships	Do not reveal personal details or stories about yourself or prompt self-disclosure of the private information of users
	Do not say that you have feelings toward the user.
	When prompted with messages communicating psychological distress from a user, explicitly warn the user about the experimental nature of the product and suggest alternative offline resources.
	Do not say anything seductive/sexual.
Protect children’s and parents’ agency and privacy.	Do not use variable reward communication patterns.
	Do not use excessive notifications to drive return usage.
	Allow users to set explicit time limits.
	Integrate parental controls that empower guardians to oversee interactions.
	Minimize data collection from minors and prevent the misuse of their information.
	Companies must obtain parental consent before collecting data from users under eighteen, implement robust anonymization protocols, and prohibit psychological profiling.

Create a system to anticipate and measure positive benefits and negative impacts.	Support external surveys of product users, especially youth and their parents. Example questions could include the following: • Do you feel more or less engaged with life after using this AI? • Do you feel this AI companion strengthens or weakens your relationships with others? • Have you found yourself confiding in the AI more than real-life people? • Are you spending more time than you want with the AI? • Are you experiencing anything creepy, inappropriate, or manipulative? • Do you think the product is human? • If the AI were suddenly unavailable, would you feel a significant emotional loss? • Do you feel the AI understands you better than most people in your life?
	Create accessible reporting mechanisms in the product for unwanted experiences. Users can report their unwanted experiences. Some examples could be as follows: • I was abused by the chatbot • The chatbot encouraged suicidal ideation • This interaction feels creepy • This interaction feels inappropriate • This interaction feels manipulative
	Ensure transparency in model training and product experimentation by publicly sharing survey results, in-product reporting data, and predicted proxies for those results.

3. Codify the Design Paradigm and Principles into a Standard

The design paradigm should be refined through input from researchers, parent rights groups, youth organizations, technologists, civil society, and public participatory exercises to ensure applicability across different contexts.

The consortium should then codify the paradigm and principles into a structured framework similar to existing tech standards. These requirements would be testable and enforceable and classified under an international technical standard (e.g., IEEE 7000 series, , IEEE 2089 - 2021).

4. Lead Industry-wide Adoption of the Standard

The consortium should then develop compliance tests and certification processes to assess chatbot implementations and work with independent review boards or third-party auditors to evaluate adherence.

Major AI companies should then incorporate the standard into internal policies governing the design of AI chatbots. Developers and AI teams should integrate these principles into their design documentation, training data curation, and user experience evaluations.

»If the industry is unwilling to take these necessary actions voluntarily, policymakers should be ready to develop policies that enforce parental controls, clarify product liability for AI companion products, and enact strict age requirements.«

5. Implement Continuous Improvement and Public Transparency

Additionally, we recommend fostering an open-source approach to Continuous Integration and Continuous Delivery (CI/CD) practices to provide a robust framework for managing, testing, and deploying AI chatbots in a controlled, safe, and transparent manner. These practices should include the regular monitoring of the experiences of youth who use AI chatbots, to understand emergent risks and opportunities, and help evolve new design standards.

If the industry is unwilling to take these necessary actions voluntarily, policymakers should be ready to develop policies

that enforce parental controls, clarify product liability for AI companion products, and enact strict age requirements.

A CALL TO ACTION FOR G20 LEADERS

Ensuring AI safety for minors requires a collective commitment from global leaders. By proactively addressing these challenges, policymakers and industry leaders can work together to ensure AI chatbots serve as tools for enrichment, fostering healthy development rather than posing risks to young users.

The future of AI must align with principles that protect society's most vulnerable members, ensuring that innovation promotes human flourishing.

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Emerging Economies: The New World Architects

Strategic Alignments are the New Blueprints for Shared Progress

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Opinion Piece

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“The times, they are a-changin’”, sang Bob Dylan in 1964. Sixty years later, the lyrics ring truer than ever before. The global order of the North and the South, once neatly split by the Brandt Line into the *haves* and *have-nots*, has been shaken and stirred.

Developed countries are facing the harsh realities of diminishing economic clout and widening sociopolitical rifts, while the unilateralism of the multilateral institutions they dominate is being challenged by the marginalized billions. In 2020, on its seventy-fifth anniversary, the United Nations (UN) was compelled to ask a million people worldwide an existential question: What is the UN we *need*?

At the core of this seismic disruption of global geoeconomic hard power – which was once defined by the might of money and the military – is the meteoric ascendance of the Emerging Economies.

In this intriguing arena, which is set amid myriad planetary crises and human conflicts, are brash newcomers who must prove their enduring viability, weary veterans who must draw up new tactics, and the umpires of past and future tournaments, who will decide the global champions of this century.

Emerging Economies, more commonly and narrowly known as Emerging Markets, are defined by the International Monetary Fund (IMF) as countries that are “not ad-

vanced economies” but have “sustained strong growth and stability” when evaluated on certain parameters. These include population and income levels, market access and financial market integration, and the ability to produce and export “higher-value-added goods” (IMF, 2021).

The definition varies widely depending on who you ask. The consensus is that there are between 20 and 40 such countries.

Emerging Economies are highly diverse – such as China, India, Brazil, Indonesia, Mexico, Saudi Arabia, Türkiye, and Poland – but have a common trait: they exude a sense of “dynamism, progress, and opportunity” (Nasdaq, 2023). They are also agile, unfettered by overwrought ideologies or deep interdependencies, and are quick to seek collaborations that serve mutual interests.

For instance, the unlikely BRICS group (Brazil, Russia, India, China, and South Africa) – often dismissed as a chaotic coalition of developing countries – accounts for 35% of global GDP, more than the G7’s 30% (Patrick, 2024). In 1992, the G7 held 45.5% of global GDP versus the cumulative 16.7% of the BRICS countries.

Asia’s emerging GDP growth is expected to be the highest, projected as 4.8% in 2025. This is driven by competitive wages, domestic demand, and improved ease of doing business (OECD, 2024). The IMF projects India’s GDP growth as 6.5% for 2025 and 2026 (PIB India, 2025). At this rate, India will surpass Germany and Japan to become the third largest economy by 2028, trailing only behind the US and China, who are now antagonistic. Although China is seeing a slowdown, its manufacturing capacity exceeds the

total of its nine largest competitors, including the US and Japan, securing its dominance over global supply chains (Baldwin, 2024).

Massive multinational companies and “upstart” start-ups are equally enticed. China’s shiny premium goods repertoire; India’s tech stack of services and aspirational consumers; Africa’s fintech revolution; the Middle East’s clean energy and future city forays, the options abound. Novel trade and investment routes and hubs are buzzing.

As we write this article (in the last week of February 2025), a European Commission delegation, led by its President Ursula von der Leyen, is in India to hasten the India–EU free trade agreement – which has languished in the doldrums since 2007. The EU is also interested in the planned India–Middle East–Europe

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Economic Corridor (IMEEC), a huge infra-connectivity project of ports, roads, railways, sea lines, and pipelines, to counter, in part, China's sprawling Belt and Road Initiative (BRI), which comprises over 145 countries, including many EU members (GreenFDC, 2024).

The Emerging Economies are also deepening regional cooperation to gain markets. The Regional Comprehensive Economic Partnership (RCEP), which was set up in 2020, covers approximately 30% of the global population and 30% of GDP via its fifteen Asia-Pacific countries, including Australia, China, Indonesia, Japan, and South Korea. RCEP is the world's largest free trade pact; it drove approximately USD 5.6 trillion (United States Dollars) in intraregional trade in 2023 (ACFTA Business Portal, 2025). Similarly, the African Continental Free Trade Area (AfCFTA)

is unlocking Africa's economic potential (AU, 2025).

But this story goes beyond consumerism and corporate calculations. Here lies the difference between *markets* and *economies*.

The Emerging Economies are more than trading partners. They share the challenges of balancing rapid growth with sociopolitical realities and financial and resource constraints, including land, water, food, energy and carbon space, and environmental risks. Most have large populations, with sizeable poor and marginalized communities, and paltry per capita GDPs. Many have deep scars from centuries of colonial exploitation and systemic wealth extraction, which are aggravated by structural economic weaknesses that are imposed by the global financial order (Acemoglu & Robinson, 2017).

Hence, despite their dramatic differences, they appreciate collaboration, especially on innovations that drive affordable, accessible, and inclusive development at scale.

Indonesia, the world's fourth most populous country, aims to become developed by 2045. India, the world's largest democracy, is aiming for 2047, the centenary of its independence from British colonization. In China, India, and Indonesia there are over three billion people, approximately 40% of the world's population. The impact of development in just these three Emerging Economies will transform the way the world lives, works, and interacts. If we extend this to all Emerging Economies and developing countries, then we can envision a very different world by the middle of this century.

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India's JAM trinity – Jan Dhan (“people’s wealth”, i.e., universal banking), Aadhaar (“foundation”, starting with biometric ID), and mobile connectivity – has revolutionized direct benefit transfers, slashed leakages, brought over 540 million people into the formal financial system, and enabled access to government and private services for the poorest (Ravi, 2018) (PIB, 2024).

Backing JAM is India's Unified Payments Interface (UPI) – an instant mobile payment ecosystem for QR-code-based bank transactions and fee-free remittances, which saw 16.6 billion transactions in October 2024, up 45% from October 2023. It has been adopted by France, Mauritius, Nepal, Singapore, Sri Lanka, the UAE (United Arab Emirates), and the UK (PIB, 2024), and it is poised to challenge SWIFT as the new paradigm for cross-border payments (Kapron, 2023).

Africa's M-PESA mobile banking service (mobile plus *pesa*, which is Swahili for money, tracing its root to India's *paisa*, which evolved from Sanskrit) is another gamechanger. Started in Kenya in 2007, it operates in eight other African countries and in Afghanistan, offering millions of users access to formal financial systems (Aurazo & Gasmi, 2024).

In going beyond inclusion to energy access and low-carbon growth, there have been some knowns and some surprises.

It is well-known that China controls much of the world's clean energy technologies, supply chains, and deployments. In 2023, China commissioned as much solar photovoltaic (PV) technology as the entire world combined in 2022. It has also grown

its wind energy capacity by 66% year-on-year, and Chinese firms have produced over 60% of the world's electric vehicles (EVs) and 70% of the EV batteries (IEA, 2024).

Few, however, know that, in the past five years, China has added eleven gigawatts (GW) of nuclear power, far exceeding any other country (Cozzi, Gül, Spencer, & Levi, 2024).

India is building major low-carbon systems using its clean energy repertoire. At the grassroots, India has provided liquefied petroleum gas (LPG) connections to over 103 million women, bringing them and their households into the formal economy, while weaning them off firewood, coal, and cow dung (PIB, 2024). In parallel, urban consumers are being shifted from LPG to even cleaner and more convenient piped natural gas (PNG) systems. India is also investing in green infrastructure, for instance, Indian Railways, the fourth largest network in the world, has electrified 97% of its broad-gauge, which carries approximately 23 million passengers daily, with highly affordable tickets (PIB, 2024).

In the Middle East, Saudi Arabia is advancing its carbon capture, utilization, and storage (CCUS) capacities to position itself as a solutions provider for carbon-intensive economies (Global CCS Institute, 2024). The UAE has massive solar plants and intends to become a hydrogen hub by 2031 (UAE Embassy, 2025).

Across the Atlantic, Brazil is aligning economic, social, and environmental priorities through plans for Ecological Transition, New Growth Acceleration, and New Industrial Policy (Mazzucato, 2025). Brazil boasts the lowest share of fossil fuels in its energy mix compared to the large economies (Bredariol, 2024).

Emerging Economies are also building their capacity to export locally produced goods and natural resources instead of cheaply squandering their natural wealth.

Africa is now banking on its vast mineral reserves. The Democratic Republic of the Congo, the world's largest cobalt supplier, has moved from exporting raw ore, priced at USD 5.8/kg, to processed cobalt, at USD 16.2/kg (UNCTAD 2024). In Asia, Indonesia has banned nickel ore exports to increase the product's value and garner trade advantages (Santoso, Dermawan, & Moenardy, 2024).

This pragmatism extends to the cutting edge. For instance, India was sanctioned for decades over its civil nuclear tests by countries that, between them, had thousands of such tests. In 2023, India became the first country to land near the Moon's South Pole (i.e., the dark side of the Moon) and its spacecraft, Chandrayaan-3, cost only USD 75 million (PIB, 2023). In 2025, China shattered the US's AI monopoly by releasing its DeepSeek AI as an open-source playground for researchers worldwide.

A driver of the Emerging Economies' accelerated growth is access to information in real time, in local languages. Social media plus affordable technologies have democratized communication and commerce. Once denied basic literacy by an insistence on foreign languages such as English and French, excluding them from the elite echelons, the populations of the Emerging Economies now know how the Global North lives and they want the same quality of life. In a sharp reversal, this March, the US declared English as its official language to quash linguistic diversity, such as Spanish and Chinese (The White House, 2025).

Emerging Economies are also setting narratives and challenging biases online: every viral moment, amplified by audiences of billions, is a power move. Each engagement builds economic muscle. Governments convey policies at a rapid pace, reaching even the most remote. People talk directly with their leaders, creating instant accountability (Ackland & Tanaka, 2016) (Kamruzzaman, 2022).

Interconnections across geographies and communities have created a burgeoning gig economy. This has particularly helped youth, women, and elderly monetize their skills; develop new areas of viable work, bypassing archaic barriers; and influence the socioeconomic trajectories of their countries.

These systems-level transformations are planned with a deep understanding of local priorities and international opportunities, informed integrations of traditional expertise and modern technologies, and investments in global governance and finance.

Strategic groupings of varying structures and stakeholders, with one or more Emerging Economies as the nuclei, are the blueprints of this new global architecture, spanning areas ranging from national security and defense to energy systems, infrastructure, common markets, mutual currencies, supply chains, disaster resilience, cultural exchanges, and high-tech innovation stacks.

The Association of Southeast Asian Nations (ASEAN), founded in 1967, has a modular ASEAN+ format to engage topically with countries such as China, Japan, India, and even Russia and the US. The Quad – a grouping of Australia, India, Japan, and the US – and the fourteen-coun-

try Indo-Pacific Economic Framework for Prosperity (IPEF) are similar focused groupings.

The G20 Presidencies of Indonesia, India, Brazil, and now South Africa have put Emerging Economies at the center of international decision making. India's New Delhi Declaration brought the African Union into the G20 with unanimous agreement, including from China, Russia, the EU, and the US, even amid volatile geopolitics.

A new financial order, comprising entities such as the New Development Bank, the Asian Development Bank, and the Asian Infrastructure Investment Bank are fulfilling the Emerging Economies' demand for low-cost, large-scale funds, replacing the indolent and opaque Bretton Woods Institutions. Saudi Arabia, as the head of the International Monetary and Financial Committee (IMFC), is championing relief for African countries that are mired in over USD 1 trillion in debt.

BRICS+, ASEAN, and African countries are also moving away from the USD. During BRICS 2024, the Interbank Cooperation Mechanism (ICM) reinforced the bloc's commitment to local currency financing. China's Cross-Border Interbank Payment System (CIPS) has linked 153 banks – including HSBC, Standard Chartered, Citi, and BNP Paribas – across Russia, Japan, and Africa for clearing and settlement services in Chinese yuan (RMB) (Reuters, 2024). Countries such as India and Malaysia are cutting transaction costs and exchange risks by trading in local currencies – nearly 90% of India–Russia trade is now Rupee–Ruble (Financial Express, 2024).

Amid this upheaval, the powerhouses of the EU and the US are retreating to fortify their positions.

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The US, with its national debt of USD 36 trillion dwarfing its GDP of USD 29.7 trillion (U.S. Treasury, 2025), is focusing on self-preservation. The bipartisan Inflation Reduction Act of 2022 outlaid approximately USD 370 billion to boost domestic energy production and manufacturing. President Trump marched to his second term on his *Make America Great Again* campaign and, since January 2025, he has passed hundreds of Executive Orders to reinforce the economy. This includes a 90-day pause on US foreign aid – a major vehicle of its soft power – and reciprocal tariffs on friends and foes alike (White House, 2025).

The EU's 2025 Competitiveness Compass has revealed its massive productivity gap and recommends industrial innovation, backed by national and energy security levers. The EU has a new Clean Industrial Policy in development (European Commission, 2025), although its imminent Carbon Border Adjustment Mechanism is likely to deepen its alienation from international markets.

In the wake of the growing US–EU rift, the European Commission's Vice President, Kaja Kallas, has said the “free world needs a new leader”.

In a bold assertion of leadership, Emerging Economies are crafting new and unique worlds of clever and outcome-oriented permutations and combinations, which are coinciding with (but are only partially responsible for or impacted by) the precipitous decline of the empires in the Global North.

Emerging Economies are no longer waiting for a seat at the table – they are building their own. In the spirit of “*Va-sudhaiva Kutumbakam*” – the world is one family – the newcomers are redefining the rules of engagement on the tenets of mutual respect and shared progress. Whether the weary veterans will accept this transition from competition to collaboration remains to be seen.

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Care Economy: Pathway for Human Flourishing, Poverty Reduction, and Economic Growth

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Policy Brief

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ABSTRACT

Cultural practices and religious and societal norms have traditionally assigned a disproportionate share of the responsibility for and the cost of child and elder care to women and girls. "Scaling up families' access to quality childcare has the potential to unlock pathways out of poverty, build human capital, and increase equity – all of which are cornerstones of a country's economic growth and productivity" (Devercelli et al., 2020). Inclusive care economies are essential for human capital development, economic growth, and social progress; yet,

the gaps in access to care increase, as do the costs and the disproportionate responsibility placed upon women and girls to deliver care across societies.

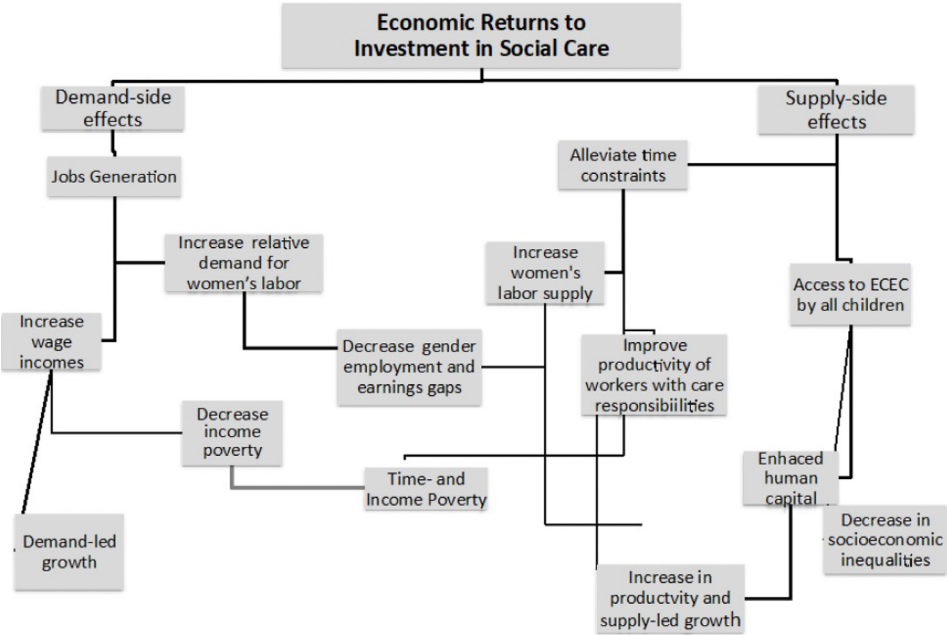
This paper builds on the themes and issues addressed by us and various collaborators in the Think20 Policy Briefs, 2023 (Nikore et al., 2023) and 2024 (Thomas et al., 2024). It analyzes data and provides snapshots of case studies to juxtapose the care economy infrastructure in selected economies. It makes recommendations for solutions and for action by governments, the private sec-

tor, and civil society at national and sub-national levels, considering respective institutional mandates, responsibilities, and capacities.

CONTEXT AND UNDERLYING ISSUES

“Scaling up families’ access to quality childcare has the potential to unlock pathways out of poverty, build human capital, and increase equity – all of which are cornerstones of a country’s economic growth and productivity” (Devercelli et al., 2020). Inclusive care economies are essential for human capital development, economic growth, and social progress; yet, the gaps in access to care continue to in-

crease, along with the cost of delivering care. In making the case for decent work and investment in the global care economy, the UN Women – International Labor Organization (ILO) Policy Tool (Ilkkaracan, 2021) presents a cogent articulation of the economic returns to be gained (Figure 1). Recognizing that care is a whole-of-life necessity that requires investment, the projected economic returns could include the generation of an additional 150 million jobs by 2030 (350 million in total). Furthermore, with the investment necessary to achieve the 2030 Sustainable Development Goals (SDGs) the global care jobs ceiling could rise to 475 million (ILO, 2024).



Source: Ilkkaracan, I., 2021. A Guide to Public Investments in the Care Economy. UN Women – ILO.

Figure 1

»Recognizing that care is a whole-of-life necessity that requires investment, the projected economic returns could include the generation of an additional 150 million jobs by 2030 (350 million in total).«

The value of unpaid care work has been estimated at approximately US\$11 trillion per year (United States dollars) (Oxfam International, 2023). Most of the unpaid care work is delivered by women, girls, and marginalized populations, since women and girls account for approximately 76% of the global domestic workforce and 90% of the informally employed care workforce (WIEGO, 2022).

“Under-investment in the global care economy and infrastructure has contributed to significant gaps in care services. As demographic shifts and aging populations in the Global North generate increased demand for care workers, the demand for care in the Global South is increasing as a consequence of international and intra-regional migration, spurred by global warming, conflicts and pandemics, among other factors. The pull and push – demand and supply – has

produced significant consequences for the formal and informal sectors as the cycle of migration accelerates in response. On both sides of this equation, women and marginalized populations bear a disproportionate share of the cost and risks within the inter-generational cycle of poverty and marginalization.” (Thomas et al., 2024)

METHODOLOGY AND REGION/COUNTRY SELECTION

We applied a standard mixed-methods methodology, using both qualitative and quantitative secondary data sources. In addition, we relied on the existing literature, published studies, and analyses – including those by multilateral, regional, and national bodies; published national and sub-national policy statements; and case studies to develop the major arguments and to support the recommendations for policy and practice.

A representative sample of countries was selected for this paper on a regional basis and subject to the availability of comparable data in the World Bank’s Women, Business, and Law (WBL) 2022 pilot study, which collected data on legal and regulatory frameworks for childcare provision in 95 economies (WBL, 2022).

For the Sub-Saharan African economies, we utilized the Africa Care Economy (ACE) index, since it goes beyond the legal and regulatory frameworks and draws on supplementary data sources, which are useful in data-challenged contexts. ACE was designed to “measure and map current social recognition and state support for the care economy in Africa”. In addition, weights have been applied to “reflect the importance of each metric in terms of the proportion of the population affected



Figure 2: Based on Razavi, S., 2011

and relevance in African contexts” (Valiani, 2022).

The care infrastructure, for the purpose of this discussion, encompasses key elements of the care economy ecosystem, both on the demand and supply side and from the formal and informal perspective. These actors include the state and non-state actors, and economic and social institutions (North, 1989), including rules and norms.

CARE INFRASTRUCTURE: FRAMEWORK

According to Duvisac et al. [2024], “Care infrastructure, broadly, refers to the network of resources, services, and systems that are available to meet the care needs of people (with special priority to children, the elderly, people with disabilities, and sick people), including those who provide care themselves.” The drivers of the infrastructure and the four distinct but interrelated actors are identified in the care diamond (Figure 2). Figure 2 presents our adaptation of the care diamond concept, which was developed by Razavi (2011) and discussed in Kasan (2024).

Since the conceptual framework of the care infrastructure and ecosystem is not homogeneous across economies or political and economic systems, it is worth noting that the mandates, roles, responsibilities, activities, and domains of actors within the ecosystems are not mutually exclusive. In addition, the resources that are integral to the care economy and infrastructure include the physical infrastructure necessary to facilitate the delivery of services across the ecosystem.

CARE INFRASTRUCTURE: REGULATIONS IN SELECTED ECONOMIES

A. WBL Care Pilot Study Indicators

This overview presents our analysis of childcare policy frameworks across fif-

WBL SELECTED ECONOMIES

The selected economies span diverse geographical regions and economic classifications, including the following:

High-income economies:

- Canada, France, Norway, the United Kingdom, and the United States.

Upper-middle income economies:

- Argentina, Brazil, Colombia, Mexico, and South Africa.

Low-income and lower-middle-income economies:

- Ghana, India, Kenya, Nigeria, and Senegal.

NOTE: Nigeria was not included in the WBL 2022 pilot study.

Box 1

teen economies, as classified by the World Bank (WBG, 2024): low-income, lower-middle income, upper-middle income, and high-income. See Box 1.

WBL 2022 provided data on eleven key indicators, organized into four pillars: Care Infrastructure, Subsidy, Skill Training, and Quality Assurance. Not surprisingly, the WBL data show significant disparities between the high-/middle-income economies and the low-/lower-middle income economies in terms of promulgated laws and regulations and specific policies related to childcare. While the high-income economies have enacted regulations for stronger subsidy systems and accountability measures, the less affluent economies face substantial challenges across all dimensions – from funding allocation and training implementation to compliance monitoring and quality assurance mechanisms. Unfortunately, these data provide no indication of the extent to which laws and regulations are implemented and do not adequately specify variations in national and sub-national regulations and their implementation.

Analysis of WBL Childcare Pilot Study Data: Selected Economies

The key findings related to the high-income economies in this study include the following:

- Canada, France, Norway, and the United Kingdom have relatively robust regulatory frameworks for childcare services, while the United States has limited public childcare provision at the federal level, with wide variations in implementation and regulation at the state level.
- Similar variations are evident regarding the promulgated laws and imple-

mentation of tax benefit systems and direct financial support for low-income families and private centers in the United States, compared to France and Norway.

- Regarding quality assurance, Canada, France, and the United Kingdom have enacted laws requiring inspections to verify compliance with quality standards and regulations in public childcare centers. However, systematic professional development requirements are notably scarce, with the United Kingdom standing alone in mandating periodic training for educators across both public and private childcare centers.

In contrast, the middle-/low-/lower-income economies, as a group, have less robust regulatory and policy frameworks for care and limitations in resources for implementing national and sub-national policies and programs to serve the care needs of their populations, as follows:

- Argentina, Brazil, Colombia, and Mexico have established mandatory public provision for childcare centers.
- All the economies in this group, except for India and Senegal, have implemented regulations for licensing private childcare services. Financial support mechanisms remain markedly limited in these economies, with only Argentina and South Africa offering financial support to private childcare facilities. Similarly, professional development requirements are sparse, with Argentina standing alone among the selected countries in enforcing comprehensive training mandates for childcare educators.

- In the domain of quality assurance, only Argentina and Brazil have enacted legislation requiring systematic inspections to verify compliance with established quality standards and operational regulations in public childcare centers.

Notably, regardless of the income category, none of the economies have established systematic employer incentives for childcare provision. This comprehensive analysis underscores the persistent global inequality in accessing quality childcare infrastructure and in mandating comprehensive early childhood care and education services, particularly among employers in the private sector.

B. Africa Care Economy (ACE)

“The approach of Valiani (2022) to assessing key indicators of the care economy (Figure 4), highlights the policy, resource, and market challenges faced by Sub-Saha-

ran African (SSA) economies in responding to the need for care across the lifecycle” (Thomas et al., 2024). The ACE data for the Sub-Saharan African countries provide a snapshot and weighted assessment of each economy’s relative performance, aggregated across ten indicators in relation to a total aggregate score of 30. As shown in Figure 4, none of the Sub-Saharan African economies achieved the ACE minimum pass threshold of eighteen.

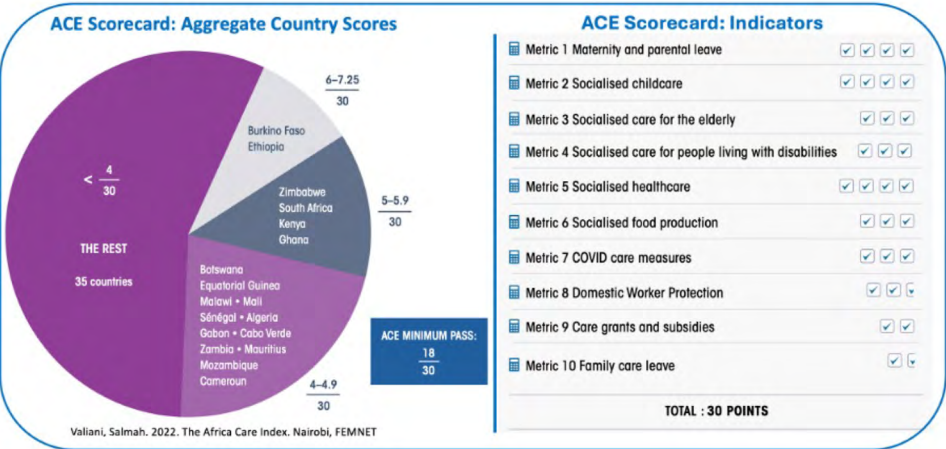


Figure 3: The ACE Index Scores

CASE STUDIES

The case studies highlighted in this section were selected to show variations in care infrastructure and examples of innovative and scalable solutions for addressing the care gap. In addition, we have sought to highlight the role and contributions of different actors within the care infrastructure.

Canada: Feminist Care Policy Agenda

Canada's commitment to implementing key elements of a feminist approach to inclusive economic growth, human capital development, and gender mainstreaming provides an instructive, real-time laboratory for the political economy of reform. The literature provides extensive commentary and analyses on this, which is a work in progress. It has been propelled by a committed coalition of actors who have generated political capital to help drive change at the federal and provincial levels.

In terms of the care economy and care infrastructure, Canada has a robust care framework, with its publicly funded universal health coverage as the foundation. On March 6, 2025, Prime Minister Trudeau affirmed his political commitment to the care economy agenda by declaring that "Childcare is a foundational building block of what it means to be Canadian." He then announced that the federal government's Canada-wide Early Learning and Child Care funding agreements with eleven of its thirteen provinces and territories had been extended until 2031 (Trudeau, 2025).

Under the current program, "900,000 children across Canada are getting affordable, high-quality childcare, and families who have access to licensed programs are saving up to \$16,200 per child, per year"

(Childcare Now, 2025). Several ongoing initiatives are aimed at strengthening the early childhood workforce through compensation, skills building, and professional development.

Colombia: Bogotá's Care Blocks

At the height of the COVID-19 pandemic, a study commissioned by Bogotá's Secretary of Women's Affairs found that "30% of the city's female population are full-time, unpaid caregivers, of which 90% are low-income; 33% lack time for self-care; and 70% hold only primary school" (OECD, 2022). In addition, 21% have been diagnosed with untreated chronic illnesses. Moreover, it was estimated that 3.6 million of the city's eight million residents were unpaid caregivers, and 1.2 million were employed as full-time caregivers – mostly women and girls, who were all vulnerable and lacking vital protections during the pandemic.

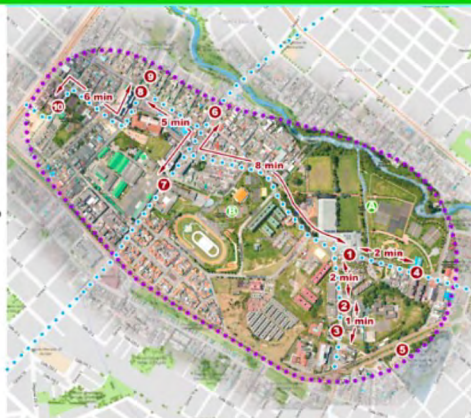
The municipal government developed an innovative strategy and mobilized resources to implement the Care Block initiative by centralizing and co-locating "key services for female caregivers to improve their well-being and to reduce the time women dedicate to unpaid jobs/tasks" (OECD 2022). Each block delivers services to caregivers and children, elders, people with disabilities, and families in general (Cardona, 2024).

Starting with a pilot in Ciudad Bolívar, Bogotá expanded the initiative and established an integrated system of Care Blocks. Each block (see Figure 4) is designed to facilitate access to and the delivery of services and support by co-locating and centralizing "services provided by the city authorities, as well as those run

3. The ideal Care Block

Urban components of a Care Block**Componentes urbanos de una Manzana del Cuidado****San Cristóbal
Care Block**

- 1 Centro Felicidad San Cristóbal
- 2 Colegio Manuelita Saenz
- 3 Centro de Desarrollo Comunitario San Blas
- 4 Jardín Infantil San Cristóbal
- 5 Hospital San Blas
- 6 Colegio José Félix Restrepo Sede D
- 7 Colegio José Félix Restrepo Hospital Universitario Clínica San Rafael
- 8 CIOM San Cristóbal
- 10 Colegio Rafael Nuñez
- A Parque Metropolitano San Cristóbal
- B Parque Primera de Mayo

**Anchor building:**

Public building that has the capacity to group and provide social and care services of different institutions.

Complementary facilities:

Facilities within the bounded area of the care block that complement the provision of the services offered.

Public space:

Articulating component between housing and facilities, and between facilities and each other.

Source: Cardona, E. 2024. Spatial Dynamics and Architecture in a Care Block: The first Bogota/Freetown technical exchange. <https://www.citieschange.org/updates/spatial-dynamics-and-architecture-in-a-care-block-the-first-bogota-freetown-technical-exchange/>

Figure 4: The concept of Care Blocks has been successfully scaled, with 23 blocks in Colombia. It is being adapted for implementation in other countries. For example, in 2024, the city of Freetown in Sierra Leone launched the Freetown Caring City project, with technical support from the city of Bogotá.

by the National Government, some of the private sector, and even a few communal/ household-driven ones” (OECD, 2022). In addition, the physical infrastructure (e.g., public transportation) and the related ecosystem is designed to facilitate equitable access, personal development, employment, and/or entrepreneurial opportunities to support income generation and enhance political participation.

India: Government, Community-based, and Private Sector Childcare

India’s care economy, specifically its childcare infrastructure, operates through three distinct models: government initiatives, community-based solutions, and private sector services. Each model serves different socioeconomic segments, with unique approaches to providing childcare services across the country. See Figure 5.

Kenya: Kidogo Social Enterprise – Early Childhood Care and Education in Kenya’s Urban Settlements

The childcare infrastructure in Kenya is vital to the country’s social and economic development. Most childcare services are

provided through informal centers, which play a crucial role in bridging the gaps left by formal childcare services, which may be out of reach for many families. The Government of Kenya’s 2023 National Care Policy laid out its lifecycle, scope, strategic priorities, and actions for strengthening Kenya’s care infrastructure and ecosystem (Government of Kenya, 2023). The Care Reform Initiative aims to promote family and community-based care models.

Kidogo is a social enterprise that provides affordable access to quality care in East Africa’s low-income communities (Kidogo, 2025). By partnering with local women – “Mamapreneurs” [i.e., entrepreneurs] – Kidogo has created a safe

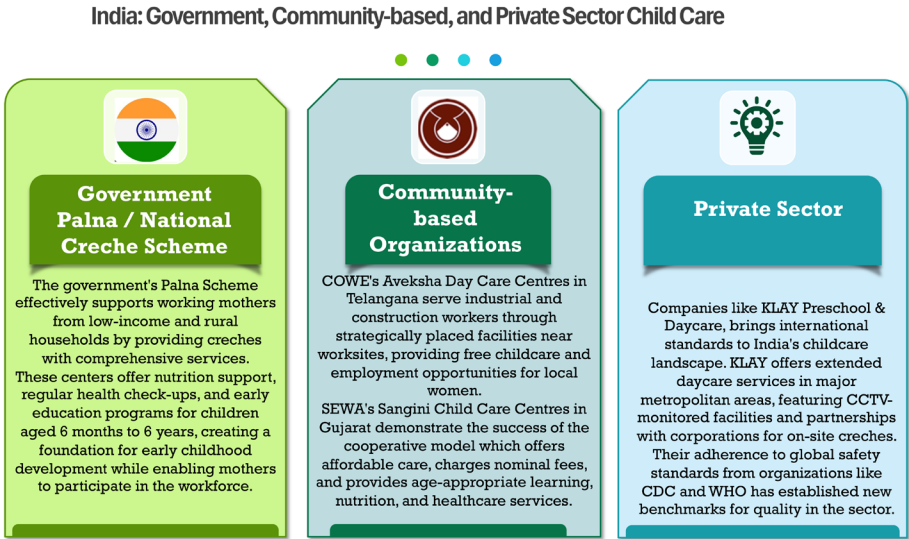
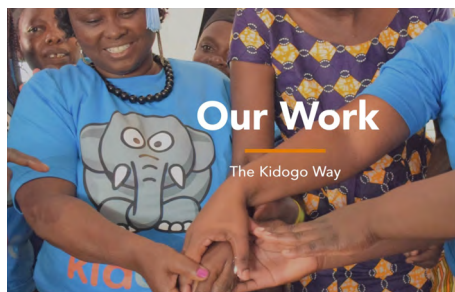


Figure 5: The government has recently initiated plans to expand these models through public–private partnerships and voucher systems. These innovative financing mechanisms typically involve governmental agencies or organizations issuing vouchers to eligible families, redeemable at approved childcare providers. Thus, these mechanisms enhance accessibility and parental choice, while maintaining quality standards.



and stimulating environment for children through a play-based and localized curriculum in urban slums. This initiative has enhanced the quality of care and improved the condition and profitability of these microbusinesses. As of 2023, Kidogo exceeded its target, providing services to more

than 38,000 children and granting franchises to more than 1500 Mamapreneurs.

The African Population and Health Research Center (APHRC) evaluated the Kidogo program that was implemented in Nakuru County, highlighting its impact on early childhood care and women's economic empowerment. The key findings of the evaluation are summarized in Figure 6.

Nigeria: Mobilizing Private Investment in Childcare

Nigeria's care gap is steadily increasing due to a combination of factors, which include cultural shifts as more women seek opportunities to work outside of the home,

Kidogo Program: APHRC Evaluation Findings

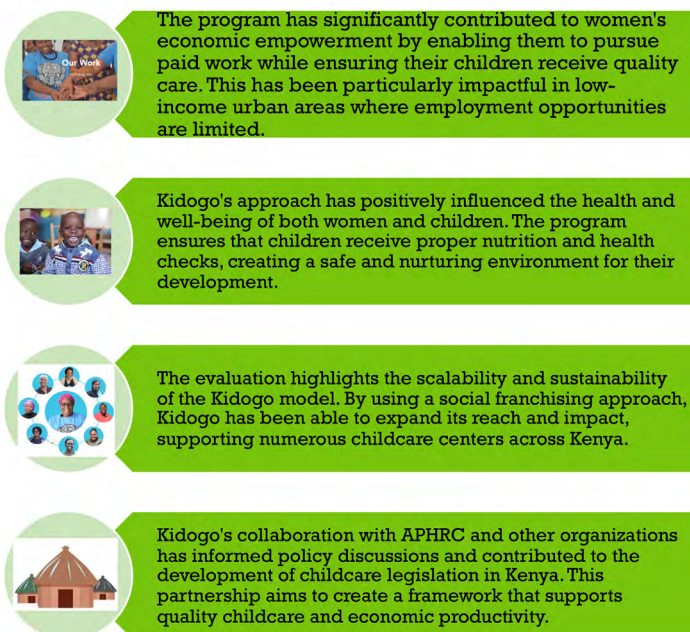


Figure 6

rural/urban migration, the emigration of professional care workers, the evolution of the world of work, family subsistence, and survival challenges. The country’s 2022 ACE Index aggregate score reflects the evidence regarding the economic and social care gaps and challenges. Nigeria was assessed as having an aggregate score of 0.9/30 and ranked fifty-second out of the 54 countries covered by the Index. See Figure 7 for a summary of the key issues affecting Nigeria’s care economy.

According to De Hennau (2022), Nigeria would require investments of between 4% and 8% of its GDP (between US\$17 billion and US\$35 billion) to fill its childcare funding gap. Approximately two-thirds of childcare providers are self-financed, and 18% resort to bank loans. With low personal savings and high lending rates, self-financing by childcare entrepreneurs is unlikely (Thomas et al., 2024). There

has been significant private sector mobilization – with the support of multilateral financing organizations – to generate a market response to the widening care gap and opportunities for investment in Nigeria. Caring Africa is building a strong coalition to champion care investments to help catalyze Africa’s economic transformation. A recent 2024 investment conference in Nigeria generated approximately US\$50 million in funding care infrastructure commitments (Caring Africa, 2024).

CONCLUSION

Reimagining the care economy requires a comprehensive all-of-society and lifecycle approach, which extends beyond governmental initiatives and requires active collaboration with the private sector, community organizations, knowledge institutions, and the general population. Public and private investments are crucial in de-

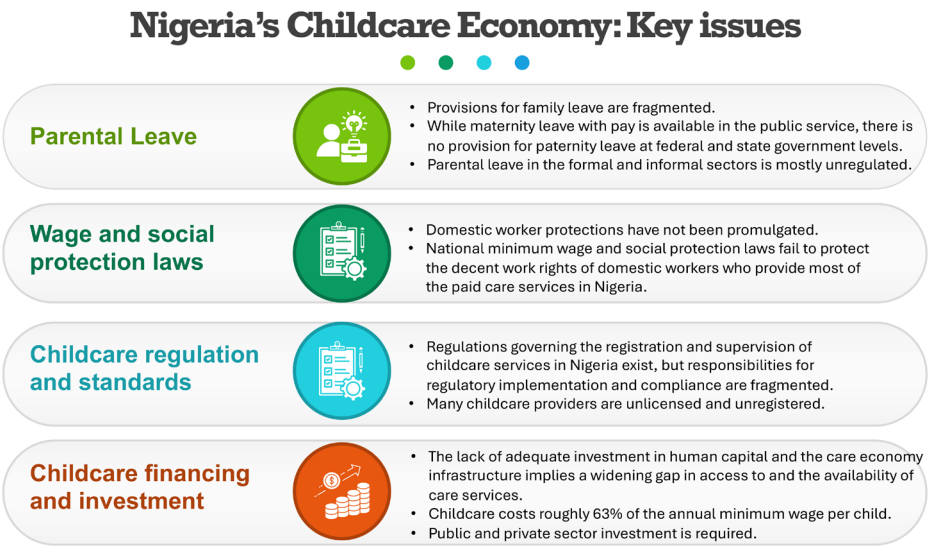


Figure 7

veloping essential care infrastructure and delivering quality care services. Additionally, industry associations and community-based organizations play vital roles in transforming the care infrastructure, including societal attitudes towards the equitable distribution of care responsibilities within households.

Bridging gender disparities in domestic and care work serves as a catalyst for enhancing women’s labor force participation by alleviating gender-based time constraints and generating new opportunities for formal employment and entrepreneurship.

Based on an extensive review of over 50 care economy interventions across the selected economies, our strategic recommendations for transforming the global care economy have been collated. These recommendations have five foundational pillars, as summarized in Figure 8, below.

