



BRIDGING THE INGENUITY GAP IDEAS FOR A VIBRANT G20

Editors

Amitabh Kant | Samir Saran



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BRIDGING THE INGENUITY GAP: IDEAS FOR A VIBRANT G20

EDITED BY AMITABH KANT AND SAMIR SARAN

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Editors' Note

INDIA ASSUMED THE PRESIDENCY OF THE G20 at a moment of crisis in world affairs. Global growth had slowed. Post-COVID-19 economic recovery was uncertain, uneven, and unequal. In many nations, decades of progress on poverty had been reversed. Countries were reeling from a sovereign debt crisis, causing funding for sustainable development to dry up. And the war in Ukraine had disrupted international supply chains, causing disruptive food and fuel inflation.

Nevertheless, the Indian presidency was determined to be ambitious, decisive, and focused on action. India's most important priority, after years of unequal growth and a vacuum in global governance, was inclusion. Thus, from the outset, the presidency championed the needs of the Global South. The pioneering 'Voices of the Global South Summit', held in January 2023, saw India engaging with 125 other developing nations to understand their concerns and shape the G20 agenda accordingly. An initiative of this kind had never been undertaken before, and it cemented India's commitment to lead an inclusive, reformed multilateralism. It was in keeping with the civilisational attribute of '*Vasudhaiva Kutumbakam*' (one earth, one family, one future) that guided India's actions at the G20. India's priorities within the G20 framework were centered on the core principles of the "4D" approach: advancing decarbonisation, digitalisation, ensuring equitable development, and de-escalating conflicts. These principles aim to address global challenges comprehensively.

With the 83 paragraphs of the New Delhi Leaders' Declaration (NDLD) agreed to by a full consensus, India has matched ambition with action during its presidency. With the inclusion of the African Union as a full member of the G20, India has brought to the table the voice of Africa, with 55 additional countries having a say in the most pertinent global issues. India has put forward an ambitious seven-year Action Plan to Accelerate Progress on the SDGs, which presents a coordinated, integrated, and inclusive roadmap for G20 actions. The G20 agreed on a Green Development Pact for a sustainable future, which includes bold and ambitious commitments on climate finance, global just transitions, and mainstreaming lifestyles for sustainable development (LiFE). India has emphasised that a quantum jump in investment, from billions to trillions of dollars, to meet our collective SDG and climate goals is required. Crucially, it also recognised the role of private enterprise and capital in this regard, and the need to reform multilateral development banks (MDBs).

The NDLD highlighted the transformative and inclusive role of technology, focusing on unlocking the potential of digital public infrastructure (DPI) and data for development to achieve SDGs and use AI in a responsible manner for social empowerment and inclusion. One of the biggest achievements of the India-helmed G20 is the emphasis on women-led development with a focus on empowerment and gender equality. The establishment of the G20 Women's Empowerment Working Group represents a highly promising development, which Brazil will carry forward. The NDLD affirms the centrality of strong, sustainable, balanced, and inclusive growth. In this regard, it emphasises the critical role of private investment and capital, in both unlocking growth and also in development and climate finance.

The Think20 (T20) is the G20's Engagement Group for think tanks. It is, in effect, the leaders' 'ideas bank'. The Observer Research Foundation served as the official T20 Secretariat during India's presidency. It facilitated the exchange of perspectives among high-level experts, policymakers, researchers, and practitioners; produced policy briefs and other knowledge products relevant to the G20; and oversaw the organisation of side events to enable further discussions around the G20's priority themes. Taken together, the T20's activities lent analytical depth and rigour to the G20's deliberations. They bridged what the Canadian political scientist Thomas Homer-Dixon calls the 'ingenuity gap'—the difference between the demand for actionable, innovative ideas to solve complex challenges, and the actual production of those ideas.

This compendium is a collection of 27 T20 policy briefs and a special contribution, chosen from over 320 such briefs published during India's tenure in 2023. Authored by thought leaders and subject experts collaborating across different institutions, geographies, and disciplines, they cover all seven of the T20's thematic areas (1). They also represent some of the finest ideation and writing worldwide. Collectively, they make for an extraordinarily rich corpus of policy ideas and solutions for the problems of global governance. Many of them have fed into the deliberations of various working groups and ministerial meetings, and supported the G20's efforts to deliver effective interventions.

For instance, the brief entitled 'Mobilising Tax Revenue for Sustainable Development in Asia' (by Yuho Myoda, Donghyun Park, Yothin Jinjarak, Shu Tian, Gemma Estrada, Robert Breunig, Sanjeev Gupta, Samuel Christopher Hill, and João Tovar Jalles) examines the enabling tax reforms that would support revenue mobilisation for the SDGs. The chapter by Matthew Stephenson, Jonathan Douw, and Peter Draper questions the equilibrium between trade and peace, and suggests a TIPS (Trade and Investment for Peace and Stability) framework for the G20 that could balance the two. Rachel Thrasher and Purvaja Modak outline recommendations for the disposing of trade disputes by establishing a more effective Appellate Body for the G20 countries.

Broad consultation with the countries of the Global South enhanced the Indian presidency's existing concerns related to the sovereign debt crisis, which is the greatest challenge for the global economy and for the timely achievement of the SDGs. Many African countries are particularly exposed to fiscal stress. Miguel Otero Iglesias, Beatrice Grace Aluoch Obado, and Agustín González-Agote suggest that the G20 coordinate debt restructuring efforts and work with the African Union to address underlying issues. In another chapter, Gracelin Baskaran, Amara Ekeruche, Chris Heitzig, Aloysius Uche Ordu, and Lemma W Senbet propose three mechanisms for financing climate-resilient infrastructure on the continent.

The Indian presidency, learning from its own domestic experience, prioritised the benefits of new tech platforms and the use of data for development. The chapter 'Using Data to Advance the 2030 Agenda: Recommendations for the G20' by Anirban

Sarma and Debosmita Sarkar proposes eight strategies for leveraging big data for development and boosting efforts to achieve the SDGs. Arasy Pradana discusses how public-interest tech solutions can learn from the start-up ecosystem to ensure that bureaucracy-designed technology systems meet the needs of the governed. The paper 'Building an Information-Sharing Mechanism to Boost Regulatory Frameworks on Cross-Border Data Flows' by Pramila Crivelli, Rolando Avendano, and Jong Woo Kang recommends the establishment of a centralised digital regulation and information repository to enhance cross-border data flows.

In the space of agriculture, Ricardo Abramovay, Ana Paula Bortoletto Martins, Nadine Marques Nunes-Galbes, Estela Catunda Sanseverino, and Juliana Tangari highlight the urgent need to reorient agri-food industries to promote sustainable and healthy consumption patterns. Ram Dhulipala, Nipun Mehrotra, and Ajit Kanitkar offer a novel vision of DPI for sustaining new development pathways for agriculture across the G20. Argarkul Ramaprasad, R Gowrish, and Vishal K Mehta present a roadmap for climate-smart agriculture in India. Gabriella Perin and Fabio Veras Soares provide lessons from Brazil's food procurement programme that could prove valuable for other G20 countries as they seek to accelerate progress towards Agenda 2030.

Ensuring gender equality is a foundational challenge to development and a major priority for India domestically and globally. Two papers highlight the case of unpaid domestic and care work that remains unaccounted for in GDP calculations. Devkanya Chakravarty and Manoranjan Pattanayak outline possible methodologies for moving towards a more gender-inclusive measure of GDP, while Sumita Ketkar, Roma Puri, and Sahana Roy Chowdhury urge the G20 to push the envelope to help bridge the gender pay gap.

Reform of the international financial architecture and addressing the climate crisis are two of the core purposes of the G20. The intellectual firepower assembled for this issue by the Indian presidency was formidable. Manon Fortemps, Jens Sedemund, Özlem Taskin, Amarendra Bhattacharya, Arjun Dutt, Arunabha Ghosh, and Paulo Esteves examine how to create an enabling environment for the US\$1 trillion a year in external financing needed by the developing world. Dongmei Chen, Rolando Fuentes, Alloysius Joko Purwanto, Noura Mansouri, and Yongzhong Wang emphasise the importance of sustainable and resilient supplies of critical minerals for meeting global net-zero emission targets. Matthew Stephenson and Samir Saran recommend boosting climate-related FDI by creating a 'climate-friendly investment climate'. Soumya Bhowmick and Nilanjan Ghosh propose a ten-point agenda to bolster SDG financing in the context of contemporary shocks and crises. Uday Khemka, Aaran Patel, and Katherine Stodulka suggest the creation of a new highway for private financial flows to accelerate green investments in the G20's emerging and developing economies. And Alin Halimatusadiah, Bambang Brodjonegoro, Fukunari Kimura, Muhammad Adriansyah, Muhamad Chatib Basri, Teuku Riefky, and Wing Thye Woo outline a long-term development investment framework for plugging the sustainable finance gap for the low and middle-income countries.

Going beyond the standard measures of economic prosperity, Colin Mayer and Dennis J Snower present an ethical framework for measuring prosperity that encompasses social and environmental elements. Hafida Fahmiasari, Danang Parikesit, and Fauziah Zen discuss the alternative financing mechanisms for channelising disaster finance resources for the small islands of the G20's member states.

With respect to public health, Viola D'Souza, Sanjay Pattanshetty, George Wharton, Helmut Brand, and Oommen Kurian propose modifications to the draft pandemic treaty to improve pandemic preparedness and response by strengthening global cooperation. Flavia Bustreo, Anshu Banerjee, David A Ross, Thahira Shireen Mustafa, Oommen Kurian, and Anshu Mohan suggest ways to establish maternal, newborn, child and adolescent health and well-being as a critical agenda item for the G20.