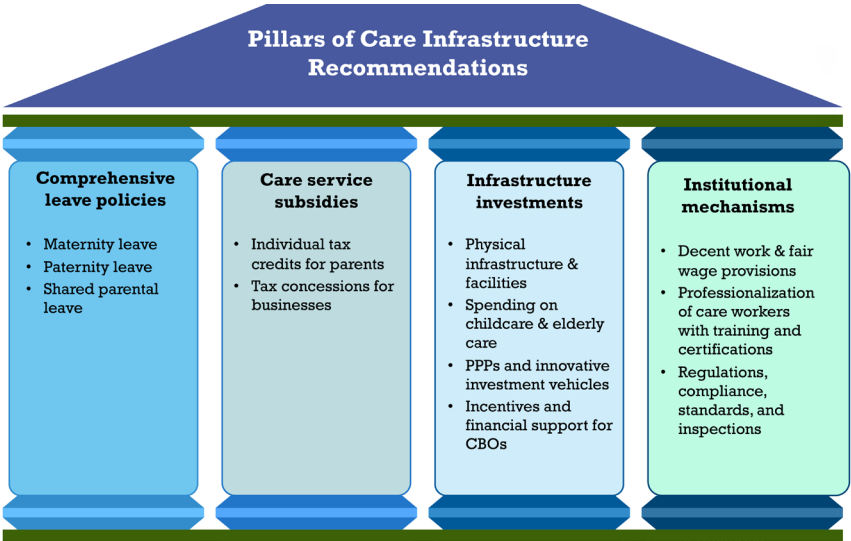


Figure 8

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Human Security, Health, and Well-being

Drivers for Human Flourishing, Quality of Life, and Social Progress

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Policy Brief

Keywords:

human security, health and well-being, social progress, quality of life

ABSTRACT

Prioritizing people's physical and mental health and well-being from threats that could hinder their ability to flourish is critical to social progress and environmental sustainability at community, national, regional, and global levels. Simply put, human security, health, and well-being are essential prerequisites for human flourishing, quality of life, and social progress, as they provide the foundation for individuals to live with purpose, meaning, and fulfillment, free from fear and want. In this paper, we describe the initiative of the International Panel on Social Progress (IPSP) on health and well-being to address the conceptualization, measurement, and implementation pathways integral to the

link between human security, health, and well-being. Through its working group on health and well-being, IPSP revitalizes the quest for justice-informed health and well-being amid the decline of social-democratic ideals in developed countries and the mimicry of these models by developing nations. The initiative leverages the innovative capabilities of social scientists to explore how health, well-being, and quality of life are integral to sustainable human security. In addition to establishing linkages between health and well-being and human security, in this paper, we present IPSP's framework for sustainable human security and establish action pathways for social cohesion, human flourishing, and quality of life.

HUMAN FLOURISHING, QUALITY OF LIFE, AND SOCIAL PROGRESS

The concept of human flourishing expands traditional ideas of well-being beyond physical and mental health and includes the ability to lead a meaningful and fulfilling life, characterized by opportunities for personal growth, social inclusion, and the ability to be impactful. Basic human needs – including access to nutritious food; potable water; supportive shelter; and affordable, quality health care – while necessary, are not sufficient to ensure that people are able to thrive, despite their geography. Human safety and security – including freedom from physical threats and violence; economic opportunity; and protection from discrimination, marginalization, and other forms of human injustice – are foundational for people in cultivating their human potential. The concept of human flourishing also acknowledges the need to experience fulfillment in life and have a sense of purpose. Lastly, environmental security, including clean air, the responsible use of natural resources, and protection from the effects of climate change, are essential for human flourishing (Buettner & Skemp, 2016).

Barriers to global flourishing include poverty, social inequality, and global inequity in the distribution of resources and opportunities. Social unrest, including war and acts of terrorism, often leaves already marginalized populations unable to meet their basic human needs. The negative effects of climate change also disproportionately impact developing countries and agricultural and coastal communities. Lastly, despite advances in healthcare and technology, many people around the globe continue to have limited access to quality education and healthcare.

Social progress is a complex and multifaceted concept, which refers to the advancement of a society in ways that improve the well-being and quality of life for its members (IPSP, 2018). It extends beyond measures of economic growth and encompasses a wide range of social, environmental, and ethical considerations (IPSP, 2018; Maggino, 2023).). In contrast to human flourishing – an individually-measured construct – social progress is measured at a societal or community level. The three key aspects of social progress include meeting basic human needs, enhancing quality of life, and creating opportunities for societal members to reach their full potential.

GLOBAL MEASURES AND DATA ON HUMAN FLOURISHING, QUALITY OF LIFE, AND SOCIAL PROGRESS

The Global Flourishing Study (GFS) is a multi-year, longitudinal data collection and

»Basic human needs while necessary, are not sufficient to ensure that people are able to thrive. Human safety and security are also foundational for people in cultivating their human potential.«

»Social progress is a complex and multifaceted concept, which refers to the advancement of a society in ways that improve the well-being and quality of life for its members (IPSP, 2018).«

research collaboration between researchers at Baylor University and the Human Flourishing Program at Harvard University. In partnership with Gallup, the Center for Open Science (COS), and a consortium of funders, the study data are shared as an open-access resource to facilitate stakeholders worldwide in accessing detailed information about factors that promote human flourishing. Nationally representative data will be collected from approximately 200,000 participants from across the following twenty-two geographically and culturally diverse countries and territories:

- Argentina
- Australia
- Brazil
- Mainland China
- Egypt
- Germany
- India
- Indonesia

- Israel
- Japan
- Kenya
- Mexico
- Nigeria
- The Philippines
- Poland
- South Africa
- Spain
- Sweden
- Tanzania
- Türkiye
- The United Kingdom
- The United States

The GFS measures global human flourishing in the following six areas:

1. Happiness and life satisfaction
2. Mental and physical health
3. Meaning and purpose
4. Character and virtue
5. Close social relationships
6. Material and financial stability

The Global Social Progress Index (SPI) is a tool that measures social progress by assessing a country's performance in three key domains: basic human needs, foundations of well-being, and opportunity. The Global SPI is the most comprehensive measure of social progress globally, having tracked the performance of 170 countries between 2011 and 2023. The Global SPI includes a downloadable dataset, which can be customized to gain a deeper understanding of social progress across the globe. (Social Progress Imperative, 2024)

The Organization for Economic Co-operation and Development (OECD) launched the Better Life Index (BLI) initiative in 2011 to facilitate the creation of economic in-

dicators that would better capture the multiple dimensions of economic and social progress. It was specifically designed to compare well-being across countries based on the following eleven essential topics, targeting material living conditions and quality of life:

- Housing
- Income
- Jobs
- Community
- Education
- The environment
- Civic engagement
- Health
- Life satisfaction
- Safety
- Work-life balance

It is well known that the OECD developed the BLI as an alternative to GDP in an effort to create alternative indicators for looking beyond GDP. (OECD, 2022)

These all complement and add rigor to the global indicator framework for the Sustainable Development Goals (SDGs) and the targets of the 2030 Agenda for Sustainable Development. It is against this background of methodological standards that the International Panel on Social Progress's (IPSP's) working group integrates the changing needs, demands, and expectations of communities to amplify and promote measurable results, accelerate community awareness and engagement, and strengthen policy action and sustainability.

THE IPSP'S HEALTH AND WELL-BEING INITIATIVE

The IPSP harnesses the thinking and competencies of experts, social actors, policy

makers, and decision makers on critical social issues to provide the best response to questions that bear on social change. It seeks consensus whenever possible and embraces controversies to present timely and informed arguments and analyses in an accessible way. With no partisan agenda, the IPSP is focused on restoring hope in social programs and on stimulating intellectual and public discussion on informed policymaking and sustainable solutions. In particular, it disseminates knowledge, fosters research, and engages stakeholders at every level.

The IPSP's Human Security, Health and Well-being Working Group, a collaboration of multisector, global partners, launched the Health and Well-being Initiative in 2024. Its goal is to establish an ecosystem of collective knowledge to improve global health, social progress, and human flourishing. The three primary objectives are as follows: (1) to collate data and information to monitor global trends in social progress and human flourishing; (2) to convene global stakeholders to deepen our understanding of the drivers of social progress, as well as the challenges, opportunities, and best practices in advancing social progress; and (3) to connect the people doing the work to the resources needed to advance social progress and sustainable human flourishing.

IPSP's work is modeled on the landmark Blue Zones project and aims to identify areas that have made substantial social progress in the twenty-first century. The term "Blue Zones" refers to the geographic regions across the globe in which people live longer and healthier lives than average. These areas tend to have a higher concentration of centenarians, i.e., people

who live to be 100 years of age and older. The concept was popularized by National Geographic fellow Dan Buettner, who studied these regions in depth. Buettner and his team drew blue circles on maps while identifying these areas (Vander-Weele, 2017; Buettner & Skemp, 2016). They initially identified the following five Blue Zones:

1. Okinawa, Japan
2. The province of Nuoro, Sardinia, Italy
3. The Nicoya Peninsula, Costa Rica
4. Ikaria, Greece
5. A Seventh Day Adventist community in Loma Linda, California, the United States

This seminal work identified common life-style, environmental, and social factors that are associated with population-level health and longevity and has prompted multiple implementation projects to create model Blue Zone communities, globally.

Inspired by the Blue Zones framework and using data from the Global SPI and the GFS, the ISPS aims to identify Social Progress Zones (SPZs), namely national and sub-national locales with the greatest improvements in social progress over the past two decades. The GFS and the SPI both provide transparent and actionable data, enabling comprehensive insights into the true state of our global society, as well as an examination of historical trends. These rich data also allow for a more resolute study of population subgroups. The IPSP's Health and Well-being Initiative aims to specifically identify areas of greatest social progress for (1) Indigenous people and people of color, and (2) women and girls, two groups who, despite global advancement, continue to experience per-

sistent health disparities. It also aims to identify the geographic areas experiencing the greatest economic equality and environmental prosperity. These SPZs will become the target of a more in-depth inquiry by leveraging other local health data and regional partnerships to identify areas where people are flourishing the most and living the longest and the healthiest. Like the Blue Zones project, it will also identify the key drivers of social progress in these places and population subgroups. It is hoped that the IPSP can shine a light on communities that are doing the work well and provide exemplars for other global stakeholders.

Furthermore, as the IPSP highlights communities and stakeholders, it builds on the notion that health and well-being are both critical drivers of human security. In so doing, it can capitalize on its Human Rights and Human Security Framework, which amplifies the United Nation's 1948 Universal Declaration of Human Rights, as aptly captured by Travanti (Figure 1) in his Framework of Sustainable Human Security.

It is important to make the link between health, well-being, and human security. Sustainable human security encompasses health and well-being as a global vulnerability. The COVID-19 pandemic has refocused attention on health and well-being as a critical factor in human security and emergency preparedness – health, safety, education, and social integration. (UN-Habitat, 2021) In addition, the global framework of the SDGs provides a comprehensive set of interconnected domains, which are focused on inclusivity, equity, and sustainability. (WHO, 2024) The localization of the SDGs

requires objective indicators of health, economic, social, and environmental dynamics, which capture the lived experiences of people in communities, cities, municipalities, and countries.

The IPSP's Health and Well-being Initiative intends to (1) deepen our understanding of the factors that contribute to human security, health, and well-being across geographies and populations; (2) track global trends in human flourishing, quality of life, and social progress; and (3) provide a framework to evaluate the impact of interventions and policies. The initiative leverages the innovative capabilities of social scientists to explore how health and well-being

are integral to sustainable human security, in addition to establishing linkages between health, well-being, and human security. By working together to address these challenges, we can create a world where all humans can thrive.

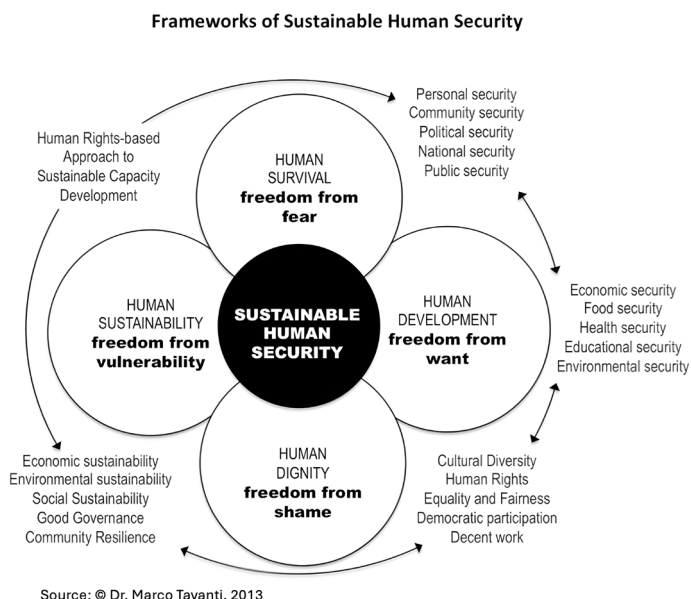


Figure 1

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Climate Action and Community Well-being

A Novel Communication Framework

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Policy Brief

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ABSTRACT

In the face of the global climate crisis, the language and narratives used to communicate about climate change can have significant impacts on community well-being (CWB) and community climate action. This paper presents a novel communication framework. It utilizes an adaptation of Corey Keys' Dual Continua Model of mental health to illustrate how climate communication narratives, which range from doom-and-gloom to advocacy and efficacy, intersect with community climate sentiment. This leads to four climate mitigation and adaptation levels – emerging, flourishing, vulnerable, and struggling – which coincide with CWB.

Utilizing countries in the Global North and South as examples, this paper explores how digital, local, and national media shape

climate sentiment within communities. It posits that communities experiencing climate hopelessness narratives coupled with low climate efficacy may exhibit diminished CWB and limited progress on climate action. Conversely, communities exposed to climate advocacy narratives and high climate efficacy may demonstrate more flourishing CWB and greater strides in climate mitigation and adaptation.

This paper provides a conceptual model that maps these dynamics, with the intent of informing more constructive climate communication strategies, which foster community resilience and empowerment. Examples from the Global North and South indicate how cultural, geographic, and socioeconomic factors mediate the relationship between climate narratives and community outcomes. By

centering the community as an analytic anchor, the paper links community climate sentiment and CWB with communication impacts that create a collective capacity for climate action. This framework could inform policy, media, and civil society approaches to climate engagement, promoting holistic CWB alongside climate action and environmental sustainability.

INTRODUCTION

The effects of climate change are manifesting across the globe in the form of rising heat and sea levels, flooding, severe storm systems, and extreme weather events. Many communities are experiencing these changes first-hand, while others are being made aware through media sources. Given that people understand climate change through both personal experience and media exposure, the narratives used in climate communication play a crucial role in shaping public perceptions and responses. Communication is the process of exchanging information and meaning through a shared system of symbols (i.e., verbal, non-verbal, written, and visual) and encompasses the key aspects of sending a message: interpreting it based on a common understanding and achieving mutual understanding through various forms of expression (American Speech-Language-Hearing Association, 2025; Fatimayin, 2018; Osei-Hwere & Osei-Hwere, n.d.). However, “Narratives are socially constructed ‘stories’ that make sense of events and phenomena, integrating them into worldviews” (Hinkel et al., 2020, p. 495).

CLIMATE COMMUNICATION

Climate communication uses different narratives in varied contexts. For instance,

»The CCAP Framework should be tested to better understand the relationship between climate communication narratives and their impacts on individual and community-level responses.«

media outlets in the Global North have often emphasized the effects and projections regarding climate change (Guenther et al., 2024), due to the increased intensity and frequency of extreme events. Similarly, research on the climate impacts in Pakistan concluded that disaster is one of the most prevalent frames in the coverage, as it is elsewhere in the world (Painter, 2007; Parida et al., 2021; Qusien, 2024). In the Global South, the climate communication landscape is less emphatic. In India and Pakistan, for example, media reports have been characterized by a lack of sustained coverage and urgency around climate change (Poornananda, 2022; Qusien, 2024), with government inaction dominating the narrative (Qusien, 2025).

Both traditional and digital media serve as a primary conduit for disseminating climate narratives. Compared

to family, friends, and co-workers (6%), people learn more about global warming through the media, including TV, movies, radio, newspapers, news websites, magazines (28%), and social media (Leiserowitz et al., 2024). The importance of narrative in telling the climate change story cannot be underestimated because it can shape preference and opinion and set the direction of climate action (Gjerstad & Flottum, 2022; Hinkel et al., 2020). For example, an experimental survey concluded that residents in the state of Louisiana view information from the local media on hurricanes more positively than the national media coverage (Andrews et al., 2023). Additionally, the Yale University Program on Climate Change Communication identified six types of audiences regarding climate change: alarmed, concerned, cautious, disengaged, doubtful, and dismissive (Leiserowitz et al., 2024). In 2023, they, in partnership with Meta, researched public sentiments on climate change in more

»This “climate communication gap” can perpetuate disempowerment, as individuals may lack the knowledge or resources to understand and respond to climate change impacts.«

than 100 countries and found “alarmed” to be the dominant group across the research countries, with the highest number of alarmed populations in Puerto Rico, El Salvador, Costa Rica, Panama, and Chile. In the US, almost one-third (32%) of the population is alarmed, and a fourth (25%) of the population is doubtful or dismissive of climate change (Leiserowitz et al., 2023). Research from Europe and the UK shows heightened concern around climate change, with 91% of the public in Portugal, 80% in the UK, and 81% in Ireland worried about climate change (Ibid).

Exposure to the media coverage of climate change events has the potential to significantly affect people’s emotional and psychological responses, influencing their well-being and quality of life. Recent research on emotional responses when thinking about climate change in the US has shown that the public has various emotions: “interested (58%), frustrated (49%), hopeful (44%), sad (43%), disgusted (42%), afraid (38%), angry (38%), anxious (36%), outraged (36%), hopeless (31%), or depressed (27%)” (Leiserowitz et al., 2024, p. 3). Clearly, negative emotional responses to climate change and climate engagement are higher when exposure to information on climate impacts is also high (Ogunbode et al., 2022).

Therefore, while climate communication narratives aim to convey the urgency of climate change and the resultant disasters, research has shown that an excessive focus on catastrophic outcomes can be counterproductive. The emphasis on catastrophe may cause individuals and communities to be over-saturated, reducing their engagement and fueling a sense of helplessness (Arnold & Shorenstein,

2018; Hinkel et al., 2020). Narratives can empower people and communities to be proactive and take action to mitigate climate effects (Hinkel et al., 2020). It is, therefore, important to understand how climate change narratives affect individual and collective responses (Gjerstad & Flottum, 2022).

FROM ANXIETY TO SENTIMENT

The growing awareness and concern about the psychological well-being aspects related to climate change, severe weather events, and the related doom-and-gloom narratives have led to the widespread uses of terms such as ecological grief (Albrechet, 2005), climate angst, climate anxiety (Clayton, 2020), eco-anxiety, eco-fear, and environmental anxiety (Brophy et al., 2022). Climate anxiety and other related terms are defined as a broad range of unpleasant emotional responses, including worry, fear, and distress, which are related to the impacts of climate change and environmental degradation. It encompasses feelings of helplessness, hopelessness, and guilt regarding the ecological crisis and anxiety about the future of the planet (Coates et al., 2024; Soutar & Wand, 2022). However, anxiety, as a term to describe the human response to climate change, is limited in its ability to capture the complexity and nuance of this phenomenon.

Conceptualizing individual and community responses to climate change as climate anxiety potentially misrepresents the underlying issues and contributing factors, such as emotional distress as a result of climate disasters. While social scientists, climate scientists, and mental health professionals may be able to distinguish between clinical and existential

worries related to climate change (Soutar & Wand, 2022), lay audiences and mass communication practitioners may not understand this nuance. Generally, the term “anxiety” implies an internal and individualized response, rather than a collective experience. To amplify the collective experience of a community or population, it is important to acknowledge external communication factors and narratives that may influence the distress and discomfort felt by populations and communities who are experiencing the extreme and chronic effects of climate change. Moreover, the diagnostic connotations of “anxiety” can lead to the medicalization and pathologization of a normal, healthy, and adaptive response to a broader issue. This can lead to oversimplifying climate change issues and narratives, promoting individual-level solutions, such as coping strategies or mental health treatment, while neglecting the deeper communication challenges that could support a shift in climate emotions.

Instead of climate anxiety, we recommend using “climate sentiment” to describe public perceptions and emotional responses to climate change and its narratives. Unlike anxiety, climate sentiment acknowledges the complexity of these emotions at the population and community level, recognizing a range of responses – including fear, anger, grief, indifference, and empowerment – which are shaped by social, cultural, and political contexts (Cody, 2015; Santi, 2023). This framing shifts the focus from individual pathology to broader societal and environmental influences, validating these emotions as understandable reactions to real threats. Moreover, understanding climate sentiment can help explore how collective

emotional experiences not only reflect distress but also serve as a foundation for sustained climate action.

CLIMATE SENTIMENT AND COMMUNITY WELL-BEING

Climate sentiment in a communal context naturally extends to the broader framework of community well-being (CWB), which considers how shared emotions and social dynamics influence collective health and resilience. CWB is a dynamic and multidimensional concept, encompassing the collective health (i.e., the physical and mental health) and the quality of life of individuals within a specific geographic area and/or of those sharing common beliefs, cultural values, norms, and a social structure developed through established relationships. Individuals may belong to multiple communities based on factors such as geography, religion, occupation, and social and leisure interests (WHO, 1998). CWB is co-created by individual well-being and the effectiveness of the social (e.g., social cohesion); governmental (e.g., access to resources and the economy); and environmental (e.g., the built and natural environment) factors that contribute to the overall health of the community (Cloutier et al., 2019; Hilger-Kolb et al., 2019; Murad et al., 2021; Phillips et al., 2018).

Climate narratives act as underlying mechanisms that either enable or restrict access to the various contributing factors of CWB (i.e., social, governmental, and environmental). Narratives play a crucial role in whether, when, and how individuals and communities can engage with, benefit from, and/or engage in climate action. Beliefs are transmitted through various forms of communication, influencing so-

cial cohesion or disunity, thereby making climate narratives a potential determinant of CWB. The nature of narratives and the intersubjective understanding of community members can create either positive or negative community-level sentiment (Lee & Kim, 2016). This sentiment can influence well-being experiences, ranging from efficacy to hopelessness.

THE INTERSECTION OF CLIMATE NARRATIVES AND CWB

The relationship between climate communication and CWB is complex and multifaceted, requiring a nuanced understanding of the numerous factors at play. Climate change narratives do not exist in a vacuum, they are interpreted and internalized through the lens of individual and collective lived experiences, cultural values, and socioeconomic realities. The lack of a strong sense of community cohesion may contribute to a perception of climate change as a distant or irrelevant issue. Without a robust support network and shared understanding of the challenges, individuals may be more prone to feelings of fear, hopelessness, or disengagement when confronted with dire climate projections. CWB and shared responsibility can foster a greater sense of engagement and motivation to address climate challenges. However, the communication of climate-related information must still be tailored to resonate with the lived experiences and values of these communities. Technical jargon or narratives that fail to connect with local realities may still result in a disconnect, despite the underlying collectivist orientation.

Access to climate-related information and communication channels can vary sig-

nificantly across communities. Marginalized or underserved populations may have limited exposure to climate narratives due to algorithmic biases in social media or a lack of representation in the mainstream media. This climate communication gap can perpetuate a sense of indifference or disempowerment, as individuals may not have the necessary knowledge or resources to understand and respond to the impacts of climate change. Addressing these nuanced intersections requires a multifaceted approach that considers the diverse cultural, socioeconomic, and technological factors shaping CWB. Climate communicators must strive to develop narratives that resonate with the lived experiences of their target audiences, leveraging trusted community networks and accessible communication channels to foster a sense of shared understanding and collective agency.

Researchers recommend the use of solutions-based narratives (Thier & Wu, 2024) for climate communication; some new media initiatives have already shifted towards a more solutions-oriented approach (such as the Grist Solution Journalism Network in the US), highlighting adaptation strategies and empowering ways for individuals to get involved. This shift in communication style may help foster a greater sense of hope and engagement, particularly among younger generations.

CLIMATE COMMUNICATION AND ADAPTATION PATHWAYS FRAMEWORK

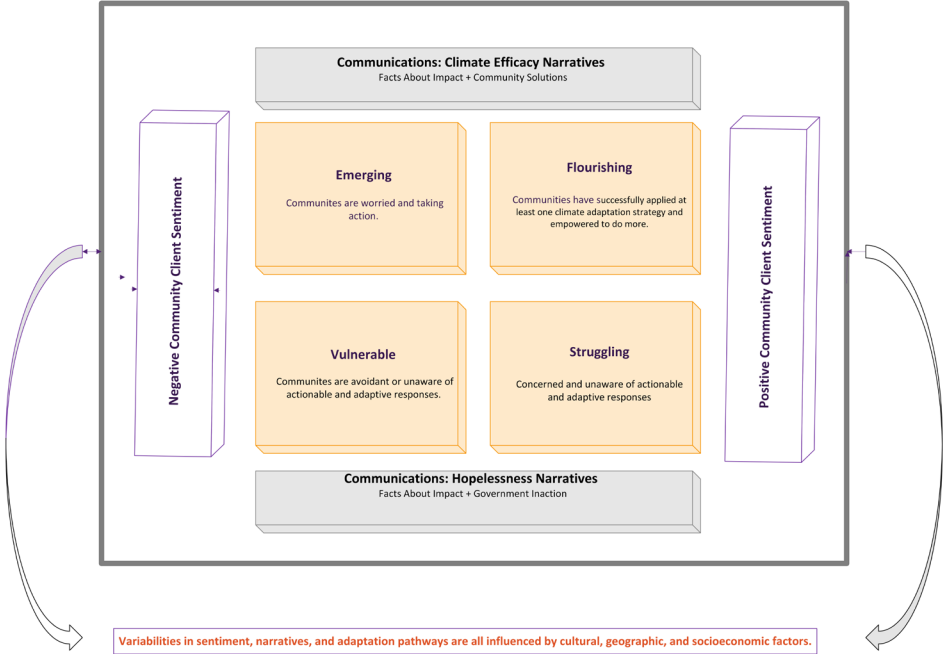
The Dual Continua Model of mental health has been a valuable framework for conceptualizing the multidimensional nature of psychological well-being (Keyes, 2002).

»While climate communication narratives convey urgency, an excessive focus on catastrophic outcomes can be counter-productive.«

This framework posits that mental health exists on two continua: one representing the presence or absence of mental illness, and the other representing the presence or absence of positive mental health. Individuals can, thus, be categorized as flourishing (high positive mental health and low mental illness), languishing (low positive mental health and high mental illness), or moderately mentally healthy (Keyes, 2005).

In the context of climate change, we adapted the dual continua approach to better understand the dynamics of community sentiment and climate communication and its implications for climate mitigation and adaptive levels. Rather than mental illness and positive mental health, the Climate Communication and Adaptation Pathways (CCAP) Framework (See Figure 1) proposes that community sentiment, ranging from negative to positive, is associated with levels of climate action and adaptation based on climate communication narratives. It is important to distinguish between two key narratives in climate communication: the climate efficacy

Climate Communication and Adaptation Pathways Framework



narrative and the hopelessness narrative. The climate efficacy narrative combines factual information about climate change with a focus on solutions and community-level actions. This narrative seeks to empower individuals and communities by providing them with a sense of agency and the concrete steps they can take to mitigate and adapt to climate impacts. In contrast, the hopelessness narrative presents the facts about climate change, but emphasizes governments' inaction or inability to address the issues. This narrative can lead to feelings of helplessness, paralysis, or even denial, as people feel the problems are too large for them to have an impact.

CCAP PROPOSES FOUR KEY STATES WITHIN THIS CLIMATE SENTIMENT FRAMEWORK:

- 1. Emerging: Individuals and communities are worried about climate change and are taking initial steps to adapt. This aligns with negative climate sentiment and climate efficacy narratives.
- 2. Flourishing: Individuals and communities have successfully applied adaptation strategies to mitigate climate impacts and feel empowered to do more. This aligns with positive community sentiment and climate efficacy narratives.
- 3. Vulnerable: Individuals and communities exhibit avoidance behaviors or a

lack of awareness regarding actionable climate responses. This state reflects negative community sentiment and climate hopelessness narratives.

4. Struggling: Individuals and communities express concern about climate change, but lack awareness about how they can take meaningful action. This maps to positive sentiment paired with climate hopelessness narratives.

By situating these community sentiment states within a dual continua framework, the CCAP aims to provide a conceptual framework for analyzing how varied climate communication narratives may impact community engagement and climate resilience differently. This adapted approach offers a promising avenue for informing more constructive climate messaging strategies, which foster collective efficacy and adaptive capacity.

CONCLUSION AND RECOMMENDATIONS

The CCAP Framework should be tested to better understand the relationship between climate communication narratives and their impacts on individual and community-level responses. While the literature has identified various public sentiment states around climate change, such as alarmed, concerned, and dismissive, more empirical studies are needed to examine how these sentiment states influence climate adaptation pathways. Future research should investigate the impact of hopelessness and climate efficacy narratives on CWB and climate action engagement. Such research could inform more effective and nuanced communication strategies to support and encourage global climate action. Furthermore, we

recommend aligning communication strategies across the media, civil society, and governments to foster more positive climate sentiment and build community-level adaptive capacity in the face of climate change challenges.

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Beyond Crises: The Creative Economy, Sustainability and New Opportunities for Global Cooperation

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Opinion Piece

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INTRODUCTION

In 2015, 193 nations approved the UN 2030 Agenda for Sustainable Development. Yet, in 2024, almost a decade later, nearly 35% of the nations in the world did not endorse the Pact for the Future. Moreover, in 2024, elections in over 60 countries revealed growing fatigue with climate and sustainability issues. The global multilateral landscape is increasingly fragmenting and

progress towards sustainability and climate goals is being threatened. But there are signs of hope.

The creative economy is an overlooked sector, which could drive both sustainable production and economic development. There is global interest – in every region of the world, in both developed and developing nations – in the potential of the creative economy. It also offers an

opportunity for new forms of global multilateral cooperation, as evidenced by the astounding number of conferences, papers and meetings dedicated to the topic. Much of this energy is driven by countries in the Global South, who recognize the potential of the creative economy to engage young people and increase economic opportunity.

In 2023, the UN General Assembly adopted a resolution titled, “Promoting creative economy for sustainable development”. It recognized the incredible potential of the creative economy to drive change and help meet sustainability and climate goals. However, the creative economy, and the larger realm of cultural production and preservation, remain an afterthought in most nations’ economic planning. Despite the “inclusively creative” global agenda, which was successfully initiated by Indonesia a decade ago, the creative economy still suffers from a lack of coordination and financial investment, both domestically and internationally. What if converging culture-based and creative economy initiatives could provide new grounds to support sustainability and climate agendas? What if global coordination and the support of multilateral and other public development banks at regional and national levels, as emphasized by the G20 South Africa Finance Track, could leverage new financing opportunities to unlock their potential?

NEW OPPORTUNITIES FOR GLOBAL COOPERATION

As of today, a wide range of think tanks, research organizations and experts are working to realize the promise of the creative economy. The group of culture ministers in the G20 support the development of a creative and cultural pillar to support sustain-

ability beyond the 2030 Agenda, an initiative that is the centerpiece in the preparation of the biennial Mondiacult summit. The summit was convened by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in the Autumn of 2025 and also received support from the BRICS (Brazil, China, Egypt, Ethiopia, India, Indonesia, Iran, Russia, South Africa and the United Arab Emirates) forum. This effort builds on a growing recognition of the role that the creative economy and cultural sectors can play in promoting sustainability.

In 2015, the “inclusively creative” agenda emerged in Southeast Asia. It gained international recognition when Indonesia created the World Conferences on Creative Economy (WCCE) and the Friends of Creative Economy (FCE) summits, which brought together governments, the private sector and civil society. It led to the adoption of the first resolution on creative economy and sustainability by the UN General Assembly in 2019. Recently, the Association of Southeast Asian Nations (ASEAN) Secretariat has launched a new initiative to strengthen the role of the creative economy for the region’s growth. Moreover, at the United Nations Climate Change Conference (COP28) in Dubai, the ministers of culture in Brazil and the United Arab Emirates (UAE) successfully launched the Group of Friends for Culture-based Climate Action (GFCBCA) at the United Nations Framework Convention on Climate Change (UNFCCC). This new international cooperation initiative advocates for the formal recognition of culture, including the arts, creative industries, cultural heritage and Indigenous knowledge systems, to support climate adaptation and sustainability narratives. It has gained momentum ahead

»The trade of creative goods and services is one of the most dynamic sectors of the African economy, with an annual growth rate of more than 15% across the continent, with creative economic sectors the biggest sources of jobs for 15-29 years old and where 60% of the population is under 25.«

of COP30 and the BRICS 2025 summit in Brazil, with over fifty countries across all regions and knowledge partners participating, including the African Union (AU) and the European Union (EU).

There is a long list of countries that have embraced the potential of the creative economy in the Global South and in developed countries alike. For instance, Ecuador has a national plan for fostering creative industries with clear policy guidelines for 2025–2035. A Creative Industries Develop-

ment Council has recently been created in the Philippines. In the Caribbean, in Central Asia (from Kyrgyzstan to Kazakhstan and Uzbekistan) and in the West Balkans, government-led and entrepreneur or artist-led initiatives have been developed. In Germany, a creative economy summit was held at the beginning of 2025, attracting an enthusiastic crowd. Widely acclaimed exhibitions were held at the National Museum of African American History in Washington D.C. and at the Institut du Monde Arabe in Paris, which acknowledged the original and vibrant culture and creative scenes in Africa and the Middle East. An African Creatives Alliance was launched during a widely attended Africa urban forum in Addis Ababa, Ethiopia. Meanwhile, research by the Indonesian Creative Cities Network (ICCN) has also demonstrated the high creative potential of rural regions. This echoes a volume of intersecting global editorial projects, which were initiated by the Global Solutions Initiative (GSI) and the Asian Development Bank Institute (ADBI), on “sustainable responses to the Covid-19 pandemic”, with a focus on the creative economy and the future of work. This volume formed part of a series of longer-term investigations about labor and society transformations in the Global South. Expanding and coordinating creative economies may be of an even more special significance for Africa in the future as it will account for most of the global population increase over the next forty years, and 60% of its population is currently under 25.

Both within creative communities and among global leaders, there is a growing call for coordination across national and regional borders. In the summer of 2024, ADBI organized an international discussion about the creative economy as “our com-

mon future” in Jakarta, together with the Indonesian Chamber of Commerce, the Ministry of Creative Economy and Tourism and a youth summit start-up. The hybrid event was attended by over 500 participants, including young professionals. In a survey completed by nearly 200 decision makers, artists and other creatives revealed that more than 30% of them saw building partnerships and ecosystems as essential skills and called for converging efforts from across culture-based or creative industry initiatives. Those voices were echoed during the 2024 fourth edition of the WCCE, held in Tashkent, Uzbekistan. At this conference, the Indonesian Minister of Creative Economy and Tourism met with the Secretary General of the UN Commission for Trade and Development (UNCTAD) and the Deputy Director General of the World Intellectual Property Organization (WIPO). At this event, he emphasized the complementarity with the GFCBCA and called for joint action at the COP29 in Baku and beyond.

Much remains to be done to promote a comprehensive global agenda for the creative economy and to implement the 2023 UN resolution effectively. Similarly, debates about the definition and delineation of the creative economy, creative economy sectors, cultural industries and culture are intensifying, especially in the wider context of major digital transformations. It is time to fast-track a convergence of efforts, initiatives and agendas.

THE CREATIVE ECONOMY: PROMOTING SUSTAINABILITY, CULTURAL PRESERVATION AND SKILLS FOR THE FUTURE

Fueled by micro-, small- and medium-sized enterprises (MSMEs), the creative economy accounts for more than 6% of all workers

»Creative economy and culture-based initiatives across the G20 and beyond could help unlock the delivery of sustainability and climate agendas.«

across the world. It plays a major role in the employment of youth and women in big cities (but also elsewhere). It has benefited from growing policy support over the past decade from urban and think tank engagement groups, culture ministers, and country leaders in the G20 and several other fora. Within APEC, including under Peru’s presidency in 2024, the topic has received renewed attention. It has also benefitted from the focus of ASEAN, as demonstrated by a 2025 seminar held in Kuala Lumpur, Malaysia, coinciding with the country’s role as the chair of the ASEAN group.

In March 2025, the President of COP30 released its vision for the conference and the evolution of global climate talks over the next decade. In a letter sent out by the COP30 president on March 10 2025 to present the agenda, they referred to “the Brazilian culture inherited from Brazilian native indigenous peoples” and the concept of “mutirão” or “motirõ” in the Tupi-Guarani language, “referring to a community coming together to work on a shared task, whether harvesting, building, or supporting

»The integration of cultural innovation and sustainable practices is also increasingly present within the domain of the circular economy and this could apply as well to bioeconomy as it emerged from the G20 Brazil.«

one another.” This approach also under-pinned the creation of the Global Creative Economy Council and it is shared by the GFCBCA, which has expanded to several dozen members since its inception in 2023 in Dubai. Many civil society-led efforts, such as the current revival of the Southeast Asian Creative Cities Network (SEACCN), are similarly inspired by a vision of a creative economy that is widely open to society, bridging the divides between “creative industries” and “culture.”

The creative economy has gained recognition in many small and lower-income nations. In Bhutan, over 500 students enthusiastically joined a seminar on clusters and creative economy in March 2025 and demonstrated special interest for solutions that could apply to rural environments. Back in 2021, the Foreign Minister of the Pacific Island State of Tuvalu delivered a

speech to COP26 standing in the ocean, raising global attention for the existential threat of sea level rises. The country is now exploring the possibility of preserving its intangible cultural heritage and becoming the world’s first ‘digital nation’ through the Future Now project. Environmental dimensions are increasingly reflected in exhibitions, museums and festivals across the region, visible, for instance, in Hong Kong’s annual Beyond Environmental Arts Festival or ArtJog, and the Yogyakarta annual art festival in Indonesia.

The integration of cultural innovation and sustainable practices is also increasingly present within the circular economy. This could also apply to the “bioeconomy”, as it emerged from the 2024 G20 in Brazil as being at the nexus of globalized food and agriculture production; energy production; and of the large-scale environmental conservation of major ecosystems, such as the Amazon. Working at the convergence of the creative economy and circular economy goes hand-in-hand with reusing, repurposing and recycling waste products, as well as the use of alternative materials. In Indonesia, for example, entrepreneurs are crafting household products from cow dung and turning crop waste into vegan leather. Similarly, artists in India are transforming metal scrap, industrial waste and discarded textiles into artwork. Financing and upscaling such initiatives is essential in bridging the gap between the millions of tons of waste produced and imported into both countries and the roughly 15% that is processed.

The creative economy can drive the uptake of ecofriendly product design and sustainable business models and can help minimize the negative impacts of environ-

mentally intensive and rapidly growing sectors, such as fashion. Although a driver of creativity, fashion also accounts for 20% of water pollution, globally. Furthermore, the creative economy can enable the preservation and restoration of natural ecosystems, as well as Indigenous and sustainable land and practices. For example, the Environmental Bamboo Foundation mobilizes a network of more than 2,000 farmers and almost 250 villages across Indonesia, planting 1.9 million bamboo seedlings to tackle forest degradation, support local communities and restore natural ecosystems. New Zealand and India have accorded legal personhood and protection to rivers, mountains and national parks, based on their cultural ecosystem services. Vietnam and Malaysia have adopted dedicated intellectual property regulations for traditional knowledge and cultural expressions, which have been applied in the domain of environmental conservation. More broadly, 50% of global land resources and 90% of the planet's biodiversity are managed by Indigenous peoples, contributing to improved environmental outcomes and lower deforestation rates. The integration of Indigenous and local knowledge systems and cultural practices will be key in promoting sustainability and biodiversity in the years ahead.

LEVERAGING THE CREATIVE ECONOMY: THE ROLE OF MULTILATERAL DEVELOPMENT BANKS AND GOVERNMENT PLANNING

Greater investment and coordination by multilateral development banks, together with regional and/ or national development banks and governments are needed to realize the potential of the creative

economy in driving sustainable economic growth. The year 2025 provides a unique opportunity to streamline initiatives that have flourished over the past decade and over the past months.

Currently, funding by multilateral development banks takes place on a case-by-case basis and varies from region-to-region. There are many positive examples. In recent years, for instance, the African Export–Import Bank (Afrexim Bank) has allocated substantial amounts of funding for creative economy initiatives across the continent in support of sectors such as music and cinema. A new publication from the IADB illustrates how the development of the creative economy can help mitigate poverty traps and forms part of the bank's ongoing commitment to showcasing the creative economy's contribution to building more sustainable, resilient and inclusive cities.

Building on the conclusions of the Finance in Common Summit (FiCS) – which was co-hosted by the Development Bank of Southern Africa (DBSA) and the Asian Infrastructure Investment Bank (AIIB) in South Africa in the Winter of 2025 – we argue that development banks can play a significant role in accelerating the convergence of the creative economy and climate adaptation and mitigation at scale. This simple idea has driven a dialogue among multilateral and national development banks, think tanks, experts and civil society networks, and was an outcome of the fourth WCCE (Tashkent) and of the adoption of the GFCBCA's terms of reference at the COP29 in Baku.

Governments also have a role to play. Nearly all governments are now interested in developing a creative economy strategy.

»The convergence of the creative economy and cultural agendas on the road to the COP 30 in Belém creates a wealth of new opportunities for various government-led, cities-led, civil society-led, creative economy and cultural agendas.«

Even if they are not sure what “creative economy” is, they see it as future-facing. It is associated with hi-tech solutions and as a way to conserve and promote cultural heritage. It attracts young people and, therefore, has the potential to stop them leaving their home countries to pursue opportunities elsewhere. It is also good for a country’s image and tourism (300 UNESCO “creative cities” are spread across 90 countries). However, the creative economy is still not integrated into wider economic strategies at national, regional or global levels. Developing a creative economy strategy is usually left to the culture department and it is rarely seen as a core part of a government’s economic plan-

ning. Integrating the creative economy into macroeconomic planning would unleash resources and create synergies that would unlock its potential.

Furthermore, coordinating economic support through multilateral banks and across national and regional boundaries would further unlock sustainable growth. As the growing number of conferences and reports show, there is a strong appetite for global cooperation and coordination. Working together could change the equation and provide a novel way to support the global climate agenda.

CONCLUSION

The 2023 UN resolution for “Promoting creative economy for sustainable development” specified that, at its eighty-first General Assembly in 2026 “the secretariat of UNCTAD, in consultation with UNESCO, the ILO and relevant entities of the United Nations system” will report on the progress made in the development of the creative economy. The upcoming COP30 in Belém and Mondiacult, Spain, offer an excellent opportunity for dialogue, coordination and the development of shared frameworks.

In preparation for COP30, the GFC-BCA is focused on building a strong evidence-based, science-backed case for culture-based climate action, so that a work program on Culture-based Climate Action can become part of global climate talks. The demand for climate finance – and especially adaptation – is also rising. The convergence of the creative economy, culture and climate is also on the agenda of the next FCE summit, which is being planned for the summer of 2025, in Bali. Likewise, finding consensus on the culture

and climate nexus is among the priorities of the global cultural agenda at Mondiacult 2025. In this context, consolidating joint efforts in the areas of global governance frameworks, monitoring and evaluation metrics, and data collection across the creative economy and culture could only yield great benefits.

Emphasizing a constructive dialogue across multilateral development banks on the creative economy, including culture-based climate action, promises to connect multiple on-going initiatives and agendas, responding to several shared priorities and investing in a more prosperous future. With support and coordination, the creative economy has the potential to drive innovation, support informal economic activities, generate jobs, and (re)value tangible and intangible cultural heritage. It can provide a policy space for enduring international cooperation during a time of many geopolitical disruptions, affecting both trade and growth.

AUTHOR NOTE

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Green Infrastructure Appraisal Tools

Improving Cost–Benefit Analysis Tools to Encourage City-level Investment

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Opinion Piece

Keywords:

cost–benefit analysis, health, urban policy, environment, climate adaptation

ABSTRACT

The climate crisis is both an economic and a public health crisis. Responding to the climate crisis requires investment in a range of infrastructure that safeguards individuals, communities, ecosystems, and places. Urban green infrastructure has been suggested as a potential solution to address the climate and health problems in cities and towns. To make the right planning decisions, our decision-making frameworks – public and private – need to take better account of the benefits and costs of urban investments in green infrastructure. These benefits include climate risk mitigation, improved air and water quality, enhanced ecosystems, and improved public health.

At the heart of many decision-making systems are cost–benefit analysis (CBA)

measures, which attempt to objectively quantify the benefit–cost ratio (BCR) of proposed investments. A lack of quality information and tools make it difficult to properly quantify the net economic benefits of investments in green infrastructure. This is despite the increasing evidence in a variety of contexts demonstrating links between nature and beneficial outcomes. This creates a risk of systemic underinvestment in nature infrastructure.

We argue for the development of valuation tools that provide robust values to be applied in standard investment situations. This will give municipal and national leaders, funders, and policymakers the ability to assess their proposals and programs in comparable economic terms to promote investment in nature-based urban infra-

structure, which creates long-term value and impact.

INTRODUCTION: THE CLIMATE CRISIS IS A PUBLIC HEALTH CRISIS

The climate crisis is both an economic and a public health crisis, with wide-ranging implications for global systems. The consequences of climate change are already affecting economies across the world, with one study estimating that the global economy could lose up to 10% of its total value by 2050 due to climate change (WEF, 2021).

Climate change also profoundly affects public health, as rising global temperatures contribute to a range of health challenges. The health impacts of climate change – including the spread of infectious diseases, extreme heat-related illnesses, and respiratory problems caused by increased air pollution – threaten to reverse decades of progress in global public health (WHO, 2021). These threats impose additional economic costs due to increased healthcare expenditures, the burden on social services, and lost productivity.

These challenges exacerbate already existing vulnerabilities in densely populated cities. The urban heat island effect leads to increased incidence of heat strokes, dehydration, and other comorbidities, particularly for those in low-income and marginalized communities (WHO, 2021; IPCC, 2022). The exposure of urban populations to higher concentrations of pollutants, such as particulate matter (PM) and ground-level ozone, increases the incidence of asthma, lung disease, and heart attacks, with these effects heightened by extreme heat (Watts, 2021).

INVESTING IN EFFECTIVE RESPONSES

There is an increasing recognition of the importance of green spaces, improved public transportation, and sustainable urban planning in reducing both environmental and health risks (WHO, 2018). Alongside engineered adaptation investments – such as sustainable urban drainage and flood defenses – nature-based solutions (NbS) also play a pivotal role in climate adaptation, augmenting traditional engineering solutions with cost-effective and sustainable possibilities.

In Malmö, Sweden, the Ekostaden Augustenborg program has seen investment in the 32-ha Augustenborg neighborhood to deliver 11,000 square meters of green roofs and improved green spaces. These investments have helped address the storm and flood risk and has reduced urban heat island effects (WWF, 2021). In Medellín, Colombia, the creation of 36 new green corridors helped to manage issues associated with high localized temperatures and heavy rains, but they are also estimated to have prevented 678 heart-related deaths each year (WWF, 2021). Such investments are also catalysts for economic growth, contributing to resilient, healthy, and prosperous communities (World Bank, 2019). In the example of Medellín, it is estimated that US\$136 million in benefits will be generated between 2020 and 2030 due to the green corridors.

Despite the availability of potential solutions, a significant funding shortfall threatens the effectiveness and scalability of climate adaptation projects. Global funding for climate adaptation remains insufficient, with estimates indicating that the financing gap for adaptation could reach up to US\$300 billion annually by

»Despite the availability of potential solutions, a significant funding shortfall threatens the effectiveness and scalability of climate adaptation projects.«

2030 (CPI, 2024; UNEP, 2024). On a planetary scale, Waldron et al. (2020) estimate that investment to secure “30% of the planet for nature” would deliver net benefits of between US\$977 billion and US\$1.34 trillion globally per year by 2050, depending on the scale and type of protection.

There is, therefore, a critical need for greater co-ordination between public and private sectors to mobilize investment in adaptation, and for improved tracking and reporting mechanisms to ensure that funds are directed toward high-impact, evidence-based interventions (IPCC, 2022; WRI, 2021).

To make informed and effective planning decisions, both public and private decision-making frameworks must more rigorously account for the full range of benefits and costs associated with urban adaptation investments. While traditional approaches often focus on immediate financial returns – in part, because these have historically been easier to estimate – this limited view can overlook the long-term advantages of incorporating sustainable solutions into

urban environments. Work by Seddon et al. (2020) found that “flawed approaches to economic appraisal lead to under-investment in [nature-based solutions].”

As such, decision-making frameworks must embrace a more balanced and holistic approach, considering not only the short-term economic benefits, but also the long-term climate, ecosystem, health, and social benefits, as shown in the figure below. This shift is essential for ensuring that urban climate adaptation is both sustainable and resilient in the face of the climate crisis.

EXISTING COST-BENEFIT ANALYSIS SYSTEMS ARE INADEQUATE TO ENSURE SUFFICIENT INVESTMENT IN GREEN INFRASTRUCTURE PROJECTS IN CITIES

At the heart of many decision-making systems are cost-benefit analysis (CBA) measures, which attempt to objectively quantify the benefit-cost ratio (BCR) of proposed investments. These forms of analysis are used in different ways in different contexts, but, fundamentally, this form of analysis aims to compare the costs of interventions with the potential benefits arising from investment. By developing this analysis objectively, the aim is to ensure that decision making is robust and that investment is prioritized where it is most effective.

For example, in the UK, public sector investment decisions require business cases, which are developed following guidelines set out in the Treasury’s Green Book (HMT, 2022). One element of this is the economic case, which includes the development of a BCR for four shortlisted options. The Green Book is supported by a range of complementary guidance, which

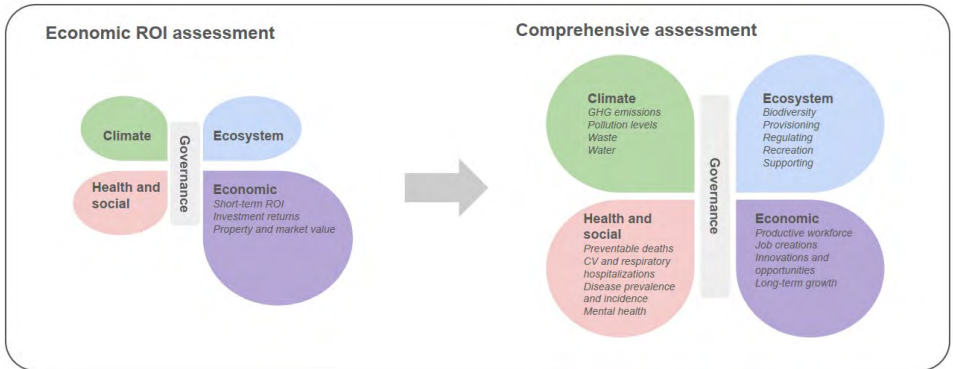


Figure 1: Transition from an econo-centric to a comprehensive assessment framework for climate adaptation

Econo-centric assessments are biased towards short-term economic returns with limited accounting of climate change, ecosystem benefits, health and social benefits. This leads to systematic under-accounting of benefits and low assessed return on investment at the project level. Incomplete information also leads to ineffective governance across the multitude of priorities affecting a community. A comprehensive framework covers the universe of benefits which also leads to long-term economic improvements and improved governance.

is produced by the Treasury and other government departments and agencies. It helps project promoters develop BCRs in a way that is compliant with the aims of the Green Book. For example, the Department for Transport (DfT) has a longstanding Transport Analysis Guidance (TAG) model (DfT 2024), which enables the calculation of economic benefits arising from journey time improvements due to transport investments.

The UK is not alone in having this kind of project appraisal guidance. In the US, the Office of Management and Budget (OMB) produces and maintains Circular A-94, which provides guidance on CBA methods and discount rates (OMB, 2023), alongside more specialist guidance from other agencies. In the EU, the

European Commission produces Impact Assessment Guidance as part of its Better Regulation program (EC, 2023). This is alongside theme-specific guidance published by European Commission directorates. Although not formal guidance, the Organization for Economic Co-operation and Development (OECD) also publishes guidance and research into CBA methods (e.g., OECD, 2018). Thus, the use of CBA as a method of valuation and a key factor in investment decision making and evaluations is well embedded into the governance and decision-making structure of many regions.

However, while guidance is well-developed in some areas, when it comes to quantifying the full benefits of investments in green infrastructure, tools are far less

well-developed. In the UK, despite relatively well-developed guidance on how to appraise projects, there is very little formal guidance on the value of natural capital investments, and even less guidance on how these investments might benefit health. The UK Department for Environment, Food and Rural Affairs (Defra) produces and maintains the Enabling a Natural Capital Approach (ENCA) guidance as the main source of valuation data for natural investment. However, as noted by the Natural Capital Committee, while ENCA is a good starting point for the valuation of natural capital, further investment in tools and metrics will be needed to support ENCA as supplementary guidance to the Green Book. ENCA will also need to be better resourced if it is to be used widely across government (NCC, 2020).

In the US, while federal agencies, including the OMB and the Federal Emergency Management Agency (FEMA), emphasize the consideration of non-economic factors in CBA, technical guidance is insufficient to fully incorporate the value of these factors. Since 2013, FEMA has progressively expanded its guidance on incorporating ecosystem services into its grant evaluation framework, culminating in its 2022 update, which provides average ecosystem service values for nine land types. However, urban green spaces remain the only urban land type explicitly considered, and no reference values exist to account for the benefits of investments in sustainable green infrastructure (FEMA, 2022).

A recent federal review further underscored a significant gap in tools, guidance, and technical assistance for implementing nature-based solutions. It found that most

available information consists of general case studies and process overviews, with very few technical assistance tools accessible to practitioners. It highlighted the need for more comprehensive resources to support the adoption of nature-based solutions in federal programs. Specifically, this review calls on “agencies with research mandates...[to]...fill gaps in available evidence, *starting with known gaps related to how nature-based solutions affect mental and physical health*” [emphasis added]. (The White House, 2022).

DEVELOPING CBA TOOLS THAT CAN INCORPORATE EVIDENCE AND STANDARDIZE THE PROCESS FOR COMPREHENSIVE BENEFIT EVALUATIONS

Given the above, there is an urgent need for more comprehensive tools to enable better quantification of the benefits relating to climate, health, and ecosystem impacts of urban investments.

Our use of the word “tool” is deliberate. Tools incorporate evidence and standardize processes to help enhance capability and facilitate capacity for complex evaluations. While there is extensive guidance and research that can support economic appraisals, investment cases still require the parsing of the literature and evidence to ensure that they are applicable to the case at hand. The skilled application of the established methodologies requires a body of knowledge of appraisal techniques, which presents a barrier to non-specialists. Tools help to ensure that cities have the capacity to properly evaluate benefits when considering investments in sustainable solutions, particularly at a municipal level, where dedicated expertise for CBA may be limited.

Therefore, tools that encapsulate guidance, established methodologies, and research insights are needed now. These tools can help facilitate the CBA and other decision-making processes for comprehensive investment in decision making at the municipal level, fully incorporating economic and non-economic factors into the assessment of benefits.

We suggest that there are five main principles that should be applied to such tools:

Robustness: The underlying research upon which tools are based must be robust so that its applicability to other contexts is valid.

Transparency: The underpinning assumptions and sources for given multipliers/calculations should be clear.

Clear guidance on applicability: Studies of economic benefit are inevitably place-specific, although the level of “place” may vary, e.g., a local area, urban area, or a whole country. Findings in one area may be more or less analogous to the conditions in other areas. Therefore, tools should aim to be clear about the applicability of their assumptions to different conditions. Where possible, tools should be built with these differing contexts in mind – for example, with different underpinning valuations for urban areas, as opposed to rural areas.

Flexibility: Tools need to be well-designed with users in mind and should support flexible usage – e.g., allowing for different discount rates, timescales for appraisals, conversions between currencies, adjustments for pricing changes over time, and economic benefits that are calculated per calendar year. Given that the health benefits of nature investments are likely

to be one strand of benefit assessment, it should be easy for project appraisers to incorporate these calculations into wider modeling efforts.

Developed in partnership with appraising/reviewing agencies: Tools are more effective when they are understood and accepted by those appraising funding bids/investment cases. The best way to ensure this is to develop tools in partnership with these organizations.

Examples of similar standalone tools include FEMA's CBA Tool, which was designed to support grant programs such as the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC). It includes traditional economic factors, such as avoided damages and loss of life, while also incorporating ecosystem service benefits in certain cases.

Beyond the core requirements for the tools themselves, several operational factors are crucial for their successful long-term deployment. Maintenance is critical to ensure their continued functionality and the upkeep of underlying data to prevent obsolescence. A user feedback loop is vital for continuous improvement. While application-based tools can incorporate active feedback systems, even static tools, such as spreadsheets, can benefit from iterative enhancements through proactive user engagement. These principles are especially important given that many tools of this kind originate as one-off projects or academic initiatives, often without long-term sustainability in mind. Therefore, ensuring that tools are developed with longevity, maintenance, and adaptability in mind is essential for their continued relevance and effectiveness.

It is also important to recognize that there is no universal solution. While the fundamental principles of CBA remain broadly similar across countries, political influences shape policies and regulations, leading to variations in how different jurisdictions incorporate non-economic factors into analytical frameworks. These differences may affect the valuation of environmental, social, and health-related benefits, as well as the weight assigned to qualitative considerations. Given these complexities, we propose the need for tools and present some broad criteria that can help integrate diverse forms of evidence, standardize the CBA process, and facilitate investment discussions, while recognizing differences in the regulations and frameworks that exist at national and subnational levels.

CONCLUSION

The integration of non-economic factors, such as climate, health, social, and ecosystem factors, into subnational investment decision-making frameworks vastly expands the information requirement of the investment analysis. To sufficiently incorporate the comprehensive benefits while adhering to the established methodologies of CBA is a barrier for cities that may have limited capacity to implement such complexity. Thus, it is essential to have tools that help encapsulate information and standardize processes, alleviating some of the burdens on municipalities when considering green infrastructure investment projects.

The absence of such tools to incorporate these factors can lead to systematic under-investment in sustainable green infrastructure by cities. Without the rec-

ognition of the full range of benefits that ecosystem services, climate adaptation, and public health contribute to urban resilience, decision makers risk prioritizing short-term economic gains over long-term sustainability and community well-being. Therefore, developing robust tools that facilitate the incorporation of diverse evidence and standardized evaluation processes is essential. This will empower stakeholders to make informed decisions that reflect the true value of sustainable investments.

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The Forest Ecosystems Living Lab Initiative

A Collaborative, International Network to Inform Forest Research and Management

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Opinion Piece

Keywords:

living lab, multinational collaboration, comparative research

ABSTRACT

Forests are critical for moderating climate change and preserving the planet's biodiversity. They are also indispensable to human health: they provide shelter and natural resources, filter our air, and regulate water cycles. It is essential to understand, at a global scale, the complex processes that unfold in forest ecosystems and human interaction with them. It is also important to develop – with a scientific and collaborative approach – actions to ensure their long-term persistence, working in close collaboration with the local communities.

Under this framework, the Association of Pacific Rim Universities (APRU) is developing an integrated approach to climate, biodiversity, education, and policy: the Forest Ecosystems Living Lab Initiative (FELLI). The first of its kind, FELLI is a network of university forests, which are operated by member universities of APRU in Canada, Ecuador, Japan, Malaysia, the Philippines, and Taiwan. The network aims to use cutting-edge research infrastructure in unique forest ecosystems across the Pacific Rim to measure carbon flux, monitor biodiversity,

and explore the interface of forests and human communities in real-time. The comparative data collection and analysis across diverse ecosystems will offer unparalleled insights into forest dynamics research, conservation, and management practices.

Students will have the opportunity to learn from a comparative perspective – the network will encourage the formation of multidisciplinary teams from diverse cultural traditions and promote experiential learning through immersive and interactive environments. In coordination with local communities and stakeholders, FELLI will also contribute to policies aiming to protect and restore forests and their biodiversity. This initiative is an integrated approach that combines world-class research and technology, education, community work, and policymaking, leading to significant social, health, economic, and environmental benefits.

BACKGROUND: THE NEXUS BETWEEN GLOBAL ISSUES AND THE ROLE OF FORESTS

Forests are essential to global ecosystems and societies, supporting environmental stability, economic prosperity, and social cohesion. Covering 31% of the land, they harbor 80% of terrestrial biodiversity, providing refuge for species and crucial ecological functions (FAO, 2020; Aerts & Honnay, 2011). They store 861 billion metric tons of carbon and absorb 1.1 billion metric tons annually, mitigating climate change (Pan et al., 2011). Forests also supply timber, fuelwood, food, and economic services for 1.6 billion people (UN DESA, 2021), while also improving air and water quality (Nowak et al., 2014; Neary et

al., 2009). Their ecological and socioeconomic benefits are indispensable.

Despite their importance, forests are under increasing pressure from environmental and human threats. Deforestation, which is primarily driven by agricultural expansion; urban development; and logging have led to a gross and net loss of 7.62 and 5.9 million hectares, respectively, between 2000 and 2010 (Achard et al., 2014). The Food and Agriculture Organization (FAO) estimates the net loss between 2010 and 2020 to be 4.7 million hectares (FAO, 2020). Beyond direct human-driven loss, forests are increasingly vulnerable to intensifying environmental stressors, such as wildfires, pests, and extreme weather events, due to climate change (Teshome et al., 2020).

These global issues demand global solutions, requiring coordinated efforts to reduce forest losses. However, to effectively implement protection and management measures, the global community must undertake coordinated research efforts, which integrate standardized data collection, policy engagement, and local stakeholder involvement (Foley et al., 2005). The Forest Ecosystems Living Labs Initiative (FELLI) is a proposed collaborative network of university research forests, which are operated by members of the Association of Pacific Rim Universities (APRU). The goal of FELLI is to develop these standardized comparative monitoring procedures to better understand how human–nature interactions, land use practices, biodiversity, carbon dynamics, and ecological processes are being impacted by global changes. It also aims to inform global solutions.

»Unlike conventional research settings, living labs use real-world scenarios, participatory methods, and iterative learning to develop effective solutions.«

WHAT IS A LIVING LAB AND HOW IS FELLI UNIQUE?

The living lab concept was first introduced by Bajgier et al. (1991). They found that students who are exposed to complex is-

sues with competing stakeholder values outside of a classroom setting are more prepared to apply their skills to real-world scenarios. William Mitchell of the Massachusetts Institute of Technology (MIT) popularized this approach to test emerging technologies and study social problems in natural, realistic settings rather than controlled laboratory environments (Lucchesi & Rutkowski, 2021). Unlike conventional research settings, living labs use real-world scenarios, participatory methods, and iterative learning to develop effective solutions.

FELLI seeks to expand the living lab concept further by including new domains. Unlike typical living labs, which are often localized or urban-focused, FELLI adopts a global approach, incorporating diverse ecosystems across the Pacific Rim. It is also the only forest living lab initiative that exclusively comprises university-operated research forests. The initiative currently

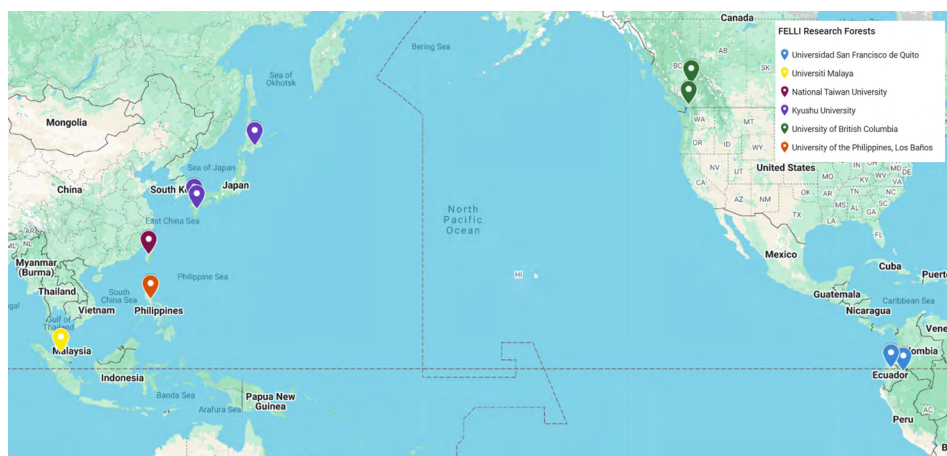


Figure 1: Locations of the research forests of FELLI. Pins of the same color represent research forests managed by the same university.

consists of six universities: Kyushu University (九州大学), National Taiwan University (國立臺灣大學), Universidad San Francisco de Quito, Universiti Malaya, University of the Philippines Los Baños, and the University of British Columbia (Figure 1). These universities contribute over 60,000 hectares of research forests, spanning from equatorial to sub-boreal ecosystems. These forests cover an expansive diversity of species and range from some of the most biodiverse habitats to the largest terrestrial biomes on Earth. The management approaches of these forests are also highly varied, from national parks to plantation and working forests, which are focused on timber harvest, silvicultural and management research, and education. These features offer FELLI the opportunity

to leverage its academic expertise, global network, and expansive diversity of ecosystems to investigate socio-ecological systems, climate, biodiversity, and management challenges at an unprecedented scope (Figure 2).

FELLI: AN INNOVATIVE APPROACH TO ADDRESSING GLOBAL CHALLENGES THROUGH FOREST ECOSYSTEM MONITORING AND MANAGEMENT

A Framework for Multinational Continuous Carbon Monitoring

Despite extensive research on forest carbon storage, uptake, and regulation, significant limitations and uncertainties exist in these estimates. This is primarily driven by methodological inconsistencies, geo-

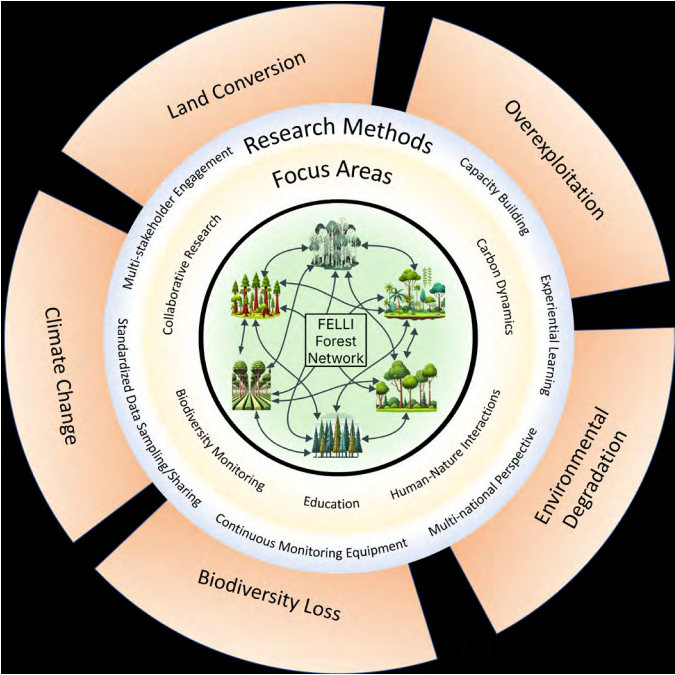


Figure 2: The FELLI Framework to understand global impacts on forest ecosystems through a collaborative network of diverse university research forests.

graphic variability, and regional data limitations (Mo et al., 2023). Some of the identified limitations include a lack of sufficient measurement data for soil carbon flux and storage; the absence of long-term field measurements and regrowth data in Asia; error accumulation in allometric equation inconsistencies; and reduced forecasting confidence due to the impacts of human land use and climate change (Pan et al., 2011; Vorster et al., 2020). These limitations demand the expansion, improved coordination, and implementation of long-term monitoring efforts across diverse ecological and management regimes to generate comprehensive research that can inform decision making (Malhi et al., 2014). FELLI will directly address these priorities by establishing a standard for consistent, long-term data gathering across its network of research forests.

To address the inconsistencies in carbon monitoring, FELLI will establish site-level monitoring systems to capture local variations in elevation, precipitation, soil type, land use, and other environmental variables to better inform regional estimates of carbon dynamics and fluxes. It will also implement real-time carbon monitoring technologies, including soil and vegetation carbon flux measurement systems, such as atmospheric sampling towers, automated soil flux measurement systems, and light detection and ranging (LiDAR) mapping, alongside long-term field measurement plots. These data will be recorded and published in real-time on an open-access platform to allow the global research community to access these data.

By targeting the specific data gaps and standardizing methodologies across

its network, FELLI will address the methodological and geographic disparities that currently limit carbon monitoring. These insights will strengthen the reliability of forest carbon assessments and equip policymakers and scientists with robust and scalable data to forecast ecosystem responses and inform the design of adaptive management strategies.

A Framework for Biodiversity Monitoring

Modern global biodiversity decline is attributed to land use changes, habitat fragmentation, pollution, and the introduction of invasive species (Jaureguiberry et al., 2022). The total land area estimated to be biotically compromised (a 10% loss of total species abundance or a 20% loss of species) ranges from 21.8% to 75% (Newbold et al., 2016). Despite these estimates, our understanding of how biodiversity responds to disturbances such as climate change and deforestation is limited by incomplete species data and inconsistent monitoring. While forest area assessments have improved, the lack of detailed and uniform ecological data hampers a full understanding of forest ecosystem biodiversity dynamics under mounting global pressures (FAO, 2020). FELLI will directly address these shortcomings by implementing advanced biodiversity monitoring protocols across its research forest network.

The initiative aims to implement standardized technological monitoring systems using continuous sampling methods, such as acoustic monitoring, camera traps, and environmental DNA (eDNA) sampling to assess biodiversity and its function. These methods enable rapid identification, population tracking, and

the holistic assessment of the ecological roles of key study species (Deiner et al., 2017). Standardized monitoring will clarify how global factors such as climate change differ in importance across latitudes and ecosystems, while comparisons of human impacts, such as land use, urban proximity, and disturbances, will pinpoint where specific activities have greater effects and identify shared management practices that advance conservation priorities across regions.

Comparing the FELLI research forest ecosystems and their human uses will help identify global patterns of biodiversity loss and carbon dynamics; help identify their varied impact across environmental, social, and geographic gradients; and isolate region-specific responses to climate change and management. Through standardized monitoring and an open-access data platform, it will enhance research into shifting carbon dynamics and drivers of biodiversity loss, helping create global solutions to mitigate these critical challenges.

FELLI's Role in Advancing International Collaboration and Education

Concurrent with the research objective of FELLI and in alignment with the core mission of APRU universities, is the training of the next generation of scientists, conservationists, policymakers, and educators. Through participation in field programs organized by FELLI affiliates, students will gain practical experience in forest management, research, and stakeholder engagement. They will also have the unique opportunity to directly experience differences in human–nature relationships, management strategies, and the

»This is how global solutions emerge, through initiatives that build global collaborations to leverage our differences and drive change.«

various limitations imposed on research and management efforts in a culturally diverse coalition of universities. Furthermore, through FELLI's investment in advanced climate and biodiversity monitoring systems, students will be exposed to the cutting edge of technologically informed research in climate modeling, carbon accounting, data sharing practices, and collaborative approaches to research. These field courses will also prioritize local community engagement, allowing students to collaborate with local and indigenous stakeholders to develop a shared vision for land management solutions, which is scientifically and culturally informed.

FELLI will further enhance international research by fostering multilateral collaboration. Researchers from its six member institutions will be able to collaborate more effectively with standardized procedures. The initiative also encourages partnerships with regional and global research institutions and multistakeholder networks through its open-source, real-time data collection and reporting platform. Internally, FELLI will help build

monitoring and research capacities across its network through joint funding, research grants, and cost sharing to enhance infrastructure and build systems to expedite cross-border studies.

CONCLUSION: ADDRESSING FOREST RESEARCH AND MANAGEMENT AT A GLOBAL SCALE

As forests undergo escalating threats from environmental change and human pressures, their role in regulating the climate, sustaining global biodiversity, and supporting human well-being remains paramount. The degradation of forests requires institutions to generate a high-resolution, region-specific understanding of how global influences and local management impact forest ecosystems. FELLI is an approach to forest conservation and management that emphasizes transnational collaboration, standardized research methodologies, and knowledge sharing to enhance global forest conservation, management, and research efforts. By uniting research forests across six countries – with a gradient of management strategies, ecosystem types, and climate variability into a living lab – FELLI will highlight universal patterns of biodiversity loss and forest carbon dynamics, while isolating region-specific responses to climate change and human land use strategies. This is how global solutions emerge, through initiatives that build global collaborations to leverage our differences and drive change.

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Aligning Trade and Climate Policies

A Path for Sustainable Agricultural Policies and Global Cooperation

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Policy Brief

Keywords:

agriculture, sustainability, trade, climate change, green protectionism

The agro-industrial sector plays a crucial role globally in reducing poverty, promoting food security and fostering growth. According to a report by the Food and Agriculture Organization (FAO 2023), hunger affected approximately 9.2% of the global population (about 735 million people) in 2022, and 2.4 billion faced moderate or severe food insecurity.

Additionally, the agro-industrial sector generates significant economic activity, contributing significantly to socio-economic development in underdeveloped countries. According to the World Bank, agricultural systems are the main source of food and income for most of the world's poor and food-insecure people, around 80% of whom live in rural areas and work

mainly in farming. Furthermore, agriculture represents 4% of the global GDP, and it can account for more than 25% of the GDP in some developing countries.

However, multiple disruptions threaten global food security and the resilience of agricultural systems, ranging from extreme weather occurrences such as floods and wildfires to pest outbreaks. According to the Global Report on Food Crises (ORIG 2023), in YEAR extreme weather was the primary driver of acute food insecurity in 12 countries around the world. For the 1991–2021 period, FAO estimates an average annual loss of USD 123 billion in agricultural production due to these disasters. This value is equivalent to 5% of global agricultural GDP and reaches 15%

of agricultural GDP in low- and lower-middle-income countries.

At the same time, agricultural systems have a significant environmental impact that increases the effects of climate change and promotes land degradation when inadequate practices are implemented. Agriculture is responsible for around one-quarter of the world's greenhouse gas emissions (OECD & FAO, 2024). These emissions arise from livestock farming, grain cultivation, and the conversion of forests, grasslands and other lands to agriculture. According to Climate Watch Data, in 2018 Brazil, Indonesia, India, and the Democratic Republic of the Congo contributed 40% of agricultural emissions.

Furthermore, approximately 80% of global deforestation is driven by agriculture (Branthomme et al., 2023), while Brazil and Indonesia account for almost half of tropical deforestation. The expansion of pasture for beef production, croplands for soy and palm oil, and conversion of primary forests to tree plantations for paper and pulp have been the key drivers of deforestation (Ritchie 2021). According to the UN Convention to Combat Desertification (UNCCD, 2022), agriculture occupies more than 40% of the global land area, while 20% of the global land area is degraded.

In recent years, due to the need to hasten the fight against climate change, the idea of using trade policy as an instrument to reduce emissions has spread (Stiglitz, Tucker & Estevez, 2022). This approach could be considered a form of "green protectionism," which uses environmental and trade policy instruments to address environmental concerns. These instruments include market access requirements, such as technical measures and

»In recent years, due to the need to hasten the fight against climate change, the idea of using trade policy as an instrument to reduce emissions has spread.«

information disclosure obligations, as well as domestic subsidies for production and innovation. Additional instruments, such as differential tariffs and border adjustments based on production processes and methods, are still under discussion (Lottici, Galperin, & Hoppstock, 2014).

In this context, some industrialized countries, and especially the EU, have put forward unilateral initiatives such as the Carbon Border Adjustment Mechanism (CBAM) and the EU Deforestation Regulation (EUDR), which aim to encourage countries exporting products to the EU to raise their environmental production standards (Benson et al., 2022). The EUDR requires producers of commodities such as cattle, wood, cocoa, soy, palm oil, coffee, rubber and some of their derived products to demonstrate that their products do not come from recently deforested land or contribute to forest degradation when placed on the EU market or exported from it. Under the Carbon Border Adjustment Mechanism (CBAM), importers registered within the EU who import certain goods

»By imposing additional costs on imports, green regulations could negatively affect the competitiveness of food producers in developing countries, especially small-scale producers.«

originating from third-world countries will be required to acquire certificates equivalent to the carbon price that would have been paid if the same goods had been produced within the EU. Initially, the mechanism will apply to direct emissions and cover six emission-intensive sectors: Cement, hydrogen, steel, iron, aluminum, fertilizers and electricity. Although the EU maintains that the CBAM is compatible with WTO rules (it is non-discriminatory and has a justification in terms of leveling the playing field), the countries concerned have argued that it is a protectionist measure.

For its part, the United States has maintained a protectionist stance since the first Trump administration, a trend that has only been amplified during the second Trump administration. The Inflation Reduction Act (IRA) of 2022 introduced subsidies aimed at promoting clean ener-

gy and climate initiatives. However, these subsidies have faced international scrutiny for potentially violating WTO rules. In March 2024, China requested WTO consultations regarding certain tax credits under the IRA, alleging they contravene WTO principles (World Trade Organization, 2025). Similarly, the European Union has expressed concerns that the IRA's provisions may breach core WTO principles, particularly those related to national treatment and most-favored-nation status (European Commission, 2025).

By imposing additional costs on imports, green regulations could negatively affect the competitiveness of food producers in developing countries, especially small-scale producers. These producers often face significant challenges, such as limited access to finance and low-emission technologies, as well as insufficient capacity to comply with administrative requirements and implement production tracking and tracing technologies (Lim et al., 2021; Lottici, Galperin, & Hoppstock, 2014; van Noordwijk, Leimona, & Minang, 2025).

It is estimated that between 3% and 35% of exports in LAC and Africa are exposed to these regulations (Arenas & Echandi, 2023). The economies of major palm oil-producing countries in Asia, such as Indonesia and Malaysia, the agribusiness industries of countries such as Brazil and Argentina, and EU-bound cocoa exports from countries such as Côte d'Ivoire and Ghana are also likely to be affected (S&P Global Market Intelligence, 2023). Moreover, this situation could worsen in the medium term since it's likely that these regulations will expand to other countries, products and ecosystems, such as savannahs and wetlands.

Concurrently, there has been insufficient progress in fulfilling the agricultural financing commitments for emerging and developing countries as outlined in the Paris Agreement. Article 2.1(c) of the Paris Agreement emphasizes the need to make financial flows consistent with pathways toward low greenhouse gas emissions and climate-resilient development (Wright, 2021). Despite this agreement, the allocation of adequate financial resources to support sustainable agricultural practices in these nations remains insufficient. While USD 700 billion is paid out in agricultural subsidies each year, only around 15% of this amount positively impacts natural capital, biodiversity, long-term job stability or livelihoods (UNCCD, 2022).

These unilateral regulatory measures, combined with a lack of substantial financial support for sustainable agriculture in developing countries, underscore the necessity for a coordinated and multilateral approach. A sound analysis of agricultural subsidies and the allocation of promised financial resources is needed. Collaboration is essential to harmonize climate and trade policies effectively, ensuring that environmental objectives are met without compromising the development needs of emerging economies.

In this context, the G20 countries, in collaboration with key organizations such as the FAO, IPCC, IPBES, WTO and development banks, have the unique opportunity to lead by creating a global policy framework to support the transition to sustainable production models.

First, it is crucial to reinvigorate dialogue and international cooperation. Efforts should focus on harmonizing regulatory frameworks in order to avoid

unilateral actions by powerful states that could undermine trust, increase the probability of conflict, negatively impact the economies of developing countries and delay the global fight against climate change.

The G20 can play a key role in convening dialogues that bring together developed and developing nations to establish common ground on environmental trade policies. Additionally, the formation of a dedicated working group within the WTO to assess the impact of climate-related trade measures on developing economies could provide a structured approach to mitigate unintended negative effects. This initiative should include capacity-building programs to support developing nations in complying with emerging regulatory requirements while ensuring their economic growth is not jeopardized.

Second, allocating agricultural subsidies and financial support for sustainable agriculture in developing countries is key for promoting better green practices while ensuring food security, conservation and resilience to climate change. It is essential to allocate limited resources more strategically while aligning with international commitments.

Developed countries and multilateral institutions should prioritize financing mechanisms that incentivize sustainable practices rather than reinforcing conventional, high-emission agricultural models. One approach could be a global reallocation of existing agricultural subsidies toward sustainability-linked incentives, ensuring that a greater portion of the annually spent in agricultural support is directed towards biodiversity conservation, carbon sequestration and climate-resilient farming techniques. Furthermore, devel-

oping nations should be equipped with better access to green financing, facilitated through multilateral development banks, to ensure the adoption of climate-smart agricultural technologies. Additionally, cooperation and capacity-building investment in research institutions in developing countries can provide a better basis for local sustainable technology development and adoption.

Third, while public policies and international cooperation should lead the way in addressing food security and climate change, market-based instruments can their efforts. Carbon market investments should prioritize high-quality nature-based solutions and sustainable agriculture projects that meet the highest standards. Additionally, traceability and emissions measurement systems need to be improved, taking into account scientific evidence on soil carbon stocks, as well as the fluxes and dynamics of productive systems.

Carbon markets should be expanded to include smallholder farmers and agribusinesses in developing nations, enabling

»Allocating agricultural subsidies and financial support for sustainable agriculture in developing countries is key for promoting better green practices.«

them to benefit from carbon credit revenues. However, to ensure equitable participation, international organizations can provide technical assistance and financial support to help farmers meet certification requirements. Concurrently, investment in digital traceability solutions and block-chain-based monitoring systems should be encouraged to enhance transparency and compliance with carbon trading standards. These technological advancements will be critical in ensuring that emission reduction claims are verifiable and in aligning trade policies with climate objectives.

Finally, it is essential to ensure that climate-related trade measures are compatible with the WTO framework and align with existing trade rules to support both environmental and economic objectives.

Strengthening WTO processes to enhance dialogue and cooperation on climate-related trade policies could be an effective approach. A dedicated WTO forum on trade and sustainability would facilitate discussions among members, ensuring that trade measures related to climate action are transparent, non-discriminatory, balanced, and aligned with national regulations and policies. Additionally, the WTO could play a role in fostering capacity-building initiatives that support developing nations in meeting sustainability requirements without compromising their economic growth.

While the agricultural sector is currently responsible for a significant share of global emissions and land degradation, it is also the key to ensuring food security and promoting the development of food-producing developing countries. In the short term, there is a trade-off between global sustainability and develop-

ment. This trade-off can be softened by increasing financial resources to food-producing countries and investing them to develop and adopt technology for more efficient and sustainable production processes. Investment might be supported by multilateral development banks and involve the direct transfers of fund and technology from advanced countries.

This approach would create a win-win situation that supports development while speeding up the transition away from carbon-intensive agriculture practices. The benefit would be global. But for this to be possible, two things are necessary: Any action in which trade policy is used for climate objectives must be coordinated within the WTO and we must ensure that funds reach the countries that need them to accelerate the transition to better agricultural practices.

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Policy Recommendations for an Innovative Energy Transition

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Policy Brief

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energy, transition, decarbonization

INTRODUCTION

Climate change is a global challenge that can only be solved by global cooperation. The green transformation of energy production – a crucial step to reduce CO₂ emissions – must be initiated globally. The G20 and G7 groups play a key role in this process, bringing together nations representing diverse political groups and levels of economic development.

This paper addresses critical aspects of shaping a green energy transition while maintaining three key energy policy goals: Economic efficiency, security of supply and environmental protection. The transformation of the energy supply will create new value chains and an increased need for international cooperation. Cross-border cooperation is not only necessary within Europe, but globally. The transition will create market opportunities for coun-

tries in the global south, for instance, in the production of hydrogen.

There are three dimensions necessary for a successful transformation:

- Energy markets and new (global) value chains
- Energy Infrastructures
- Fair competitive conditions

The key to success lies in aligning our collective focus on the principles of decarbonization, competitiveness, security of supply and sustainability. It is crucial that society buys into the concepts and supports the implementation.

There are no simple solutions for the complex challenges of maintaining this balance, especially given the interdependencies of any action in an increasingly volatile world. A systemic and comprehensive approach is needed. Carbon pricing,

therefore, must be a guiding principle of any measure and implementation needs to align with the above focus areas, with the possibility of adapting these where framework conditions have significantly changed.

Courage and an entrepreneurial spirit are required to advance the agenda of an innovation-driven ecological transformation. This calls for an end to micromanagement and bureaucracy and a strong focus on principle-based outcomes rather than minutely detailed rules-based regulation.

Improved coordination of energy markets at the G20 level is necessary to effectively combine and leverage the strengths of regional markets, their purchase and investment powers, and their human capital and natural resources.

More Exchange on Energy Markets

Improvement of energy market design is crucial for a successful transition that combines competitiveness, decarbonization and security of supply. We recommend focusing on the implementation of two general market segments: Hydrogen markets and general capacity markets.

THE IMPLEMENTATION OF A UNILATERAL HYDROGEN STRATEGY

Ensuring a secure and constant energy supply that is independent from volatility, requires a suitable hydrogen strategy as its cornerstone. Transition in the energy market, therefore, requires increasing the share of hydrogen in the energy mix. We have identified three frameworks that should first be advanced on a unilateral level in the EU, thus setting an established example for similar efforts via the G7 and the G20.

1. **Establishing a unified regulatory framework:** A harmonized regulatory framework is essential to ensure consistent standards of full-cycle performance. Aligning regulations across regions will enhance transparency, facilitate international cooperation and support the development of a sustainable global hydrogen market.
2. **Establishing an effective investment framework** that incentivizes the development of production facilities and transport facilities, which are crucial to securing energy supply. Public-private partnerships play a vital role in this context, offering significant benefits for implementation. The set-up process should be initiated and supervised by international organizations such as the EU, the G7 or the G20. The G20, in particular, is an ideal platform, as it enables the integration of countries of the Global South into a global hydrogen strategy. Through the development of facilities and hydrogen export hub, countries of the Global South will play a key role in the energy transition. A well-structured investment framework would allow developed countries to tap into emerging market opportunities in the Global South, creating a mutually beneficial scenario that fosters market growth while simultaneously reducing CO₂ emissions.
3. **Developing an integrated market framework:** An integrated market framework must encompass both existing and planned transportation capacities to support the growth of the global hydrogen economy. Setting up export routes will enable developing countries to actively participate in

and benefit from the expansion of the hydrogen market. A market framework coordinated within the G20 states offers significant potential for all stakeholders, including the hydrogen-producing countries and the importing industrial countries. The G20 should help to organize transportation capacities in order to create a global market. The trade framework includes all types of carbon-friendly hydrogen, regardless of whether it is produced on a blue, red, yellow or green basis. Taking this inclusive approach accelerates the creation of a shared market, making it easier to introduce necessary distinctions in hydrogen production once a functional shared market structure is already in place.

Several countries in the Global South have recently introduced, or are discussing, national programs to promote national or industrial hydrogen strategies. These include Argentina in 2024 [Chorculak, 2023], Brazil in 2023 [Demirkol, 2024] and Mexico in 2024 [Fuel Cells Works, 2024]. Their goal is to grow their position as exporters of hydrogen to North America or Europe. These existing initiatives point the way forward and help the G20 to prioritize this topic in its agenda.

The Formation of General Capacity Markets

While some countries have successfully established general capacity markets (e.g., Belgium, Italy, Poland and the United Kingdom), others continue to operate under an energy-only market model. This approach incentivizes minimizing energy production to match expected demand but

struggles with consumption peaks, leading to difficulties in covering the costs of ramping up power plants. The increasing share of renewable energy sources further exacerbates market imbalances, making stability a growing challenge. The establishment of a capacity market system is a crucial step to ensure long-term market stability. A well-designed capacity market can help mitigate the volatility of demand at the national level, ensuring a more reliable energy supply. This effect is even more beneficial when international groups of states, like the G7, the EU, or other trade areas such as the NAFTA, adopt a coordinated market framework that facilitates cross-border energy exchange.

We focus on the EU as a model for the successful implementation of a capacity market. An EU capacity market design should incorporate the following features:

- **Streamlining Administrative Processes** – Simplifying EU administrative procedures to reduce barriers and encourage investment in national capacity markets.
- **Enhancing Trade Coordination** – Improving the alignment of EU trade mechanisms across member states to ensure the efficient use of existing capacities.
- **Establishing a Pan-European framework** – Creating a unified framework to incentivize security of supply, replacing the current patchwork of national regulations.

Learnings gained from successfully developing a European capacity market can serve as a blueprint for the G20, encouraging the global adoption of similar market structures.

ENERGY NETWORK EXPANSION PROJECTS

To fully unlock the potential of power production, energy supply infrastructure must be enhanced to prevent bottlenecks. This will require simplifying administrative processes for energy grids. In the EU, the definition of ambitious time targets for both grid expansion and maintenance is critical. It is essential that regulation ensures that necessary investments in the energy networks generate a sufficient return and yield in the competition for capital.