Amlan Mishra, Soham Banerjee, Smita Chakravarty, Shubhi Goel, Dorothy Ashmita Biswas, and Veena CP suggest how subnational agencies might be empowered through a multilateral approach for them to combat climate change more efficaciously. Charlotte Unger and Sonja Thielges reflect on the benefits and challenges of expanding the G7 Climate Club to a G20 Climate Club. Tashina Cheranda, Kanchan Kargwal, and Sahil Mathew provide a framework for quantifying the climate co-benefits of natural resource management-based development programmes as part of broader endeavours to meet climate targets. Finally, the essay by N.K. Singh outlines a triple mandate and a set of strategies for MDBs to enhance their lending capacity, evaluate their risk tolerance, and create mechanisms for securing additional capital from the private sector. To ensure accountability, it also provides a timeline for implementing various interventions.

India's G20 presidency sought to identify programmes and ideas that would last beyond its tenure. The years between 2022 and 2025 are a historic pivot for global governance; the G20 troika-plus-one in this period will consist entirely of emerging economies. This four-year window will prove crucial for the developmental journey of the Global South and North alike. In a time of division and contestation, the Indian presidency built an informed and forward-looking consensus on inclusive, sustainable development. The ideas in this compendium reflect that ethos and provide the foundation for a new and reformed multilateralism that can restore growth, build trust, and move the world closer to meeting its shared development goals.

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Endnote

- (1) These seven areas correspond to the seven T20 Task Forces on 'Macroeconomics, Trade, and Livelihoods'; 'Our Common Digital Future'; 'LiFE, Resilience, and Values for Well-being'; 'Clean Energy and Green Transitions'; 'Reassessing the Global Financial Order'; 'Accelerating SDGs'; and 'Reformed Multilateralism'.



TF-1

**MACROECONOMICS,
TRADE, AND LIVELIHOODS:
POLICY COHERENCE
AND INTERNATIONAL
COORDINATION**

Mobilising Tax Revenue for Sustainable Development in Asia

Yuho Myoda | Donghyun Park | Robert Breunig | Gemma Estrada | Sanjeev Gupta |
Chloe Heininger | Samuel Christopher Hill | João Tovar Jalles | Yothin Jinjarak |
Shu Tian

Abstract

ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS (SDGs) for a greener and more inclusive future will require public spending. Revenue mobilisation remains essential to many G20 economies to satisfy fiscal needs and support progress. Although the approach may vary across countries, the options holding universal promise include better use of value-added tax (VAT), rationalised tax exemptions, and appropriate taxation of income generated from the fast-growing digital economy. Strengthening personal income and property taxes can also boost their low revenue yield and make taxes more progressive. Corrective taxes can effectively curb harmful consumption and raise revenue for mitigating measures. Additionally, strengthening tax administration can help, and taxpayer morale can be buttressed by improving the quality of public spending.

Introduction

The 2030 deadline for the SDGs is fast approaching, and yet many G20 economies, especially in the Asia-Pacific region, are encountering new and substantial challenges in meeting these goals. The COVID-19 pandemic has been only one example of the multiple, wide-reaching global issues impacting countries' abilities to meet the SDGs. Other challenges include worsening climate change and ageing populations, and the ramifications of increasingly digitalised economies. This article argues that a key path forward for G20 governments in meeting these goals is to increase public funds through better taxation.

This essay (1) will outline the contributory factors behind the spending pressure that G20 economies are experiencing. This spending pressure is inhibiting countries from mobilising the funds necessary to invest in infrastructure and policies that will improve SDG progress. It will describe how transnational issues and improper design and implementation of various taxes are depleting economies' expenditure potential; and underline the importance of the G20 in encouraging economic growth and domestic resource mobilisation as well as facilitating global cooperation and coordination. The chapter concludes by exploring the various options available for economies to improve their revenue-raising potential whilst simultaneously achieving socially optimal outcomes from a health, environmental and equality perspective.

The Challenge

Developing economies face significant spending pressure

This spending pressure includes the substantial public funds required for education, health, energy, water supply and sanitation, and, in recent years, combating the consequences of climate change. The International Monetary Fund (IMF) estimates that additional annual spending needs will amount to US\$2.1 trillion in 2030 for emerging market economies (2). These annual spending requirements will be particularly pronounced in the Asia-Pacific region at an estimated 1.5 percent of 2030 world GDP. However, it is worth noting that certain nations in the Asia-Pacific region, defined as low-income developing countries, will face even higher additional spending demands. They are estimated to require additional government spending of 15.4 percent of the world's 2030 GDP. These fiscal pressures are projected to persist well beyond 2030—the target year for the SDGs.

In terms of future spending pressures, developing economies will also face the rising transnational issues of climate change and ageing populations. Achieving net-zero emissions by 2050 will require massive investments in clean energy, where such

substantial investment in infrastructure will necessitate government participation (3). The share of the ageing population will also increase rapidly in most countries, requiring higher spending on pensions and healthcare (4). For example, in the median OECD economy, government spending on public health and long-term care is expected to rise by 2.2 percent of GDP between 2021 and 2060 (5). Likewise, public pension expenditure is estimated to increase by 2.8 percent.

The COVID-19 pandemic increased the pressure on fiscal accounts by both increasing expenditure needs and decreasing revenue

Governments experienced huge increases in outlays on health and social protection measures concurrently with massive losses in revenue as a result of lockdowns and tax concessions (6). These fiscal policy needs were substantial, clearly exceeding those mustered to deal with the global financial crisis of 2008–2009. The International Monetary Fund (IMF) estimated that the COVID-19 crisis resulted in additional annual expenditure needs of 2.5 percent of GDP for Low Income Countries on average (7). These results suggest that, whilst the pandemic increased government spending pressures for all economies, developing economies were hit the hardest. These additional spending pressures on developing countries gave rise to unique policy avenues, involving certain central bank asset purchase programmes (8). Overall, in the Asia-Pacific region, almost all countries experienced significant decreases in tax revenue whilst simultaneously encountering a need to expand government expenditures (9). It is therefore clear that G20 economies must strengthen tax revenue mobilisation to fund the vast public spending needed to achieve the SDGs.

G20 economies with lower tax revenues rely more heavily on VAT and other consumption taxes (see Figure 1.A)

For some economies, such as Indonesia, Mexico, Türkiye, and the People's Republic of China (PRC), in 2019, the revenue from consumption taxes was less than 10 percent of their annual GDP, despite their heavy reliance on such taxes (see Figure 1.B). The 2021 GTED Flagship Report also found that these countries provide large tax exemptions on consumption taxes. The report estimated that these exemptions were responsible for an average of 2.1 percent of foregone revenue, relative to GDP (10). South Asia is also the leading global area in providing VAT exemptions or reductions (11). In many countries, weak enforcement capacity can be further hamstrung by scarce third-party information on taxpayers from firms (12). Thus, increasing tax revenue requires that governments make the most of the key revenue sources, consistent with local priorities and capacity.

Figure 1.A: Total Tax Revenues to GDP and Taxes on Goods and Services to Total Tax Revenue in 2019

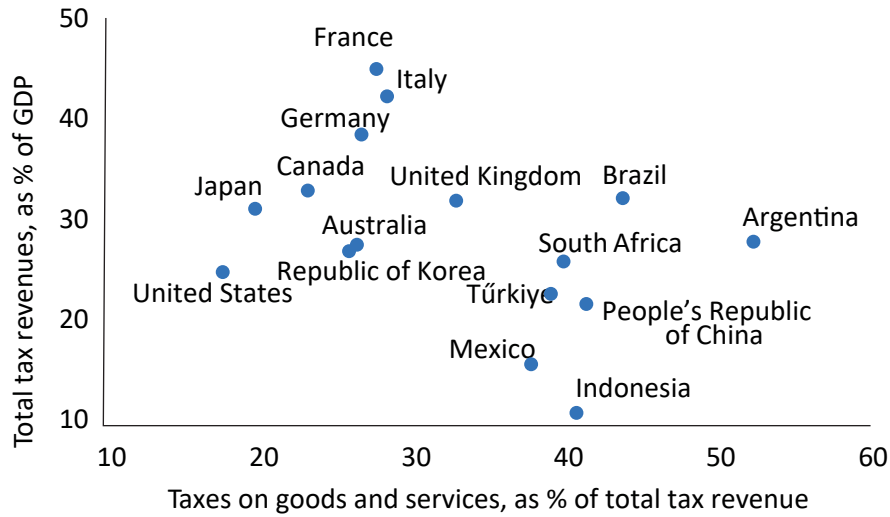
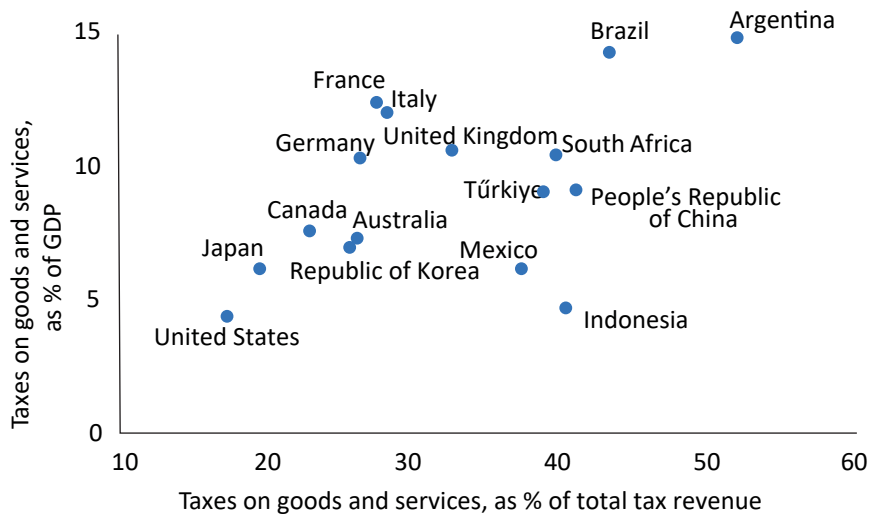


Figure 1.B: Taxes on Goods and Services to Total Tax Revenue and to GDP



Notes: The members of the G20 are Argentina, Australia, Brazil, Canada, People's Republic of China, France, Germany, Indonesia, Italy, Japan, Mexico, South Africa, Republic of Korea, Türkiye, United Kingdom, and United States. All figures are for 2019.