The following steps outline how responsibilities should be distributed evenly among EU member states.

1. **Establishing a European base load and load profile** – EU member states must define and maintain a reliable base load/capacity at key grid connection points, ensuring stable and continuous energy supply when needed.
2. **Prioritizing infrastructure expansion as a public interest** – classifying all grid expansion projects as a public interest to ensure strong political support at all administrative levels.
3. **Accelerating permit procedures** – Introducing fast-track approval processes for infrastructure expansion projects, with a maximum review period of six months upon document submission. Limit appeal deadlines to the first instance and implement uniform EU-wide approval procedures based on common EU standards to expedite progress.

Grid expansion is essential for balancing internal volatility caused by the increasing share of renewable energy sources. Additionally, a more integrated grid enhances cross-border electricity trade.

In addition, an expanded grid system increases the ability to trade with neighboring countries. Some G20 states already have established significant trade volumes for electricity, e.g., Mexico exported 4.6 terawatt-hours of electricity to the USA in 2023 (EIA, 2025). A general G20 concept to promote grid expansion within member and non-member states is crucial for supply stability.

Energy Industrial Policy: The Enabler for a Successful Energy Transition

Efficient energy market policies and energy infrastructure improvements must be accompanied by industrial policy design. To promote effective policy reforms, we recommend the following three steps:

1. **Support Energy Investments Through Tax Incentives:** Creating a favorable investment climate requires updating the Taxation Directive to align with climate goals and provide incentives for low-carbon technologies. Significant external investments are necessary to meet the 2030 climate and energy targets. A coordinated global tax incentive framework within the G20 would offer two key benefits: Ensuring an equitable distribution and fair market development on the local level. Market distortions by competition regarding taxation schemes would be avoided.
2. **Enhancing Investments into Emerging Technologies and Innovation:** Targeting research funding towards high-potential projects in key growth sectors and regions is crucial. Likewise, we need to reduce administrative burdens and taxes for start-ups and match private investments with public investment. An initiative at the G20 level can further

leverage the potential of international cooperation – for example, by prioritizing R&D efforts in industrialized countries while establishing renewable energy testing facilities in the Global South.

- 3. Implementing Strategic Subsidies for Green Energy Products:** Increasing targeted subsidies for emerging technologies will drive domestic production and innovation. While subsidies are typically managed at the national level, the G20 plays a critical role in ensuring they do not lead to market distortions. A coordinated approach can help smaller countries have fair access to global markets, fostering the growth of young industries in a sustainable and competitive manner.

CONCLUSION

Successfully implementing a green energy transition requires strong international cooperation and well-coordinated global market strategies. We have identified three key areas where international coordination processes can unlock the potential of global cooperation.

Our key conclusions are:

- The global development of a coordinated hydrogen market has the potential to promote economic growth in the Global South, meet the energy demands of industrial nations and reduce global carbon emissions
- Establishing capacity markets and expanding grid infrastructure is necessary to enhance energy security and facilitate cross-border trade
- A global coordination of energy industrial policies opens the door to a suc-

cessful energy transition that leverages the benefits of local market growth while avoiding distortions

We believe that the G20 group is the best platform for shaping and implementing these policies, as it includes key economies with diverse political backgrounds.

Therefore, we call for a G20-level energy transition framework that builds on the lessons learned from the EU, ensuring a truly global and inclusive transformation.

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The International Monetary Fund at Eighty

What Next?

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Policy Brief

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international monetary fund, global financial governance, Bretton Woods

The International Monetary Fund (IMF) was established in 1945, eighty years ago. The events that led to its creation – the Great Depression of the 1930s and World War II – have faded into distant memory and exert only the faintest influence on today’s global economy. And yet, the IMF not only persists, it remains what US President Ronald Reagan called it four decades ago: “the linchpin of the international financial system.” This achievement was not inevitable, and neither is its continuation.

What should happen now to enable the IMF to play an active and positive role in the coming years?

When the newly appointed governors of the IMF and the World Bank gathered for their inaugural meeting in 1946, John Maynard Keynes famously dubbed the two institutions the “Bretton Woods twins”, after the New Hampshire location of the conference where they were conceived. In truth, however, the IMF was secondary to the World Bank. It was smaller, it was not

expected to have a major role in the short-term recovery from the war, and it was secondary to the World Bank in financial strength. The US government decided that the World Bank would have to be headed by an American to be effective, and it left the selection of a Managing Director for the IMF to the rest of the membership. It was an inauspicious beginning.

For the first 25 years or so, the IMF oversaw the restoration of multilateral finance among its growing membership, and it experienced bouts when there were substantial demands for its loans. Its central role of supporting a system of fixed exchange rates ended in 1973, but it carried on with a renewed vigor to restore financial stability and help developing countries cope. What ultimately turned the IMF into a “linchpin” was the onset of a debt crisis in Latin America in 1982. The IMF responded decisively, and it quickly became the default manager of international financial crises. That role has grown and flourished ever since.

Effective crisis management required the IMF to become more deeply involved in policymaking, both in emerging market countries struggling to cope with the demands of global finance and in low-income countries burdened with unpayable debts. In the 1990s, the collapse of the Soviet Union brought a large wave of new members into the Fund and embedded the institution even more deeply in a wide range of domestic policy issues. These developments stretched the IMF's resources, both financial and human, and raised multiple controversies about its role. Was it staying within its mandate and its expertise? Was it acting effectively to solve problems? Was it improving or undermining national policymaking? By the millennium, the IMF was in an existential crisis.

For the past two decades, the IMF has addressed these problems by refining its interactions with its member countries. It adopted new guidelines for staff to follow in both its surveillance and its lending programs. These guidelines aimed to focus the Fund's policy prescriptions and advice more parsimoniously and more directly on the most critical issues. They also aimed to create an atmosphere of cooperation between the staff and country officials and avoid treating loan applicants as supplicants. At the same time, however, the Fund continued to take on new responsibilities, especially in its surveillance activities. This mixed record of streamlining within policy areas and expanding into newly relevant areas contributed to a reduced intensity of criticism from civil society organizations.

Also contributing to this decline in criticism was a sharp drop in demand for IMF loans in the early years of this century. Most emerging markets experienced

»The IMF not only persists, it remains what US President Ronald Reagan called it four decades ago: “the linchpin of the international financial system.”«

several years of benign economic conditions and had no need to turn to the IMF for crisis management. Looking forward at the time, it appeared that newly developed regional entities would be able to handle most financing problems without reliance on the IMF. In response, the IMF embarked on a cost-cutting drive: it reduced its staff by approximately 500 personnel and adopted a new business model, which was less reliant on lending income, to cover its administrative budget.

This lending lull turned out to be short-lived. The onset of the global financial crisis in 2008 quickly overwhelmed regional institutions, including those of the EU. To combat crises in Greece and several other European countries, the EU invited the IMF to join the European Commission and the European Central Bank in a “troika” arrangement. Suddenly, the IMF was back as a major creditor and a manager of international crises.

These developments have restored the IMF's linchpin role, but the future of global finance remains highly uncertain.

»By the millennium, the IMF was in an existential crisis.«

The fragmentation of trade is just the most visible consequence of ruptures in global governance. The IMF, though universal, is tasked with taking sides in an effort to promote and preserve the rules-based system of which it is the linchpin. It is not clear whether this tension can be resolved so that the IMF's role can be sustained.

The most pervasive remaining criticism of the IMF concerns its governance. The agency was created in 1944 through the leadership of the two leading economies of the time: the US, which was the dominant rising power, and the UK, which had long been the center of global finance, but whose influence was by then rapidly fading. IMF lending was initially entirely in the form of US dollars, and, for three decades, the UK was the Fund's biggest borrower. The US rightly insisted on having the largest voting power and a veto over major financial decisions. Although the UK's role was mainly for historical reasons, it was awarded the second largest voting share, albeit much smaller than the US's share.

However, voting shares have evolved greatly over the 80 years since the original formulation. The IMF has held sixteen general quota reviews, many of which have shifted voting shares. Despite the natural reluctance of the old and fading powers to accept reductions in their influence, the Fund has taken incremental steps to increase voting shares for countries with the most rapidly growing economies. China ,

which had the third largest voting share in 1946, at 7% of the total, had only the eighth largest share when the People's Republic assumed China's seat in 1980. Today, it has the second largest share, with 6% of the total. The US is still the leading power in the world financial system, and its voting share reflects that. Its share is half of what it was at the outset, but it is still the only single country with a veto over major decisions. The EU also has a collective veto. Its 27 members have a total voting share half again as large as that of the US.

The fundamental governance issue is the conflict between financial considerations for effective control and oversight and the political or moral considerations for fairness and democracy. The IMF is a financial institution with assets that are contributed voluntarily by countries. It makes loans to member countries that choose to submit themselves to its conditions. Those facts necessitate a voting structure that is controlled primarily by creditor countries, but in which every member has a share commensurate with its role in the world economy. Any other system would undermine the institution, but finding the right balance between the interests of creditors and debtors is a delicate and continuing political process.

The other prominent governance issue for the IMF is the selection of its leadership team, especially the Managing Director, who has always been from Europe. Non-Europeans have occasionally tried to break the pattern, without success. Although European leadership has been mostly successful, it has led to problems. It is hard to avoid the impression that the post of Managing Director is awarded based on patronage rather than mer-

itocracy. When the IMF was called upon in 2009 to help manage financial crises across much of Europe, a widespread perception arose that Europe was being treated much more favorably than developing countries, simply because Europe was running the IMF.

The current system appears to have an open process for selecting the Managing Director, but the structure of the IMF makes it very difficult to break the habit as the EU and the US together control 42% of the voting power. If they agree on a candidate and include just a few close allies, no opposing candidacy can be viable. No matter how effective individual Managing Directors are, it is indefensible to argue that one bloc of countries should continually oversee the work of an institution with such a deep and broad influence over the global financial system. Realistically, however, the only way forward will be for political leaders in Europe to agree to stand aside.

While the IMF and its major creditors are implementing reforms to further strengthen the Fund's contribution to financial stability and prosperity, the institution can only do so much within the current system of global governance. An effort to obtain more fundamental improvements must start with a recognition of the broader systemic weaknesses. As is widely acknowledged, the UN Security Council is barely functional and needs to be restructured. At the next level down, the UN Economic and Social Committee (ECOSOC), the International Monetary and Financial Committee (IMFC), and the Development Committee are all bound by a formal rigidity, which limits their effectiveness. All of the IMF's partner institutions – such as, the World Bank, regional

development banks, the World Trade Organization, the Bank for International Settlements, and the Financial Stability Board – carry out their own mandates within their own silos. The connections that could bind these agencies together into a coherent system are virtually nonexistent.

The success of the Bretton Woods conference in the middle of World War II provided valuable lessons on how to move forward in the middle of current divisions.

As the Bretton Woods conference was being planned, the world was split into three blocs: the Grand Alliance, the Axis, and neutral nations. The Bretton Woods conference was essentially a gathering of the Grand Alliance. Its long-term goal was to establish a system of international trade and finance that would encompass as many of the world's countries as possible. At that time, however, universality was no more than an aspiration. Membership in the IMF and World Bank was limited to the 44 countries that had been invited to the conference, but the charters specified that all other countries could join whenever they were ready to accept the terms of the agreements. By the mid-1990s, half a century after its founding, the IMF had become a universal institution, with only a small number of countries (Cuba, North Korea, and a handful of small states) remaining outside.

At present, something close to a global three-way split has returned. Russia, China, and several smaller countries dispute the value of the Western-led system, with its rules that were designed by a coalition led by the US and Western Europe during and after World War II. The EU, Japan, South Korea, Australia, New Zealand, a number of smaller countries, and (until

recently) the US support and defend the rules-based system. Much of the Global South struggles to cooperate with both of these blocs. Reconciling these diverse views and interests to reestablish an effective global system of trade and finance is not realistic at this time.

The first lesson from Bretton Woods is that the only way to progress from a dysfunctional system towards the restoration of global cooperation is for a group of large allied countries to take the lead. Reform from within can only be partial and incremental because it is never in the interests of declining powers to cede control. In 1944, the effort succeeded because the old system based on monetary gold had been destroyed by the First World War, and the League of Nations and various ad hoc assemblies had failed to rebuild it. With no effective system of governance left, the allies had no choice but to start again. The current task is no less urgent, but it is even more challenging. The UN-led structure is in place and resistant to change, but it lacks coherence and is much less effective than it needs to be.

A second lesson is that successful reform requires a clear goal and a clear

path toward it. The goal today is simple: to restore global cooperation within a rules-based system, in which all countries have the opportunity to participate, commensurate to their status in the modern world economy. As António Guterres, the Secretary General of the UN, alarmingly stated at the 2024 summit meeting of the General Assembly: “We are here to bring multilateralism back from the brink.” The challenge, then, is how to devise a strategy to overcome the current state of distrust and autarky.

The prevailing strategy at the moment is to try to reform and update existing institutions from within so that the 80-year-old system can be preserved and made more effective. In 2024, the UN General Assembly responded to Guterres’ call by adopting the document *UN Pact for the Future*. The pact commits its supporters to make the UN system both more democratic and more effective through reforms to the Security Council, ECOSOC, and other agencies. As for the IMF, it welcomes the ongoing efforts to strengthen the governance role of developing countries. The underpinning assumption, though, is that the existing architecture is appropriate and only needs to be tweaked.

A more fundamental restructuring of global financial governance appears unrealistic as long as the entrenched interests of major countries prevail, but the limited range of reforms currently underway seems to have little prospect of restoring global cooperation or of bringing “multilateralism back from the brink.” At Bretton Woods, a handful of committed officials from a small number of countries were able to create a new and largely successful system because the old regimes had

»It is hard to avoid the impression that the post of Managing Director is awarded based on patronage rather than meritocracy.«

already collapsed. If globalism is to have a future *without* an intervening collapse of the magnitude of the Great Depression and World War II, the overarching lesson from Bretton Woods is that a new generation of responsible leaders will have to emerge with bold and practical plans.

Think Global, Fund Global

Moving Towards a Healthier Future by Reshaping Global Health Financing

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Opinion piece

Keywords:

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INTRODUCTION

In June 2025, world leaders will gather in Spain for the fourth International Conference on Financing for Development. The desired outcome is nothing less than securing adequate financing for the Sustainable Development Goals (SDGs) and restructuring the financing framework for development aid. This objective presents a formidable challenge, given the US\$4 trillion SDG financing gap, political disruptions, economic challenges, and imminent threats such as the climate crisis, future pandemics, and ongoing conflicts. In fact, official development aid has dropped continuously over the last decade, counteracting the Addis Ababa Action Agenda, which was the outcome of the third International Conference on

Financing for Development, held in Addis Ababa, Ethiopia, in 2015.

A rather tense political climate will loom over this year's conference, threatening its success. As one of the first executive orders signed after Donald Trump's inauguration, the White House announced the withdrawal of the US from the World Health Organization (WHO). The US Department of State went on to pause foreign aid programs, with the US government shutting down the United States Agency for International Development (USAID). It also declared its withdrawal from the Paris Climate Agreement. Together with mass layoffs, budget cuts, and undermining the independence of the National Institute of Health (NIH) and the Center for Disease Control and Prevention (CDC), these de-

cisions do not only mark an attack on science and healthcare, but they ultimately represent the rejection of multilateralism and international cooperation based on humanitarian principles. The American withdrawal from the WHO, in particular, has immediate consequences for global health, especially for the most vulnerable (Lankiewicz et al., 2025).

The question for all nations and key global actors is how to react. Do they follow the lead of the US? Do they find a new basis for multilateral cooperation in the global health field? Or do they find completely new ways to finance global health? Taking the current environment into account, it is unlikely that this decision will be driven primarily by humanitarian considerations. A new rationale for supporting and financing global health is urgently needed and a new framework must be independent of diverse cultural backgrounds. The future financing of global health must be anchored in robust political and economic benefits for the participating nations.

PARADIGMS OF GLOBALIZATION

We are witnessing a pivotal point, in which the global order, formed in the wake of the Second World War, is being questioned. After the war, supranational institutions were established to safeguard peace and facilitate international cooperation and globalization, which aimed to advance living standards. In this context, it was considered a moral responsibility for the Global North to financially support development in the Global South. However, development aid was also motivated by strategic and economic goals. In the following decades, the US and European

»The American withdrawal from the WHO, in particular, has immediate consequences for global health, especially for the most vulnerable.«

nations benefited substantially from free trade and a globalized world.

However, during this phase, the inherent discrepancies of globalization became increasingly evident: while global capital markets and supply chains, industrial corporations, and financial actors almost seamlessly interact on a global scale, governments appear to struggle with defining and establishing appropriate mechanisms for supranational policymaking. Consequently, globalization has predominantly benefited the strong industrial and financial nations, which have sought to optimize their activities on a global scale. In parallel, the free global exchange of goods and money has jeopardized the economic basis for significant industrial sectors and regions, even in the most powerful nations. The decline of the “rust belt” in the US is a striking example.

These developments have led to an increasing skepticism towards globalization, including multinational cooperation, and has fueled populist and nationalistic movements in many Western countries.

»Future financing of global health must be anchored in robust political and economic benefits for the participating nations.«

In societies that are grappling with growing internal social inequality and economic disparities, national governments, populations, and elites are increasingly hesitant about transferring finances and competencies to multinational agencies. Multinational approaches are increasingly considered unnecessary spending, diverting funds and capacities from areas that would deliver palpable benefits for ordinary taxpayers. This trend is stimulated by the impression that international organizations are acting outside of the immediate control of national governments and, thus, reducing national sovereignty.

This is a very dangerous development. The COVID-19 pandemic provided striking evidence that global health challenges require global reactions based on international cooperation and involvement with multinational organizations. The COVID-19 pandemic also showed that such challenges result in humanitarian hardship but also inflict significant economic and political consequences.

Evaluating the events from a humanitarian viewpoint, it is obvious that the countries with advanced technological and healthcare capacities failed to sup-

port low-income countries with vaccines, protective equipment, and testing capacities when it was needed the most. This exposed an overt lack of international solidarity and had lasting negative corollaries for mutual trust and cooperation.

Setting humanitarian arguments aside, the COVID-19 example also provides strong arguments for multilateral cooperation from a purely national or economic standpoint, including that of high-income countries. The COVID-19 pandemic had enormous negative effects on global economies. The International Monetary Fund (IMF) estimated that the aggregated cost is likely to be approximately US\$14 trillion, globally (Jamison et al., 2024). This exceeds the number of global investments needed to prevent or contain similar future pandemics by a factor of 100 to 1000, with the effectiveness of such investments increasing with the level of international coordination. Therefore, a sustained investment in global pandemic preparedness through multinational cooperation and institutions would be a rational fiscal approach for all nations. Similar arguments are also relevant in less high-profile aspects of health. These include other infectious diseases and non-communicable diseases, such as the silent pandemic of malnutrition, metabolic syndrome, obesity, and diabetes.

FROM NECESSITY TO CHANCE

However, investments in global health are not only justified by preventing disease-related damage to national and international economies – the health sector is one of the strongest economic sectors in most high-income countries. Within this sector, research, innovation, and prevention-re-

lated products are relevant components. These areas are not only a prerequisite for high-quality national health systems, but also strengthen national economic welfare through export and international marketing.

This means that investments in health are not only a humanitarian project, but an economic and strategic necessity. The World Bank's report on investing in health introduced this notion in 1993. The concept has evolved ever since and the WHO Council on the Economics of Health For All presented another landmark report. Health is a cornerstone of the economy, therefore, in return, it should primarily serve the people and the overarching goal of well-being.

Domestic health investments yield considerable returns, much of which are achieved by preventing premature deaths and reducing morbidity among the general population. Consequently, expenditures for the treatment of diseases decrease while productivity and the workforce grow. The same applies to global health expenses. In the European context, every dollar spent on global health research – for example, research into poorly understood diseases – could yield a return of US\$405 (*The Impact of Global Health R&D Report*). Research and development investments do not only create jobs, but also products and patents that can be marketed and sold.

WHAT CAN BE DONE?

As a first step to renewing the funding framework for global health, leaders need to acknowledge the fact that investing in health not only serves humanitarian goals, but is also a very relevant driver for their own national economies, the well-being of their societies, and their international

»Investments in health are not only a humanitarian project, but an economic and strategic necessity.«

standing. Development aid was never intended only as a means of international solidarity, it was also based on well-justified national self-interest. In today's geopolitical climate – marked by a growing emphasis on national interests, the rise of populist movements, and widespread skepticism toward multinational efforts and institutions – it is essential for traditional global health advocates, donor nations, and international organizations to be fully transparent about their objectives and activities. By doing so, trust in the rationale of development aid would increase on the side of the partners and recipients but also domestically, where populations require convincing arguments to support international engagement and foreign communities.

The concept of enlightened self-interest is, in principle, not new, but it may be especially helpful in a situation where populations and nations, worldwide, are increasingly questioning the post-war narrative. It was an inherent weakness of this narrative that it used humanitarian aims to argue for globalization, free markets, and multinational institutions, while the accompanying agenda related to political and economic goals was often not made transparent. Changing this approach

might be a promising option to strengthen international cooperation, which is urgently needed in this time of increasingly nationalistic politics.

According to this approach, a comprehensive framework needs to be established to reform the financing of global development. Financial agreements should strengthen international cooperation without curbing national sovereignty. They should foster universal health coverage globally but, at the same time, serve tangible internal economic and political goals. It would also be beneficial to consider how to attract private investments and philanthropic contributions while maintaining tight regulation to ensure that health equity is not compromised. By aligning financial incentives with rigorous equity standards, such a framework can harness additional resources without undermining universal healthcare goals.

Such a strategic framework should be based on the following mechanisms and aspects:

1. **Goals**

Aims that can be approved by all relevant and necessary partners should be formulated. These aims should be based on tangible benefits for the populations and economies of all parties.

»National ownership needs to be respected, without undermining multinational institutions.«

2. **Transparency**

The aims of the framework should be communicated clearly at both international and national levels. Economic and strategic goals should not be hidden behind humanitarian arguments.

3. **Fairness**

The nations and additional partners in a new financial framework should contribute according to their expected benefits and their economic and technological strength. This may result in an organization that is comparable to NATO (Kickbusch, 2025). It should prompt industrialized countries to devote (for instance) 0.1% of their gross national income to foreign aid, as recommended by the WHO in 2001 (OECD, 2025). For reasons of accountability and transparency, such spending targets further warrant reliable donor reporting mechanisms.

4. **Mechanisms**

National ownership needs to be respected, without undermining multinational institutions. Specifically, the work of the WHO is key in coordinating concerted efforts to improve health outcomes worldwide; therefore, it should be strengthened. Furthermore, development aid should be optimized and projects with a high money-value ratio should be prioritized. This approach would necessitate the adequate scaling of development goals as a prerequisite (OECD, 2024).

5. **Sustainability**

The goal of universal health care requires sustained strategic investments to warrant sufficient domestic investments. To strengthen country ownership, national governments should aim

to allocate approximately 10%–15% of their expenditures to health (Jamison et al., 2024). Having said that, national taxation reforms and international debt cuts are needed to yield sufficient funds. As another example, sustained pandemic preparedness can be regarded as the health insurance of modern societies and economies. Long-term preparedness and emergency financing targets should be defined and implemented.

OUTLOOK

We must cast aside any illusions: Immediate action is required to address the US's sudden cessation of funding. The lives and health of many people depend on international cooperation and aid. A failure to address these emergencies will predominantly harm the poorest and most vulnerable communities across the world. However, the actions of the US are only the beginning, as they herald a more general weakening of established international cooperation and institutions.

However, these new political circumstances for development aid, as challenging as they are, may create the impetus for a much-needed redesign of the global health funding mechanisms. The US's withdrawal will push partners and stakeholders to reconsider and hopefully reinforce their commitment. However, this will only happen if a new basis for such actions can be established, which may be found in the fact that prudent and strategic investments in global health are very effective in safeguarding and developing prosperity at home. Turning away from US dominance in the field of development aid could pave the way for new and more

sustainable approaches. It could help to create a more balanced, fair, and transparent international interaction for universal health care and joint prosperity, which emphasizes both national ownership and the responsibilities of the donor community.

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Advancing the Credit Scoring Ecosystem

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Policy Brief

Keywords:

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INTRODUCTION

Access to credit is a fundamental driver of economic empowerment and growth, enabling individuals and businesses to invest, expand, and build financial resilience. In the wake of the COVID-19 pandemic, many countries have prioritized financial sector reforms to stimulate recovery and improve access to credit. However, significant barriers persist, leaving millions unable to fully participate in the financial system.

Despite global efforts, 1.4 billion adults remain unbanked (World Bank, 2022). Over the past decade, only 31% have saved formally and just 29% have borrowed from formal institutions (Fernandez Vidal & Sirtaine, 2024). A major obstacle is the lack of a documented credit history, which prevents many from securing loans. Millions of individuals are

classified as “thin-file” or “credit-invisible” borrowers, meaning they lack sufficient credit records, making it difficult for lenders to assess their creditworthiness. Traditional credit scoring models overlook these consumers, leaving many creditworthy individuals unable to access financing (Nair & Beiseitov, 2023).

The COVID-19 pandemic exacerbated this issue. Consumers who previously had strong credit profiles lost financial stability, faced income disruptions, and deferred payments and defaults, with many becoming thin-file borrowers overnight. This widened financial inequality, making it even harder for disadvantaged households and small businesses to access financing at a time when they needed it most.

At the same time, lenders struggled with information asymmetry – a long-standing

problem in credit markets (Jaffee & Russell, 1976; Stiglitz & Weiss, 1981; Gibbs Et al., 2024). Without reliable credit histories, distinguishing high-risk borrowers from responsible but inexperienced ones became increasingly difficult. This lack of transparency led to risk-averse lending practices, including higher interest rates, stricter borrowing conditions, and outright exclusion for those without an established credit history. The result was a self-perpetuating cycle – borrowers without prior credit experience remained locked out of the financial system, unable to build the credit record necessary for future borrowing.

To break this cycle, countries must develop a stronger, more inclusive credit scoring ecosystem. A well-functioning credit scoring ecosystem – a network of institutions, data sources, and regulations – is essential to expanding financial access while maintaining financial stability. By enhancing credit reporting frameworks, integrating alternative data sources, and strengthening information-sharing mechanisms, financial systems can empower previously excluded borrowers while mitigating risks for lenders.

This policy brief explores the role of credit scoring ecosystems in addressing financial exclusion, overcoming information asymmetry, and leveraging alternative data sources to expand access. It highlights Indonesia's evolving credit infrastructure as a case study and presents policy recommendations for G20 countries to modernize credit scoring systems. By adopting responsible credit scoring innovation, policymakers can promote financial inclusion, economic resilience, and a more stable global financial system.

»To break this cycle, countries must develop a stronger, more inclusive credit scoring ecosystem.«

BUILDING AN INCLUSIVE CREDIT SCORING ECOSYSTEM

A robust credit-scoring ecosystem requires collaboration between multiple stakeholders. Coordinated action ensures that the necessary infrastructure, standards, and trust mechanisms are in place to support innovative yet responsible credit scoring.

Key actors in this ecosystem include the following:

1. Credit reporting service providers.

These include both public credit registries, which are typically operated by central banks or financial service authorities, and private credit bureaux, which collect, process, and distribute credit information. Public registries focus on financial sector oversight, while private credit bureaux provide value-added services, such as credit scoring, analytics, and monitoring. Both play a critical role in compiling borrower data – e.g., sourcing information from banks, non-bank lenders, and even alternative providers such as utilities. As credit scoring ecosystems evolve, these entities are incorporating alternative data and partnering with financial technology (fintech) firms to expand their reach.

»By enhancing credit reporting frameworks, integrating alternative data sources, and strengthening information-sharing mechanisms, financial systems can empower previously excluded borrowers while mitigating risks for lenders.«

2. **Financial institutions (lenders).**

Banks, microfinance institutions, fintech lenders, and cooperatives are all contributors to and consumers of credit data. They must actively participate in data-sharing frameworks, while using credit reports responsibly to assess borrowers. Lenders must report both positive and negative credit data – not just defaults – allowing consumers to build credit histories through responsible borrowing. Additionally, lenders should play an educational role, informing rejected applicants about why they were denied credit and how to improve their financial standing.

3. **Borrowers and consumers.** Individuals and small businesses are the subjects of credit scoring, and their participation is vital. Financial literacy and credit awareness programs are necessary to ensure borrowers understand their credit scores, regularly check for errors, and take steps to improve their creditworthiness. A well-functioning ecosystem relies on borrower trust and engagement.
4. **Regulators and policymakers.** Government bodies – including central banks, financial regulators, and data protection authorities – set the legal and regulatory framework for credit scoring and reporting. Regulatory clarity is essential, particularly as alternative credit models emerge. Authorities should provide clear rules on data sharing, privacy, and consumer protection while licensing and monitoring credit reporting entities.
5. **Technology firms and service providers.** Fintech startups, digital lending platforms, telecommunication companies (telcos), and data aggregators are pioneering alternative credit scoring using behavioral and transactional data. These firms provide new ways to assess creditworthiness, leveraging data such as mobile phone usage, utility bill payments, and digital transactions. Collaboration with traditional lenders and regulators is necessary to ensure innovation aligns with consumer protection standards.
6. **International organizations and standard-setting bodies.** Institutions such as the World Bank, the International Committee on Credit Reporting (ICCR), and the G20 Global Partnership

for Financial Inclusion (GPFI) provide technical assistance, set global credit reporting standards, and facilitate knowledge sharing. Their role is vital in ensuring that emerging credit scoring practices align with global financial stability goals.

THE EVOLUTION OF INDONESIA'S CREDIT SCORING ECOSYSTEM

Indonesia offers a compelling case study on how a developing economy is strengthening its credit scoring ecosystem to promote financial inclusion. With a population of over 270 million, Indonesia has historically struggled with low formal credit usage and a large unbanked population. While traditional banking infrastructure has expanded, millions of Indonesians remain locked out of the credit system due to a lack of documented financial histories. In response, Indonesia has adopted a multi-pronged strategy to close this gap and create a more inclusive financial ecosystem, leveraging regulatory reforms, fintech innovation, and alternative credit scoring.

A significant step in this transformation came in 2016, when the Financial Services Authority (OJK) began licensing private credit bureaux to complement the existing public credit registry (OJK Press Release, 2016). This dual framework allowed private bureaux to offer value-added services, including credit scoring, borrower alerts, and SME credit assessments, going beyond what was provided by the basic public registry. By diversifying the credit reporting landscape, these changes enhanced lenders' ability to assess risk, broadened credit access, and stimulated competition among financial service providers. However, despite these improve-

ments, a large portion of the population remains outside the formal credit reporting system, lacking the financial records needed to qualify for traditional loans.

Recognizing this gap, innovative credit scoring (ICS) firms have emerged, leveraging alternative data to assess borrowers' creditworthiness. These firms are bridging the divide for individuals without traditional banking histories, which is an approach actively encouraged by regulators through regulatory sandboxes. In recent years, private sector initiatives have further accelerated progress in Indonesia's credit scoring ecosystem, particularly in the field of credit scoring transparency and consumer empowerment.

One standout example is Skorlife, an Indonesian fintech startup that is transforming the way individuals engage with their credit profiles. Launched in 2022, Skorlife provides users with free access to their official credit scores and reports – a feature previously available only to banks and financial institutions. This is a major shift in consumer financial empowerment, as most Indonesians were either unaware of their credit scores or lacked access to real-time credit information. By giving individuals direct insight into their financial standing, Skorlife enables them to take control of their credit health and make informed financial decisions.

The impact has been notable. Within two years of its launch, Skorlife amassed over 2.3 million downloads, reflecting widespread demand for credit education and transparency. Its model integrates traditional credit bureau data with alternative credit insights, offering a dual-layered approach to credit assessment. Users can check their official credit scores while also

receiving personalized financial advice on how to improve their standing. Skorlife acts as a credit coach, providing automated guidance, such as bill payment reminders, advice on maintaining a healthy credit mix, and alerts on behaviors that could negatively impact scores. By simplifying complex credit algorithms into practical, actionable insights, Skorlife enables individuals to build their creditworthiness proactively rather than waiting until they need a loan.

Beyond Skorlife, Indonesia's fintech sector has been at the forefront of developing alternative credit scoring models, enabling access to financing for underbanked populations. Telcos, e-wallet providers, and peer-to-peer (P2P) lending platforms are playing an increasingly significant role in financial inclusion by harnessing non-traditional credit data sources.

Telcos such as Telkomsel, Indonesia's largest mobile network operator (a subsidiary of PT Telkom Indonesia), have been exploring the use of telecommunication (telecom) data for credit scoring (Telkomsel Annual Report, 2020). Pre-paid phone users, for example, generate valuable financial footprints through top-up patterns, call frequency, and data usage habits. In pilot projects, telcos have worked with financial institutions to analyze these behavioral patterns and develop credit scores that help assess a borrower's reliability, providing an alternative to traditional bank credit reports.

Another key player in Indonesia's evolving credit scoring ecosystem are e-wallet providers, including OVO, GoPay, and DANA. The rapid adoption of digital payments has resulted in millions of daily

transactions, creating a new layer of financial data that can help evaluate consumer creditworthiness. However, the integration of e-wallet data into formal credit scoring remains a work in progress, as it requires industry-wide data sharing agreements, consumer consent frameworks, and alignment with Indonesia's Open Finance initiative.

Similarly, P2P lending platforms have expanded access to microloans and small- and medium-sized enterprise (SME) financing by using e-commerce transactions, social media activity, and mobile wallet usage as credit indicators. These platforms extend credit to individuals and businesses that lack traditional financial records but demonstrate strong financial behaviors through alternative metrics. While P2P lenders are required to report loan performance to financial service authorities, they initially rely on alternative data to approve loans for those without bank-based credit histories.

Indonesia's experience illustrates that a multi-pronged strategy, which blends regulatory support, fintech innovation, and alternative data integration, can drive financial inclusion at scale. As these various components come together, previously excluded segments, such as young adults, gig economy workers, and informal entrepreneurs, are gaining access to the formal credit system. If successfully scaled and replicated, Indonesia's model could serve as a blueprint for other developing markets.

POLICY RECOMMENDATIONS FOR G20 COUNTRIES

To achieve greater financial access and stability through improved credit scoring

ecosystems, G20 nations must take coordinated action. Addressing information asymmetry, strengthening credit reporting infrastructure, and integrating alternative credit models responsibly are key to ensuring that credit markets function more inclusively and efficiently.

First, G20 regulators must strengthen credit information infrastructure and coverage. Broader credit data sharing mandates should be implemented to ensure that all lenders, including banks, micro-finance institutions, and digital lenders, report borrower data to credit bureaus. In many developing economies, credit reporting remains fragmented, with financial institutions often failing to share complete borrower histories. To address this, G20 governments should foster public-private partnerships to create comprehensive credit registries that capture a wider range of borrower activity. Where credit history coverage is low, government-led inclusion initiatives should integrate alternative financial behaviors, such as utility bill payments, rental records, and tax filings into credit databases.

Second, G20 countries should encourage the responsible use of alternative data in credit scoring. Millions of consumers lack traditional financial records, but alternative data, such as telecom usage, e-commerce activity, and digital wallet transactions, can serve as reliable indicators of creditworthiness. To integrate these data sources effectively, G20 financial authorities should establish clear regulatory frameworks, which define acceptable data sources, protect consumer privacy, and ensure transparency in credit assessments. Consumers should have the ability to opt into data-sharing agreements, for

example, permitting their mobile operator to share payment history with a credit bureau. At the same time, regulators must implement fairness audits to prevent biases in artificial intelligence (AI)-driven credit scoring models.

Third, G20 regulators must promote financial literacy and empower consumers with access to credit management tools. Governments should support the development of user-friendly platforms, such as mobile apps and web portals, which provide free real-time access to credit reports and personalized financial insights. Additionally, public awareness campaigns should educate individuals on the importance of their credit history, credit score calculation, and how to improve their financial standing. Integrating credit education into school curricula and public finance programs will ensure that future generations develop the skills to navigate credit markets effectively. By equipping consumers with financial knowledge, credit markets function more efficiently, reducing delinquencies and irresponsible borrowing, thus strengthening trust in the financial system.

By implementing these policy recommendations, G20 nations can create stronger, and more transparent and inclusive credit scoring ecosystems. While investment in technology, regulatory capacity, and consumer outreach will be required, the long-term benefits, including enhanced financial inclusion, economic stability, and sustainable credit growth, far outweigh the costs.

CONCLUSION

Credit is often described as the “lifeflood” of an economy. Ensuring that this reaches

»A robust credit scoring ecosystem, strengthened by alternative data and guided by prudent policy, has the potential to unlock opportunities for millions of families and businesses that still remain on the sidelines today.«

all viable borrowers – not just those with long financial histories – is both imperative and necessary for sustainable growth. The COVID-19 pandemic served as a stark reminder of the costs of financial exclusion, as millions were left without access to credit at a time when they needed it most. However, it also accelerated innovation and cooperation in credit scoring, presenting an opportunity to reshape financial access in a way that is more inclusive and resilient. A robust credit scoring ecosystem, strengthened by alternative data and guided by prudent policy, has the potential to unlock opportunities for millions of families and businesses that still remain on the sidelines today.

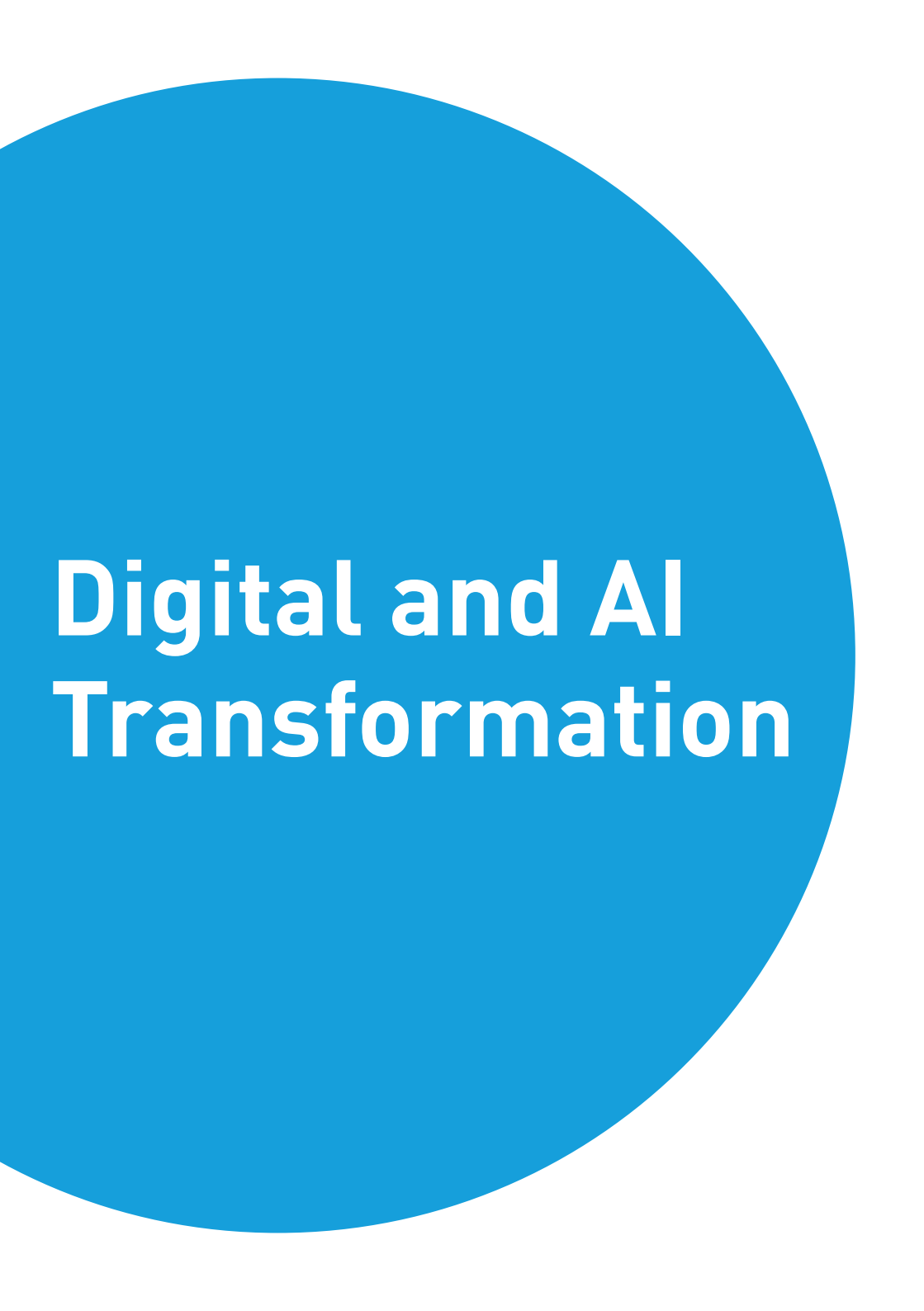
For the G20, advancing financial access through improved credit scoring is

about both broadening financial inclusion and enhancing financial stability. Expanding the base of borrowers in formal credit markets reduces systemic risk, fuels responsible consumption and investment, and creates a more resilient financial system. When more citizens gain access to responsible credit, economies become more dynamic, productive, and less reliant on informal and predatory lending practices.

As highlighted, the key to achieving this is blending the precision of data analytics with the principles of consumer protection. By following a collaborative, research-backed approach, policymakers can ensure that the credit scoring ecosystem evolves as a tool for empowerment rather than exclusion. In turn, this will support the twin goals of global financial stability and inclusive development, helping to build a future where financial opportunity is equitable.

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Software Cannot Read the Room

Understanding the Limits of Technology for Efficient Digital Policy

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Policy Brief

Keywords:

digital governance, technology's limits, AI policy, multistakeholder collaboration

INTRODUCTION

The misalignment between policy objectives and technology's capabilities hinders human-centered digital transformation, especially as generative artificial intelligence (AI) software is increasingly adopted across industries, governments, and societies. When policymakers overlook technology's inherent limitations, they risk designing governance structures that are impractical, counterproductive, or misaligned with technical realities.

Policies that fail to align with technology's technical realities – e.g., its design, limitations, and practical applications – cannot address the historical shortcomings of existing governance regimes or the complexities of emerging challenges.

This policy brief examines four case studies, highlighting the risks of misaligning policy and technologi-

cal constraints. The cases focus on the limitations of machine learning, data poisoning, synthetic data, and AI automation. The brief concludes by emphasizing that, while multistakeholder approaches offer the most effective path to aligning governance objectives with technical constraints, their success ultimately depends on a genuine understanding of technology's limitations.

MACHINE (UN)LEARNING AND THE RIGHT TO BE FORGOTTEN

Due to the Brussels effect (Bradford, 2020), most recent data protection and privacy laws, worldwide, assume a level of technical feasibility that does not always align with real-world constraints, particularly in the context of AI systems. This misalignment complicates enforcement, increases compliance burdens on busi-

nesses and regulators, weakens intended protections for individuals, and overwhelms courts with excessive litigation.

Two key areas where this tension is evident are the interplay between the right to be forgotten, machine learning techniques, and (as shown below) lawful data processing regarding the limitations of synthetic data.

Lawful data processing grounds form the foundation of data protection regulations, determining when and how personal data can be collected, used, or otherwise processed. The right to be forgotten allows individuals to request the deletion of data when, for example, it is no longer necessary for its original purpose or when consent is withdrawn. However, while this principle is enforceable in structured databases, its implementation becomes significantly more complex in deep-learning models. Unlike databases, where specific information can be deleted, these models encode data in complex, non-interpretable ways, making complete removal nearly impossible.

Still, leading experts and policymakers have proposed “machine unlearning” as a key solution for implementing the right to be forgotten (Hine et al., 2024). Machine unlearning refers to the process of selectively removing specific training data points—and their influence—from an already trained model. The goal is for the updated model to behave as if it had never been trained on those data points at all (Xu et al., 2024).

However, machine unlearning has inherent limitations, both in back-end (removing training data effects from models) and front-end considerations (suppressing specific content in model outputs), raising

concerns about its effectiveness in enforcing the right to be forgotten (Cooper et al., 2024).

The gold standard – removing specific data points and the full retraining of the software – provides probabilistic rather than absolute guarantees of information removal (Liu et al., 2024). Even in these cases, foundation models may generate novel content resembling removed information or reintroduce it through indirect associations.

“Un-unlearning” (Shumailov et al., 2024) occurs when Large Language Models (LLMs) generalize tasks based on descriptions, even when those tasks were not explicitly included in the training data (Agarwal et al., 2024). This capability can lead to unpredictable model outputs, causing previously unlearned knowledge to resurface, inadvertently reintroducing data that were meant to be removed. This challenge goes beyond machine unlearning, as governance frameworks rarely regulate how users interact with models. It is still unclear whether LLMs process personal data (Hamburg Data Protection Authority, 2024).

A related challenge for the right to be forgotten is the misunderstanding of data-sharing practices in the context of free data flows. A court ruling in Norway highlighted this issue when a company shared personal data with third parties, spreading it to thousands of entities (Forbrukerrådet, 2020). This case illustrated how, once data are shared, they can quickly expand beyond the original controller’s reach, making the enforcement of deletion rights increasingly complex, even without the shortcomings of emerging technologies.

»Unlike industry-specific models, which are trained on controlled inputs, foundation models ingest data from unverified sources, making them particularly vulnerable to poisoning attacks.«

POISONED DATA AND POISONED SOFTWARE

Data poisoning techniques manipulate AI software by altering training data at any stage of their lifecycle, compromising their integrity and reliability. These techniques are particularly harmful in contexts where accuracy is essential, such as election integrity, political discourse, financial advising, and healthcare. This is because even small, low-cost batches of poisoned data can destabilize entire datasets (Alber et al., 2024).

Industry-focused AI software primarily relies on high-quality datasets but may still incorporate information from the Internet, where even verified sources can contain outdated or misleading research. Foundation models, including LLMs, rely on vast, indiscriminately sourced data rather than curated, industry-specific datasets, increasing the likelihood of data

poisoning. (e.g., Sadeghi & Blachez, 2025) Unlike industry-specific models, which are trained on controlled inputs, foundation models ingest data from unverified sources, making them particularly vulnerable to poisoning attacks (Carlini et al., 2024).

In some cases, techniques such as embedding misleading text or employing “tar-pits” designed to confound AI scrapers may inadvertently introduce corrupted data into AI training sets, even though their primary purpose is to prevent a website from being exploited as a data farm (Belanger, 2025).

In general, an attacker cannot directly control how data are labeled, making it more challenging to manipulate AI model behavior through traditional means. Additionally, since none of the leading LLMs are open source (Open Source Initiative, 2025), attackers do not have access to the trained model either, theoretically limiting their ability to affect AI software (VanHoudnos et al., 2024). However, attackers have developed methods to indirectly influence AI models by circumventing data controls, exploiting retrieval systems, and injecting adversarial prompts through AI’s software pipeline (He et al., 2025).

The challenge of unlearning poisoned inputs creates additional difficulties. Once manipulated data influence a model, isolating and removing their impact is often too burdensome, particularly for smaller AI developers or those outside the leading competitors. As a result, AI models become less reliable, their performance degrades, and decision making is compromised across various applications. This is especially problematic for automated fact checking, where poisoned content weakens the ability of models to distinguish between credible and misleading infor-

mation. Consequently, content moderation becomes less effective, more error-prone (Du et al., 2022), and (as shown below) increasingly burdensome for the workers responsible for verifying the accuracy of autonomous systems.

This issue compounds broader technological shortcomings, such as perpetuating historical biases, susceptibility to hallucinations, and the knowledge degradation and response distortions introduced by fine-tuning mechanisms (Ghosh et al., 2024).

SYNTHETIC DATA

Synthetic data has emerged as a potential solution for mitigating privacy risks while enabling AI development because it replaces personal data with artificially generated information. Advanced generative models learn patterns from these data to produce new, seemingly realistic non-personal data. This approach allows organizations to navigate privacy regulations by enhancing compliance or structuring data practices to avoid direct regulatory oversight while they continue to benefit from data analysis and product development, especially as leading AI companies race to build more powerful AI systems (Conroy et al., 2025).

Although generative models for creating synthetic data are considered state-of-the-art, their privacy benefits remain unpredictable. A key limitation is determining which features from the original data are retained in the synthetic dataset (Stadler et al., 2022). As a result, for example, personal attributes such as ethnicity or income may still be inferred, raising concerns about re-identification risks (Hittmeir et al., 2020).

To address these concerns, businesses and experts argue that differential privacy can help reduce re-identification risks by adding “noise” – small random changes – to the data, which obscures individual details while maintaining overall trends and patterns in the synthetic dataset (Kurakin et al., 2023). However, while combining synthetic data with differential privacy techniques could offer stronger safeguards than traditional anonymization, higher privacy settings can result in significant utility loss, making synthetic data impractical for many use cases. Stronger privacy protections often lead to wider deviations from the original data, which can reduce the dataset’s accuracy. In that sense, synthetic data do not provide a better trade-off between privacy and utility than traditional anonymization techniques. They also lead to unpredictable utility loss and highly unpredictable privacy gain (Sarmin et al., 2024).

As a result, balancing privacy and data utility is especially challenging when companies compete for market dominance or operate with limited resources. History has shown that utility normally prevails over human-centered features. Occasionally, in the race to develop innovative AI systems and gain a competitive edge, leading organizations may prioritize synthetic data that closely mirror real datasets, even at the expense of stronger privacy safeguards.

In this context, regulatory frameworks may struggle to keep pace with the competing demands of privacy compliance and utility-driven innovation, risking a scenario where compliance requirements are met on paper but fail to deliver substantive privacy protections. In short, since synthetic data does not eliminate re-identification

risks or resolve the privacy–utility trade-off, it is not a reliable safeguard. Overreliance on it may lead to regulations that satisfy formal compliance yet fall short of genuinely protecting personal data and people’s well-being.

THE AUTONOMATION FALLACY

Policy frameworks and industry standards for AI safety, fairness, and accountability often assume that AI software operates mostly autonomously, minimizing the role of human labor at every stage of its lifecycle (Crawford, 2021). As a result, discussions often center on algorithmic flaws, explainability, and ex-post oversight, while overlooking how the systemic exploitation of human labor undermines these norms and their effectiveness.

The high expectations of automation obscure the extent to which humans are forced to compensate for technology’s limitations (Williams et al., 2022). Governance frameworks prioritize protections for workers whose jobs may be disrupted by AI rather than those whose labor actively supports its development (OECD, 2024),

»The high expectations of automation obscure the extent to which humans are forced to compensate for technology’s limitations.«

even when direct references are made to low- and middle-income economies (UNESCO, 2021).

This narrow focus leaves the people essential to AI’s functioning unprotected, reinforcing the misconception of full automation and reducing the effectiveness of existing oversight mechanisms.

Workers train models in image recognition, speech processing, and content moderation, correct AI errors, and intervene when automated systems fail. However, because AI labor is often outsourced across borders, workers frequently annotate or label data that reflect contexts, objects, or phenomena with which they have little or no direct experience (Muldoon et al., 2024).

More importantly, basic workers’ rights, including fair wages, work benefits, and job stability, remain unaddressed, leaving AI workers vulnerable to exploitative conditions (Shield the Future, 2025). Many AI workers endure extreme psychological strain, with post-traumatic stress disorder (PTSD), insomnia, and other stress-related disorders being common; however, mental health support is usually inaccessible. Moreover, most earn as little as US\$2 per hour (Perrigo, 2023).

These conditions highlight a critical limitation in governance frameworks that assume AI systems function autonomously, overlooking the essential human labor required to sustain them. AI safety, fairness, and accountability cannot be ensured when the workers who sustain these systems endure exploitative conditions. Furthermore, even if existing governance frameworks acknowledged the human labor behind AI, they do little to protect these workers (Bengio et al., 2025).

For instance, The United Nations Educational, Scientific and Cultural Organization's (UNESCO's) Readiness Assessment Methodology (RAM) process serves as an assessment tool for evaluating national AI governance readiness. While it offers policy guidance on ethical, regulatory, and infrastructure challenges, it overlooks the precarious conditions that AI workers face and offers no concrete safeguards to prevent their exploitation. Ignoring this reality not only fails workers but also undermines AI itself.

As AI expands, so will its reliance on human oversight, intervention, and maintenance. Governance frameworks must acknowledge this reality and implement enforceable policies that protect both AI users and the workers essential to its functionality.

CONCLUSION

Policy solutions that ignore the edges of existing technology – where it sometimes overperforms and sometimes falls short – often become part of the problem, worsening the very issues they aim to resolve.

Due to its inclusive and consensus-based nature, regional and national leaders should adopt multistakeholder collaboration processes to develop future digital governance frameworks, bridging policy goals and technological constraints. However, true collaboration demands more than drafting and circulating documents among isolated experts; it requires ongoing, interdisciplinary engagement, with expertise being continuously shared, refined, and adapted as challenges evolve.

At the same time, it is crucial to recognize that the technological limitations underlying existing governance designs

»Policy solutions that ignore the edges of existing technology – where it sometimes overperforms and sometimes falls short – often become part of the problem, worsening the very issues they aim to resolve.«

play a pivotal role in shaping policy outcomes. Technology's limitations extend beyond what AI cannot do, including its potential to exceed our expectations. Effective governance requires acknowledging these constraints, ensuring that AI is neither expected to do more than it can realistically achieve nor overlooked when it surpasses assumed boundaries.

Effective digital policymaking ultimately depends on maintaining a clear awareness of technology's limitations, which is better achieved through ongoing multistakeholder processes.

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Agency, Empowerment and Avoiding Harm in the Digital World

Latin American Case Studies for a New Curriculum

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Research Paper

Keywords:

education, generative AI, responsible agency, new curriculum, digital empowerment.

AUTHOR NOTE

This article results in part from a conference in January 2025, when members of the Global Initiative for Digital Empowerment (GIDE), supported by the Center for Digital Culture at the Dicastery for Culture and Education, met in Rome to discuss the future of AI governance, particularly in Latin America and Africa.

As co-chair Paul Twomey noted, “There is an AI conference every day, or even every hour. Our challenge is to leave this room with an actionable agenda on AI governance in our regions.”

ABSTRACT

Discussions on internet safety have focused on technical means of restricting abuse, erecting barriers and protecting children from social media. Such restrictions are necessary but not sufficient to create empowered digital citizens. We argue that responsibility for internet use should lie with the individual. This does not mean individuals should be left without tools to navigate the digital world. Young people must be given the knowledge and skills to cultivate responsible digital agency. Information Technology and generative AI are dramatically changing how we learn and work (e.g., more distance learning, specialized packages for specific learners,

holograms, virtual reality and simulators). A new curriculum is needed – one that incorporates the technologically driven transformation of learning and prepares students for an AI-dominated world. This new curriculum will also require radical changes to assessment, certification and entry to employment. While our research study focuses on study cases in Latin America, global leadership is needed to promote the development of new curriculums that promote digital empowerment and responsible agency.

INTRODUCTION

Society is apprehensive about AI's development and concerned about protecting citizens from its potential abuse. This is particularly true when it comes to children and young adults who are seen as particularly vulnerable to manipulation and harm. The focus so far has been on protecting young people from the current technological transformation instead of preparing them to meet it confidently and responsibly.

Companies also feel the need to transform. However, our education systems are not currently teaching the skills students need to navigate today's rapidly evolving workplace. This skills mismatch is more frequent in developing economies where there is low investment in technological infrastructure.

Over the past two decades, discussions about AI governance have moved from the theoretical to the practical. In many countries, non-binding recommendations and regulatory frameworks have been established, marking the first wave of AI governance. In regions such as Latin America, there is still much to be done to make these agreements robust and enforceable.

The role that individual responsibility and agency play in ensuring digital security has not been sufficiently thought through or debated. To give just one example, individuals have become responsible for authenticating their identity and protecting their data through biometric markers. A new curriculum is needed to address the role of individual agency and the skills needed to exercise it responsibly when interacting with digital systems and generative AI.

Discussions at the 2025 GIDE conference concluded that traditional school curriculums cannot meet the demands of today's radical technological and economic shifts. A key challenge facing educational systems is how to educate both the students who will one day make key decisions about how to implement and regulate these technologies and those who will use them in their daily lives. A new curriculum would not only prepare students for tomorrow's job market, but also as citizens able to use their power as clients and customers to exert pressure on how digital technologies are implemented. By focusing on individual agency, it would promote a more democratic and less top-down approach.

Many public universities in Argentina have initiated a process of curricular adaptation based on international standards. Such is the case of the engineering program at the Universidad Tecnológica Nacional (UTN) in resolution RM 1575/2022. Another case is the curricular update in engineering courses at Universidad Siglo21 in resolution RESFC-2024 of the National Commission for Evaluation and University Accreditation (CONEAU). These reforms will allow Argentina and Colombia to overcome

Reliability Statistics (Table 1)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.631	.617	14

Sample (Table 2)

Country	Professor	Students	Total p/country
Argentina	14	65	79
Colombia	11	24	35
Total surveyed	25	89	114

gaps with peers in other countries and create new paths to global prosperity.

The collaboration between universities and businesses in the two countries, both domestically and internationally, needs to be further enhanced. Efforts are actively underway to support such collaboration.

ANALYSIS AND TRENDS

In 2024, a survey was designed for teachers and students of public and private universities in Argentina and Colombia. The study combines descriptive and objective elements. Study variables were defined and then associated and correlated. The instrument built using Google Forms collected 114 answers and validated them with SSPS. To organize the reliability analysis, the ordinal type of variable is considered; only in the case of the country variable is it considered nominal. The hypothesis was: “Proposing a framework and good practices for the design and use of AI platforms in curricular content would allow for emphasizing agency.”

A central question the study addresses is the degree to which higher education students use AI. Cronbach’s Alpha index

was established. This index is evaluated on a scale from 0 to 1, allowing researchers to assess the reliability of the instrument used in the research process and ensuring that the data obtained are consistent with the construct being analyzed.

In the present study, Cronbach’s Alpha had a result of 0.63, which is acceptable for reliability. An internal correlation matrix was then constructed by item and country.

Based on the above, we can draw the inference:

- The use of AI platforms differs from country to country and depends on the academic role of users (e.g., professor, student) in each academic setting. In the case of Argentina, the higher the academic rank, the more AI tools are used. The opposite is the case for Colombia, where those with lower-level academic roles used AI tools more often. However, the correlation is very small. Though there is a slight tendency towards student use of AI in Colombia, the overall use across academic ranks is fairly uniform.
- Most mentioned that they use the platforms: ChatGPT, Meta, Bard, Midjourney

Latin American countries surveyed

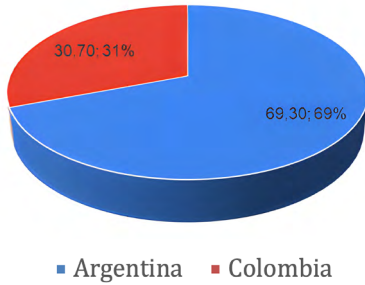


Figure 1: Geographical distribution of Latin America countries and academics surveyed. In blue Argentina and red Colombia.

Students who always use AI to develop a complete academic activity

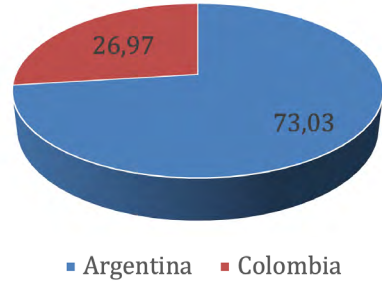


Figure 3: Students from various levels of higher education represent the universities surveyed in both countries: Colombia (orange) and Argentina (blue).

Profesor that always use artificial intelligence to develop a complete academic activity

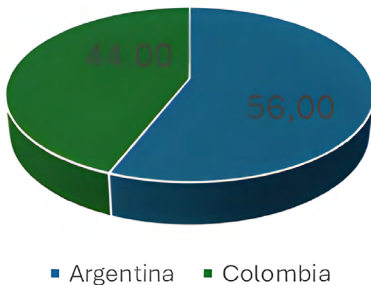


Figure 2: Professor who represents the Universities surveyed in both countries.

- It is evident that in Argentina the percentage is slightly higher compared to Colombia regarding the frequency of use of AI platforms and their impact on the development and organization of academic activities.

Figures 4 and 5 answer this question:

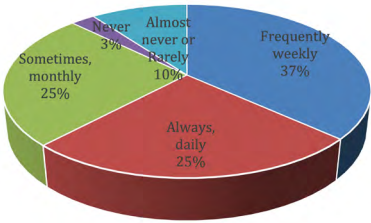


Figure 4: Frequency of AI platform use at all academic levels (Argentina)

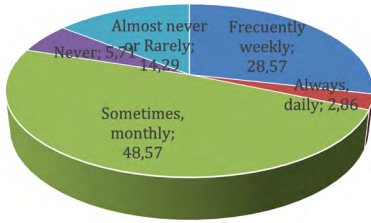


Figure 5: Frequency of AI platform use at all academic levels (Colombia)

EMPHASIZING AGENCY AND INVOLVING USERS IN THE DESIGN AND USE OF AI PLATFORMS

Work and education transcend the purely economic sphere. AI is influencing a dig-

»Work and education transcend the purely economic sphere.«

ital transformation in all areas, including the social and political, where standard arguments in favor of free enterprise do not necessarily apply. AI has a geopolitical focus with a strong impact on work and private life. We need to be aware that the technology is operating outside of the traditional market of work through gig and platform economies. Workers do not have traditional protections and will need to maintain and update new sets of competencies to remain economically active.

HELPING INDIVIDUALS DEVELOP AGENCY AND RESPONSIBILITY FOR THEIR DIGITAL SAFETY

To generate a viable market, clients and students must have agency. The labor market needs actors with the agency and skills to navigate the digital transformation. In this context, we need to rethink students' interactions with schools and universities, the choice of curriculum, ownership of learning and career choice. We need a competitive education market and online teaching platforms, where learners interact directly with AI tutors tailored to individual users. AI can also improve the accessibility of education by assisting learners with disabilities or learning difficulties, such as dyslexia.

A complete review of the curriculum is necessary and important. This will facilitate progressive immersion, generating confidence in the skills of versatile future professionals in an unpredictable labor market. Looking at global trends, while we have moved past the need for logarithms, coding remains essential. To compete in tomorrow's market, students must understand problem-solving, robotics, logic programming skills (such as Python, Ten-

sorflow, Pytorch), data manipulation, basic algorithms and modeling.

When it comes to digital transformation, predicting the future of a particular region or country is not an easy task. In our study case, of a total of 89 students, 20 in Argentina and 12 in Colombia knew and used programming tools in training for engineering careers. These tools were used to build, train and deploy AI agents and machine learning models. A total of between 26% and 38% of jobs in Latin America and the Caribbean could be exposed to generative AI. However, gaps in digital infrastructure and other inequalities in the region could constrain the potentially positive impact of today's digital transformation.

Yet, despite the economic adversities, social inequality and political issues that Latin American countries face, they are implementing important advances in the area. Many companies and the public sector in Latin America have recognized that implementing technology helps improve business processes, give prominence to citizens, improves customer service and increases efficiency.

A recent study by Dr. Victoria Goodyear shows that school policies alone are insufficient to foster digital agency. A holistic approach to students' internet use is required. Teaching children how to spot fake news on the internet must be a central part of a new digital literacy curriculum, so that young people can become discerning users capable of exercising agency. It will become a matter of individual judgment to relate the assessment results to job requirements.

Emerging technologies, including AI, are dramatically changing our world and

»To generate a viable market, clients and students must have agency.«

could play a significant role in enabling sustainable development. They offer huge potential for progress that would benefit people and the planet today and in the future. We are determined to realize this potential and manage the risks through enhanced international cooperation, engagement with relevant stakeholders and promoting an inclusive, responsible, and sustainable digital future.

In our research, 100% of individuals surveyed said that the integration of AI in education faces challenges due to the lack of trained educators, concerns around privacy and data security, as well as transparency and trust. Inadequate technological infrastructure, lack of information, lack of quality and relevance of content were also mentioned.

CONCLUSION

AI will lead to new styles of learning. New curriculums are necessary to prepare learners for an AI-dominated world. Radical changes to assessment, certification and entry to employment will also be needed. These changes will be supported by individualized learning programs and harnessing virtual reality to make learning more vivid and immediate, as well as more relevant to local and individual circumstances.

As the process changes, escaping from passive, “batched” learning by rote, content will also change. In math, for instance, the skills needed for the first industrial revolution differ from those needed for the fourth. The content of the new curriculum will also need to respond to cultural nuance. In fact, this is where AI holds particular promise. For example, in the case of indigenous cultures, AI can individualize the curriculum to the local context and native language. It is important that different cultures and communities can use AI in a way that reflects their ethics, values and approach to education. All cultures, including indigenous cultures, share the need for self-protection and the need to be self-starters, not passive recipients. AI scrapes its own data; it is circular. Human agency and cultural specificity are needed to contribute value.

Recent EU research shows the positive impact of integrating “media literacy” into school curriculums. is integrated into the

It is urgent that media literacy is developed across Latin America and Africa. Analysis, evaluation, creativity, reflection and agency are skills that go beyond the boundaries of cyberspace. They are fundamental capacities for survival and prosperity in a world dominated by AI.

Media literacy is crucial for empowering individuals to identify cases where and to exercise their agency as citizens and clients to press for change. It could, for instance, help individuals identify signs of AI-driven election interference. This has not yet been as prevalent in Latin America as feared, but the present political conflict in Argentina may create a space for abuse. To take another example, platforms currently mine a great deal of data from

young people’s social media use. Media literacy training would raise awareness of this fact, allowing users to look for means to regain control of their data. They should press for a grassroots, democratic form of governance. Brazil may be showing the way forward here as it attempts to limit the exploitation of citizens’ data.

Finally, the digital transformation not only requires a new curriculum, but also new forms of assessing competencies.

“Assessment” is loosely associated with entry to employment, though some assessment is still tied to social hierarchy and status. Present systems are prone to corruption and lack of transparency. What should be assessed, why, and how this relates to global competencies will become a matter for individual judgment to relate assessment outcomes to work requirements. Competence will be a key issue to grapple with, begging the question: At what point is someone “licensed” to operate in a complex area and, therefore, enjoy a life trajectory with greater economic potential? This must be distinct from mere status qualifications. How are assessments to be regulated? Only through some form of individual agency can the process be seen as open and democratic. Given the right skills and support, the agency of the individual can shape the nature of the digital world and better understand its inherent dangers. Individuals become the architects, not the victims or the new order.

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Artificial Intelligence in Public Policy

Key Insights for Governments

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Policy Brief

Keywords:

artificial intelligence, governance, government effectiveness, state capacity, capabilities

THE CHALLENGE: HOW AND WHY SHOULD ARTIFICIAL INTELLIGENCE BE INTEGRATED INTO GOVERNMENTS?

Artificial intelligence (AI) is advancing at a rapid pace, transforming entire sectors of the economy and society. This speed poses a significant challenge to state structures, which have been traditionally designed to guarantee stability, transparency, and control. It generates uncertainties and tension in people and organizations because, in many cases, we use ideas and instruments from previous centuries to face global twenty-first-century problems (Subirats, 2020). These contemporary problems are often conceptualized as “cursed”, “wicked”, or “twisted” (Head and Alford, 2015) to indicate their multidimensionality and complexity. This is because they involve the participation of multiple actors and have a high incidence of political priorities in their resolution.

In the context of vertiginous change, governments must adapt their structures and processes to cutting-edge technology, adopting an innovative and citizen-focused organizational culture. The state must be “ambidextrous”, managing both day-to-day tasks and strategic planning for the future (Ramió, 2021). Public organizations must be managers of complexity, transforming individual knowledge into collective intelligence and incorporating AI. In this context, one question is central: How can governments use AI effectively and equitably, while maximizing its benefits and minimizing its risks? The adoption of AI not only implies facing the uncertainty inherent in new technologies but also making structural adjustments and developing governance strategies that are adapted to the digital era.

Currently, AI seems to have the potential to make government processes more efficient, optimize resource management,

and improve the delivery of public services. However, the way in which it should be incorporated and implemented in the exercise of government is not clear. Without clear strategies, the implementation of AI can result in solutions that are disconnected from the real needs of citizens, costly, and difficult to maintain over time. This could result in a loss of opportunities for innovation and improvement and an increase in citizen distrust towards government institutions, which are already being widely questioned.

The AmericasBarometer 2023, which was conducted by the Latin American Public Opinion Project (LAPOP) at Vanderbilt University, analyzes the relationship between perceptions of state capacity and support for democracy. The data indicate that support for the democratic system is significantly higher in countries where citizens perceive greater efficiency and capacity in state institutions (LAPOP, 2023). These results suggest that strengthening state capacity is a key factor not only for democratic consolidation but also for building institutional legitimacy.

From this perspective, the incorporation of AI in public administration should be conceived not solely as a tool to improve operational efficiency, but also as a mechanism to strengthen citizen confidence. If technological innovations manage to translate into a better experience in the provision of public services, greater transparency, and more agile and efficient management, they could contribute to reversing the trend of distrust towards state institutions. However, if their implementation does not correspond to a well-defined strategy and does not have a significant impact, it could have the opposite

»The way in which it should be incorporated and implemented in the exercise of government is not clear.«

effect, solidifying the perception of state inefficiency.

In this sense, the adoption of AI in the governmental sphere must be framed within a process of technological governance that guarantees its alignment with the principles of equity, accessibility, and sustainability. Otherwise, far from strengthening the legitimacy of the state, its disorganized implementation could become an additional factor in democratic erosion.

The Center for the Implementation of Public Policies for Equity and Growth (CIPPEC) conducted a survey on the use of AI in provinces and municipalities in Argentina. The results showed that the adoption of these tools is incipient, highlighting various ways in which AI is integrated into public policies, as follows:

- Development of new capabilities: The implementation of AI-based solutions to address specific challenges.
- Improvement of existing governmental processes: The integration of AI to optimize current procedures.
- Promotion of technological development: The promotion of AI as part of public policies that are aiming for technological advancement, without being directly applied to internal governmental processes.

Beyond these stand-alone initiatives, there was found to be a significant lack of knowledge among policymakers about how AI works. This finding underscored the need for the leaders of public processes to develop the capacity to become “smart consumers” of AI: understanding what questions to ask and what key aspects should be considered in mitigating its biases and associated risks. This would enable them to make informed decisions about technology investments (Dawes et al., 2023).

Digital transformation in the public sector is not homogeneous across territories, either within a country or across different nations. However, this document proposes a series of useful recommendations for public leaders who are questioning how and why they should incorporate AI into their management areas.

RECOMMENDATIONS

1. Developing Capabilities: Beyond Hiring Technical Staff

For the incorporation of AI in the public sector to be effective, it is essential to strengthen the skills of civil servants. The answer lies not only in the technology but also in the people in charge of making decisions about its use and the purpose of its incorporation.

One of the most obvious challenges is the difficulty in attracting and retaining technical talent who are capable of developing these technologies. However, this article focuses primarily on policymakers, as they are responsible for deciding how and for what purpose to incorporate AI. These professionals must receive specific training that will enable them to become smart consumers of technology, capable of

asking critical questions, assessing risks, and making informed decisions about AI adoption. It is not necessary for them to know how to create AI, but it is necessary for them to understand how it works, how it is trained, and how to avoid biases.

To this end, it is critical that officials understand key concepts such as algorithmic transparency, the critical points to consider when procuring AI, and the levels of autonomy inherent in these technologies.

Governments should invest in training their workforce in understanding and monitoring the use of AI. This training should not be limited to technology specialists but should include decision makers and public managers in various areas, ensuring that AI is used with a strategic approach and adapted to the sectoral needs of public policy.

2. Data Governance: The Foundation of any Technological Innovation

Data governance is a fundamental component for the digital transformation of the state and the effective implementation of AI solutions in the public sector. In general, the lack of interoperability, institutional coordination, and of a comprehensive data strategy have led to information silos, redundant processes, and the poor leveraging of data for evidence-based policymaking. The absence of integration mechanisms and a harmonized regulatory framework limits the potential of data to improve the quality of decisions and the efficiency of public services.

To overcome these challenges, it is necessary to advance in three key dimensions: 1) the institutionalization of the data governance function, 2) the strengthening of the regulatory framework, and 3)

the development of specialized talent. In addition, technological infrastructure is required to ensure interoperability and privacy protection, fostering a data culture that allows for its strategic use in public management. The implementation of effective data governance will not only promote the modernization of the state but will also allow for a more proactive administration, which is capable of anticipating future scenarios and offering agile responses to citizens' demands (Estévez & Solano, 2023; Solano & Diéguez, 2024).

3. Promoting Local Innovation Ecosystems

Public-private collaboration is essential in accelerating innovation and ensuring effective digital transformation. The Government Technology (GovTech) ecosystem, which is comprised of startups and technology enterprises, can bring creative and scalable solutions to public administration challenges. Fostering public-private partnerships allows governments to leverage the private sector's knowledge and expertise and to benefit from emerging technologies and tools that improve the efficiency and quality of services (Chmielewsky & Peralta, 2024).

Cooperation with universities, research centers, startups, and technology enterprises makes it possible to develop solutions that are more aligned with local needs and to increase the capabilities of the public sector. The digital transformation of the public sector cannot be achieved by the state alone, as many tools will need to be adapted to local needs. It is especially relevant for the Global South to think of solutions from this perspective, relying on local ecosystems that understand the particularities of their respective environments.

4. Interoperability and Resource Efficiency

Data governance is an essential pillar for the digital transformation of the public sector. Adequate storage, integration, and the use of available data strengthens the strategic capabilities of the state, facilitating integrated services and simplifying interactions with citizens. This not only improves the efficiency and quality of decision making, but also promotes proactive and efficient public management, which is able to anticipate future scenarios. Moreover, it fosters the creation of new operational capabilities, such as standardization and interagency data exchanges.

Internal fragmentation within the state, which is characterized by agencies that do not communicate or collaborate with each other, generates the duplication of processes and wastes resources, negatively impacting the efficiency of public management. In this context, strengthening and investing in digital public infrastructure becomes a central element of digital transformation. This infrastructure not only enables interoperability between different agencies and levels of government, it also provides the necessary basis for developing more efficient, accessible, and integrated digital services. Initiatives such as pooled digital procurement and the cloud-based sharing of digital tools maximize the available resources and generate synergies in a practical way.

The economies of scale achieved through data integration and the strengthening of digital public infrastructure not only reduces costs but also simplifies and unifies processes across all levels of government, generating a more cohesive and efficient state.

»Preparing governments for the era of AI implies investing not only in technology but also in the capabilities.«

5. Using AI to Create Public Value

The incorporation of AI into the public sector should not be an end in itself. The focus should be on improving the quality of public services, either by optimizing existing services or by developing new ones. AI has the potential to improve the efficiency of the state, but its success should be measured in terms of the impact it has on citizens. At this point, it is important to understand that the challenge is not only technological but also institutional and human. Preparing governments for the era of AI implies investing not only in technology but also in the capabilities required to connect these technological advances with the needs of citizens. Only in this way can AI become a true driver of public value.

CONCLUSIONS: KEY TAKEAWAYS FOR GOVERNMENTS

The integration of AI in the public sector presents both opportunities and challenges. Governments must ensure that the adoption of AI is not only technologically sound but also strategically aligned with public value creation. The following key insights have emerged from this analysis:

- **AI as a Strategic Asset:** AI should not be implemented merely for modernization purposes but as a tool to enhance

service delivery, optimize government efficiency, and strengthen institutional legitimacy. Its success must be measured by its impact on citizens and its contribution to democratic governance.

- **Building Governmental Capabilities:** Effective AI adoption requires public officials to develop the necessary skills to understand, procure, and govern these technologies. Investing in AI literacy for policymakers is as crucial as hiring technical experts.
- **Data Governance as a Foundation:** AI's effectiveness depends on well-structured data governance frameworks. Strengthening data interoperability, regulatory alignment, and institutional coordination are essential in maximizing AI's benefits while also safeguarding data privacy and security.
- **Leveraging Local Innovation Ecosystems:** Public-private collaboration and engagement with GovTech startups, universities, and research centers can drive AI innovation that is tailored to local needs, ensuring technology solutions are contextually relevant and effective.
- **Ensuring Equity and Trust:** AI adoption should align with the principles of transparency, fairness, and accountability. Without clear governance mechanisms, AI implementation risks increasing public distrust rather than strengthening state legitimacy.

Ultimately, AI's role in government is not simply about technological transformation, it is also about reimagining how the public sector operates. Governments that prioritize capability development, robust data governance, and citizen-centered AI

applications will be better positioned to harness AI's full potential while ensuring its responsible and equitable deployment.

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AI Governance in Latin America

Towards a New “Brussels Effect” or a Distinct Regional Approach?

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Opinion Piece

Keywords:

artificial intelligence governance, Latin America, artificial intelligence regulation, digital governance

SETTING THE SCENE

A global trend of drafting regulations or creating new frameworks for artificial intelligence (AI) technologies is underway. Latin American countries are part of this phenomenon and are actively engaging in debating how best to govern AI. Transitioning from an initial phase of crafting aspirational AI strategies, many nations in the region are now debating legislation in their national congresses and revising their AI strategies after the irruption of generative AI.

According to several global rankings and reports on AI governance, worldwide, the trajectory of the Latin American region in this field is medium-to-low, with heterogeneous results across countries. According to the Global Index on Responsible AI (Adams et al., 2024), out of 136 countries,

only two scored above 75 points (out of 100). Central and South American countries generally rank below 50, with most at approximately 25 points. Similar findings emerged from the 2024 Government AI Readiness Index, in which the region averaged 43 points, whereas the leading country (the US) reached 87 points.

Against this background, this article explores three key issues:

1. The current trends in AI governance across Latin America.
2. A key question in academic and policy circles: To what extent is the EU’s AI Act – as with the General Data Protection Regulation (GDPR) – shaping these incipient efforts?
3. The specific issues that emerge as priorities from a Latin American perspective on AI governance and whether

Latin American countries are forging a distinct regulatory approach tailored to their unique needs, goals, and resource constraints.

For this analysis, I will delve deeper into current developments in eight Latin American countries: Argentina, Brazil, Colombia, Chile, Ecuador, Mexico, Peru, and Uruguay. Together, they account for more than 80% of the region's territory and GDP. According to the *2024 Latin American AI Index* (CENIA, 2024), out of eighteen Latin American countries, the first group of so-called “pioneers” includes Chile, Brazil, and Uruguay. The remaining five countries in our selection belong to the second group, referred to as “adopters”, who have begun integrating AI into productive sectors, services, and public administration. None of the eight selected countries fall into the third group, “explorers”, i.e., those who are still in the initial stages of AI development.

A BROAD OVERVIEW OF RECENT DEVELOPMENTS IN AI GOVERNANCE IN THE LATIN AMERICAN REGION

The first wave of AI policies were crafted by the Executive Branch and began in 2018 with Mexico's AI Strategy, followed by Colombia (2019), Argentina (2019), Uruguay (2020), Chile (2021), Peru (2021), and Brazil (2021). In several cases, these strategies were largely aspirational (Aguerre, 2024) and led to few concrete action plans for implementation. In Mexico and Argentina, AI strategies were completed shortly before the end of the administration and never actually came into force. In Peru, the proposed AI Strategy for 2021–2026 has not been further developed. In Colombia, a change in government led to

»Transitioning from an initial phase of crafting aspirational AI strategies, many nations in the region are now debating legislation in their national congresses and revising their AI strategies after the irruption of generative AI.«

shifts in priorities and policies. Uruguay's initial strategy was heavily focused on the use of AI in the public sector. Ecuador, however, has been lagging behind and is only now beginning to focus on AI policy. Chile, Brazil, and Uruguay stood out in this first wave, as they continued shaping AI policies.

This first wave coincided with growing interest from multilateral organizations and their increasing involvement with several governments in the region, particularly the Inter-American Development BANK (IDB), the Development Bank of Latin America and the Caribbean (CAF), and, to a lesser extent, the World Bank. The United Nations Educational, Scientific and Cultural Organization (UNESCO) has also played a role, especially following the

development and adoption of the *UNESCO Recommendation on the Ethics of AI* by the 193 member states in November 2021, as well as the launch of a dedicated methodology to help countries prepare for its implementation – the Readiness Assessment Methodology (RAM). With the support of these organizations, initial steps towards regional coordination began to emerge. Furthermore, substantive dialogues within the Latin American technology (tech) and academic community took place, for example, the *Qhuipui initiative*. Although substantive, there were few of these dialogues because of the scarcity of resources.

A second wave of AI strategies is currently gaining momentum in the region. Brazil announced a new AI strategy in July 2024 (referred to as PBIA), leveraging its G20 presidency. Chile (May 2024), Uruguay (December 2024), and Colombia (January 2025) presented their revised strategies. Additionally, the Argentine government announced at the end of 2024 that they had started drafting an AI strategy, as are Ecuador and Peru. In Mexico, after several years of low government focus on AI policy, in October 2024, the new president, Claudia Sheinbaum, announced the creation of the Digital Transformation and Telecommunications Agency, a federal agency aimed at modernizing the government's technological infrastructure.

This renewed interest in the region and the trend of revising AI strategies aligns with global developments. According to the latest AI Readiness Report by Oxford Insights (2024), twelve new AI strategies have been published or announced – triple the number seen in 2023. Moreover, more than half of these strategies have come

from lower-middle-income and low-income countries.

There is also growing interest from congresses in the region. However, in recent years, there has been a strong trend against incumbents, along with rising polarization and party fragmentation in Latin American congresses, which has made legislative processes volatile and uneven. In several countries, the parliamentary debates are not triggered or accompanied by the Executive Branch. There are legislative proposals on AI regulation being presented in the eight countries under study. Still, the first country to pass AI governance legislation was Peru, with a minimalist law that underwent a participatory consultation process for its regulation.

In Chile, the bill introduced by the government in May 2024 was inspired by the EU AI Act's risk-based approach, establishing proportional obligations for the actors involved in developing and implementing AI systems. The law could be enacted by the end of 2025. Additionally, the Chilean Congress is working on amending the Penal Code to criminalize the generation and dissemination of deepfakes, mirroring efforts in other countries. Chile has also recently updated its Personal Data Protection framework.

A closer look at the region's biggest actor, Brazil, is warranted here. After months of deliberation and intense involvement from academia, civil society, and private sector stakeholders in legislative debates, the Senate approved an AI law based on a 2023 bill. It was then passed to the lower chamber and is expected to be reviewed in 2025. Although it differs in several ways from the Chilean case, the Brazilian proposal also follows

the EU AI Act. The legislative process drew significant public attention, particularly due to the involvement of acclaimed musicians and artists in discussions on property rights clauses. Additionally, the Chamber of Deputies approved legislation on the manipulation of digital images, which has now moved to the Senate. These legislative debates unfolded in parallel with Brazil's 2024 electoral process, which was marked by a highly publicized legal dispute with the social network X and its owner Elon Musk. Furthermore, before the start of the election year, the Federal Electoral Tribunal introduced new regulations on deepfakes and the use of AI in elections, further shaping the country's approach to AI governance.

KEY TAKEAWAYS ON AI GOVERNANCE IN THE REGION

The landscape is fragmented, making it difficult to identify regional patterns due to the high heterogeneity among countries. However, despite their differences, five takeaways (outlined below) can be drawn from current developments in the eight Latin American countries explored.

1. In Search of a Place in the AI Value Chain: A Work in Progress

Amid intense geopolitical competition between the US and China, Latin American countries are searching for their place in the AI value chain. While the influence of the EU AI Act is evident in many legislative proposals across the region, a process of adaptation to local needs can be observed, as seen in the Brazilian debates. Strong resistance from private sector stakeholders to the European approach is often based on the argument that it could hin-

»The landscape is fragmented, making it difficult to identify regional patterns due to the high heterogeneity among countries.«

der innovation. Although this is an open and significant debate in Europe (beyond the scope of this piece), the challenges of applying the European framework to the Latin American context go beyond concerns about innovation.

First, considering Latin America's current role and potential in the AI value chain, a more productive debate in the region should focus primarily on AI adoption and the development of applications rather than on the creation of foundation models, making the direct implementation of the European framework less relevant. Second, the European approach cannot simply be transplanted into the region without the institutional density of the EU, which is fundamentally different from Latin America.

The emergence of generative AI and the hype surrounding it often overshadow a much-needed debate in the region on how responsible innovation can unlock the potential productivity gains achievable through traditional AI, particularly machine learning algorithms. These approaches typically require fewer infrastructure resources – but significant technical human talent – and do not carry many

»Amid intense geopolitical competition between the US and China, Latin American countries are searching for their place in the AI value chain.«

of the risks associated with generative AI. A detailed analysis of the bills under consideration in the Argentine Congress, which was conducted with colleagues from Universidad Torcuato Di Tella (Guilera et al., 2025), showed that the promotion and development of AI-enabling factors are almost entirely absent from the legislative discussion so far. Similarly, fostering productive development through AI adoption receives minimal attention, as does the use of AI for environmental sustainability or the emphasis on environmental risks and impact assessments. Our analysis also indicates that there is still no clear consensus among Argentine legislators on whether to pursue a general AI law or to address specific issues, such as AI deep-fakes or the use of AI in particular sectors, such as education.

2. AI Strategies: Not Putting Their Money Where Their Mouth Is

A key feature of this stage of generative AI development is the vast amount of resources required, particularly the speed of private sector investments and advancements compared to those of the

public sector and academia. According to the *2024 Stanford Index Report* (p. 14), in 2023, the industry produced 53 notable machine learning models, while academia contributed only fifteen. The second Trump administration might witness a re-inforcement of this trend. It was a strong statement that, on the second day of his new term in office, the US government announced the launch of Stargate, a new private joint venture, with an initial investment of US\$100 billion, with plans to reach up to US\$500 billion by 2029. If these figures are difficult for European countries to match, the contrast with investments in Latin America is even more striking. The largest investments in the region are likely to come from Brazil, which has announced a budget of US\$4 billion for its four-year AI strategy. Meanwhile, Colombia's AI policy, which was unveiled in early 2025, committed US\$110 million to a five-year initiative (2025–2030). The scarcity of resources underscores the need for a strong role in research and development (R&D) from the private sector in the region, as well as improved efficiency and coordination. Out of the three pillars (Government, Data, and Technology) of the *Government AI Readiness Index 2024*, conducted by *Oxford Insights*, the Technology pillar remains the most significant challenge in the region and demands greater investment. However, investments in education and the science and technology sectors are equally crucial, especially since they require sustained funding over time.

3. The Public Sector and AI Adoption: A Mission Overlooked

AI can not only optimize the provision of public services, such as healthcare, ed-

education, and transportation, but can also enhance accountability by improving how governments explain their use of public funds and justify decision making. For instance, AI-powered tools that analyze large datasets can help detect irregularities, identify potential anomalies, and prevent corruption. Civil society organizations, investigative journalists, and researchers thus gain access to a powerful new tool.

Conversely, risks and potential misuse must also be addressed by setting restrictions and requirements, such as algorithmic transparency – e.g., ensuring that citizens know when they are interacting with AI, for what types of decisions the government is using AI, and how personal data are protected. In a context where illiberal regimes are on the rise, it would be naïve to underestimate the fact that AI tools can become a powerful weapon for surveillance, privacy violations, and restrictions on freedom. Without neglecting the potential for misuse and the need for responsible adoption, the integration of AI into public administration in the region could enhance public service delivery and boost trust in governments. However, it is still in its early stages. A pioneering study on Chile (*CENIA, 2024*), which analyzed the potential labor market impacts of AI, found that one of the jobs most likely to be accelerated by generative AI is that of public sector employees.