Source: OECD's Global Revenue Statistics Database.

Tax expenditures are widely used and may cause significant revenue losses

These expenditures include exemptions, deductions, credits, deferrals, and lower tax rates intended to enhance social welfare, promote development, and support other

policy goals (13). However, unlike direct expenditure, tax expenditure reductions are not typically reported in a reliable, comparable, or open manner (14). They render the tax system less efficient by narrowing the tax base (15). Surveys of Asian tax authorities show the impact of tax incentives in the region, with tax holidays and tax rate reductions being particularly prevalent (16). In 2013, it was found that all seven South Asian countries surveyed and 11 out of 12 East Asia and Pacific countries surveyed provided tax holidays or exemptions (17). These figures are significantly higher than the OECD average of 21 percent. In addition, East Asia and the Pacific were found to have the highest use of reduced tax rates, investment allowances, tax credits and research and development tax incentives (18).

Corporate income tax (CIT) revenue faces increasing pressures of base erosion and profit shifting

Motivated by a desire to attract internationally mobile capital and maintain competitiveness, governments have steadily reduced CIT rates over the past few decades. This threat of base erosion and profit shifting will only continue intensifying as regional integration grows more pronounced (19). A weak international tax framework and differences across countries in tax policy can be exploited, especially by multinational enterprises (MNEs), to reduce their tax liability. MNEs shift income and profits to lower-tax jurisdictions to minimise tax liability. Global revenue losses from tax avoidance have been estimated at 4 percent–10 percent of CIT revenue, with larger losses for developing countries (20).

In the Asia-Pacific region, in particular, it has been estimated that tax incentives in place to encourage foreign direct investment have resulted in a lowering of the effective average corporate income tax rate by approximately 8.6 percent (21). Econometric analysis by Chen et al. has demonstrated that the highly competitive economic environment in the Asia-Pacific region produces a situation where countries' corporate income tax rates respond to one another (22). They estimate that when a home country lowers their statutory corporate tax rate by 10 percent, other countries are expected, on average, to lower their rate by 6.8 percent.

The rise of the digital economy exacerbates CIT avoidance

Digitalisation can make it more difficult to identify the country from which profits are derived, for example, when software sold from a platform in one country is downloaded by a user in another country (23). Highly digitalised firms are taxed only in the jurisdiction where they base their headquarters, as opposed to within other economies where they conduct substantial trading operations (24). Further, intangible assets such

as licences, trademarks, and data, which are easy to shift to lower-tax jurisdictions, are prevalent in the digital economy. The difficulty of determining arm's-length prices for digital intangibles increases a firm's ability to exploit transfer pricing. It is likely that digital MNEs benefit significantly from tax planning and enjoy lower effective tax rates (25).

Inequality in disposable income remains high in several G20 economies and has even risen recently

The dwindling labour share and the widening wage gap between the top and bottom percentiles will not only likely exacerbate inequality in market income but also increase inequality in disposable income without strengthening progressivity, partly because the effective tax rate on capital income tends to be lower for the richest earners. While reducing income inequality through expenditure-side redistributive policies is feasible and the first best policy, taxes still play a greater role in reducing inequality than social transfers (26). Moreover, for many economies, strengthening the redistributive function on the expenditure side also requires domestic resource mobilisation, given that the current fiscal space is not sufficient to accommodate a significant expansion of transfer expenditure in a sustainable manner.

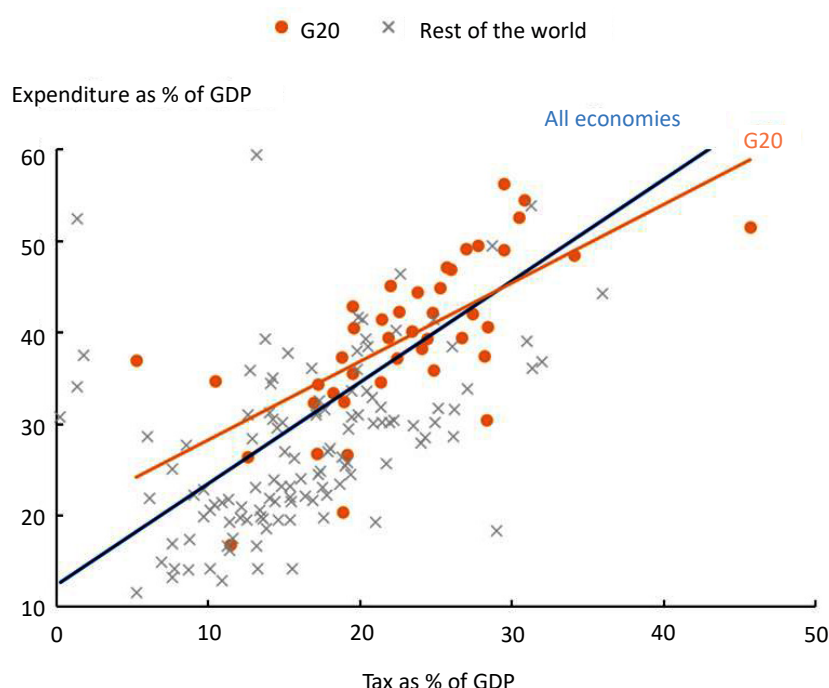
In the Asia-Pacific region, whilst most countries experienced large GDP growth in the past few decades, such growth has been accompanied by increasing inequality (27). Inequality may have been exacerbated by the COVID-19 pandemic. Countries in the Asia-Pacific will not only need to aspire to high growth rates to achieve their SDGs but also to lower amounts of income inequality.

The G20's Role

Domestic resource mobilisation—fundamentally, adequate tax revenue efficiently spent—is central to domestic and international development (28). This need is made critical by recent 2018 IMF estimates that developing countries would need to collectively spend an additional US\$520 billion per year on key public services and infrastructure to meet the SDGs (29). For most economies, taxes are the primary source of government revenue and largely define the public spending envelope over the medium and longer term. As private financial flows are not always predictable, the ability of governments to borrow varies, and revenue from state-owned operations is often uncertain. Such instability is heightened in the case of developing economies who may also wish to avoid the risk of or the worsening of debt distress (30). While government expenditures normally exceed tax revenues, with the balance made up of

borrowing and non-tax revenue, spending rises with tax revenue (see Figure 2). Since the G20 economies account for around 80 percent of global GDP and growth, raising more tax revenue in those economies is essential to satisfy the rising fiscal demand to achieve the SDGs. Hall and O’Hare also found a non-linear relationship between growing government revenues and an improvement in meeting SDGs, where the effect was more pronounced in low-income compared to high-income countries, suggesting the importance of raising taxation for developing economies (31).

Figure 2: Tax and Expenditure, Average in 2015–2019



Notes: The members of the G20 are Argentina, Australia, Brazil, Canada, People’s Republic of China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, Republic of Korea, Türkiye, United Kingdom, and United States, as well as the European Union. The figure excludes Timor-Leste, Nauru, Kiribati, and Tuvalu. See Go et al. (2022) for further details.

Sources: OECD’s Global Revenue Statistics Database; IMF’s Government Finance Statistics online database; IMF’s World Economic Outlook online database; and Asian Development Bank estimates.

As digitalisation further complicates international taxation, G20 economies are to continue leading inter-state cooperation and international rulemaking

Efforts to secure multilateral solutions are essential. A notable example of such solutions is the G20–OECD project on base erosion and profit shifting and by the Inclusive Framework (32). In 2021, the Inclusive Framework endorsed a new international tax framework featuring two pillars. Under Pillar 1, profits and taxing rights are shared by countries to include those where MNEs derive revenue. Pillar 2 proposes a set of rules

to achieve outcomes which approximate a global minimum CIT rate of 15 percent. Together, the two pillars aim to be fair, mitigate a 'race to the bottom' on CIT rates, and provide more certainty to taxpayers and tax administrations. G20 economies need to comply with the agreement and further improve the rules in the future. This agreement was produced because of public discussion drafts and publicly recorded stakeholder discussions (33), representing an important collaborative effort demonstrating how successful G20 economic cooperation can produce coordinated SDG improvements.