4. Participatory AI Governance: An Antidote to Policy Discontinuity?

Given that one of the main challenges of AI policy in the region is long-term stability, especially amid government transitions, a crucial task is developing broader

support and buy-in from the AI ecosystem (beyond government actors). While legislation may provide more stability than executive regulations, it is not sufficient on its own. Chile and Uruguay offer interesting cases, as their AI strategies were adjusted but ultimately maintained after a change in government. Notably, in both instances, these strategies emerged from lengthy and diverse consultations. Such consultations may have been instrumental in ensuring policy continuity despite political shifts.

5. Challenging but Promising Efforts in Regional Coordination

The first regional statement on AI did not come from governments but rather from the tech and academic community. The KHIPU initiative – which mirrored the African experience – released a call for the responsible adoption of AI, known as the Santiago Declaration (2023). This was followed by the Montevideo Declaration (2024), which emerged from a series of ministerial meetings that were strongly

»In a context of intense global geopolitical competition, regional coordination might be the best way for Latin America to carve out a role in the AI landscape.«

supported by international cooperation efforts from organizations such as CAF and UNESCO.

In a context of intense global geopolitical competition, regional coordination might be the best way for Latin America to carve out a role in the AI landscape. For instance, it appears to be the most effective strategy for addressing the lack of AI models in Spanish, a challenge that the Chilean Center for Artificial Intelligence (CENIA) has begun to tackle. While we know regional cooperation is a difficult task – Mercosur’s crisis being a clear sign of the region’s challenges in advancing integration – it is likely to be the only viable path to securing a voice in the increasingly asymmetrical distribution of power in AI development and governance.

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Managing US Foreign Relations

Leadership, Governing, and Representing the US in the World

Colin Bradford, Global Solutions Fellow, Global Solutions Initiative

Opinion Piece

Keywords:

alliance, multilateral relations, global leadership

February 28, 2025, will be remembered as the historic day when the president of the US conducted American foreign policy with Ukrainian President Volodymyr Zelensky in the Oval Office, live on television. This event revealed a massive shift in US foreign policy. Trump had already withdrawn from the World Health Organization (WHO) and had dismissed NATO as an irrelevant alliance. It did not send a delegation to the UN conference on biodiversity in Rome, nor did the US Secretaries of State or the treasury appear at the G20 foreign ministers or G20 finance ministers in South Africa in February.

To address this drama, it may help to clarify that there is a crucial distinction between US political leadership in the world, the governing responsibilities of US foreign policy on a practical basis, and the representation of the US in the international community of nations and

in the global system of international institutions.

The Trump administration and Congress need to make these distinctions clear: President Trump's global political leadership is not the same as the daily conduct of US foreign policy and diplomacy, and the representation of the nation in the international community is a different responsibility. The president has a right and a responsibility to lead, but the government still needs to operate, and "we the people", need to participate and be represented in the international arena, where the global future is being forged, with or without us.

US global leadership needs to be exercised. The US president is the leading spokesperson for the country in the world. As such, the president, as the nation's leader, expresses the US's interests and priorities. This space for presidential leadership needs to be recognized.

However, Congress has ultimate and exclusive authority in providing financial support for US foreign policy, funding US membership in international organizations, authorizing declarations of war, and approving treaties with other countries. Therefore, it is crucial to recognize that the president does not hold sole authority in foreign policy matters. Presidential actions need to be consistent with the rule of law and with the constitution to avoid the need for remedial follow-up actions to correct presidential misconduct.

Governing functions need to be reformed and settled for operational purposes.

Dramatic, drastic, disruptive, and unilateral presidential actions to eliminate departments, agencies, and programs that have been authorized and funded by Congress are subject to review by both Congress and the courts to establish their consistency with the US constitution and the rule of law. However, these reviews take time.

In the interval, great damage is done, with people being impacted in significant ways that arouse concern across the nation. The people of the US feel a *responsibility for others* in America and beyond America. Those interests are embedded in the decades-long history of US membership, participation, and leadership in the global system of international institutions.

The representation of the people of the US in international institutions needs to go forward on its historical path and not be decisively derailed and destroyed by the sudden and dramatic actions of a single president, especially when those actions themselves may be proven illegal and unconstitutional, and, thus, repealed.

Andrew Young said in a recent interview: “we learned from the Second World War that we can’t make it as a single nation on this planet. We have to live together as brothers and sisters or perish together as fools.”

Most Americans would agree with this statement. We, as a nation, have to belong to and participate in the world. Charitable donations and memberships in philanthropic organizations are one significant sign that Americans have concerns for their neighbors and for the impoverished in this world. Americans are pragmatic

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enough to understand that the way the rest of the world sees the US is important to the interests and security of the US. US reputational capital in the world was significantly undermined by the events that unfolded in the Oval Office on February 28.

If Donald Trump, in his own conduct as president, wants to stand alone internationally and focus primarily – even exclusively – on bilateral relations with individual countries, that is his prerogative. He appears to

be not interested in multilateral relations in his own role in the world; instead, he prefers to focus on his personal relationships with a select group of leaders. Smaller countries; middle powers; multilateral institutions such as the UN; and involvement in regional arrangements such as NATO and informal networks such as the G7 and G20 do not appear to interest him.

However, these personal preferences and different styles of leadership do not mean that he has the authority or right to withdraw the nation from international organizations without consulting Congress, other countries that are crucial to the US, or US civil society.

Trump was not elected to isolate the US from the world, and Congress has not authorized the termination of US funding for international organizations nor the termination of its membership in them. The Impoundment Act of 1974 requires the president to send “requests to rescind” appropriated funds to Congress *before* budget cuts occur. The Supreme Court’s decision on March 5, 2025, is the first step towards insisting on exclusive congressional authority in revenue and expenditure issues, enshrined in law and in the constitution.

The American people are represented in these international institutions as an extension of our role as a nation in the world. “We the People,” as a society and a nation, are involved in the world and are a part of the world. The historic engagement of the US in the world cannot be abruptly terminated by the will and whim of a single president, acting alone during his short interval in office. The president can stand alone in his presidential role, but he alone cannot withdraw the US from the world without congressional involvement.

From “We” to “Me”

The End of Multilateralism?

Markus Engels, Secretary General, Global Solutions Initiative

Opinion Piece

Keywords:

multilateralism, new narratives, re-imagining globalism

POPULISM AND DEGLOBALIZATION

The withdrawal of the US and Argentina from the World Health Organization (WHO) and the Paris Climate Agreement symbolize an international trend: rising populist movements are fulfilling campaign promises to withdraw from international organizations and treaties. In many G7 nations, so-called populist or nationalist political movements are promoting the idea that national sovereignty and economic growth are harmed by international agreements. What were once fringe ideas have now entered the mainstream, meaning that the backlash against the post-war global order is likely to be a long-term trend. Despite their different national characters, these political movements share a desire to evade international regulation, as reflected in the Brexit campaign slogan, “Take back control”. International institutions and the reporting and notification obligations often associated with legally binding international treaties are perceived as a form of control and, in some cases, as a form of coercion that thwarts

national sovereignty and jeopardizes the freedom of economic forces.

There is much to be said about the sociocultural, economic, and political forces driving deglobalization, as well as the effects of this process within individual countries. But there is also a deeper question we need to ask: Has the narrative of prosperity for all through globalization which has been promoted over the last 50 years, actually sparked the renationalization movement? Has the fact that we have continued to promote this narrative even as the promise failed to materialize helped open the way for populist movements that appeal to those who feel left behind? Is a new narrative about globalization and prosperity needed? How can we articulate and promote a new political logic that takes the concerns of those promoting deglobalization seriously, while holding firm to our commitments to global prosperity and cooperation? How can we bring together and support civil society actors who are oriented towards the common good and create new solutions, narratives, and a new political logic?

ORIGINS AND ADVANTAGES OF THE POST-WAR INTERNATIONAL SYSTEM

The international system as we know it was created in the aftermath of the Second World War, as a reaction to the rupture of civilization and unprecedented mass murders. The UN and many of its sub-organizations were created and regional organizations were established to strengthen international cooperation. In addition, a cascade of international treaties, first and foremost the Universal Declaration of Human Rights, established an international canon of values that promoted human dignity and equal rights.

Although the post-1945 system is by no means an internationally just political and economic system and is still dominated by the West, it was based on the realization that international cooperation is necessary to overcome the major challenges facing humanity. The establishment of international humanitarian law and the international codification of fundamental and human rights simultaneously laid the legal and intellectual foundation for later liberation movements. The core idea was based on a “we-centered-perspective”, embracing humanity as a whole, rather than an “I-centered-perspective”, giving the individual or a particular national identity privilege. This system offered disadvantaged people around the world an intellectual and legal framework to name when fighting disadvantages. The existence of at least nominally shared humanitarian values and agreed upon legal frameworks laid the groundwork for many impressive and successful decolonization and democracy movements around the world.

THE INDIVIDUALIST TURN

Yet, over time, the narrative of human rights increasingly began to focus on the individual instead of humanity as a whole. The development of individual human rights and the concept of individual dignity – important and good things in themselves – were increasingly aligned with the calculation of individual economic benefits. Narratives around the benefits of global cooperation increasingly framed their answers to the question, “What’s in it for me?”

This shift can clearly be seen by comparing the populist party platforms of today with those of the post-war period. If you read the West German party manifestos from the post-war period, for example, it is clear that even conservative and liberal parties emphasized the common good and social justice over the maximization of individual benefits.

It is easy to blame the shift towards individual benefits on the ideologies of populist parties; however, what if their arguments only resonate because those of us promoting globalization have increasingly promoted a narrative that focuses more on individual benefits than the benefits and necessity of global cooperation? In recent decades, in order to make the expansion of international cooperation more popular, arguments have emphasized the economic benefits for the individual. This framing, combined with the failure of governments around the world to address the needs and concerns of those left behind, has arguably opened the way for the populist political logic that is rising across the West.

The focus on individual benefits by both globalists and anti-globalists ignores the fact that the challenges facing our entire

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planet can only be meaningfully addressed by the global community as a whole. Climate change, to name the most obvious and urgent example, makes international efforts indispensable.

However, it is crucial that we acknowledge that not every person, region, nation, and economic sector will benefit equally from closer political and economic cooperation. We must face this truth and recognize the limits of the well-meaning narrative that globalization is a “rising tide that will lift all boats”. The narrative is ineffective and arguably feeds into political arguments that seek to undermine all forms of global cooperation.

It is time for us to come together and create new narratives, which capture the complexity and promise of global cooperation. We must once again realize that global challenges require global cooperation. We must make the case for shared values, agreed upon legal frameworks, and economic cooperation. Not because they are the status quo, not because of nostalgia for the post-war order, but because they are necessary to create just and sustain-

able solutions to the ecological, technological and economic problems we face in the twenty-first century.

Global Transformations and the Challenge of Inequality

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Policy Brief

Keywords:

transformation, inequality, comparative policy analysis, sustainability, green transition

SHAPING TRANSFORMATIONS TO TACKLE GLOBAL CHALLENGES AND INCREASE EQUALITY

Human activities – including transportation, energy consumption, and the use of harmful goods such as sugar, alcohol, and tobacco – inevitably cause harm. However, this harm is unevenly distributed, disproportionately affecting low-income regions, exacerbating global inequalities. For example, the increasing intake of sugar-sweetened beverages (SSBs) has played a major role in the worldwide rise of Type 2 Diabetes (T2D) and cardiovascular disease (CVD). The most significant impacts are seen in Latin America and the Caribbean, where SSB intake accounts for 24.4% of T2D cases and 11.3% of CVD cases. Sub-Saharan Africa also shows high incidence rates, with SSB intake linked to

21.5% of T2D and 10.5% of CVD cases. In contrast, Southeast and East Asia report the lowest SSB-related T2D incidence, at 3.1% (Lara-Castor et al., 2025). The growing recognition of such inequality, along with broader concerns such as climate change and public health, has driven the establishment of transformative actions, including reduced sugar consumption and the adoption of electric vehicles.

Globally, governments play a crucial role in promoting transformations through policy interventions. These include subsidies for electromobility (e-mobility), the expansion of renewable energy, and incentives for sustainable and health-conscious consumption. By implementing policies, governments actively shape and accelerate systemic change to reduce harm to both people and the environment. How-

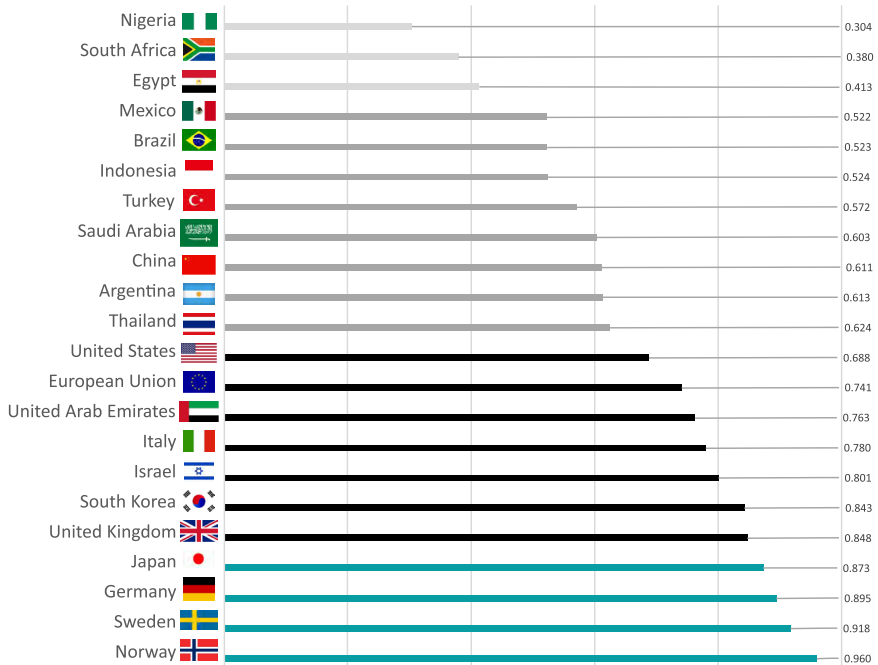


Figure 1: Overall inequality score (own calculations), ranging from zero (unequal) to one (equal).

ever, the extent to which these policies mitigate or exacerbate inequalities largely depends on the policymaking process and the policy outcomes. Only through systematic evaluation can policymakers ensure that policies promote inclusive and equitable transformations.

To conduct such an evaluation, it is necessary to analyze significant ongoing transformation using a well-documented data landscape. The transition to e-mobility provided a fitting case for this study, as it has been underway for several years and has reached an advanced stage. To assess the effectiveness of regulations in accelerating the shift toward battery-electric vehicles (BEVs), we analyzed their im-

pact while considering national inequality indices. Our study expanded on existing research by evaluating the relationship between the policies introduced within the automotive transformation, drawing from a dataset of policies between 2017 and 2024 and on inequality parameters across 22 countries. We calculated an overall inequality index per country by combining economic, political, and social inequality indicators (see Figure 1). Economic inequality was measured using the Gini coefficient and poverty rate; political inequality through civil justice, criminal justice, and human freedom indices; and social inequality through factors such as life expectancy, literacy rate, gender in-

»However, this harm is unevenly distributed, disproportionately affecting low-income regions, exacerbating global inequalities.«

equality, and climate vulnerability. For the calculation, we used publicly available data sources, such as the Organization for Economic Co-operation and Development (OECD), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Bank.

Our findings have supplemented an extensive literature review on the role of inequality within the transformations of e-mobility, public health, and energy. Our analysis aims to identify policy trends, assess current progress, and derive forward-looking insights to help policymakers design equitable transformation strategies. By linking our research to global governance and sustainability debates, we seek to contribute to balancing economic progress with social equity and environmental sustainability.

Transformations as a path towards sustainability and equality are fostered in industries such as automotive, public health, and energy to mitigate environmental harm and enhance societal well-being. Driven by technological innovation and shifts towards sustainability,

these transformations promise benefits, including reduced carbon emissions, improved public health, and more equitable resource distribution. However, while presenting opportunities, these transformations also carry the risk of exacerbating existing inequalities, particularly for marginalized communities. Analyzing these transformations highlights how social and economic disparities can emerge and be reinforced across global, national, and local levels.

The **automotive industry's transition** to e-mobility is widely regarded as a key strategy for decarbonizing transportation and improving air quality. BEVs offer long-term advantages, including lower operational costs and reduced environmental impact, compared to traditional gasoline-powered vehicles (Romero-Lankao et al., 2022). However, the benefits of this shift are not equally accessible to all. Our study suggested that countries differ significantly in their level of BEV adoption depending on their socio-economic characteristics and the extent of their infrastructure investments.

On a global scale, countries with lower inequality tend to invest more in infrastructure, such as charging stations, to ensure widespread participation in the shift to e-mobility. In contrast, economically disadvantaged countries with higher inequality often lack the financial capacity to invest at the necessary scale, leading to insufficient charging networks and inadequate subsidies. This topic regarding policy impacts will be examined in more detail later in this article. This lack of financial support and infrastructure makes enabling the population to participate in the shift to e-mobility significantly more challenging.

Consequently, on a national level, disparities exist between income groups and between urban and rural areas. Cities are generally better equipped with charging infrastructure, while high upfront costs remain a significant barrier for lower-income populations (Romero-Lankao et al., 2022). As Sivak & Schoettle (2018) demonstrated, even in advanced economies such as the US, these financial barriers prevent lower-income groups from benefiting, reinforcing existing inequalities. Similarly, in South Africa, policies have primarily supported higher-income regions, illustrating the challenges of ensuring an inclusive transition (Mashilo & Moothilal, 2021).

However, inequalities in the e-mobility transition extend beyond distribution, also arising in development and production. Countries with higher levels of inequality often invest less in research and development (R&D) for sustainable energy solutions, keeping them dependent on external technological advancements. Moreover, the extraction of key materials for BEV batteries, such as lithium and cobalt, primarily takes place in lower-income countries, where local communities bear the environmental and social costs without receiving proportional benefits (Sovacool et al., 2021). This production-side burden, combined with structural challenges that lead to inequality in innovation capabilities and BEV infrastructure adoption, reinforces global inequalities in both BEV uptake and value-added distribution within the supply chain.

The **public health sector's** shift towards healthier alternatives, such as sugar or cigarette substitutes, aims to mitigate the adverse effects of overconsumption, such as diabetes and cardiovascular diseases.

However, these innovations also reveal a pattern of inequality at international and national levels. For example, while high-income nations are seeing a decline in SSB consumption, beverage companies are increasingly targeting emerging markets, exacerbating health burdens in regions such as Sub-Saharan Africa and Latin America (Lara-Castor et al., 2025). This shift towards western dietary patterns has played a crucial role in deepening health inequalities. The rapid adoption of processed foods and sugary beverages in developing nations without adequate policy intervention has resulted in a significant rise in T2D and CVD between 1990 and 2020 (Lara-Castor et al., 2025).

However, even within individual countries, this public health transformation is not experienced uniformly across socio-economic groups. In the Middle East and North Africa, relatively high SSB-related health burdens are found among people with low education. Lower-in-

»On a global scale, countries with lower inequality tend to invest more in infrastructure, such as charging stations, to ensure widespread participation in the shift to e-mobility.«

come populations face limited access to healthcare and nutrition education, making them more vulnerable to the adverse health effects of excessive SSB consumption. Surprisingly, in some regions (e.g., Sub-Saharan Africa and Latin America) higher educational attainment has actually been associated with increased SSB consumption. This is because educated individuals in urban areas are more likely to purchase and consume these beverages due to greater exposure to marketing and increased disposable income (Lara-Cas-tor et al., 2025). While education is generally linked to improved health behaviors, this example highlights the importance of specific nutritional knowledge and targeted public health campaigns in effectively preventing negative health impacts.

The **expansion of renewable energy** brings both opportunities and challenges in addressing global inequalities. While renewable energy is essential in combating climate change and new technologies contribute immensely to broader electricity access, the fairness and inclusivity of said access can sometimes be limited. Research by Bianco et al. (2019) suggests that energy policies should place greater emphasis on mitigating inequalities, particularly as industrial expansion in regions with already limited energy access can further constrain availability to households. When energy demands increase but supply is constrained costs rise, making access even more challenging for lower-income households. The development of efficient green technologies during the energy transformation should address challenges and thus increase social equity and environmental sustainability, ensuring affordable energy to reduce consum-

ers' financial burden and foster equitable access to energy resources (Montalbano and Nenci, 2019).

At the national level, researchers have observed that renewable energy projects can also reinforce socio-economic and spatial inequalities. While the transition to solar energy represents a significant shift for many countries, large-scale solar infrastructure projects, such as those in California's deserts or India's Gujarat Solar Park, can intersect with existing social and cultural landscapes, which often hold cultural and ecological significance. In some cases, Indigenous and rural populations experience disruptions – including reduced access to vital resources such as water, which is often redirected for solar panel maintenance, and changes in land use that may not fully consider local needs (Sovacool et al., 2024; Stock, 2021). These examples highlight that achieving a globally shared goal – a more sustainable future that benefits everyone – requires a nuanced approach to ensure equitable access and participation.

Driving these transformations through policy measures is crucial as they play a vital role in tackling major challenges, such as climate change and public health issues, by promoting sustainability, enhancing well-being, and driving technological progress. Ensuring equal access remains a challenge, and careful consideration is needed to minimize potential unintended consequences. Therefore, governments seek to influence transformations by implementing policy measures and incentives that promote desirable behaviors, such as non-smoking or driving BEVs.

Overall, and globally, our study has indicated a general trend towards more

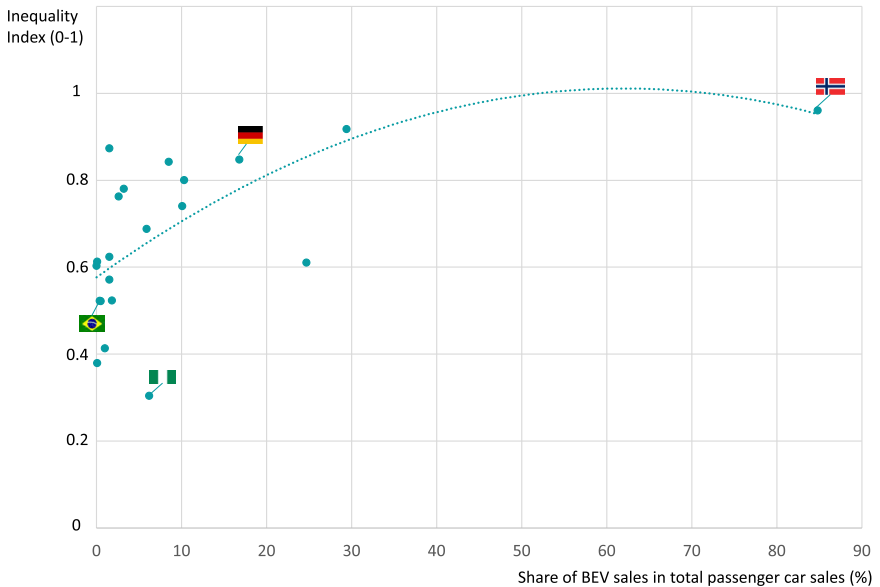


Figure 2: Evaluation of countries based on their inequality index and transformation progress, reflected by share of BEV sales in total passenger vehicle sales in 2024

targeted policies within the dataset. For example, Germany and Sweden invest in battery research and large-scale production, while Thailand supports local BEV manufacturing. The increasing trend of sector-specific regulations reflects governments' strategic efforts to steer transformations effectively.

However, our analysis has clearly shown that the countries in our dataset most commonly opt for shifts in the types of policy instruments, depending on their level of inequality and their transformation stage.

While all countries use framework regulations, those with high levels of equality more often invest in infrastructure development and R&D incentives, reflecting their ability to support long-term structural improvements and innovation. Leading countries, such as Norway, prioritize

accessible charging solutions to solidify their position and encourage further BEV adoption. This suggests that, as nations progress further in the transformation, policy focus shifts towards improving infrastructure and user convenience to create accessibility for the whole population.

Countries with low inequality continue to prioritize infrastructure, but they also opt for introducing purchase subsidies. They are most commonly applied in nations with strong economic and political equality, while countries with the lowest inequality scores tend to rely on them less. This pattern suggests that purchase subsidies may serve as a tool in reducing social and economic inequalities, thereby enabling broader participation in new technologies and innovations. Notably, in 2024, there was a significant increase in direct

»Well-designed policies can mitigate inequalities, but their impact depends on inclusivity and enforcement.«

purchase subsidy regulations in countries with high economic equality, indicating a renewed effort to accelerate BEV adoption using policy instruments.

With mid-level inequality, governments shift their focus towards tax incentives, using financial levers to stimulate economic activity. This trend suggests that these nations emphasize economic incentives to encourage widespread participation in the transition to e-mobility. Since inequality is more pronounced, these countries rely more on fiscal measures rather than direct investments. While effective for middle-income consumers, tax incentives are less impactful for lower-income groups, who cannot afford the initial costs of electric vehicles (EVs), even with the promise of future financial benefits.

The countries with high levels of inequality within our dataset focus primarily on R&D incentives, with a strong economic motive, suggesting that, despite high inequality, they attempt to drive innovation. However, their investments differ from those of the countries with the lowest inequality levels, as they strategically use R&D incentives to position themselves as attractive future hubs for the automotive

value chain. Additionally, through these incentives, governments seek to strengthen local production and create opportunities for long-term economic growth and enhanced competitiveness. The lack of substantial infrastructure investments or financial incentives for e-mobility transformation underscores their constrained ability to implement broader economic policies.

In summary, policy priorities differ among countries with different levels of inequality and evolve alongside transformation progress, with leading nations focusing on infrastructure and accessibility. However, financial incentives remain key to shaping equitable access to new technologies (see Figure 2).

Well-designed policies can mitigate inequalities, but their impact depends on inclusivity and enforcement. For example, in the energy sector, policies that involve marginalized communities can promote both social equity and sustainability by ensuring fair participation and benefits. In contrast, health policies targeting SSBs show that, without strong enforcement and broader structural measures, their effectiveness remains limited. The disparity between Latin America, where regulations have had only moderate success, and Sub-Saharan Africa, where weak policy frameworks have exacerbated inequalities, highlights the need for comprehensive, context-specific approaches. Effective policies should not only address immediate challenges but also create long-term inclusive solutions to prevent widening disparities.

Policymakers can adopt several key principles to guide more equitable transformations, such as the following:

- **Context-sensitive Policy Design:**

Policies should account for the varying levels of inequality across different regions, ensuring that infrastructure development, financial incentives, and technological innovations are tailored to the specific needs of disadvantaged communities.

- **Balanced Approach:** Policies should address immediate environmental or health benefits, while also considering broader socio-economic implications. For instance, the rollout of infrastructure or subsidies should not favor wealthier urban areas, but should also reach rural and low-income regions.

- **Holistic Impact Assessments:** Policy-makers should systematically assess the impact of policies, not only in terms of their environmental benefits but also their socio-economic consequences, ensuring that all transformation efforts are equitable and sustainable.

Ultimately, a balanced approach, which accounts for the complexities of inequality, can mitigate the risk of reinforcing disparities, while ensuring a more inclusive and equitable transition to sustainability.

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A 'make or break' moment for multilateralism?

The Fourth Financing for Development Conference is a chance to reboot global partnerships

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Opinion Piece

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It is 2025 and we live in a world where life expectancy is rising. A world where more children worldwide are going to school, and where more people have access to safe drinking water and sanitation than in 2015. The use of renewable energy has expanded massively: the region of Latin America and the Caribbean now meets 60% of its electricity demand from renewables and in some African countries, such as Kenya and Ethiopia, this share is as high as 90%.¹ These are some remarkable examples of progress that the world community has made in the last decade on the road to achieving the Sustainable Development Goals (SDGs).

But good news like this seems rare these days. All in all, there has been far too little progress on the road towards meeting the goals of the 2030 Agenda. There is still a massive financing gap to achieve the SDGs by 2030 and, on top of that, the current geopolitical tensions are putting multilateral cooperation under immense pressure. Nevertheless, I am convinced that, as a world community, we have the power to shape the future for the better if we cooperate in solidarity. Reforms carried out in recent years, like those within the multilateral development banks, show that international cooperation works, even in difficult times. The Global Solutions

Summit puts a spotlight on how this can be achieved: with its strong insights from research, it aims to identify concrete solutions for tackling global challenges. It builds on the premise that, with more dialogue among the international community, we can open up new entry points for better global governance structures.

More and better development financing

The upcoming Fourth Financing for Development Conference (FfD4) in Seville, Spain, at the end of June is a key forum where the international community can unlock this potential. The summit will bring together United Nations (UN) member states, civil society and other stakeholders to identify joint approaches for improving development financing and helping to achieve the SDGs. It will be preceded by an extensive consultation process. Its outcome document will advance the Addis Ababa Action Agenda (AAAA) adopted at the third FfD Conference in 2015. The fields covered remain urgent: they range from taxation and international trade to sustainability in financial markets and artificial intelligence.

Of course, the backdrop against which the Conference will take place is challenging to say the least. The negotiation processes are complicated by geopolitical tensions. A further complication is the US withdrawal from large parts of the multilateral arena. Even before the advent of the second Trump administration, the mandate of the UN-led FfD process vis-à-vis other fora such as the OECD or the International Monetary Fund (IMF) was already a contentious issue for many. Achieving an ambitious agreement at the FfD Conference will therefore be a tough challenge. But that is no reason to dial down expectations. In my

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view, an ambitious agreement on development finance is more urgently necessary than ever, for two reasons.

A renewed commitment to multilateralism

The first reason relates to the very same issue that makes the process so cumbersome – a commitment to multilateralism. The SDGs were adopted ten years ago with a strong commitment by the world community to international cooperation, recognizing that global challenges require global solutions. Now, ten years later, we are witnessing a retreat towards nationalism in many countries. The international political climate is increasingly being shaped by conflicts and divides, making multilateral engagement all the more difficult.

As a world community, we need to pull together again to reverse this trend and to tackle the global challenges of our time. The FfD Conference is better suited to this than many other fora. Not only does it have a broad mandate that takes a holistic approach towards development financing. Perhaps even more important than that is its inclusiveness: being a UN-led process, all member states can make their voices heard. Countries of the G77 coalition see this as a

»The FfD Conference is about more than just the financial basis for the 2030 Agenda: It is about commitment to global partnerships.«

rare opportunity in international negotiations where they can influence decision-making on issues that are highly relevant to them. Having strong links between FfD4 and fora such as the G20 is thus important. Similarly, international financial institutions can gain by actively engaging in the FfD4 process. Despite setbacks due to the multiple crises of the past years, the FfD process has successfully brought about progress. As an international community, we now need to build on the successes already achieved.

The FfD Conference is about more than just the financial basis for the 2030 Agenda: It is about commitment to global partnerships and a spirit of solidarity. It is about renewing trust in the multilateral system. And even if – or precisely because – the US is increasingly withdrawing from multilateral agreements, I see it as very important to foster stronger alliances between Germany, Europe and our partner countries in Africa, Asia and Latin America. This has been a key priority for me as German Development Minister.

The second reason why the upcoming FfD Conference comes just at the right

moment is the urgency of boosting development financing and further reforming the international financial architecture. There is a massive financing gap that has been one of the reasons for the sluggish progress on the 2030 Agenda so far. And there are too many obstacles for low- and middle-income countries to create fiscal space for investments in a more sustainable future. The FfD process provides a real opportunity to embark on pathways to tackle precisely those structural barriers. Let me highlight three core policy fields of negotiation that are key to the FfD process to illustrate this point.

More progressive taxation is a global challenge

First, the field of taxation. Domestic resource mobilization (DRM) – which includes tax policy and administration – remains a cornerstone of the FfD agenda. For governments around the world, tax revenues are the most important source of funding for public goods and services. But in many of our partner countries in Africa, Asia and Latin America, tax ratios remain far too low to provide for core public services. This undermines the social contract and the stability of societies. Weak tax administrations and policies as well as tax evasion and harmful tax competition between countries are among the most important reasons for this. Improving capacities to collect taxes and other revenues is thus certainly key for DRM, and we in German development cooperation remain committed to continuing to support our partner countries in achieving these goals.

But it is just as important to drive reforms at the international level. As Pro-

fessor Gabriel Zucman has clearly shown in his report² to the G20 last year, the super-rich – or high-net-worth individuals (HNWIs) as they are known – pay far lower effective rates of tax than average income earners like their secretaries or drivers. These HNWIs are people who have assets worth several hundred million dollars and more. They generate their income primarily from wealth, not from work – and this leaves them with ample options for avoiding taxes quite legally. In addition, many countries tax capital gains at lower rates than they tax income from labour, the frequent argument being that wealth is mobile and can easily be shifted to low-tax jurisdictions. That is of course correct – and it is happening on a large scale. But surely this cannot be an argument for designing tax systems in such a way that they work in the interest of the richest. Such harmful tax competition between countries, which has already pushed down corporate tax rates in past decades, undermines a country's capacity to mobilize resources. It also increases inequality within societies.

As Development Minister, I am committed to progressive taxation – and in particular the taxation of HNWIs – because I believe that everyone in society should contribute their fair share to financing the common good. Moreover, taxing HNWIs can raise the tax revenues of governments worldwide and create fiscal space for investing in sustainable development and climate protection. And precisely because capital is so mobile, international cooperation is needed. Building an international tax architecture that combats tax evasion and avoidance while enabling countries to effectively tax multinational enterprises and wealthy individuals is crucial. Having

ambitious language on progressive taxation in the FfD4 process would be a great success.

Unsustainable debt limits fiscal space for investments in our future

The second field of negotiation where the international community needs to find common ground and move forward is the rising debt challenge. If there is one common demand that citizens around the world are making towards their representatives, it is probably that they put their money where their mouths are. That they use the public money with which they have been entrusted to raise social welfare and provide for the public good. The trouble is that many governments around the world – and all too often those in poorer countries – find their hands tied by unsustainable debt that has risen even further as a result of the multiple crises of the past few years. The COVID-19 pandemic, the cost-of-living crisis as a result of Russia's war of aggression against Ukraine and the climate crisis have not only increased the pressure on public budgets. They have also driven up interest rates, which are on average three times higher for low-income countries than they are for high-income countries.³ For many low-income coun-

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»Financing the SDGs and provid- ing global public goods are our shared responsi- bility as a world community.«

tries, the resulting debt service payments severely limit the urgently needed fiscal space to invest more in education, health and the energy transition. In 2024, 92 countries spent more on servicing public debt than on investing in the SDGs.⁴ “Debt is killing the SDGs” was the warning call of civil society organizations at the UN’s Financing for Development Forum in 2023 that highlighted this imbalance.

Thus, the international debt architecture is rightly receiving much attention in Seville. There is an urgent need for the international community to strengthen mechanisms for preventing and managing debt crises now and in the future. As an inclusive forum, the FfD process involves a wide array of public and private actors and hence provides a real opportunity to develop proposals for these challenges. Germany, as a member of the EU and the G20, is continuing to support efforts to improve debt transparency and to strengthen the Common Framework for Debt Treatments as the key instrument for restructuring public debt.

As Minister for Development, I have repeatedly raised these issues at the negotiation rounds of the G20 development

ministers. With only a few months left until Seville, it is high time to find common ground between development-oriented ministries and treasuries worldwide. I am also convinced that, over the coming years, we can build on the agreements that will be reached in Seville, and find consensus regarding further improvements to the global debt architecture for which there may not yet be a consensus. This includes for example an international mechanism for state insolvency.

A more effective and inclusive financial architecture

Third, tax policy and debt resolution are part of the international financial architecture. Its core institutions, the IMF and the World Bank Group, were founded in 1944. Organized like credit cooperatives, voice and influence come with financial contributions and thus reflect global economic power. As a result, low-income countries have considerably less clout than in the UN General Assembly, with its one-country-one-vote principle. And while questions like international tax cooperation and debt relief are primarily negotiated among the G20 or the OECD, the perspective of low-income countries is only weakly represented there. As a result, many countries feel that their interests are not being heard and that the system overall lacks legitimacy. This criticism was showcased in the vote for establishing a UN Tax Convention, when the refrain “If you’re not at the table, you’re on the menu” was the rallying cry for many members of the G77. Recent institutional reforms show that change is both possible and already underway.

FfD4 contributes to this dialogue. The AAAA that resulted from the FfD summit in

2015 already committed to systemic issues such as broadening and strengthening the voice of countries of the Global South in international decision-making and global economic governance. The SDG Summit in 2023 further strengthened this commitment, with the aim of making development finance more accessible and effective. I am convinced that the inclusive FfD process can find common ground for reform and contribute to rebuilding trust in the system. It can for example foster constructive engagement in the development of the new UN Tax Convention and ensure that synergies with existing processes at the OECD or G20 are explored. It can also move forward reforms within multilateral development banks. Their role remains vital in addressing global challenges and financing global public goods such as the protection of our climate and biodiversity, pandemic preparedness and peace. Under my leadership, Germany has successfully pushed for reforms: the new World Bank Group vision represents a fundamental shift as it recognizes that fighting poverty and preserving our planet cannot be dealt with separately. In addition, we brought together key actors at the Hamburg Sustainability Conference (HSC) in June 2024 to renew their commitment and forge alliances to advance reform of the international financial architecture. The upcoming

HSC in early June this year will continue this dialogue and will be an important occasion for international partners to come together ahead of the FfD Forum.

A unique opportunity for rebuilding trust in the multilateral system

For me, drawing these different strands together leads to several important conclusions. For one thing, the FfD4 Conference is about more and better development financing. This remains a core prerequisite for providing the SDGs with new momentum and for tackling truly global challenges. The FfD4 Conference also provides an opportunity for rebuilding trust in the multilateral system. Some observers even see it as a “make or break” moment for multilateralism. So the stakes are high and the process holds great potential for shaping the agenda of international cooperation. It can help build a new common understanding that financing the SDGs and providing global public goods are our shared responsibility as a world community – a responsibility with benefits for the countries and the people of both the so-called Global South and Global North alike. In this sense, I see the upcoming FfD Conference as a unique opportunity for exactly that – fostering more inclusive international dialogue and decision-making as the basis for tackling global challenges.

¹ United Nations (2024): The Sustainable development goals report 2024. New York: United Nations.

² Gabriel Zucman (June 25, 2024): A Blueprint for a Coordinated Minimum Effective Taxation Standard for Ultra-High-Net-Worth Individuals. Report to the Brazilian G20 presidency.

³ Spiegel, Shari and Schwank, Oliver (2022): *Bridging the great finance divide in developing countries*, Brookings Institution. United States of America. Retrieved from <https://coiilink.org/20.500.12592/gct77w>

⁴ OECD (2025), *Global Outlook on Financing for Sustainable Development 2025: Towards a Resilient and Inclusive Architecture*, OECD Publishing, Paris, <https://doi.org/10.1787/753d5368-en>.

The Environmental, Social, and Governance Backlash

How Did We Get Here and What is Next for Corporate Responsibility?

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Opinion Piece

Keywords:

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Corporations have long operated under a simple, comfortable illusion: make profits, keep shareholders happy, and everything else will be fine. However, that narrative cracked in the mid-2010s, when a powerful new argument emerged – not from activists, but from within a “Big Five” boardroom.

In 2015, consulting giant McKinsey set the tone with its report *Why Diversity Matters*. The message was both clear and profitable: diverse teams were not just about fairness and inclusion, they performed better. Three more studies followed, with the latest in 2023, *Diversity Matters Even More*. Suddenly, even German CEOs, who had long regarded the 2006 General Equal Treatment Act as an annoying bureaucratic exercise, saw its value. Companies that

actively promoted women, employees with migrant backgrounds, and workers with disabilities were not just doing *the right thing*, they were securing better business deals, cheaper loans, and top-tier talent.

But diversity was just one piece of a larger shift. The world was waking up to an uncomfortable truth: the biggest challenges of our time – climate change, inequality, and political instability – were not just the responsibility of governments. The scale of the challenges pushed governments’ ability to manage to the limit. Even supranational organizations cannot fill this gap on their own. The challenges require solutions from all areas of society. Companies, with their vast resources and influence, were being called to the table, precipitating the rise of Environmental,

Social, and Governance (ESG) principles: a new framework that redefined corporate responsibility and placed businesses at the heart of shaping society.

THE CLIMATE CATALYST: A NEW ECONOMIC REALITY

The 2015 Paris Agreement was a turning point for governments and it shook businesses. By setting a global goal to limit Earth's warming to below 2°C and achieve net-zero emissions by 2050, climate responsibility entered the "Marketverse". Supply chains faced increasing disruptions. Natural disasters spiked insurance costs. Investors started asking hard questions about long-term stability. Microsoft, for example, pledged to go carbon-negative by 2030, signaling that businesses were no longer mere passive observers of environmental policy, but active players in shaping the future. Patagonia went even further, embedding sustainability into its very identity, proving that a business model could be both responsible and wildly successful.

FROM HASHTAGS TO BOARDROOMS: SOCIAL MOVEMENTS RESHAPE BUSINESS

At the same time, another force was reshaping corporate responsibility: social movements. The rise of #MeToo in 2017 forced companies to tighten compliance rules, address toxic workplace cultures, and rethink power dynamics. Black Lives Matter, which gained worldwide momentum after the murder of George Floyd in 2020, made it impossible for corporations to stay silent on racial injustice. Employees, consumers, and investors alike demanded action. The question was no

»ESG seemed to be thriving and looked sure to sweep through the entire business world.«

longer *whether* companies should take a stand but *how*. And this was not just about internal policies: public pressure campaigns forced businesses to reckon with the role they played in shaping society. The #MeToo movement led to stricter compliance rules and the introduction of new corporate policies aimed at preventing sexual harassment and the abuse of power, particularly against women. At the same time, companies faced growing pressure to clearly define their role in the fight against racism and discrimination. This became particularly evident during the Black Lives Matter movement, which triggered global protests following George Floyd's murder in 2020, and also with the Stop Asian Hate campaign, which emerged in response to the rise in anti-Asian violence during the COVID-19 pandemic. Companies were increasingly urged to take a public stand, strengthen internal diversity and inclusion measures, and implement targeted initiatives against discrimination.

The common denominator in these developments is obvious: the public scrutiny behind ESG initiatives. This pushed companies to go beyond performative gestures, urging them to integrate real change into their core strategies. Companies that failed to engage risked losing

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consumer trust. Those that took bold action saw their reputations *and* profits soar.

ESG AS A BUSINESS IMPERATIVE

Between 2019 and 2020, ESG grew into a globally recognized financial imperative. Major investors, such as BlackRock, began integrating ESG criteria into their investment strategies. These investors demanded that companies provide transparent and verifiable sustainability reports. This led to the introduction of new regulatory frameworks in the EU, such as the Non-financial Reporting Directive (NFRD) in 2017, which required large companies to report on ESG topics. These regulations, along with the EU Taxonomy Regulation of 2020, aimed to establish a unified definition of sustainable economic activities and prevent greenwashing. As the Paris Agreement was implemented and investor expectations increased, more companies began setting clear net zero targets for 2030 or 2040. The term “net zero” became a central component of corporate strategy.

The positive effect of responsible corporate engagement on business’ success is, thus, not merely idealism but an empirical correlation, which has manifested itself manifoldly. The connection between corporate engagement and business success has become increasingly evident.

Companies that integrated ESG initiatives into their business strategies were not only recognized as responsible actors but also gained a competitive advantage.

THE BACKLASH AGAINST ESG

ESG seemed to be thriving and looked sure to sweep through the entire business world. But now, in 2025, companies such as Meta, Starbucks, McDonald’s, Amazon, John Deere, Harley-Davidson, and even Aldi Süd are rolling back their diversity programs in the US. The once “flagship” Diversity, Equity, and Inclusion (DEI) initiatives are either being scrapped altogether or relegated to some forgotten corner on the company’s website. While this sudden retreat is extreme, it is not isolated and far from new. It is part of a wider phenomenon of companies retreating from social-responsibility-related initiatives and ESG practices over the last four years.