The G20 economies should promote the use of corrective taxes to support the SDGs

Green and health taxes are levied to address negative externalities. Studies have shown that taxing pollutants effectively reduces emissions and pollution (34). Fossil fuel price elasticity tends to be low in the short run but increases over time (35). Environmental taxes can cut pollution and generate significant revenues only if they hit a broad range of pollutants. A coordinated approach surrounding such corrective environmental taxes seems crucial, especially given that in most developing countries, corrective taxes are almost absent (36). Moreover, in some of the economies that do implement these taxes, the revenue gathered remains low, reflecting low tax rates and patchy coverage. For example, revenue from energy, pollution, and transport taxes equalled 2.3 percent of GDP in OECD countries in 2018 (37). Increasing carbon prices can support climate change targets and lift revenue. From a health perspective, excise taxes on alcohol and tobacco consumption have been shown to have a strong link to a reduction in premature mortality as well as an increase in healthcare savings (38). These taxes can also lead to substantial increases in government revenue. The Task Force on Fiscal Policy for Health simulated the impact of raising tobacco, alcohol, and sugar taxes by 50 percent in the Philippines, South Africa, and Mexico. The resulting change found an increase in annual tax revenues of up to 0.7 percent in upper-middle-income countries, 1 percent in low-income countries, and 1.2 percent in lower-middle-income countries.

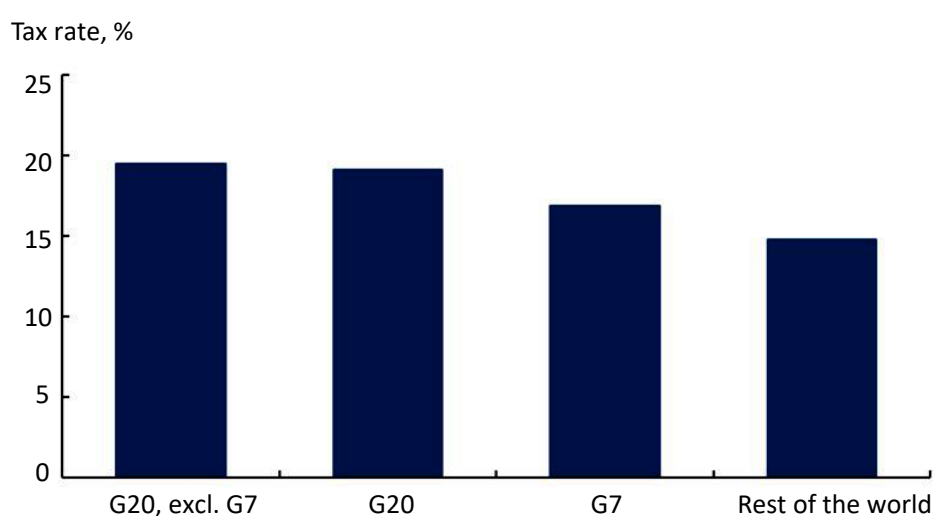
Recommendations to the G20

VAT exemptions should be reviewed and tightened to broaden the tax base and raise tax revenue (see Figure 3)

Tightening VAT exemptions would be more conducive to economic growth than increasing tax rates (39). Whilst policymakers often argue that VAT exemptions aid in preventing the regressive effects of the tax, VAT exemptions actually benefit the wealthy more because they consume more, making exemptions generally inefficient improvers of equity (40). Given that VAT is currently being underutilised in most

developing countries and that VAT exemptions are ineffective in achieving equity goals, tightening such exemptions would significantly aid in increasing countries' government revenues (41). Raising VAT revenue is also important as VAT can be a very stable source of taxation revenue in comparison to more volatile fluctuating taxes (42). However, whilst a lower threshold for VAT can potentially broaden the tax base, it may also encourage firms to underreport activity or remain small (43). Like direct expenditure, tax expenditures should have clear policy objectives and justifications and meet goals efficiently and cost-effectively, and perform better than policy alternatives.

Figure 3: VAT Rates in G20 and Average Rates in Selected Regions



Source: World Tax Summary, PwC

Where the wage gap is significant, raising the marginal rates for higher earners may help strengthen the progressivity of the overall tax system

Raising marginal rates for higher-income earners has been shown to promote greater income equality and assist in reducing poverty (44). Moreover, increasing personal income tax rates by 1 percent on average has been associated with a 0.028 percent increase in the SDG index (45). This figure has even been estimated to be a positive change of 0.2 percent in the SDGs (46). However, personal income tax (PIT) can be economically costly, especially if marginal tax rates rise steeply (47), when the economy reflects the reality of self-employment, and thus a scarcity of third-party information on taxable income hinders enforcement and shrinks the tax base (48). Higher tax rates reduce work incentives and can dampen labour supply, especially for highly skilled and internationally mobile workers (49). PIT levied on household income can discourage female labour participation, exacerbating gender inequality. By reducing lifetime earnings, progressive income tax weakens incentives to invest in human capital,

compounding efficiency and output losses (50). High marginal rates in the PIT system can also increase tax minimisation through shifting income to other types or making more extensive use of exemptions. Limiting tax expenditures in the PIT system is often progressive since higher-income individuals often claim the most exemptions.

Effective taxation on individuals' capital income is vital to improving equity

Wealthy individuals own a disproportionate share of capital and must be the target of taxes, especially in the Asia-Pacific region (51). Self-employed entrepreneurs, who can shift their income from labour to capital, should also be targeted. For this reason, similar effective tax rates should be applied to capital and labour income (52). Many countries apply preferential tax rates to certain types of capital income, but this should be minimised because it can distort investment, erode progressivity and the tax base, and complicate enforcement. Tax breaks to encourage retirement savings, for example, may encourage taxpayers not to save more but merely to shift their savings into tax-sheltered accounts, causing revenue losses that worsen inequity (53).

Improving property taxes can complement progressivity

In G20 economies with lower tax revenues, property tax generally raises little revenue at less than 2 percent of GDP (54). Governments must improve property valuation to capture the rising value and enable growth in the tax base. Technology can help keep property registers and values updated in a timely and cost-effectively (55). Spatial data from remote imagery can be used to estimate building footprints and the built-up area and, combined with land prices, enable mass appraisal of property taxes. Where price data is scarce, prices can be estimated using models drawing on spatial data. Finally, property tax rates need to be sufficiently high and tax bases sufficiently broad. Raising low property tax rates in developing countries could yield substantial revenue gains (56).

A comprehensive wealth tax system with a tax-exempt threshold can effectively reduce inequality

A wealth tax can be levied on transfers such as inheritance or gifts, or wealth holdings (the difference between assets and liabilities). As tax is levied regardless of asset returns, individuals may be encouraged to invest in higher-yield assets, making asset allocation more efficient (57). Notwithstanding these advantages, a wealth tax poses considerable implementation challenges. It requires significant administrative resources for recurrent asset evaluation, made harder by the absence of reference prices for some asset classes (58). Property taxes can act as effective wealth taxes in many countries.

Using corrective health taxes is effective in coping with rising healthcare costs, as many G20 economies are rapidly aging

Consumption of alcohol and tobacco, and unhealthy diets generate economic costs when productivity is lost to premature death or disability, medical treatment, and other social costs (59). Individuals bear some of these costs as out-of-pocket medical expenses and income lost with death or disability, but other costs, such as public healthcare, are socialised. Raising corrective taxes is a highly effective way to reduce or deter the harmful consumption of alcohol, tobacco, and sugar-sweetened beverages (60). Higher corrective taxes on these goods correlate with a 0.6 percent increase in additional tax revenue relative to GDP (61).

Raising fossil fuel taxes to curb consumption and generate revenue, if the rates are currently low

Potential revenue from carbon pricing instruments is significant in some economies, including India and PRC (62). Fossil fuel taxes are often well-established, easy to administer, and likely to generate more revenue in the short term than carbon pricing. Direct taxation offers greater price predictability and simpler administration. A carbon tax can be imposed on a relatively small number of upstream firms, either producers or at the border, to minimise compliance costs and opportunities for evasion (63). When implementing a carbon tax, countries must ensure that related energy taxes are not unduly cut, which can undermine revenue (64).

Earmarking revenues from corrective taxes can ensure the fiscal space for SDGs-targeted expenditures

For example, currently, Japan has used a sulfur charge to compensate air pollution victims (65). Such approaches can build public acceptance. Where environmental taxes have adverse distributional effects, governments can implement offsetting revenue recycling transfers or rebates. These are widely used, as in Singapore, where rebates cushion price impacts from the carbon tax and gasoline duty (66).

Conclusion

Developing economies face significant spending pressures for more sustainable and inclusive growth, and the COVID-19 pandemic has only worsened their fiscal space. Globally, the world faces many emerging and unprecedented issues, such as the growth of digitalisation, worsening climate change, and ageing populations. These issues increase the difficulties of raising enough revenue to fund the infrastructure

and measures required to continue progress on the SDGs. In the Asia-Pacific region, in particular, these pressures have given rise to unique challenges, where countries must navigate huge amounts of foreign direct investment from MNCs that encourage low corporate income tax rates and low consumption tax revenue, as well as the proliferation of tax exemptions. When combatting these spending pressures, G20 economies are expected to remain a driver of SDG progress due to their resilient economic growth and effective domestic resource mobilisation. Cooperation and coordination of policy between G20 economies has also served as an important tool, especially in the space of MNCs, to raise government revenue and secure tax receipts.

When targeting the SDGs, governments should focus on increasing tax revenue instead of private revenue sources, which are more volatile and unreliable by nature. Increasing tax revenue to achieve progress towards the SDGs will require governments to make the most of crucial revenue sources consistent with local priorities and capacity. For economies that rely heavily on consumption taxes but have a low ratio between such taxes and their GDP, the expansion of the VAT base and the tightening of VAT exemptions may be necessary.

Other G20 economies must improve the progressivity of their tax system, which can be achieved by reducing and removing tax expenditures, raising the marginal PIT rate for higher earners, and strengthening land, capital income and wealth taxes. Finally, as most developing economies possess limited and ineffective forms of corrective taxation, raising fossil fuel and health taxes should achieve desirable societal outcomes whilst expanding government revenues. Overall, G20 economies have a variety of effective tools at their disposal to increase the public funds necessary when aiming to achieve the SDGs by 2030.

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How Do Trade and Investment Contribute to Peace and Stability? What Should Policymakers Do?

Matthew Stephenson | Jonathan Douw | and Peter Draper

Abstract

THE PREMISE THAT NATIONS THAT TRADE ARE LESS likely to go to war is in urgent need of revisiting and refreshing. The war in Ukraine and border clashes between India and China, along with many other hotspots worldwide, create an urgency to understand how trade and investment can impact peace and stability between countries.

This essay provides a review of literature on the relationship between trade and investment relations between countries and the conditions of peace and stability that they share. Based on empirical evidence, a new framework is put forward to better understand and use trade and investment for peace and stability (TIPS), known as the TIPS Framework. The TIPS Framework comprises 12 guiding principles that can help orient and inform TIPS strategy and policy, coupled with 12 targeted measures to operationally leverage trade and investment for peace and stability.

This can serve as a tool for the G20's critical role in global security and cooperation.

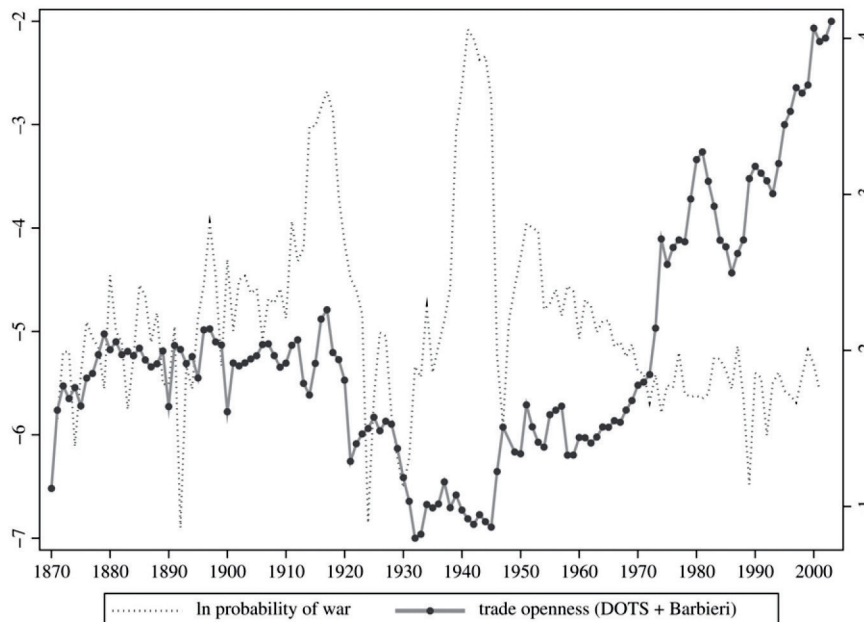
Literature review and conceptual framework

Trade and Peace

The premise that nations that trade are less likely to go to war traces its origins to Montesquieu (1) and Immanuel Kant (2), was further advanced by John Stuart Mill (3) and Schumpeter (4), and is now known as the 'liberal peace' theory. It is grounded in the insight that nations that trade with each other are less likely to go to war as they will lose the mutually beneficial gains from trade (5).

However, the evidence is not so clear-cut. There are many examples of nations that had very deep trade relations and yet still went to war, for example, Germany, the UK, and France in the First World War. Figure 1 charts trade openness versus the probability of military conflict and shows that the two do not always move together. For instance, from 1880 to the First World War, trade openness remained steady, or even increased slightly, while the probability of military conflict escalated rapidly, and eventually occurred.

Figure 1: Military Conflict Probability and Trade Openness Over Time (1870-2000)



Source: Martin et al. (6)

During the Second World War, the liberal peace theory holds more in the data: trade openness fell significantly in the run-up to the war, and the probability of conflict increased sharply. Following the Second World War, the theory seems to hold at a macro level: from 1950 onwards, trade openness grew while the probability of war declined.

However, several more recent cases call for a better understanding of these dynamics. The war in Ukraine and border clashes between India and China, along with many other hotspots worldwide, create an urgency to understand how trade and investment can impact peace and stability between countries.

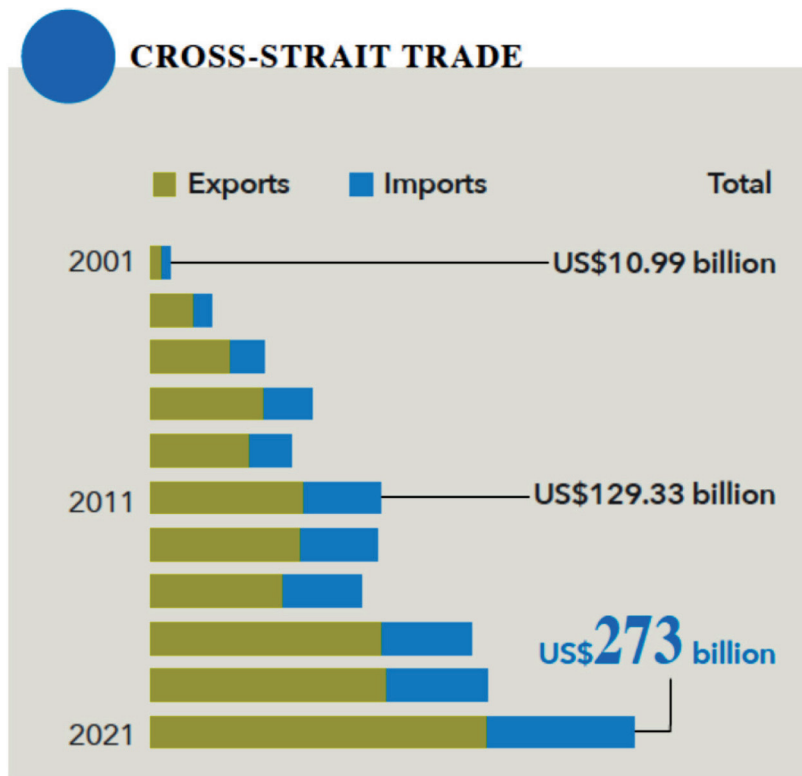
Consider recent data. In 2021, the year immediately prior to Russia's invasion of Ukraine in February 2022, trade between the two countries represented just 1.8 percent of Ukraine's GDP, and 0.5 percent of Russia's GDP (7). These low numbers bolster the theory that deep trade relations contribute to peace; in this case, the trade relations were shallow and had been falling over time.

In contrast, there are two striking examples where significant conflict has not occurred even though tensions have flared.

China and India experienced border clashes in 2020 and early 2021, yet this did not erupt into a larger conflict, as in 1962. In 2021, trade between the two countries reached record levels, surpassing US\$100 billion for the first time. India's imports from China increased by 46 percent to reach US\$98 billion, while Indian exports to China increased by 34 percent to reach US\$28 billion (8).

Regarding the Taiwan Strait, trade between China and Chinese Taipei has increased while tensions have also increased, though they have not escalated to conflict. In 2021, about 22 percent of Chinese Taipei's imports came from mainland China and Hong Kong, while 42 percent of its exports went to mainland China and Hong Kong (9). Cross-strait trade has grown significantly over the past 20 years (see Figure 2), with China becoming Chinese Taipei's leading trade partner in 2005.

Figure 2: Trade Between China and Chinese Taipei (2001-2021)



Source: Chinese Taipei government (10).

While tensions have increased in both cases (India-China; China-Chinese Taipei), there has not been conflict. Is this because of the incredibly deep trade ties between the two economies, or are there other factors at play?

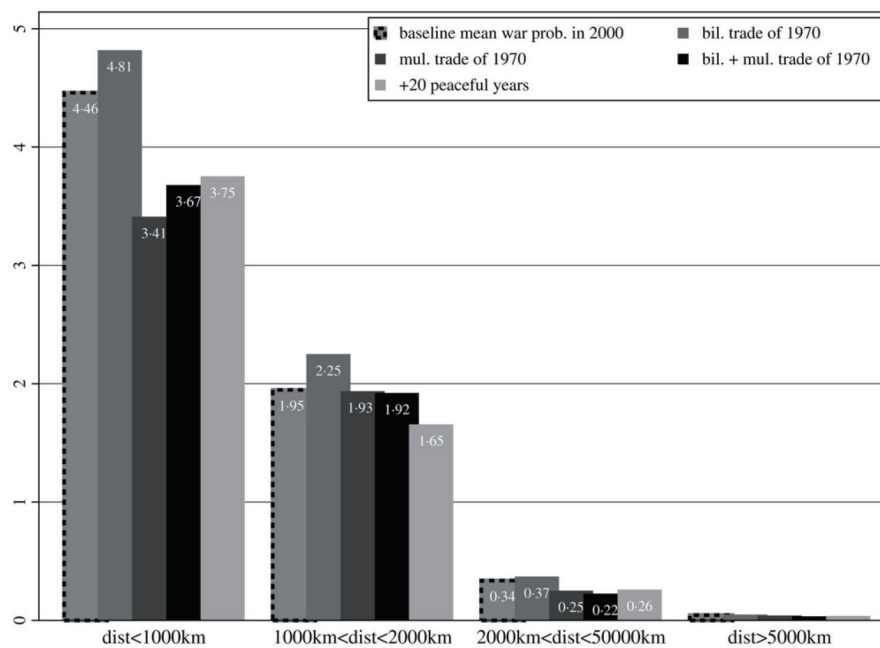
Academic literature that examines the interaction of trade and investment with peace and stability—and especially seeks to identify causal determinants—is inconclusive, though helpful. It can help orient the G20’s consideration of actions to grow trade and investment for peace and stability. G20 action can be informed by a series of 12 TIPS principles and 12 TIPS measures presented in the next section of this brief but foreshadowed in parentheses (e.g. ‘cf. TIPS Principle 2’) to link the evidence with the recommendations.