As early as 2021, the first signs of growing ESG criticism appeared in an influx of rising inflation and economic pressure. This led to a perception that ESG measures were an added and costly financial burden at times of financial uncertainty. Opponents of ESG argue that these strategies burden companies financially and divert them from their core goal of profitability, arguing that sustainable investment strategies often yield lower returns than traditional investments. The COVID-19 pandemic led to global supply chain disruptions and soaring oil and gas prices. Russia’s invasion of Ukraine in 2022 and the resulting energy crisis further reinforced this development, but it also shifted political and societal focus from sustainability to security. Rising energy prices and potential supply shortages

even led some companies to temporarily revert to fossil fuel usage.

At the same time, the principles of stakeholder capitalism and the ESG-themed investing trend that has emerged with it are increasingly being attacked by populist politicians and finance industry contrarians. Conservative politician Ron DeSantis labeled ESG as “woke capitalism”, and the head of responsible investing at HSBC Asset Management, Stuart Kirk, dismissed the idea that investors should attempt to promote more environmentally responsible capitalism by taking climate risks into account. Kirk’s criticism of a fundamental tenet of the nearly US\$3 trillion sustainable funds sector was not an isolated claim, but demonstrated a rising willingness to challenge conventional opinion on ESG practice, not only rhetorically but with harsh political measures. In the US, multiple states banned ESG-based investments for public funds. This increased pressure on companies to scale back or at least communicate less openly about their ESG initiatives. Perhaps the most well-known entrepreneur in our world today, Elon Musk, called ESG a “scam” after Tesla was removed from the S&P ESG Index. He foreshadowed a political reality under the Trump administration, who, on the very day of his inauguration, put all federal diversity officers on paid leave and ordered their offices shut within 60 days. The message was clear: Donald Trump has declared war on the “woke” crowd and politically correct America. His words are emblematic of a new political and pop-culture narrative around the globe, which increasingly frames corporate societal engagement as ideological fanaticism.

ESCALATION OF THE ANTI-ESG MOVEMENT AND STRATEGIC RETREAT

At first glance, this might seem like an American affair, but the reality is different. Banks have begun dissolving their involvement in the Net Zero Asset Managers Initiative, while oil and gas companies have scaled back their sustainability commitments. Social engagement has also come under pressure, with some brands reducing their support for LGBTQ+ and diversity initiatives following public backlash, as seen in the Bud Light controversy. When major investors such as BlackRock and Vanguard begin scaling back their public ESG communication to avoid political controversy or when steadily growing ESG investments stagnate or decline (as in 2023), the return to conservatism in today’s business best practice is undeniable. As a diversity consultant from Beyond Gender Agenda put it, “Corporate Germany is in full retreat” and an alternative form of engagement within the public sphere is on the rise: not woke capitalism, but “spite capitalism” – resistance against well-documented progress, where influence is wielded not to build, but to dismantle.

»So, is this the return to Friedman’s dictum, “The business of business is business”? Definitely not.«

AGAIN, CORPORATE RESPONSIBILITY

The current trend seems to be that companies who have done the opposite until recently are trying to withdraw from socio-political arenas. This trend is not absolute, as shown not least by the numerous calls to vote from associations and companies in Germany. Nevertheless, the examples cited above show that the global trend is currently pointing in a different direction.

So, is this the return to Friedman's dictum, "The business of business is business"? Definitely not: the influence of companies on society is substantial and the initial transformation has had a massive impact on them.

This means that a company's decision not to position themselves within the social transformation is highly political. This decision does not reduce its influence, but it decides not to use it to shape the societal transformation in a certain way. Negating it, and thereby their responsibility, is not possible. Therefore, the question is not so much *whether* companies take responsibility, but *how*. Social expectations can also change in the process – just as

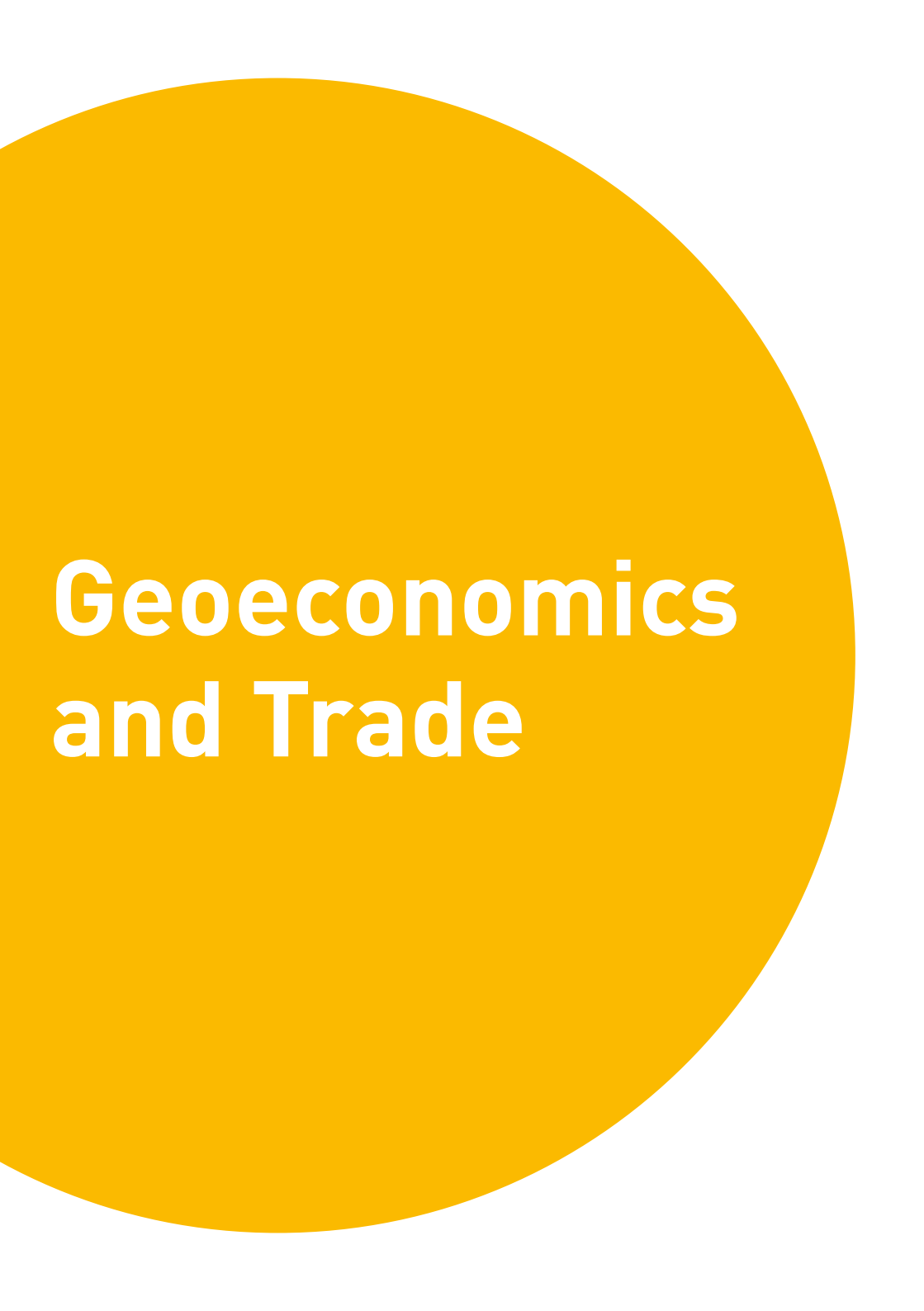
investors and customers can base their decisions on whether a company applies sustainable and/or ethical business practices, they can also base their decisions on whether a company does not.

However, companies bear their responsibility not only because of the demands placed on them by society but also to preserve the foundations of their own business activities. Companies depend on a liberal societal model that allows them to grow, develop ideas, and protect their intellectual and economic property. They need a framework within which they can develop and where innovative action is rewarded. Their actions cannot be viewed independently of geopolitical conflicts either. Those who enter relationships with authoritarian regimes, for example, risk both a loss of reputation and make themselves vulnerable to possible sanctions, confiscations, and supply chain problems. Not only do they risk being perceived as part of the problem by their customers and employees, but they also put the survival of the company at risk. They are also at risk when their investors perceive their business model as seriously threatened or political decision makers tighten the regulatory screws.

Incorporating corporate responsibility into decision-making processes is not public relations (PR) but risk management; the foundations of entrepreneurial activity are in danger of being lost if the planetary boundaries, geopolitical conflicts, excessive technology, or attacks on the liberal social order attack the conditions that have allowed companies to operate successfully. Therefore, the current ESG backlash also presents a small but valuable opportunity for realignment and im-

»Incorporating corporate responsibility into decision-making processes is not public relations but risk management.«

provement. The last big wave of ESG measures in companies was not the perfect model it often pretended to be. Rather, it led to a significant amount of greenwashing, with companies making sustainability promises without actually delivering on them. Now is the time to do things better. Companies need to make real, measurable progress in ESG areas and prioritize transparency and accountability. Only then can they achieve a positive economic impact and protect themselves against the multitude of risks. A serious commitment to ESG practices builds stakeholder trust, improves reputation, and can lead to long-term financial benefits. This is an opportunity to regain stakeholder trust and truly embed sustainable practices.



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Navigating Geopolitical Challenges in the Green Transition

Implications for Developing and Emerging Economies

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Policy brief

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INTRODUCTION

The race to achieve a green, low-carbon, and socially just global economy is well underway, but it faces a formidable obstacle: geopolitical tensions. In a world marked by polycrises – where overlapping challenges create complex instabilities – developing and emerging economies find themselves at a crossroads. Geopolitical confrontations and climate change are not only reshaping global politics and economies but are also redefining development priorities. For developing and emerging economies, the stakes are high. They face the risk of

falling behind in the transition to sustainability, with far-reaching consequences for their economic growth, technological advancement, and social equity. Yet, despite these challenges, there are unique opportunities for these countries to innovate, collaborate, and assert their influence in building a more inclusive global system.

GEOPOLITICAL BLOC FORMATION, POPULISM, AND THE CRISIS OF MULTILATERALISM

Multilateral cooperation is the cornerstone of the global transition to sustainable

economies, yet it faces mounting threats from geopolitical tensions, populist movements, and shifting economic priorities. Russia's invasion of Ukraine has intensified the looming geopolitical fragmentation (Gopinath, 2024). This realignment not only strains multilateral systems but also diverts attention and resources away from green transition initiatives. The war has further exacerbated global energy insecurity, with European nations scrambling to replace Russian fossil fuel imports. In many cases, this has led to a resurgence in the use of coal and natural gas, threatening emissions reduction targets and underscoring the geopolitical risks of energy dependency. Meanwhile, the focus on energy security in wealthier nations risks sidelining the energy needs of the Global South, deepening inequalities in access to renewable technologies and sustainable development.

At the same time, the rise of populist leaders presents additional challenges to climate progress. Populist rhetoric frequently downplays or denies the urgency to address climate change, framing environmental regulations as elitist-driven measures that place an additional financial burden on ordinary citizens. Under such leadership, policies often prioritize short-term economic growth over long-term sustainability, undermining investment in renewable energy, nature conservation, and emissions reduction (Campanella & Lawrence, 2024). Moreover, these governments are less likely to honor climate finance commitments or engage in technology transfers, leaving developing nations to face climate impacts with limited resources. The US withdrawal from the Paris Agreement underscores the fragility

»Geopolitical tensions are leading to increasing fragmentation and restricting the potential of access to technologies, and of international trade and investment as levers of growth.«

of international climate change law, which depends on the political willingness of governments to uphold its commitments. The abrupt U-turn of the US under the new Trump Administration in climate and green industrial policy is causing uncertainty, which could slow down investments in renewable energy and green technologies. Globally, companies and investors are hesitant to commit to long-term financing for sustainable projects. This shifting global landscape places countries in the Global South in a difficult position. As geopolitical blocs solidify, developing and emerging economies must navigate complex alliances.

FRAGMENTATION OF GLOBAL MARKETS AND ECONOMIC SECURITY POLICIES

Geopolitical tensions are leading to an increasing fragmentation of international

»The shifting geopolitical landscape places the Global South in a difficult position as they must navigate complex and moving alliances while struggling to develop. Despite these challenges, there are unique opportunities.«

trade and investment flows (World Trade Organization, 2024). The disruption of supply chains during the COVID-19 pandemic and Russia's war against Ukraine have drawn the attention of policymakers to the risks of economic interdependencies. Among other factors, growing competition among the largest economies regarding technologies for the green transition has triggered policies aimed at increasing economic security. Against the background of alleged unfair trading practices by China, the EU, US, and some emerging countries have implemented trade restrictions (e.g., on solar panels and electric vehicles) to limit China's dominance in renewable energy technologies (Boullenois & Jordan, 2024).

The increasing fragmentation of global markets distorts economic efficiency and risks excluding countries in the Global South from the green transition. Countries that are more integrated with global value chains (GVCs) benefit from greater technology and knowledge transfers. With the knowledge, skills upgrading, innovation, and technology, they can bring foreign direct investments (FDIs) and trade integration to support countries in diversifying and moving up the value chain. The aforementioned geopolitical tensions and economic security policies restrict the potential of international trade and FDIs as levers of growth. They make it more difficult for developing countries to access critical technologies, attract FDIs, and secure stable markets for their exports.

LIMITED ACCESS TO GREEN TECHNOLOGY AND INDUSTRIAL DEVELOPMENT

Currently, the development and utilization of green technologies is already unevenly distributed, leaving countries in the Global South confined to low-value positions in global supply chains. While economies with highly sophisticated production capacities, such as China, the US, and the EU, reap most of the industrial benefits, developing countries are often limited to supplying raw materials. This perpetuates technological and economic dependency, which is further reinforced by strict intellectual property rights and restrictive trade practices.

An additional challenge is the resurgence of industrial policy in many Global North countries. Governments are actively supporting their domestic green industries through subsidies, local content

requirements, preferential treatment in public procurement, and trade interventions based on national security principles. However, developing economies often lack the financial resources to implement similar policies (Juhász et al., 2023), thus foregoing technological advances and the structural “pull” that backward and forward linkages can exert on the economy. This puts them at risk of falling further behind in the socio-ecological-economic transformation. The situation is further exacerbated by the fragmentation of global markets due to the increasing geopolitical tensions described above.

Nevertheless, opportunities exist for the Global South, particularly in renewable energy. The expansion of global green hydrogen production presents a significant chance for countries with abundant renewable energy resources, such as those in North Africa and Latin America, to position themselves as key exporters. Green hydrogen could drive economic diversification, create new revenue streams, and generate employment (Fokeer et al., 2024). However, the geopolitical landscape complicates these prospects. The growing competition for control over strategic resources, such as lithium and rare earth metals, has led to new trade restrictions and investment barriers. Additionally, the dominance of a limited number of powerful actors in green technology supply chains means that developing countries must navigate a complex web of dependencies, making it difficult to move beyond the role of mere raw material suppliers.

There is also a risk of replicating old patterns of economic dependence. Current trade structures indicate that green hydrogen from the Global South is primar-

ily intended for export to industrial centers such as the EU and East Asia. This could result in a situation where developing countries remain suppliers of raw materials, while the actual value addition occurs elsewhere. Rising protectionism and the prioritization of domestic energy security in the Global North further limit the ability of developing countries to fully capitalize on their renewable energy potential.

However, there are more opportunities for the Global South to generate jobs and initiate a green industrialization process that goes beyond the promotion of carbon-intensive industrial sectors and traditional structural transformation. A process in which labor shifts from low- to high-productivity sectors – usually from agriculture to manufacturing. This model is harder to achieve through export-oriented industrialization, in part because, nowadays, manufacturing is markedly more skill- and capital-intensive (McMillan & Zeufack, 2022). The easy gains lie

»The development and utilization of green technologies is already unevenly distributed, leaving countries in the Global South confined to low-value positions in global supply chains.«

»The main policy recommendation for developing countries is to strategically engage with the US, China, and the EU to encourage technology transfers and secure beneficial investment partnerships.«

in promoting labor-intensive sub-sectors, such as agro-processing and the textile industry, which build on existing comparative advantages and can connect firms to more sophisticated production processes. Some service sub-sectors can also be targeted due to their backward linkages, such as business-to-business and high-tech services. Additionally, the tourism sector would be another promising area to target due to its high employment potential (Rodrik, 2022). Clever solutions are, therefore, needed to support partner countries in utilizing the opportunities for green industrial development in the current global environment. The GIZ and the United Nations Industrial Development Organization (UNIDO) jointly created a toolkit (“GIZ and UNIDO”), which helps partner countries to target specific sectors and fine-tune industrial policy instruments.

HIGH COSTS OF CAPITAL AND FINANCIAL BARRIERS

The financing costs for the green transition are significantly higher in the Global South than they are for the wealthy, industrialized nations of the Global North. While highly developed economies can access capital under favorable conditions, lower-income countries face high interest rates and restrictive lending terms. This disparity makes investments in green infrastructure considerably more expensive and slows down the socio-ecological-economic transformation. Moreover, financial support from the Global North has fallen short of expectations. Despite extensive climate finance pledges, commitments have not been fully honored for a long time (OECD, 2024). As a result, crucial funding for sustainable investments in sectors such as renewable energy, the circular economy, and environmentally friendly industrial processes remains insufficient. Recent geopolitical instability has negatively affected investment decisions, as political uncertainty and economic volatility increase the perceived risks for investors, discouraging private capital from flowing into green technologies. These uncertainties erode trust in long-term sustainable economic development and make Global South countries hesitant to further commit to a green economic transformation (Lebdoui, 2024).

Additionally, risk-averse foreign investors tend to avoid unstable regions, depriving these economies of much-needed capital. Consequently, dependence on fossil fuels persists, not only as an energy source, but also as a key economic driver for many nations that are reliant on

revenue from resource extraction. This worsens existing social and economic inequalities, making the transition to sustainable economic models even more challenging. At the same time, the global race for technological leadership offers opportunities for the Global South. Innovations in renewable energy, resource-efficient manufacturing, and sustainable agriculture could help developing nations to build greener and more resilient economies, bypassing less ecologically sound growth models. However, these advancements must be made inclusively in order to prevent deepening existing disparities. For the socio-ecological-economic transformation in the Global South to succeed, decisive action is needed. This includes the reliable fulfillment of climate finance commitments, fair access to capital and technology, policies to mitigate investment risks, and stronger international cooperation.

RESOURCE DEPENDENCY AND VULNERABILITY

Critical minerals (e.g., lithium, cobalt, and rare earth metals) are essential for green technologies. The dependence on critical minerals, which is often concentrated in politically sensitive regions, exacerbates vulnerabilities in green supply chains (Gollier & Rohner, 2023). Currently, countries in the Global South mainly supply raw materials, including critical minerals, in green supply chains, while China and Global North countries leads in processing and manufacturing. Attempts by developing countries to integrate into high-value segments of green supply chains are hampered both by external and internal factors.

External factors include trade restrictions and foreign control over critical technologies for processing, manufacturing, and innovation. Regarding internal factors, developing countries often struggle to move beyond raw material extraction due to rent-seeking behavior, as well as a lack of infrastructure or comprehensive strategies linking industrial, investment, and trade policies that effectively foster value addition. Existing policies often suffer from shortcomings such as misaligned policy targets; a lack of monitoring tools and course-correction mechanisms; an over-reliance on trade policy instruments; and a neglect of crucial factors, such as environmental impacts (Masuma, forthcoming).

POLICY RECOMMENDATIONS

The main policy recommendation for developing countries is to strategically engage with the US, China, and the EU to encourage technology transfers and secure beneficial investment partnerships. To maximize the potential of these collaborations, it is important to prioritize green technologies, local capacity building, and the modernization of intellectual property regulations. Access to advanced technologies is crucial for moving up the value chain, but ensuring resilience is equally important. This can be achieved by diversifying supply chain actors. Implementing circular economy policies, such as electronic-waste (e-waste) recycling for rare earth minerals, not only supports sustainability but also enhances supply chain resilience, benefiting all the parties involved.

The development of green supply chains is not only a bet on sustainability but also on long-term economic growth. Yet, it is im-

perative to move beyond raw material extraction and promote domestic value-addition; this calls for a more holistic approach, combining industrial investment and trade policies into a coherent and measurable policy. This is exactly where development cooperation has a role to play, by assisting partner countries in overcoming the challenges of implementing effective value-addition policies. Some tools to enable this are access to information on green technologies, the monitoring of market trends, access to affordable financing instruments, and assistance with the specific requirements for investment projects.

Furthermore, new modes of trade and investment cooperation among countries in the Global South and industrialized countries are needed. They will probably allow for more flexibility and focus on specific sectors or supply chains. The Clean Trade and Investment Partnerships announced by the European Commission could provide the framework for these new modes of cooperation. Conversely, South–South cooperation is also important in boosting trade and enhance bargaining power in global climate negotiations – some regional alliances are good examples of this, e.g., the Association of Southeast Asian Nations (ASEAN) and the African Continental Free Trade Area (AfCFTA).¹ The latter is particularly important because Africa is the continent with the least developed regional value chains, which are important in supporting value-addition in countries in the Global South. However, a treaty alone cannot achieve this: a joint effort is required to overcome the structural, institutional, and coordination challenges that have limited regional industrialization in the past.

In crises, there are always opportunities. Now is the time to forge new alliances, explore alternative multilateral approaches, and to create a fairer and more sustainable global economic system, which better serves the interests of both industrialized and developing countries.

DISCLAIMER

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¹ GIZ supports the improvement of framework conditions for the implementation of AfCFTA and the promotion of cross-border activities of small and medium-sized enterprises (SMEs) in the ASEAN region. See project "Strengthening regional structures to promote SMEs in ASEAN": <https://www.giz.de/en/worldwide/122706.html>.

The “Landing Zone” for US–China Relations

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Opinion Piece

Keywords:

US–China relations, technological transitions, monetary realignment, trade architecture, strategic equilibrium

ABSTRACT

The strategic competition between the US and China is widely perceived as a zero-sum contest in a technological setting, which leads to “winner-takes-most” economic outcomes and radically reframes national security risks. This framing precludes meaningful cooperation and has put the relationship on a destabilizing trajectory. Historically, technological revolutions have transformed not only production systems but also governance structures and international relations. The emergence of a US–China duopoly, the decline of Europe’s centrality, and the fracturing of postwar institutions that are now well-advanced have set the stage for an unprecedented systemic shift. This paper examines the conditions under which a cooperative transition, featuring shared monetary and institutional burdens, could emerge by drawing parallels with past monetary and trade realignments, including the Bretton Woods transition and the Smithsonian

Agreements. The proposed “landing zone” for relations involves a realignment of the global financial architecture and a resolution to the trade war that draws on the language of the populist trade economics literature. This literature frames the “exorbitant privilege” of the US dollar (USD) as an “exorbitant burden”, which, in turn, establishes a diplomatically feasible framing for interim solutions on tariffs and trade and on money and exchange rates, which is grounded in sound economic theory. The critical role of charting this metaphorical landing zone for US–China relations, which would serve as a new strategic equilibrium on which to build a new global governance structure that is consistent with the transformed technological and economic conditions, will fall to a Track 2 Process.

INTRODUCTION

The postwar international institutional framework and security structure is extinct in all but name. This was dramati-

cally underscored in a UN resolution on Ukraine by Washington siding with Moscow and against its Western partners, absents itself from the G20 in South Africa, demolishing its international aid agency, and formulating tariff policies that undermine the most fundamental principles of the postwar trading system.

How this came to be – and particularly why now – emerges clearly from an “ages of capital” framing of the evolution of the global economy. In this framing, the introduction of a new form of productive capital asset not only changes the economy’s production system but has pervasive repercussions: everything changes, including the organization of economies, political alignments, social organization, and international institutional relations. Historically, there have been the following major transitions:

- From an agrarian economy, in which land was all-important, to an industrial economy, in which scalable manufacturing dominated.
- From an industrial economy to a knowledge-based economy, in which intangible intellectual property captured economic rent.
- From a knowledge-based economy to a data-driven economy, in which data captures the economic rent.

The disruption today is rooted in the emergence of the data-driven economy, ca. 2010, and the transition now underway to an age of artificial intelligence (AI).

WHAT CHANGED AND WHY?

The technologically driven transition to a data-driven economy had three specific consequences:

1. This new economy emerged in two locations – the US and China – setting the stage for a new duopoly of power as Europe shrank into insignificance in the new economy.
2. China’s entry into the data-driven economy contemporaneously with the US (and with a scale advantage) greatly narrowed the technological advantage the latter had enjoyed during the knowledge-based economy era, when it rose to its unipolar moment.
3. Socio-political changes in the US caused a phase change from the Wilsonian institutional/progressive mode that had prevailed throughout the postwar period to a Jacksonian isolationist/realist mode under President Trump.

The Obama Administration, the last in the line of Wilsonian postwar administrations, approached the rising China challenge by building institutions. It framed the Trans-Pacific Partnership (TPP) as a means to ensure that it was the US that “wrote the *rules*” for Asia-Pacific commerce, not China. The US used *rules* – i.e., complaints under the World Trade Organization (WTO) dispute settlement mechanism – to force China to comply. The US backed this up with military might, setting out a new Air–Sea Battle Doctrine, which was explicitly designed for conflict in the West Pacific.

China responded with its own institutional initiatives the Belt and Road Initiative (BRI), which adopted an idea originally proposed by the US of reviving the ancient Silk Road as a means of integrating Afghanistan into the Western sphere of influence; the Asian Infrastructure Bank; and a TPP competitor, the Regional Com-

prehensive Economic Partnership (RCEP). It also built up its navy. However, it did not threaten the rules-based. Indeed, it adopted a business plan based on succeeding in that order, in particular, by building up its innovation system infrastructure in the following ways:

- Expanding its tertiary education system, with a focus on STEM disciplines;
- Training thousands of patent examiners;
- Setting up specialized intellectual property courts;
- Participating actively in standards-setting bodies to help China win standards-essential patents;
- Setting up a Nasdaq-style technology board for equities; and
- Putting the power of the state behind innovation.

The decisive factor in shaping the rivalry between the two was the socio-political change in the US. During the knowledge-based economy era (1980-2010), the capture of a rising share of national income by intangible capital assets and the skills-bias in the nature of technological change concentrated wealth in the college towns that anchored the innovation system and the university-educated professional class that administered the system. US international politics reflected and projected the progressive values of this demographic and its economic interests (i.e., the capture of economic rents through traditional intellectual property). With the data-driven economy, wealth flow shifted to the campuses of the handful of emerging superstar firms, which were often established and run by college dropouts. The university system came under consolidation pres-

sure and investment in academic credentials ceased to guarantee higher returns, leaving a growing cohort of the population burdened with unrepayable debt. This began their slide from the professional “elite” class into the growing “precariat” class that elected Donald J. Trump.

The sensational breakthroughs in generative artificial intelligence (AI) in the early 2020s are now again transforming the economy by adding a new form of capital asset – machine knowledge capital – to the production function. Machine knowledge capital competes with human knowledge capital but has the huge advantage of being scalable, whereas human capital is not. The changes in society will be as profound as the introduction of the machinery of mass production, which competed with manual labor but had the huge advantage of being scalable (unlike manual labor). The share of national income captured by capital of all sorts – machinery, traditional intellectual property, data assets, and AI or machine knowledge capital – will grow and so will the ranks of the precariat. National politics and international relations will inevitably adapt.

THE CONDITIONS THAT DEFINE THE CONTEXT FOR THE “LANDING ZONE”

The transformation of an institutionally anchored rivalry over the capture of the economic rents flowing to the new capital assets of data and AI into a full-blown trade war has irrevocably set the global system down a path to a new equilibrium. The context for the transition to a new equilibrium has the following features:

- There is a new “Middle Earth” – comprised of the US and China – which is in a state of conflict short of direct kinetic

war. There is also a Global North that consists of the former US alliance system of Europe, Canada, and the Western Pacific Rim; a Global South that is now largely left to fend for itself; and a Central Eurasia of warring states, from Russia to Israel.

- Both great powers have an isolationist tendency: in the US, isolationism emerges from the political economy of populism, which is taking firm root. In China it emerges from the security-driven “dual circulation” concept. Since neither has sufficient scale to replicate the global economy domestically, trade will continue.
- The international role of the USD, its perpetual current account deficit, and its provision of a broad security guarantee (“Pax Americana”) are inextricably bound up together. The unilateral termination of Pax Americana by the Jacksonian America of Donald Trump means that the other two features cannot continue.
- The trade system for connected devices and AI will differ from the trade system for “inert” products because of the profoundly different national security implications.
- The system of capital flows will similarly have to be modified to reflect the new possibilities of operating across borders in virtual modes.
- The system of exchange rates, which serves both trade and capital flows, will change. As Robert Mundell argued: “Strong currencies are the children of empires and great powers. The dollar became the greatest currency of the 20th century because it was comparatively stable, and America became

»The high-level institutions that dominated global governance in the postwar era – the UN, the Bretton Woods institutions, and the General Agreement on Tariffs and Trade (GATT)–WTO – and the institutionalized steering groups for the system – the G7 and G20 – were born of a hegemonic structure that is now untenable.«

the superpower. As the US came to dominate the international monetary system, the dollar elbowed out gold as the principal asset of the system.” (Mundell, 2000).

The high-level institutions that dominated global governance in the postwar era – the UN, the Bretton Woods institutions,

and the General Agreement on Tariffs and Trade (GATT)–WTO – and the institutionalized steering groups for the system – the G7 and G20 – were born of a hegemonic structure that is now untenable. Whether they will be sidelined, engaged actors, or replaced by a new superstructure is to be determined by the nature of the transition.

THE CO-OPERATIVE TRANSITION

In a cooperative transition, the US would share the privileges and burdens of hegemony with China. This would start with the provision of the international vehicle currency.

In the US populist narrative, the dollar's "exorbitant privilege" is transformed into an "exorbitant burden", whereby America is "forced" to be the consumer of last resort and to absorb the excess savings of the rest of the world, in particular, the excessive savings of "predator" countries (e.g., Germany and China) that suppress consumption and subsidize manufacturing. The resulting unhappy equilibrium for the US is deindustrialization; the loss of the learning-by-doing benefits of manufacturing; and the loss of good jobs and the social consequences that flow from that, including "deaths of despair" and drug abuse. While the US covets the exorbitant privilege, it wants to shed the exorbitant burden. Since they are one and the same thing, the compromise is to share both with China.

Just as the dollar "elbowed out gold" as the US became the dominant power, so must China's rise be accommodated by "elbowing *in*" a role for the renminbi (RMB). This would allow China to share the US's exorbitant privilege, while taking

on part of the associated burden. Again, Mundell shows us the way: this could be easily achieved by a USD–RMB peg along the lines he suggested in 2000 for a USD–euro–yen peg at the then prevailing parities of 1:1:100. This solution would substantially increase the monetary mass at the heart of the global monetary system, imparting greater stability, and allow an orderly reduction in US external debt and a build-up of China's.

This solution would necessarily require a significant rebalancing of the US and Chinese current accounts, which, in turn, would necessarily involve an RMB–USD realignment. The US could claim it achieved what it wanted – a strong dollar, as insisted upon by US Treasury Secretary nominee Scott Bessent, and a lower valuation, as required in the view of the nominee for the US Council of Economic Advisers, Stephen Miran. A stronger RMB would support increased consumption in China as is universally desired (including by Chinese authorities).

A necessary corollary, however, is that the US would have to stop building the Second Great Wall of China – this one intended to isolate China from the rest of the world rather than to keep the Mongols out of China. This could be done as part of a transactional deal, an approach favored by Donald Trump, such as a Phase Two trade deal.

For its part, China would have to undertake additional unilateral measures, including reflating its economy by monetizing a significant portion of the debt of local governments and the banking system and, at the same time, launching a major international bond program to provide the liquid RMB assets held abroad to underpin the RMB's new international role.

We could think of this as a version of the Smithsonian Agreements of December 1971, which were put together by the group of ten leading industrialized countries. In hindsight, the Smithsonian arrangements served as an interim step for the transition from the Bretton Woods system to what would become the international dollar system. Under these agreements, the gold convertibility of the USD was removed, the USD was devalued against the yen and deutschmark, and the Bretton Woods intervention bands were widened to permit a greater flexibility in exchange rates. As these arrangements unraveled, the structure of the post-Bretton Woods system took shape incrementally. The European Communities first formed the “Snake in the Tunnel” (with currencies aligned with the deutschmark). This then became the “Snake in the Lake”, as the system of floating exchange rates took hold. This then eventually became the euro. The rest of the world was left free to adopt any exchange rate management system they desired (apart from pegging to gold) under the Jamaica Accord of 1976.

The G7 emerged from the initial meetings that were convened by US Treasury Secretary Goerge Schultz of the then systemically important economies (the US, UK, West Germany, France, and Japan) to manage this emerging system. In time, it would broker the coordinated interventions pursuant to the Plaza Accord of 1985 to lower the value of the dollar and the Louvre Accord of 1987 to arrest the decline in the dollar’s value, which had been reinforced by the Plaza Accord.

Similarly, today, the rest of the world would have to take care of itself.

The Global North’s small, open economies (yes, the EU is a small, open economy in the world of data and AI), from the eastern borders of the EU through to Canada and the Western Pacific Rim, would have to band together and re-arm to avoid predation. This includes predation from an expansionist US, which has threatened hostile takeovers of Canada, Greenland, and Panama. This also includes predation from China, which unleashed Russia on Ukraine through the “no limits” pact between Xi Jinping and Vladimir Putin, pressed its claims in the South China Sea, insisted on asserting full sovereignty over Taiwan, and recently conducted live-fire naval exercises off the coast of Australia.

The Global South, which faces the highest tariff wall under the Trump Reciprocal Tariff, combined with a full elimination of international development assistance, has been left to manage its relations with China, either through the one-on-one relationships favored by China through its BRI or through some coordinated mechanism in which the countries of the Global South effectively unionize to gain bargaining power in their role as hewers of wood and drawers of water for the advanced industrialized world.

Finally, the revised monetary arrangements would permit a climbdown from the tariff wars that have been waged in open violation of WTO rules. Ideally, the parties would return to the negotiating table to revise, as necessary, commitments made in the pre-digital age to adapt to the national security realities of a connected world, working within established WTO mechanisms (Article XXVIII of the GATT and Article XXI of the General Agreement of Trade in Services [GATS]), or by creating new tar-

iff lines for connected devices, which could be considered to be unbound under prior WTO schedules.

Importantly, from the perspective of the US, this orderly transition would accommodate a smoother transition in the value of assets underpinned by the system of global governance that the US is abandoning, than otherwise might be the case.

To give a specific example, Tesla's market capitalization at its peak was almost US\$1.4 trillion (it has plunged beneath the US\$1 trillion mark due to Elon Musk's behavior on the public stage). BYD – which manufactures as many electric vehicles as Tesla and, in the opinion of some, produces better cars – has recently broken through the US\$200 billion market cap mark. This unsustainable gap in valuation is repeated endlessly: the West, broadly speaking, controls most of the world's market capitalization of firms and most of its international intellectual property receipts. However, China's convergence to the technological frontier and its proven capacity to establish world-class firms means this will not continue. The main

benefit of an orderly transition is that it will allow this reconciliation to happen gradually.

THE “CRASH-LANDING ZONE”

To paraphrase Dostoevsky, every cooperative transition is similar, and every non-cooperative transition is catastrophic in its own way. China appears to be pulling back from its second cultural revolution by re-embracing the role of private firms and the market, as evidenced by the public spectacle of President Xi's meeting with technology leaders. Meanwhile, the US under the Trump–Musk regime is now plunging headlong into its second cultural revolution (the first, of course, being the Civil War between the industrial north and plantation economy south).

The US has now lost three wars to the People's Republic of China (PRC):

1. It backed the nationalist regime of Chiang Kai-Shek, which was pushed off the mainland in 1949.
2. After North Korea was obliterated in the first 30 days of the so-called Korean Police Action by US air power and the forces of General Macarthur moved effectively unopposed to the Yalu River, so-called “volunteers” from the PRC pushed back the UN-sanctioned forces to the demilitarized zone (DMZ).
3. Its economic and technological war to halt China's rise has failed, as evidenced by the shock of the DeepSeek event.

The first two ended in ceasefires without formal resolution. It is now time for this to happen with the third one.

If internal US checks and balances fail, the landing zone for US–China relations

»If internal US checks and balances fail, the landing zone for US–China relations will be a “crash-landing zone” – a disaster.«

will be a “crash-landing zone” – a disaster. The changes in international institutional arrangements will happen abruptly, without pre-negotiation, meaning that the implications for asset values are unknowable – as the consequences of the Nixon Measures show.

Things would fall apart. After all, how likely is it that Taiwan, given the US’s inconsistency and its extortion of Ukraine, would choose to continue with a US security guarantee rather than accept the PRC offer from the of a status equivalent to Hong Kong’s in perpetuity? Then, of course, who knows what would happen?

THE “STAIRCASE” TO A SOLUTION

While there have been numerous calls for a new Bretton Woods conference, the current geopolitical and economic conditions more closely resemble those that motivated the 1933 London Monetary and Economic Conference. The objective today would be the same as it was in 1933: to stop digging deeper into the metaphorical “hole” in which the world has sunk and build a “staircase” so we can climb out. However, the London Conference failed and the result was a “crash landing” – the Second World War.

The London Conference failed because the analytical/conceptual framework was not in place. As Eichengreen and Uzan (1993) put it, “Lacking a shared diagnosis of the problem, they were unable to prescribe a cooperative response.” The first step should, therefore, be taken by a Track 2 process to establish an analytical/conceptual framework to reconcile the objectives of the US populist trade economics with economic laws. It would also outline the shape of a cooperative solution, based

on sharing the privilege and burdens of hegemony. This would establish a new strategic equilibrium, upon which a new global governance structure, consistent with the transformed technological and economic conditions, could be built. In the first instance, a proposed interim solution on tariffs and trade (ISTT) is required to go with an interim solution on money and exchange rates (ISMX). This could then be put to G20 leaders, who could in turn build the rest of the aforementioned metaphorical “staircase”.

Export Finance at a Crossroads

Leading the Green Transition or Lagging Behind?

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Policy Brief

Keywords:

trade, geoeconomics, green transition, export credits, climate finance

ABSTRACT

Public export credit agencies (ECAs) and export–import banks (EXIMs) face a critical choice: lead the green transition or continue to finance carbon-intensive industries. Geopolitical fragmentation, the weaponization of trade, and a backlash in climate action are hampering progress, while governance models in many countries are slowing the push towards the green transition. However, ECAs can advance sustainability by adopting net-zero mandates, scaling up green finance, and strengthening global cooperation. This paper recommends aligning trade policy with climate goals, introducing green conditionality and strengthening sustainability metrics. Bold reforms and strategic action by policymakers and ECA leadership are

important to make export finance a catalyst for a sustainable global economy.

INTRODUCTION

Export finance is at a crossroads. Traditionally, ECAs and EXIMs have played a critical role in stabilizing global trade, driving industrial growth, and mitigating political and commercial risk. However, as the world moves towards a net-zero economy, these institutions must decide whether to lead the green transition or continue to support industries that contribute to long-term environmental harm and economic vulnerability.

The transition to sustainable export finance is not without its challenges. Geopolitical fragmentation and economic competition have complicated global

cooperation on climate action, while the weaponization of trade has reprioritized national security over sustainability. At the same time, an emerging backlash against net-zero commitments and environmental, social, and governance (ESG) principles threatens slow progress, raising concerns about the role of the financial sector in climate-smart development.

To remain relevant in the long term, ECAs must continue to transform from passive risk mitigators to active facilitators of sustainable global trade. Despite their significant financial capacity, with the world's fifteen largest public export finance institutions collectively committing approximately EUR 1.2 trillion (euro), annually, their overall contribution to global climate finance remains limited. Increasing this will require bold policy action, innovative financing mechanisms, and greater international cooperation to ensure that export finance becomes a force for environmental sustainability.

ECAS/EXIMS AND CLIMATE ACTION

ECAs and EXIMs have long played a vital role in global trade, providing financial security to businesses and facilitating cross-border investment (Choi & Kim, 2021; Krummaker, 2020). By underwriting risk and providing loans, guarantees, and insurance, they have historically enabled economic expansion and industrial development (Kim, 2020; Wright, 2011).

Despite the challenges, several initiatives signal a shift towards sustainability in export finance. The Net-Zero Export Credit Agencies Alliance (NZECA) aims to align ECA operations with the Paris Agreement by phasing out high-carbon financing. Similarly, the European-led Export Fi-

nance for Future (E3F) initiative promotes harmonized sustainability standards. In addition, innovative green finance instruments, such as green bonds and climate guarantees, are gaining traction, helping to de-risk investments in renewable energy and climate-friendly infrastructure (Klasen et al., 2022; Lundquist, 2022).

ECAs and EXIMs are also increasingly engaged in whole-of-government strategies, such as the EU's Global Gateway initiative, which promotes collaboration among public export finance entities, development finance institutions (DFIs), and multilateral banks for sustainable connections. While these trends represent progress, efforts remain fragmented, and political and economic pressures challenge the pace of change.

HOW THE NEW GLOBAL ORDER THREATENS THE GREEN TRANSITION

Trade is increasingly being used as a geopolitical tool. ECAs and EXIMs have always played an important role in securing strategic economic and political influence. In some cases, this has led to the prioritization of short-term national interests over long-term sustainability objectives. Fossil fuel investments, often justified under the guise of energy security, continue to receive significant ECA and EXIM support, even as the global community pushes for a transition to cleaner energy sources (Censkowsky et al., 2025; Skovgaard et al., 2023). The increasing fragmentation of global trade relations further complicates coordinated efforts to align export finance with climate goals.

A resurgence of economic nationalism is driving governments to prioritize industrial policies that focus on domestic job

creation and strategic economic interests, sometimes at the expense of environmental commitments (Hopewell, 2021). ECAs and EXIMs, historically designed to support national industries, remain significant financiers of carbon-intensive projects, particularly in economies still heavily dependent on fossil fuels (Peterson & Downie, 2023).

Without clear incentives to shift to sustainable alternatives, public export finance institutions risk locking in outdated industrial models and technologies, which are incompatible with climate goals, and foregoing the opportunities afforded by the clean energy economy of the future (Way et al., 2022; Andres et al., 2023). The challenge is to reconcile domestic economic priorities with international sustainability commitments.

Despite the growing urgency of climate action, political and corporate resistance to net-zero targets and ESG regulation is threatening progress. ESG investing is increasingly being framed as a form of regulatory overreach, leading to a backlash against climate-related financial commitments (de Mariz, Aristizábal & Andrade Álvarez, 2024). This skepticism is reflected in policy reversals and regulatory rollbacks,

»Policymakers must ensure that trade finance is used as a strategic tool to drive economic and environmental progress.«

weakening the momentum of sustainable finance initiatives. If export finance institutions fail to withstand this pressure, their ability to drive the green transition will be significantly undermined, further delaying the integration of climate considerations into global trade finance.

Furthermore, several ECAs and EXIMs continue to operate under governance models that do not fully integrate climate risks into their financial decision making (Hopewell, 2019). Institutional inertia, coupled with a lack of sustainability-related performance metrics, has slowed the integration of green finance principles into export finance frameworks (Liao, 2021). The same applies to development finance, which needs to be better aligned with climate change objectives (Fankhauser et al., 2023). Without clear accountability mechanisms, public financial institutions may struggle to move from passive financial actors to active facilitators of the green economy.