Omar Keshk, Brian Pollins, and Rafael Reuveny (11), and Hyung Min Kim and David L. Rousseau (12) examined the relationship between trade and conflict econometrically and concluded that trade does not deter conflict (13). Yet, later studies reached different conclusions. Examining a large dataset of over 200,000 dyadic relationships from 1950 to 2000, Philippe Martin, Thierry Mayer, and Mathias Thoenig found a two-sided relationship between trade and conflict: positive for bilateral trade and negative

for multilateral trade. In other words, bilateral trade decreases bilateral conflict, but multilateral trade openness increases the probability of bilateral conflict because the cost of bilateral conflict is lower between any two countries, whereas multilateral openness provides alternative trading partners. Because of the alternatives, the incentives to make concessions to avert escalation are weakened. They conclude that “an increase in trade between two countries pacifies relations between them but increases the probability of conflict with third countries” (14). There is a related trade-off between deepening bilateral trade relations (increasing efficiency) and diversifying multilateral trade relations (increasing resilience to shocks) (15). The right balance needs to be struck between these competing goals (cf. TIPS Principle 1 – find balance between deepening trade relations and diversifying supply chains to grow resilience).

Geographic distance between economies also emerges as a key determinant in the interaction between trade and conflict. In other words, contiguous countries are much more likely to go to war, and the probability diminishes as distance grows. Figure 3 shows Martin, Mayer and Theonig’s estimates of the impact of bilateral and multilateral trade when considering distance (km) (cf. TIPS Principle 2 – focus on promoting and facilitating trade from neighbouring countries).

Figure 3: Military Conflict Probability, Trade, and Geographic Distance



Source: Martin et al. (16)

The issue is far from settled. Jong-Wha Lee and Ju Hyun Pyun (17) and Håvard Hegre, John R. Oneal, and Bruce Russett (18) find that trade categorically diminishes

the probability of conflict, when not only properly accounting for distance between the countries but especially the size of the countries, which they use as a proxy for power. In other words, two very close, very powerful countries may still go to war even if they have very significant bilateral trade: “Large, proximate states fight more and trade more” (19) (cf. TIPS Principle 3 – pay special attention to relations between large trading partners, as these can have conflict even with significant trade relations).

Patrick J. McDonald offers an explanation: It is not trade per se that affects the probability of conflict, but *free* trade (20). Free trade reduces the domestic political power of interests that are protected by barriers to trade. Sectors relying on trade protection may even actively support aggressive foreign policies that reduce imports and foreign competition, expanding their share of the domestic markets (21). Applying this lens to France-Germany and China-India, the explanation then becomes that France and Germany, while they traded plenty, had very protective trade policies at the time, while India and China had relatively less protective bilateral trade policies due to their membership of the World Trade Organization, especially the concessions that China had to provide to join in 2001 since it was not a founding member. (cf. TIPS Principle 4 – ensure that trade regimes create free trade and do not favour special interests).

This finding is bolstered by considering a third region, South America, where Argentina and Brazil (two large, proximate states) created the Common Market of the South or MERCOSUR in 1991 to help avoid military conflict through growing trade relations, and have since not had military conflict, which they did before the agreement.

A promising new line of thinking is whether the relationship between trade and peace depends on what is being traded. Some trade may be of imperfect substitutes (e.g., bananas and apples, both fruit), and some trade of complements, especially intermediate inputs into production processes constituted by global value chains. Trade in complements will diminish the probability of bilateral conflict more than trade in imperfect substitutes as the former creates alignment of interests in continuing trade relations that are mutually beneficial, while the latter does not (cf. TIPS Principle 5 – focus on promoting and facilitating trade in complements rather than trade in substitutes).

This line of thinking is bolstered when looking at the composition of trade between India and China. In 2021, the main products that China exported to India were computers (US\$6.34 billion), telephones (US\$4.42 billion), and semiconductor devices (US\$4.25 billion) (22). In contrast, India’s main products of export to China were iron ore (US\$3.51 billion), refined petroleum (US\$1.61 billion), and raw aluminium (US\$1.26 billion) (23). One can clearly see that India’s exports are of primary products while China’s are of finished products, demonstrating trade in complements rather than trade in substitutes.

Trade in complements will create mutual dependency, which can lead to two very different outcomes: (a) stability, with both parties having an interest in maintaining the status quo, and (b) tension, with one party feeling more dependent on or vulnerable to the other. This vulnerability can then be mobilised to exert power over the other party, creating both resentment and a desire to break the dependency (24). If two states are more or less equally powerful, this could lead to conflict. This brings the argument back to principles 1 and 3—finding the right balance between deepening mutual dependence through trade and building resilience through diversification, and paying special attention to relations between large trading partners as these can have conflict even with significant trade relations.

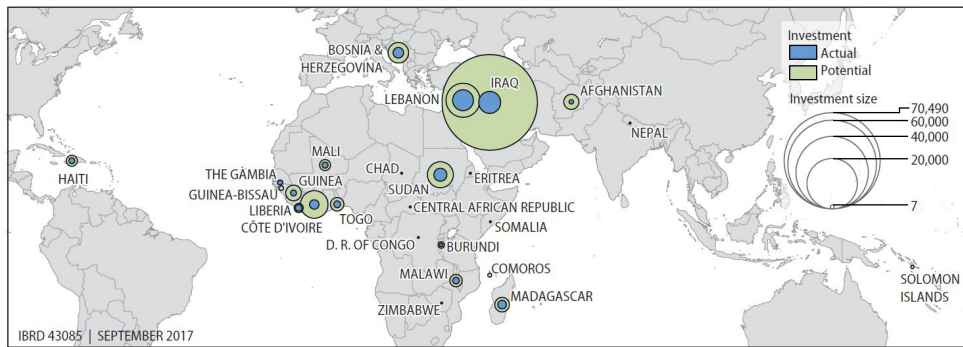
Investment and Peace

Regarding the relationship between foreign direct investment (FDI) and peace and stability, the arguments and evidence do not go back too far, but the importance of leveraging FDI to contribute positively to peace and stability in the aftermath of conflict has been examined in detail more recently.

Foreign private-sector players have historically been wary of investments in peacebuilding situations due to the prevailing risk–reward estimates (25). However, large investments are needed to help catalyse and keep the peace by restarting the economy and providing employment. At the same time, there is a risk that FDI could contribute to conflict and instability. Conflict-insensitive FDI could, for instance, destabilise domestic political processes if favouring one group of power brokers over another or providing resources to acquire further weapons.

The real challenge is to grow FDI that contributes to peace and stability under difficult investment climate conditions. Figure 4 shows how much FDI fragile and conflict-affected states (FCS) have received compared to their estimated potential, considering FDI determinants, including market size and domestic resources.

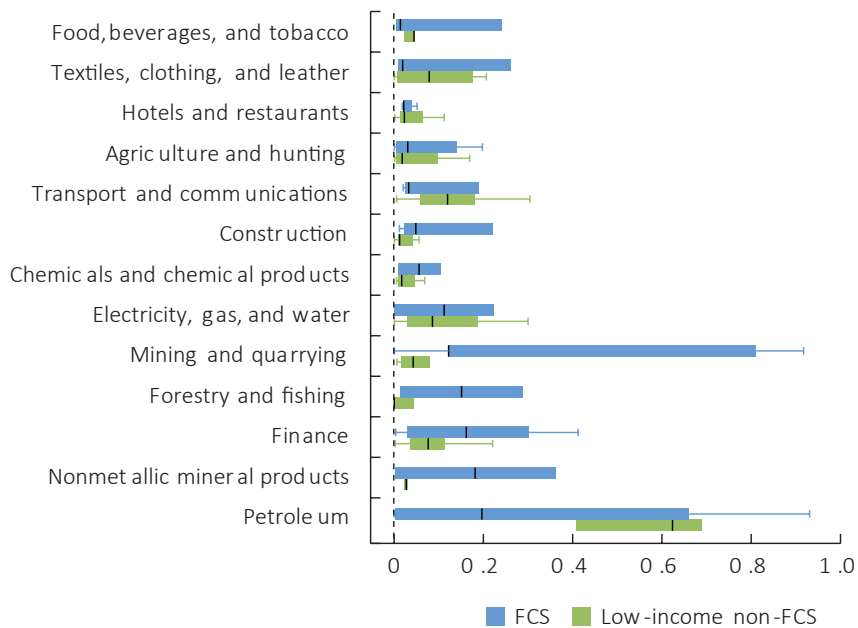
Figure 4: FDI Flows to Fragile and Conflict-Affected States (2008–14)



Source: Ragoussis and Shams (26).

Yet even under difficult investment climate conditions, there are opportunities. Many FCS countries have natural resources, including minerals, metals, and oil. If structured appropriately, investment in these resources can anchor stability and growth. Figure 5 shows that natural resource sectors receive a much greater share of FDI in FCS countries compared to low-income non-FCS countries.

Figure 5: Distribution of FDI Across Sectors (FCS vs Non-FCS; 2008–14)



Source: Ragoussis and Shams (27).