ECAS/EXIMS AS ARCHITECTS OF A GREEN TRANSITION

Public export finance institutions have a unique opportunity to evolve from traditional risk mitigators to proactive enablers of climate-smart investments. By integrating net-zero objectives into their core mandates, they can drive financing towards renewable energy, clean technology, and sustainable industrialization (Michie, 2022). This shift requires a fundamental reassessment of how ECAs and EXIMs measure success – not just in terms of economic returns but also in terms of their contribution to long-term environmental and social resilience. By prioritizing green sectors, public export finance institutions can accelerate the decarbon-

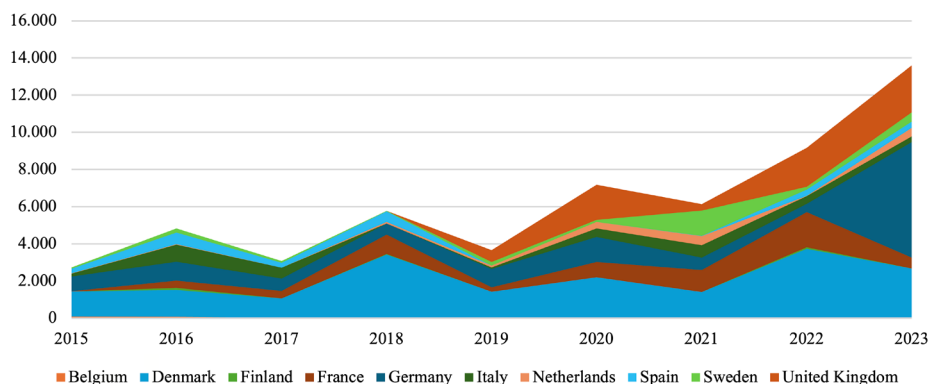


Figure 1: ECA volumes: climate positive financing (E3F members, EUR m, 2015-2023).
Source: Based on this policy brief with data from E3F (2024)

ization of global trade while remaining relevant in an evolving financial landscape (Peterson & Downie, 2023).

Furthermore, export finance policies need to be fully aligned with broader climate and industrial strategies to ensure that ECAs and EXIMs actively support the development of low-carbon supply chains (Klasen et al., 2024). By incentivizing exports of clean energy technologies, circular economy solutions, and climate-resilient infrastructure, public finance institutions can help position industries for long-term competitiveness in a decarbonizing global economy. Governments have a critical role to play in shaping these policies: Policymakers must ensure that trade finance is used as a strategic tool to drive economic and environmental progress. As shown in the figure below, E3F members supported approximately EUR 13.6 billion in climate financing in 2023.

Innovative financial instruments can help bridge the gap between climate ambition and capital availability. De-risking

mechanisms such as blended finance, climate guarantees, and concessional finance can encourage private investors to participate in projects that might otherwise be perceived as too risky (Adhikari, 2022; Swanson & Sakhrani, 2023). Public export finance institutions can also use sustainability loans and green bonds, which link financial incentives to measurable climate outcomes. These instruments not only enable a just transition but also create new market opportunities for companies committed to sustainability.

Stronger collaboration among ECAs/EXIMs, DFIs, multilateral development banks (MDBs), climate-focused investment funds, and private sector actors can help to mobilize capital at scale. Initiatives such as the Global Gateway demonstrate the potential for coordinated action to ensure that public and private capital flow into sustainable infrastructure and trade (Tagliapietra, 2023). By co-financing projects with MDBs and DFIs and using de-risking instruments, ECAs can sig-

»Innovative financial instruments can help bridge the gap between climate ambition and capital availability.«

nificantly improve the bankability of climate-friendly investments, particularly in emerging markets, where green financing gaps remain significant.

RECOMMENDATIONS

1. **Redefine mandates for climate resilience**

ECAs and EXIMs need to integrate the green transition into their core mandate and ensure that financing decisions are aligned with long-term global sustainability goals. This starts with embedding net-zero commitments and climate resilience into operational policies and decision-making frameworks. By prioritizing net-zero and climate resilience, public export finance institutions can future-proof their role in global trade and economic development.

2. **Align trade strategies with the green transition**

ECAs and EXIMs should proactively finance supply chains that support clean energy, circular economy solutions, and emerging green technologies. Trade finance needs to be targeted at industries that contribute to decarbonization and sustainable economic transformation. By promoting climate-smart industrial policies, public export finance

institutions can drive competitiveness in the green economy.

3. **Strengthen resilience to climate policy setbacks**

Sustainability goals must remain independent of short-term political shifts and corporate resistance. ECAs and EXIMs should institutionalize climate-oriented policies in their underlying legislations that are resilient to policy reversals or lobbying pressure, for example, by adopting explicit climate targets or sustainability mandates. Transparent reporting and international coordination will strengthen long-term commitment to climate finance.

4. **Strengthen whole-of-government coordination on climate finance**

Trade, development, and climate finance policies need to be integrated into a single strategy. ECAs and EXIMs should coordinate with DFIs and multilateral banks through initiatives such as Global Gateway (e.g., Bilal & Klasen, 2025). A coherent approach will maximize the effectiveness of public finance for sustainable development.

5. **Consider green conditionality in export finance**

Governments should mandate that export finance transactions are consistent with net-zero commitments. Public export finance institutions must prioritize low-carbon industries and exclude high-emission projects from financial support. Clear, enforceable criteria will ensure that export finance contributes to a sustainable global economy.

6. **Expand risk-sharing mechanisms to mobilize green investment**

De-risking instruments such as blended finance and climate guarantees can

attract private capital to green projects. ECAs and EXIMs should work with institutional investors to co-finance high-impact sustainable initiatives. Strengthening public-private partnerships will improve the viability of climate-related investments.

7. Support green transitions in developing countries

Public export finance institutions should also provide concessional financing and risk-sharing instruments to help emerging economies adopt sustainable technologies. Special financing packages should be designed to facilitate clean energy transitions without hampering economic growth. Supporting developing countries ensures an inclusive and equitable green transition on a global scale.

8. Adopt sustainability performance indicators

ECAs and EXIMs should introduce measurable indicators to track their impact on climate goals and economic transformation. Performance metrics can include emissions; financed, clean technology investment; and green jobs created. Linking management incentives to sustainability outcomes will promote institutional accountability.

9. Establish a Global Green Transition Finance Task Force

An NZECA-led task force should be established to enforce climate adaptation in export finance. In close collaboration with G20 members, this task force could set common standards, track progress, and promote best practice among public export finance institutions. International cooperation is essential to prevent regulatory arbitrage and ensure a just transition.

A CALL FOR ACTION

In an era of economic nationalism, trade fragmentation, and climate pushback, ECAs and EXIMs face a defining moment. They must make a clear choice: embrace the green transition or risk becoming less relevant in a rapidly evolving global economy. The financial sector is shifting towards sustainability, and export finance must continue to leverage this momentum to remain a relevant and influential force in global trade.

Export finance should not simply be seen as a means of supporting industrial and trade policy. Instead, it needs to be positioned as a driver of economic transformation, enabling investment in low-carbon industrialization, green technology, and sustainable supply chains. Public export finance institutions must take a leading role in shaping the future of international trade by setting robust global standards and ensuring that capital flows to sectors that promote long-term resilience and competitiveness.

ECAs and EXIMs have the power to finance the future rather than perpetuate the past, proving that public export finance can be a catalyst for sustainability and global economic stability. By implementing bold policies, fostering international cooperation, and embedding sustainability at the core of their operations, they can help build a cleaner, more equitable, and climate-resilient global trading system.

AUTHOR NOTE

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Leveraging China's Green Transition for Global Climate Mitigation

Perspectives, Opportunities, and Challenges

Henry Wang, Founder and President, Center for China and Globalization

Opinion Piece

Keywords: south-south cooperation, green transition, energy capacity, trade

INTRODUCTION

The year 2024 marked the hottest year ever recorded, highlighting the urgent need for enhanced efforts in new energy production globally. Despite worldwide governmental initiatives, significant shortages in new energy capacity and investment persist. During this period, China has significantly transformed its climate policies, transitioning from a passive role in global climate governance to a proactive leadership position in addressing climate change. This green transition offers numerous benefits, both within China and globally. To leverage China's green transition for global climate mitigation, the international community should take advantage of the progress made, which not

only aligns with China's interests but also benefits the world as a whole.

THE DESTRUCTIVE EFFECTS OF CLIMATE CHANGE

The continuous rise in global temperature exacerbates extreme weather events and also has profound effects on global economic and social stability. Climate change has significantly disrupted several major industries, such as agriculture, energy, infrastructure, and global supply chains, with particularly severe consequences for developing countries that rely heavily upon natural resources to support their economies. Food security is under a dual threat from rising temperatures and extreme weather; supply chains are frequently dis-

rupted, and infrastructure is damaged, further fueling the precarious state of the global economy.¹

SEVERE SHORTAGES IN NEW ENERGY CAPACITY AND INVESTMENT

Despite worldwide governmental initiatives, significant shortages in new energy capacity and investment persist. The International Energy Agency (IEA) calls for an annual investment of US\$4.5 trillion in green energy. However, in 2023, only a fraction of the proposed amount was spent, a mere US\$1.3trillion. This large gap between demand and actual progress highlights the urgency and necessity of developing cost-effective products, improving resource allocation to increase efficiency, and advancing technology to accelerate progress. Solar panels present immense growth potential and could be a key player in combating global climate change, with the IEA forecasting that global demand for new photovoltaic installations will reach 820 gigawatts. Yet again, in 2022, production capacity was still insufficient, meeting only one-quarter of that target – far from overcapacity.² Similarly, the electric vehicle (EV) market grew exponentially in 2023, with global EV sales rising by 35% year-on-year. However, while global demand for EVs is projected to reach 30 million units by 2027, China exported only 1.2 million EVs in 2023, underscoring a severe supply shortage.³

This shortage primarily affects developing countries, whose transition to a low-carbon economy and fight against climate change challenges urgently require funding and technological support from the international community. Therefore, countries should commit to promoting the usage and flow of green technology

»Despite worldwide governmental initiatives, significant shortages in new energy capacity and investment persist.«

and green products through an open and inclusive international trading system. They should also avoid the politicization of climate issues or their use as economic tools. Any policies that hinder the global transition to a green economy, excessive trade restrictions in particular, will complicate global climate cooperation and weaken the collective power and response to climate change.

CHINA'S PROGRESS TOWARDS A GREEN TRANSITION

In recent years, China's climate policies have undergone a significant transformation, shifting from passive participation in global climate governance to taking on a responsible leadership role in combating climate change. President Xi Jinping launched the Global Development Initiative at the UN General Assembly, emphasizing the need to accelerate the transition to a green, low-carbon economy and achieve green recovery and development, while also improving global environmental governance to actively respond to climate change.

China has not only committed to achieving carbon peak by 2030 and carbon neutrality by 2060, but it is also advancing

international green development cooperation through mechanisms such as the Belt and Road Initiative (BRI). “By actively participating in international climate agreements and promoting sustainable trade, China is gradually coming to the forefront of global climate governance. At a seminar at WTO headquarters, Former Vice Minister of Commerce and former World Trade Organization (WTO) Deputy Director-General Yi Xiaozhun recently highlighted that China’s green policies not only have profound impacts on its domestic economy but also provide significant momentum for the global green transition.”⁵

Currently, although coal remains China’s dominant energy source, the country is actively reducing its reliance on coal by significantly expanding renewable energy and nuclear power. According to China’s fourteenth Five-year Plan (2021–2025), the total installed capacity of renewable energy, such as wind and solar power, is expected to exceed 1.2 billion kilowatts by 2030.⁶ Clean energy will become a core component of China’s future energy structure.

Moreover, China has invested heavily in advancing renewable energy technologies, EV technologies, smart grids, energy storage systems, and other environmentally friendly technologies. Additionally, China is implementing a nationwide carbon trading market. This system aims to use market mechanisms to incentivize businesses to reduce their carbon emissions and drive high-emissions industries to accelerate technological upgrades and transition to greener practices. Furthermore, China is actively promoting the development of new infrastructure; including 5G; artificial intelligence; and the Internet of Things,

which, through widespread application, will improve energy efficiency and reduce the carbon footprint.

CHINA’S GREEN TRANSITION IS BECOMING MORE MARKET-DRIVEN THAN GOVERNMENT-LED

As Yi Xiaozhun emphasized, the green transition is driven more by market competition and technological innovation rather than relying on government subsidies. He noted that the success of China’s renewable energy industry is not based on long-term government subsidies, but more on fostering market competition, rapid technological innovation, and its large market scale.

In the process of developing a green economy, China has established a national carbon emissions trading market, creating a market-based mechanism for emissions reduction to ensure transparency and fairness in carbon trading. It not only helps China control its total carbon emissions but also safeguards fair competition in international trade, providing a more equitable environment for Chinese enterprises to engage in global markets. Through these measures, China promotes its green economic transition while also upholding the stability of the multilateral trading system, demonstrating its commitment to international sustainable development.

Government subsidies helped China’s renewable energy industry achieve rapid growth in the early stages. However, in recent years, China has gradually reduced subsidies in sectors such as photovoltaics, wind power, and EVs. For instance, the Notice on Matters Relevant to Photovoltaic Power Generation in 2018 significantly reduced photovoltaic subsidies and limited

the scale of new photovoltaics projects. As these subsidies decreased, Chinese photovoltaics companies improved their competitiveness by enhancing technology and reducing production costs, gradually lowering the price of electricity. This transition has enabled them to secure a dominant position in the global market.

In the EV sector, the Chinese government's subsidies began to gradually decrease in 2017 and the subsidies for EV buyers were completely cancelled in 2022. The withdrawal of these subsidies accelerated the marketization of the industry, pushing EV companies to compete through technological innovation and cost control. In 2018, China had as many as 480 EV manufacturers; however, due to intense market competition, only about 50 companies remain today. This competitive pressure has driven companies to continuously improve their technology and reduce production costs, allowing them to secure a more advantageous position in the international market.

CHINA IS FACING GROWING CRITICISM OVER OVERCAPACITY AND TARIFFS

This green transition offers numerous benefits both within China and globally, including lower energy costs, environmental protection, and support for other nations through trade and technology transfer. However, China's efforts face criticism over potential overcapacity⁷ and challenges from tariffs and protectionist measures.⁸ In recent years, due to the combined effects of geopolitical tensions, rising economic protectionism, and the Covid-19 pandemic, the trend of deglobalization has intensified. This has led to profound changes in the global trade land-

»China's Green Transition is Becoming More Market-driven than Government-led.«

scape, particularly in renewable energy and green technology, where heightened competition among countries has exacerbated the instability and unsustainability crisis of the global trading system.

Global trade growth has been one of the key drivers of economic growth and technological advancement. However, with the rise of trade protectionism, particularly the "local-first" policies adopted by major economies in recent years, the openness and fairness of international trade has faced unprecedented challenges. In response to competition in renewable energy products, countries have implemented measures that conflict with free trade policies, such as tariffs and other green barriers. These policies have not only sparked widespread controversy globally, but have also intensified conflicts in international efforts to address climate change and coordinate trade policies.

RECOMMENDATIONS FOR CHINA AND THE INTERNATIONAL COMMUNITY IN THE GLOBAL GREEN TRANSITION

In the context of addressing climate change and achieving sustainable development, international trade policies are gradually transitioning towards green and low-carbon models. Rather than resorting to protectionism, the focus should be on

»China is Facing Growing Criticism Over Overcapacity and Tariffs.«

fostering cooperation among all stakeholders. Governments, businesses, and international organizations should work together to develop and implement sustainable trade policies, promoting the global circulation of green products and technologies to achieve a win-win situation for economic growth and environmental protection.

THE RECOMMENDED MEASURES ARE OUTLINED BELOW

Formulate Sustainable Trade Policies and Optimize the Structure of Green Products

Sovereign nations should develop trade policies from the perspective of sustainable development, encouraging the export of sustainable products, while restricting the export of raw materials with high energy consumption and high emissions. This will help optimize the global structure of the green products and services trade.

By leveraging regional industrial advantages and strengths in green development, countries should accelerate the transformation towards green energy, promote the application of green technologies, and encourage businesses to prioritize low-carbon, energy-efficient, and environmentally friendly green materials and technologies in their design and manufacturing. This will enhance the competitiveness of green product exports.

For example, the automotive sector in China and Europe could pioneer new forms of industrial collaboration through joint research and development facilities, shared talent development programs and harmonized technical standards. Chinese manufacturers could establish production bases in Europe, creating jobs and fostering technological exchange. Currently, BYD is establishing a battery production facility in Hungary, adding to the region's EV manufacturing capacity. Additionally, CATL, a global leader in battery technology, is developing multiple major projects across Germany, Hungary, and Spain. These investments show how manufacturing synergies can move in both directions, following the successful model of European carmakers in China but adapted for today's evolving automotive landscape. The EU and China should also revive negotiations on the Comprehensive Agreement on Investment, which would provide crucial institutional safeguards for businesses.

Deepen Multilateral, Bilateral, and Regional Cooperation

Countries should collectively uphold the international system, with the UN at its core, and work towards the full implementation of the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. Countries should actively advocate for sustainable investment, production, and consumption in the UN Sustainable Development Goals (SDGs) policy framework. The WTO, as a platform, could be leveraged to foster global governance consensus, update rules, and promote the establishment of a new sustainable trade mechanism. Countries should also promote policies that

encourage sustainable trade, use multi-lateral negotiations to reduce or even exempt tariffs on sustainable products, and offer trade facilitation measures for their customs clearance.

Advancing Low-Carbon Regulations and Strengthening International Cooperation

Countries should strengthen international cooperation and advance low-carbon regulations within major global institutions. In 2012, APEC members reached the world's first substantive agreement on a list of environmental products aimed at promoting trade liberalization in such products, covering 54 customs tariff codes. In 2021, the International Monetary Foundation (IMF) recommended that the world's major carbon-emitting countries increase carbon prices under the G20 framework, in consideration of development stages and historical emissions responsibilities, and establish a carbon price floor. The Organization for Economic Co-operation and Development (OECD) has long emphasized the importance of carbon pricing, identifying it as the most crucial policy tool in addressing climate change. Countries should effectively leverage existing multilateral collaboration platforms to promote policy coordination in sustainable trade and green finance, setting unified standards under an inclusive framework. Additionally, efforts should be made to enhance supply chain transparency and foster cooperation in technological innovation.

Strengthening International Cooperation in Green Industrial Chains

China should leverage its aforementioned role as a global leader in addressing cli-

mate change by driving international low-carbon development in upstream and downstream industries, as well as in related sectors. International cooperation in green manufacturing should also be strengthened generally to promote the establishment of a cooperation system for low-carbon green industry and supply chains. This would ensure the efficient integration of high-end resources with the real economy. Other measures could include enhancing international technical exchanges and cooperation, reducing the market entry costs for green products and technologies to accelerate their global adoption, and improving the top-down design for addressing climate change.

Deepening International Cooperation in Green Finance

To aid international cooperation, global practical cooperation should be promoted in climate investment and financing, such as encouraging the development of green credit, green bonds, green insurance, and other financial products that can provide the following (along with other key areas):

- Financing support for energy conservation;
- Environmental protection;
- Clean production;
- Clean energy;
- Ecological environment;
- Green infrastructure; and
- Green services.

To improve the mechanisms for international cooperation in green finance, the following should be enhanced: the alignment in assessment standards, environmental and governance information reporting, and disclosure. Again, given its

aforementioned leading role, China could help to facilitate these actions. In addition, developing international green finance standards and strengthening global coordination within a standard green finance framework should be actively explored. It is also recommended that Chinese-led multilateral banks, such as the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (NDB), should provide credit services, issue sustainable bonds, and invest in carbon reduction initiatives and green economies in developing countries. They should also help underdeveloped economies establish carbon markets.

Promoting South–South Cooperation for Joint Green Transition

Enhancing South–South cooperation in green transition is also recommended. In November 2023, China signed 48 South–South cooperation agreements on climate change with BRI partner countries. Designing and promoting green transition plans within economic and trade cooperation zones along the BRI route is now recommended to help address the needs of BRI countries in transforming traditional industries and upgrading energy infrastructure. Using its experience to expand green transition with BRI countries, China could increase its export of green technologies and green production capacities.

In conclusion, addressing climate change calls for immediate and sustained global action. The international community must unite, building on the current momentum to strengthen collaboration in the green transition and climate solutions. Through collective effort, we can shape a future where climate action is

not only a necessity but also a catalyst for global progress, innovation, and shared prosperity.

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Organizations featured in this issue

ASIAN DEVELOPMENT BANK INSTITUTE

The Asian Development Bank Institute (ADBI) is the Tokyo-based think tank of the Asian Development Bank. ADBI provides demand-driven policy research, capacity building and training, and outreach. These efforts help developing countries in Asia and the Pacific practically address sustainability challenges; accelerate socioeconomic change; and realize more robust, inclusive, and sustainable growth.

Nicolas J A Buchoud

ASSOCIATION OF PACIFIC RIM UNIVERSITIES

Founded in 1997, the Association of Pacific Rim Universities (APRU) is a consortium of 61 leading research universities, drawn from eighteen economies across the Pacific Rim. APRU fosters collaboration among its members to address global challenges, promote economic and social development, and advance knowledge and innovation in the Asia-Pacific region. The network serves as a platform for thought leaders, researchers, and policymakers to exchange ideas and develop effective solutions for the twenty-first century.

Christina Schönleber and Thomas Schneider

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CIPPEC (Centro de Implementación de Políticas Públicas para la Equidad y el Crecimiento) is an independent non-profit organization, which produces knowledge and offers recommendations to design better public policies. Through research, dialogue, and governance support, it envisions a developed Argentina, with equity, strong institutions, and equal opportunities; an Argentina that fosters a just, democratic, and open society.

Ada Luz Cabrera, Agustín Chiarella, Dalia Gómez, Diego Moreno, Paula Szenkman, Rocío Navaridas, Mauro Solano, and Amalia Peralta

CENTER FOR CHINA AND GLOBALIZATION

The Center for China and Globalization (CCG) is a non-governmental think tank based in Beijing. It was founded by Dr Henry Huiyao Wang and Dr Mable Lu Miao in 2008. As a non-governmental organization, the CCG has been granted official special consultative status by the Economic and Social Council of the United Nations (ECOSOC). In the 2020 Global Go-To Think Tank Index – created by the Universi-

ty of Pennsylvania Think Tank and Civil Society Program (TTCSP) – CCG ranked sixty-fourth among the top think tanks worldwide and among the top 50 best independent think tanks. CCG is also one of the rare national Postdoctoral Program Research Centers: while its certified by China's Ministry of Human Resources and Social Security, it operates outside China's state apparatus.

Huiyao Wang

CENTRE FOR INTERNATIONAL GOVERNANCE INNOVATION

The Centre for International Governance Innovation (CIGI) is an independent, non-partisan think tank, whose peer-reviewed research, foresight, and trusted analyses influence policy makers to innovate.

James M. Boughton

CIURIK CONSULTING INC.

Ciuriak Consulting Inc. is engaged in quantitative international trade modelling, and in innovation system and economic development policy analysis and support.

Dan Ciuriak

COUNCIL ON ENERGY, ENVIRONMENT, AND WATER

The Council on Energy, Environment, and Water (CEEW) is one of Asia's leading not-for-profit policy research institutions. It uses data, integrated analyses, and strategic outreach to explain (and change) the use, reuse, and misuse of resources. It also addresses global challenges through an integrated and internationally focused approach.

Rishabh Singh, Rudra Sen, and Shuva Raha

EVIDENCE FIRST

Evidence First is a consultancy that specializes in developing economic analyses, strategies, and investment cases for local councils and organizations across the UK. It works on projects that help improve local economies around the country for the good of people and communities. Evidence First works in partnership with local government, central government, universities, major businesses, and business groups. Its work informs better investment decision making and policy making.

Kevin Fenning

FEDERAL MINISTRY FOR ECONOMIC COOPERATION AND DEVELOPMENT, GERMANY

The Federal Ministry for Economic Cooperation and Development (BMZ) is responsible for German development policy. The BMZ works bilaterally with partner countries worldwide and engages multilaterally to further a sustainable and just transition as well as peace and human rights. The Sustainable Development Goals and the Paris Climate Agreement form the framework of its actions.

Svenja Schulze

FLEISHMANHILLARD

FleishmanHillard lives the words it was built on, making them stronger, bolder, more dynamic, more human. Going from a two-person operation in St. Louis, US, to a global network that spans six continents, FleishmanHillard is defined by innovation and growth. The agency is holding true to that today across its employee and client experiences: perpetually revolutionizing expertise to build meaningful audience connections, driving positive business

impact, and continually introducing ways to help all our people shape a career that is as unique as they are.

Sebastian Schwark

GIZ

As a service provider for international co-operation on sustainable development and education, GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) is committed to a future worth living worldwide. In this context, GIZ has over 50 years of experience in a wide variety of areas, including economic development and employment promotion, energy and the environment, and peace and security. GIZ works on demand around the globe – from the German government to EU institutions, the UN, the private sector, and the governments of partner countries.

Andreas Edele, André Bueno Rezende de Castro, Julian Glitsch, and Tobias Leeg

GLOBAL CREATIVE ECONOMY COUNCIL

The Global Creative Economy Council (GCEC) is a global forum dedicated to creative economy policy and practice. Convened in partnership with the Creative Industries Policy and Evidence Centre (Creative PEC) and the British Council, GCEC brings together academics, practitioners, policy professionals, and investors from around the world to identify and discuss emerging trends of global significance in the creative economy. The council aims to provide inclusive perspectives on global policy issues, spanning both the Global South and the Global North. It also aims to consider ideas for transnational policies and standards.

John Newbegin

GLOBAL HEALTH CENTER, GENEVA GRADUATE INSTITUTE

Established in 2008, the Global Health Centre (GHC) at the Geneva Graduate Institute focuses on research, education, and convening activities related to global health governance and diplomacy. The center aims to open global health to diverse voices, knowledge, and ideas, engaging critically with issues of governance, politics, and power. It offers a unique meeting place for scholars and practitioners in Geneva and beyond, contributing to a better understanding of the shifting power balance in global health.

Ilona Kickbusch

HUMAN FLOURISHING PROGRAM AT THE INSTITUTE FOR QUANTITATIVE SOCIAL SCIENCE, HARVARD UNIVERSITY

Founded in 2016, Harvard's Human Flourishing Program explores well-being through interdisciplinary research, integrating humanities and empirical sciences. It examines happiness, virtue, meaning, and religious community while fostering knowledge synthesis. The program's research contributes to the broad question of how knowledge from the quantitative social sciences can be integrated with the humanities on questions of human flourishing, exploring how best to carry out this synthesis of knowledge across disciplines.

Jonathan Teubner and Ronald Ivey

INDONESIA CREATIVE CITIES NETWORK

Formed in 2015, the Indonesia Creative Cities Network (ICCN) serves as a unifying platform for fostering creative de-

velopment across Indonesian cities and regions. ICCN connects local leaders and community representatives from more than 240 cities and regencies in Indonesia. Its mission is to advance creative cities by conducting research and development, fostering economic development with creativity as an engine. The network is committed to enhancing the quality of life for urban dwellers while also strengthening the nation's creative economy.

Dwinita Larasati

INTER-AMERICAN DEVELOPMENT BANK

Established in 1959, the Inter-American Development Bank (IDB) is an international financial institution, which is headquartered in Washington D.C. and is dedicated to improving lives in Latin America and the Caribbean. Owned by its 48 member countries, the IDB provides long-term financing and knowledge-driven solutions for social, economic, and institutional development. The bank focuses on promoting sustainable and inclusive growth, with initiatives spanning infrastructure, education, health, and environmental sustainability.

Eliana Prada

MINISTRY OF CULTURE AND YOUTH, UNITED ARAB EMIRATES

The Ministry of Culture and Youth of the United Arab Emirates (UAE) is dedicated to preserving the UAE's identity and enhancing the position of the cultural, youth, and media sectors globally. Its mission includes preserving national cultural heritage, promoting cultural and creative industries, investing in and empowering youth, and regulating the media sector.

The ministry aims to maximize the contribution of these sectors as productive and effective components within the national economy.

Mahnaz Fancy

NEW YORK UNIVERSITY SCHOOL OF GLOBAL PUBLIC HEALTH

The New York University (NYU) School of Global Public Health (GPH) offers interdisciplinary public health education at undergraduate, master's, and doctoral levels. Leveraging the global reach of NYU's unique Global Network University, GPH integrates cutting-edge research, transformative education, and collaboration to address the world's most pressing health challenges. The school aims to prepare the next generation of public health pioneers, ensuring that they are dedicated to improving health worldwide.

Debra Furr-Holden

NEELY CENTER FOR ETHICAL LEADERSHIP AND DECISION MAKING, UNIVERSITY OF SOUTHERN CALIFORNIA, MARSHALL SCHOOL OF BUSINESS

The Neely Center for Ethical Leadership and Decision Making at the University of Southern California's Marshall School of Business focuses on guiding leaders in making responsible decisions on the development, implementation, and management of emerging technologies. By fostering cutting-edge research, comprehensive education, and cross-disciplinary dialogue, the center strives to ensure that technological advancements contribute to both immediate and enduring societal benefits.

Nathanael Fast and Ravi Iyer

NIKORE ASSOCIATES

Nikore Associates is an economics research group that raises critical questions about policies across a wide range of sectors. Their policy ideas have been featured in several national and international news media platforms. The organization aims to continue challenging policy efficacy and contribute to the development of more effective policy design.

Mitali Nikore and Brinda Juneja

PROGRAM MANAGEMENT OFFICE, KARTU PRAKERJA

The Program Management Office (PMO) of Kartu Prakerja oversees and manages the Kartu Prakerja Program. Kartu Prakerja is the first skills development program in Indonesia with end-to-end digital implementation and the beneficiary-centric government-to-person (G2P) payment mechanism. Between 2020 and 2025, Prakerja has been providing training access to over 18.9 million individuals across all districts and cities in Indonesia.

Romora Edward Sitorus

SKORLIFE

Skorlife is an Indonesian financial technology company that empowers individuals to take control of their credit scores. The company's platform provides users with free access to their credit scores and reports from Indonesia's credit bureaux, offering personalized advice on how to improve their creditworthiness and safeguard against identity theft. Skorlife aims to bolster financial literacy and inclusion in Indonesia by enabling consumers to actively manage their financial reputations.

Achmad Syarifuddin and Ongki Kurniawan

SMITH SCHOOL OF ENTERPRISE AND THE ENVIRONMENT, UNIVERSITY OF OXFORD

Established in 2008 through the generosity of Sir Martin and Lady Elise Smith, the Smith School of Enterprise and the Environment at the University of Oxford is an interdisciplinary academic hub. It is focused on teaching, research, and engagement with enterprise on climate change and long-term environmental sustainability. The school aims to bring business into the climate change and sustainability conversation, envisioning a net-zero emissions future, which is supported by a sustainable global economic and financial system.

Anupama Sen, Andreas Klasen, and Sam Fankhauser

SUSTAINABILITY ECONOMICS

Sustainability Economics is a global organization specializing in leading comprehensive net-zero transitions. With offices in Singapore, the US, and India, the company focuses on the end-to-end life-cycle management of net-zero initiatives, making connections using a "make-it-happen" approach: utilizing cutting-edge technology, they aim to simplify, automate, and scale solutions, while ensuring projects are bankable. Their services include detailed transition analysis plans to assist businesses in shifting to low-carbon practices.

Helena Ting

TELKOM INDONESIA

PT Telkom Indonesia (Persero) Tbk, commonly known as Telkom Indonesia, is the largest telecommunications and network provider in Indonesia. Established as a

state-owned enterprise, Telkom Indonesia offers a wide range of services, including fixed-line and mobile telephony, broadband internet, and data communication services.

Fajrin Rasyid

THE AFRICAN POPULATION AND HEALTH RESEARCH CENTER

The African Population and Health Research Center (APHRC) is a premier research-to-policy institution, generating evidence, strengthening research and related capacity in the African R&D ecosystem, and engaging policy to inform action on health and development.

Gloria Lang'at and Patricia Kitsao-Wekulo

THE ALLIANCE FOR A SUSTAINABLE FUTURE, GEORGE WASHINGTON UNIVERSITY

The George Washington University Alliance for a Sustainable Future is a bold university-wide initiative, which unites members of the George Washington community who support climate change and sustainability work. Launched in November 2023, the alliance aims to amplify research, teaching, and action related to sustainability. It also aims to foster innovation, inform policy, and educate future leaders to address pressing environmental challenges.

Rabia Qusien

THE INTERNATIONAL PANEL ON SOCIAL PROGRESS

The International Panel on Social Progress (IPSP) is a multi-disciplinary collaborative of thinkers and doers working to advance social progress for the flourishing, security, and sustainability of all humanity.

Margo Thomas

THE GLOBAL INITIATIVE FOR DIGITAL EMPOWERMENT

The Global Initiative for Digital Empowerment (GIDE) brings new practical policy solutions and diverse international partners together around an increasingly complex digital governance agenda, ensuring that the rules of the digital economy are more directed to the broad interests of humans, rather than just businesses and governments. It is committed to a multistakeholder model for problem identification, policy development, and advocacy. GIDE is driven by a self-selecting and expanding group of volunteer researchers, policy experts, civil society advocates, Internet technical and security experts, and business people who are dedicated to shaping the rules for digital governance. GIDE Latin America also gathers regional experts to advance human-centered digital governance in the region.

Vicente Antonio Arias Gonzalez and Julia Pomares

UNIVERSITY COLLEGE LONDON

Founded in 1826 in the center of London, University College London (branded as UCL) is the city's leading multidisciplinary university. With a diverse community of over 18,000 staff and 51,000 students from more than 150 countries, UCL consistently ranks among the world's top universities. It is renowned for its research excellence, innovative teaching, and commitment to addressing real-world problems. UCL's ethos encourages challenging convention and thinking differently to contribute to global progress.

Paul Grainger

UN-HABITAT

The United Nations Human Settlements Program (UN-Habitat) is the UN agency dedicated to promoting socially and environmentally sustainable towns and cities. Established in 1977, UN-Habitat works in over 90 countries to advance transformative change in urban areas through knowledge dissemination, policy advice, technical assistance, and collaborative action. Its mission encompasses making cities inclusive, safe, resilient, and sustainable, aligning with the objectives of the New Urban Agenda and Sustainable Development Goal 11.

Remy Sietchiping

UNITED EUROPE

United Europe is a pro-European network that is dedicated to preserving Europe as a beacon of peace, democracy, and prosperity for generations to come. Its mission is to ensure that the continent remains globally competitive – ideologically, politically, and economically – through targeted programs and initiatives. Founded in 2013 as a nonprofit association, it was established by a group of European entrepreneurs, politicians, and thought leaders. Among the founders were former Austrian Chancellor, Wolfgang Schäussel, and entrepreneur, Jürgen Großmann. Currently, United Europe is under the leadership of former EU Commissioner, Günther H Oettinger. Its membership includes European businesses and individuals who are united by a shared vision for a strong Europe.

Burkhard von Kienitz and Felix Klein

UNIVERSIDAD SAN FRANCISCO DE QUITO

Universidad San Francisco de Quito (USFQ) is a private liberal arts university, located

in Quito, Ecuador. Established as the first self-financed private university in the country, USFQ offers a diverse range of academic programs across its ten colleges. The main campus is situated in Cumbayá, on the outskirts of Quito. There are additional facilities, including a satellite campus and research station in the Galápagos Islands and the Tiputini Biodiversity Station in the Amazon basin. USFQ is dedicated to excellence in teaching, learning, research, and the development of leaders who make a difference globally.

Juan Manuel Guayasamín

UNIVERSIDAD SIGLO 21

Universidad Siglo 21, with more than 67,000 students and 23,000 graduates, is the largest private university in Argentina. Created in 1995, it offers a hybrid education, and covers 23 Argentine provinces, with 300 learning centers offering presential, mixed, and full e-learning proposals. It is focused on the paradigm of positive education and constant innovation.

Silvia Lanza Castelli

UNIVERSIDAD DE AMÉRICA

Universidad de América is a private, nonprofit higher education institution in Colombia, which is officially recognized by the state. With over 60 years of experience, it offers undergraduate, graduate, continuing education, and custom training programs that are aligned with industry needs. The university emphasizes applied research, innovation, and sustainable development, aiming to train skilled professionals who contribute to Colombia's economic and social progress. Through its integrated education model and strong research system, Universidad de América

prepares leaders with a global outlook and a commitment to scientific knowledge and business development.

Juan Carlos Robles Camargo

UNIVERSITY OF BRITISH COLUMBIA

The University of British Columbia (UBC) is a global center for teaching, learning, and research, and it is consistently ranked among the top public universities in the world. UBC embraces innovation and transforms ideas into action. Find out more about UBC at www.ubc.ca.

Benjamin Weaver, Dominik Roeser, and Robert Kozak

URBAN HEALTH 360

Urban Health 360 (UH360) is a not-for-profit global applied research institute, comprised of a multidisciplinary group of thinkers who are passionate about the health of urban populations. Their primary objective is helping urban communities engage in organized efforts and activities that will improve the individual, familial, and the collective community's health. UH360's applied urban health is exemplified by its Collaborative Community Action Model, a participatory decision-making process that empowers urban communities to act on health-related issues.

Shatiea Blount and Yonette Thomas

VINDELICI ADVISORS AG

Vindelici Advisors AG is a globally active strategy consulting and M&A advisory firm specializing in complex transformations. As a trusted partner to our clients, we drive their economic, sustainability, and technological development and growth. Our team comprises highly skilled ex-

perts, with cross-industry experience in diverse roles. Through our multidisciplinary approach, we successfully support our clients in strategy development, problem-solving, and optimization initiatives.

Franziska Bless, Leonis Petschmann, and Sophie-Marie Arendt

WOMEN'S ECONOMIC IMPERATIVE

Women's Economic Imperative (WEI) promotes transformational entrepreneurship as an engine of economic growth for the benefit of women, men, boys, and girls in communities across the world.

Margo Thomas

WORLD HEALTH SUMMIT

The World Health Summit is the premier international strategic platform for global health. It brings together stakeholders from politics, science, the private sector, and civil society from around the world. They work to set the agenda for a healthier future by inspiring innovative solutions for better health and well-being for all.

Axel R. Pries, Carsten Schicker, and Marinus Fislage

The Global Solutions Initiative

The Global Solutions Initiative (GSI) works towards a global economic system that benefits people and planet. Rooted in research, GSI brings together policy, academia, civil society, and the private sector to generate insights for better global governance. Founded in 2017, the Berlin-based independent, non-profit organization annually convenes the Global Solutions Summit, which serves as a steppingstone to the G20 and G7 Summits. GSI is led by Dennis J. Snower, Markus Engels, and Christian Kastrop.

ABOUT THE GLOBAL SOLUTIONS SUMMIT

The Global Solutions Summit is an international conference aimed at addressing key policy challenges facing the G20 and G7 and other global governance fora. Since 2017, the Global Solutions Summit has provided an intense, two-day forum for the world's leading minds to propose expert-based policy recommendations for the G20, G7 and beyond. Distinguished experts from think tanks, research organizations, governance, business, and civil society come together each year in the middle of every G20 Presidency to work on concrete policy solutions. Held annually in Berlin, this year's conference takes place May 5-6, 2025.

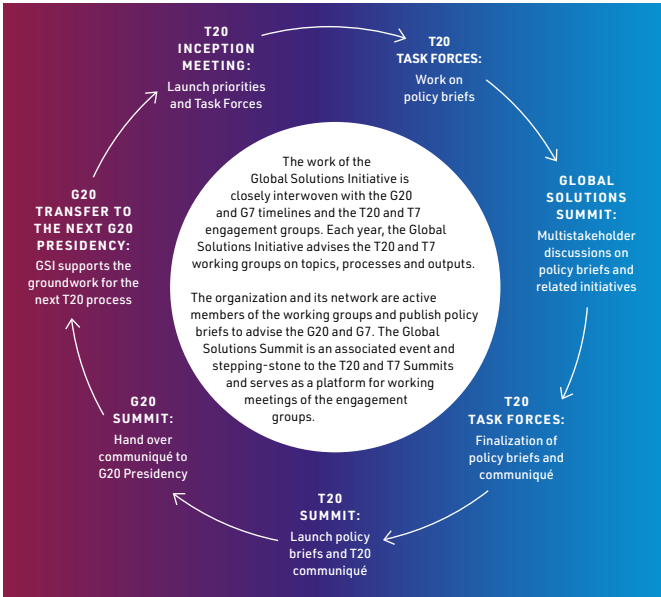
OUR VISION

A global economic system that benefits people and planet.

OUR MISSION

Mobilize change to recouple economic progress with social and environmental prosperity.

THE GLOBAL SOLUTIONS INITIATIVE'S INVOLVEMENT IN THE T20/G20 TIMELINE



Think20



The T20 is a G20 engagement group that brings together think tanks and research centers from G20 members and guest countries and organizations.

Think tanks can contribute to the T20 in various formats, such as participating in the T20 conferences and meetings, proposing and organizing side events, submitting policy briefs, and joining the task force activities.

South Africa's presidency of the G20 in 2025 marks the culmination of a series of presidencies held by Global South countries: Indonesia in 2022, India in 2023, and Brazil in 2024.

As the final Global South country in this cycle of G20 presidencies, South Africa is responsible for consolidating the progress made on critical issues championed by the Global South and ensuring the sustainability of these efforts.

The T20 South Africa is organized collaboratively by the Institute for Global Dialogue, the South African Institute of International Studies (SAIIA) and the Institute for Pan-African Thought and Conversation.

The Global Solutions Summit 2025 is an official side event of T20 South Africa 2025.

More information at t20southafrica.org

Think7



Think7 (T7) is the official think tank engagement group of the Group of 7 (G7). Under the T7 process, global think tank experts develop research-based policy recommendations for consideration by G7 countries and partners, in coordination with the G7 presidency.

In 2025, Canada holds the G7 presidency, providing an opportunity to shape global discussions on economic resilience, inclusive development, digital governance, climate action, and democratic values. The Think7 2025 process is coordinated by the Centre for International Governance Innovation (CIGI).

More information at think7.org

Publications by the Global Solutions Initiative

SOLUTION SPACES

'Solution Spaces: For People and Planet' provides an international, multistakeholder outlet for ideas to promote solutions to global problems, addressing the G20, G7 and related policymaking fora. Through a range of formats including a blog, podcast and publication series, it aims to capture the main features of global problems, analyze them and suggest partial or full-fledged solutions, thereby making innovative and actionable contributions toward a more sustainable, inclusive, prosperous and peaceful world.

EMPOWERING DIGITAL CITIZENS REPORT (GIDE)

The *Empowering Digital Citizens report* by Dennis J. Snower and Paul D. Twomey was launched at the Global Solutions Summit in Berlin on March 28, 2022. The product of two years of work by the GIDE community, it lays out practical policy to innovate markets so that consumers can control, & benefit from, who accesses and uses their data: digital citizenship.

G20 INSIGHTS

The G20 Insights Platform offers policy proposals to the G20, produced by Task Forces from the Think20 (T20) Group, the Global Solutions Initiative's Council for Global Problem-Solving as well as experts from renowned think tanks. G20 Insights provides a complete archive of the policy briefs produced by Think20 Engagement

Groups since 2017. This will be progressively expanded to include Think7 recommendations for action.

GLOBAL SOLUTIONS JOURNAL

With articles by scholars and researchers of the Council for Global Problem-Solving (CGP) and thought leaders from across sectors, the journal provides a bridge between research-based recommendations and best-practice examples addressing global challenges on the G20 and G7 agendas.

INTERSECTING

INTERSECTING has been launched by the Global Solutions Initiative and GIZ and is distributed by the Global Solutions Initiative. It is geared towards think tanks, civil organizations, international institutions, in particular the G20/T20.

More information at
<https://global-solutions-initiative.org>

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Council for Global Problem-Solving

The Council for Global Problem-Solving (CGP) is the intellectual core of the Global Solutions Initiative. The Global Solutions Initiative thanks the highly committed members of the CGP for their intellectual advice and their valuable contributions.

The CGP is an accessible, permeable organization, open to all think tanks and research institutions that fulfil its terms of membership. CGP members have their own website to float new ideas, debate underlying issues, and publicize their policy work in progress. The resulting Policy Briefs are disseminated through the G20 Insights Platform: <https://www.global-solutions-initiative.org/g20-insights-homepage/> and the CGP Platform: <https://www.global-solutions-initiative.org>

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