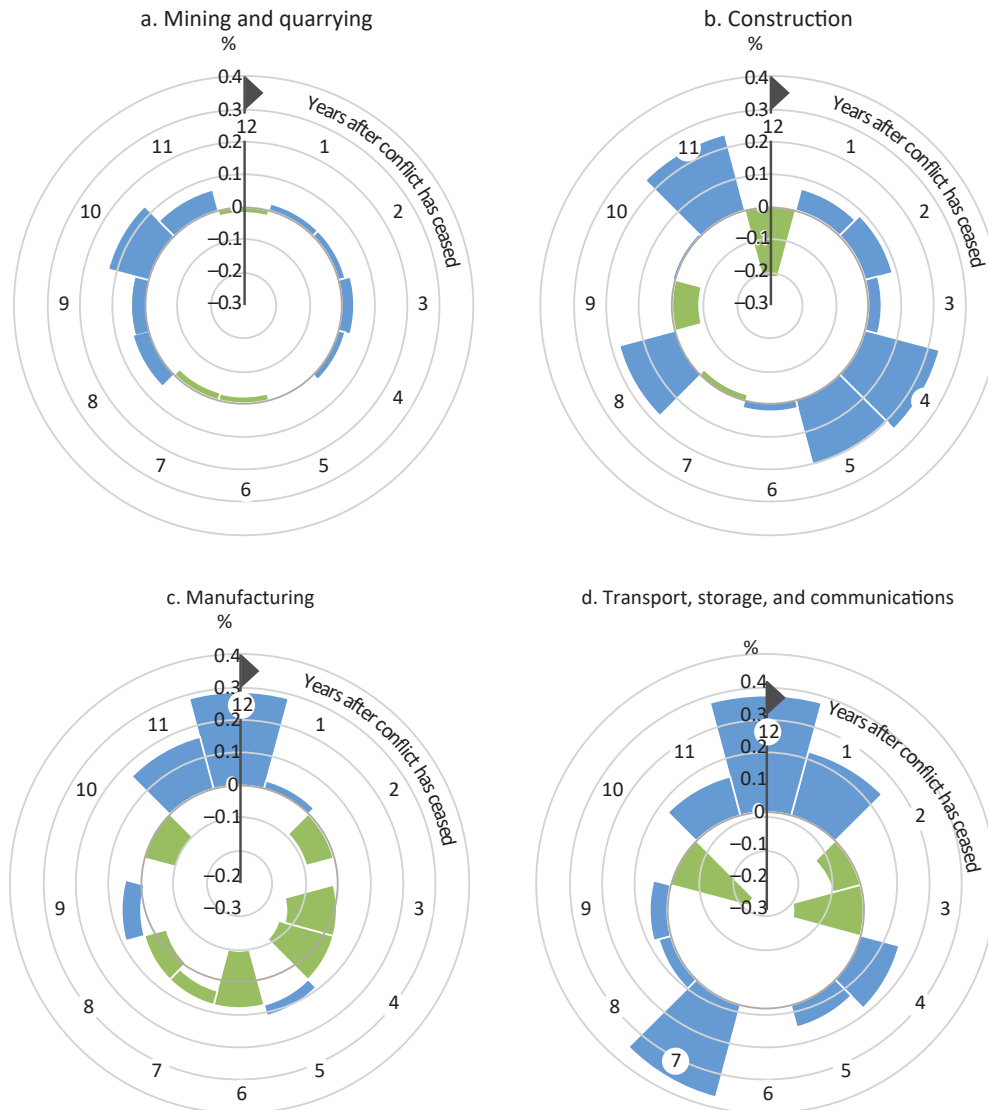
Therefore, and as Mats Berdal and Nader Mousavizadeh argue, “an important starting point in re-examining the role of natural resources in peacebuilding is to recognise that, for a number of developing countries, minerals and petroleum offer the biggest and most accessible source of income” (28). Rather than shy away from such investments, it may be preferable to structure them in a way that contributes to peace and stability, for instance through ensuring transparent and equitable revenue management, which may only be effective through the application of home-country due diligence requirements (29). This will determine whether FDI in these resources deepens fissures within a society or creates a common basis for economic progress. The natural resource curse for the bottom billion can be reversed, with the right guardrails (30) (cf. TIPS Principle 6 – where natural resources are the main FDI opportunity, provide support but ensure proper guardrails through home-country due diligence requirements).

In addition, different sectors grow at different times in post-conflict situations during the process of reconstruction, and investment can be sequenced accordingly (see Figure 6). For instance, transportation, storage, and communications take off immediately after a conflict has ended, followed soon after by construction. These sectors also present real opportunities for foreign firms. Therefore, these sectors should be prioritised in FDI facilitation efforts in the context of growing peace and stability. Manufacturing, in contrast, initially contracts and does not take off again for a long time, and so may not be the best choice for FDI facilitation.

Furthermore, there need not be generalised peace and stability across a country for pockets of geographies to be peaceful and stable, and FDI should be oriented to these areas, which can then have a positive spillover effect on other areas, demonstrating the benefits of peace and stability to the economy (31) (cf. TIPS Principle 7 – consider sequencing FDI support to specific areas of the country and specific sectors over time, informed through consultation with the private sector).

Finally, special economic zones (SEZs) can be oriented to helping successfully demobilise and reintegrate combatants by employing demobilised combatants (32), what can be called ‘Peace SEZs’, while evidence shows that the presence of peacekeeping operations can significantly increase FDI in FCS countries (33) (cf. TIPS Principle 8 – ensure SEZs help support peace and stability, and consider welcoming the presence of peacekeeping operations in the country) (34).

Figure 6: 'Growth Clocks'—Growth of Sectors After Conflict has Ceased (Years vs Percentage)



Source: Ragoussis and Shams (35).

In this context, state-backed FDI may be needed to overcome the political, commercial, and security risk in post-conflict and conflict-affected environments. What has been called 'state-backed 'macro-finance' investment (36) helps mitigate these risks (37). These investments can especially be structured to support infrastructure, a much-needed base for the rest of the economy to pick up (cf. TIPS Principle 9 – consider using state financial and political support for FDI in post-conflict situations, especially focusing on infrastructure).

Many FCS countries also have large diasporas that left because of conflict. Diaspora investors understand their country of origin and have networks there, both of which can increase the chance of investment success. The presence of diaspora investors in their country of origin can also facilitate the internationalisation of firms from FCS countries, providing a secondary channel to generate revenue and growth (38) (cf. TIPS Principle 10 – welcome and encourage diaspora investment, as well as the diaspora’s support with internationalization of firms from post-conflict countries).

The evidence also shows that multinational firms from the same region may be better placed to navigate the complexities of FCS environments in post-conflict situations, either through knowledge or networks. Past examples include FDI from Russia to Uzbekistan, Malaysia to Cambodia, South Africa to Nigeria, Japan and Thailand to Myanmar, and the United Arab Emirates to Iraq (39)(cf. TIPS Principle 11 – focus on promoting and facilitating FDI from the same region as these firms have familiarity and comfort operating in that environment).

Lastly, it may be wise to focus on partnering with local firms that have shown resilience and success in navigating the complexities of FCS environments, especially small- and medium-sized enterprises (SMEs) that may be exhibiting organic growth as, in the context of fragility, commerce needs to be built from the ground up, often starting with family-owned businesses (40) (cf. TIPS Principle 12 – consider partnering with resilient SMEs that have been able to survive/grow during conflict, especially family-owned business).

The G20’s Role

The G20 is uniquely suited to leverage trade and investment for peace and stability, given that its members are both the largest sources and recipients of trade and investment flows, certain members sit on the UN Security Council (which aims to defuse conflict), and the group can play a critical role in determining the course of conflicts and, ideally, defuse them. In other words, the G20 is relevant on both the economic and security levels to guide and shape global cooperation.

The G20 economies can thus consider the principles and measures laid out below in two different, complementary ways. On the one hand, the G20 economies can use the principles to inform their strategies and policies for trade and investment while considering adopting targeted measures for their economies to maximise the positive contribution of trade and investment to peace and stability. On the other hand, the G20 economies can encourage other economies directly or indirectly involved in conflict and post-conflict situations to consider the principles and measures. In many cases, a

combination of the two—G20 adoption and non-G20 adoption—will be most effective in leveraging these tools to contribute to national, regional, and global peace and stability.

Finally, it is worth underscoring that on the investment side, the G20 economies are uniquely resourced to support state-backed ‘macro-finance’ investments in relatively riskier post-conflict settings, to facilitate private capital inflows.

Recommendations

The recommendations that follow are set out in two pithy sections: a restatement of principles to guide TIPS that emerge from the evidence, and measures to operationalise the TIPS principles. Trade-related principles and measures, as well as investment-related principles and measures, may be different—even though the G20 may wish to reflect and act on these elements jointly given the interrelationships between trade and investment.

Principles to guide TIPS strategy and policy

Trade

1. Find balance between deepening trade relations and diversifying supply chains to grow resilience
2. Focus on promoting and facilitating trade from neighbouring countries
3. Pay special attention to relations between large trading partners, as these can have conflict even with significant trade relations
4. Ensure that trade regimes create free trade and do not favour special interests
5. Focus on promoting and facilitating trade in complements rather than trade in substitutes

Investment

6. Where natural resources are the main FDI opportunity, provide support but ensure proper guardrails through home-country due diligence requirements
7. Consider sequencing FDI support to specific zones of the country and specific sectors over time (especially with a view to providing employment for former combatants), informed through consultation with the private sector

8. Ensure SEZs help support peace and stability, and consider welcoming the presence of peacekeeping operations in the country
9. Consider using state financial and political support for FDI in post-conflict situations, especially focusing on infrastructure
10. Welcome and encourage diaspora investment, as well as the diaspora's support with the internationalisation of firms from post-conflict countries
11. Focus on promoting and facilitating FDI from the same region as these firms have familiarity and comfort operating in that environment
12. Consider partnering with resilient SMEs that have been able to survive/grow during conflict, especially family-owned business

Concrete and specific measures to operationalise TIPS in practice

1. Ensure tariffs and non-tariff barriers are low or removed on goods and services between neighbouring countries: This is an important step to facilitate trade between two countries, and also helps create not just trade but free trade.
2. Ensure FDI restrictions are low or removed on investments between neighbouring countries: Similar to the point immediately above, this is an important step to create in practice the opportunity for investment to take place between two economies.
3. Identify complementarities between neighbouring economies in terms of sectors and products, and use industrial policy to develop these sectors and products: Targeting interventions to sectors and products that have the potential to grow trade and investment between two countries because of economic complementarities may be one of the most important of the measures suggested.
4. Provide commitment to liberalisation and facilitation of trade and investment between neighbouring economies in these priority sectors and products, with the aim of developing value chains criss-crossing across borders: Building on the point immediately above, once complementary sectors and products are developed, there is the potential to encourage the creation of value chains criss-crossing across borders, e.g., through factories sourcing from neighbouring countries.
5. Develop joint equity investment projects between firms in neighbouring countries: Joint equity or equity swaps increase the cost of conflict and align both parties in the interest of maintaining peaceful economic relations lest the equity is lost.

6. Develop a joint trade and investment committee to provide policy advocacy, co-chaired by representatives of two countries: A joint trade and investment committee can make recommendations to policy makers in both countries on improvements with respect to trade and investment procedures and rules.
7. Develop a business association co-chaired by representatives of two countries: Bringing businesspeople together through a formal mechanism creates opportunities for dialogue and cooperation that can organically lead to growing economic relations.
8. Develop a jointly managed port or customs clearance system between two countries: A jointly managed port or customs clearance system will facilitate trade between two countries and in so doing increase economic relations.
9. Encourage manager swaps in firms from neighbouring countries: Facilitating staff exchanges, especially at the managerial level, can provide an additional mechanism to increase economic understanding, and in so doing the potential to grow economic relations.
10. Allow government procurement access for firms from neighbouring countries: By allowing firms from neighbouring countries to bid for government contracts, this may naturally – over time – leads to greater economies activity in each other's economies as firms receive contracts and provide business services.
11. Create 'Peace SEZs': Special economic zones can be oriented to providing employment for demobilised combatants, one of the most important considerations in post-conflict settings.
12. Consider welcoming peacekeepers to maintain the peace: The evidence shows that the presence of peacekeeping operations can significantly increase FDI in FCS countries and so parties should not be shy of sending and welcoming such forces.

Conclusion

This essay proposes a new framework to better understand and use trade and investment for peace and stability, known as the TIPS framework. Grounded in empirical evidence, the TIPS framework is composed of 12 guiding principles that can help orient and inform TIPS strategy and policy, coupled with 12 targeted TIPS measures to operationally leverage trade and investment for peace and stability.

The G20 is uniquely suited to leverage trade and investment for peace and stability. Its members are both the largest sources and recipients of trade and investment flows, and the group plays a critical role in determining the course of conflicts. The G20 economies can thus use the TIPS framework both to inform their own trade and investment policies and measures, as well as to encourage other economies that are either directly or indirectly involved in conflict and post-conflict situations to consider the principles and measures.

Some tensions and conflicts may have deeply rooted origins—whether cultural, religious, territorial, or other—and economic tools may not trump these variables. This does not mean that economic tools in the form of TIPS policies and measures cannot help. Even in situations where tension and conflict are deep-seated for non-economic reasons, trade and investment can still play a positive influence in improving the situation.

Over time, TIPS policies and measures may help economic considerations to wax and non-economic considerations to wane, and so trade and investment can play a role in moving what might have initially appeared as an intractable situation towards a better state of affairs.

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Increasing G20 Cooperation on Debt and Investment in Africa

Miguel Otero Iglesias | Beatrice Grace Aluoch Obado | Agustín González-Agote

Abstract

AFRICA'S LONG-STANDING AND DIFFICULT HISTORY with international capital can be attributed to a complex set of factors, including historical legacies, structural adjustment programs, and most recently, Chinese investment. In many ways, external finance has helped African countries create jobs, increase productivity, and improve competitiveness with recent achievements in knowledge-intensive sectors such as business services and financial technology. However, the region is currently facing its most severe debt and fiscal distress in this century, precisely when it needs to mobilise resources to meet development objectives and climate commitments. While Africa's hard-won credit market access had once been hailed as the key to boosting the region's growth and development, these countries are now facing significant challenges in their relationship with international capital, with profound economic, political, and social

implications. Despite tensions, China and the West share a common interest in helping African nations address their mounting debt and will need to step up their efforts to arrive at a mutual understanding. The G20 must support this process by promoting debt-relief initiatives, coordinating debt-restructuring efforts that include lowering escalating borrowing costs, and working with the African Union to address underlying issues.

Introduction

In recent years, considerable attention has been devoted to China's growing financial involvement in Africa as a key factor behind the continent's unfolding complexities and challenges. This viewpoint highlights China's 'debt-trap diplomacy' and has been used to explain the surge in Africa's debt concerns and the looming spectre of sovereign defaults (1). Nevertheless, Africa's complicated international capital history predates these recent developments, as evidenced by its difficult relationship with traditional public multilateral lenders such as the International Monetary Fund (IMF) and the World Bank (WB), as well as with private international creditors. Indeed, the complexity of Africa's debt sustainability transcends a single lender or nation to encompass an intricate web of historical legacies, structural weaknesses, exorbitant borrowing costs, and bad governance. An illustrative example can be found in the structural adjustment programmes (SAPs) facilitated by the IMF and the WB in the 1980s and 1990s, which offered debt relief in exchange for economic policy reforms, mostly centred around currency devaluation, capital account and trade openness, and privatisation of publicly owned companies (2). At the time, these were hailed as the key to restructuring the region's productive capacity and unlocking its full economic potential and promised to increase efficiency and restore growth across the continent (3). However, these efforts often yielded counterproductive outcomes, although they were technically designed to balance external payments, attract inward foreign direct investment (FDI), and increase and diversify exports. The literature generally agrees that the effectiveness of these approaches was far from universal and often detrimental to the African context, thus highlighting the impact of conditional lending on the industrialisation, employment, and social wellbeing of various African nations (4).

Consequently, beginning in the early 2000s, several African countries started seeking alternative sources of international finance, leading to a shift towards engaging with other partners. China, in particular, became an appealing foreign creditor to many desperate governments, as it generally offered more flexible conditions—at least in terms of economic policy reforms—and was willing to lend to authoritarian leaders who were less favoured by the West (5). Chinese lending in resource-rich African countries has expanded rapidly in the last decade, with increasing oil- and other mineral-backed infrastructure projects across the continent, particularly within the framework of

China's Belt and Road Initiative (BRI) (6). The lack of transparency and accountability in these arrangements, however, makes it hard to assess the full extent of economic development enabled by Chinese capital, though widespread concerns about large-scale corruption and mismanagement seem to point to a missed opportunity (7).

Hence, while traditional institutional lenders have been criticised for their fixation on fiscal austerity and market-oriented reforms, with profound impacts on African countries' underdeveloped sectors and vital welfare programs, China's approach to lending in the continent has been critiqued for its lack of transparency and accountability, as well as for its support of corrupt and authoritarian regimes. Despite this, both China and the West have played an important role in promoting Africa's debt sustainability, implying greater cooperation and coordination between the different stakeholders. The United States (US) and China are currently engaged in a debt standoff that will only hurt poor nations in the long run, and thus, differences stemming from geopolitical tensions will need to be set aside to develop effective and enduring solutions (8).

This essay argues that attributing Africa's current debt dilemma solely to the actions of external lenders does not capture the complete picture. The escalating debt burdens also bear the imprint of internal factors such as weak tax systems, endemic corruption, and overreliance on specific commodity exports, which have contributed to an environment with burgeoning fiscal pressures that have driven various countries into spiralling debt cycles. Within this context, it is important to address how the continent arrived at the current debt conundrum, the challenges African economies face in their ongoing debt-restructuring efforts, and the role of the G20 countries in mitigating these issues.

Literature Review

The surge in Africa's debt problems can be traced to 2014, when the global economy was hit by plummeting oil prices, which had a cascading impact on several African nations (9). Various countries in the region were already facing a series of economic pressures stemming from export dependence (10) and bad governance. To mitigate these challenges, international capital quickly shifted its focus from funding infrastructure projects to supporting economies in the face of these uncertainties (11). However, despite these measures, the burden on indebted countries remained significant. These difficulties have been compounded by the COVID-19 pandemic, Russia's invasion of Ukraine, and the steep hike in interest rates by the US Federal Reserve, thus underscoring the multifaceted nature of Africa's debt challenges (12).

At the end of 2020, the region's external debt stood at almost US\$700 billion, with approximately 12 percent owed to Chinese lenders, 35 percent to Western private

creditors, and 39 percent to multilateral institutions (13). China did not create Africa's debt problems, and it would be unfair to say that it alone holds the key to the solution, but it does play an important role in helping African countries return to a path of debt sustainability. According to the latest IMF data, of the 70 low-income countries eligible for the Poverty Reduction and Growth Trust (PRGT)—the IMF's primary vehicle for providing concessional financing to the world's poorest countries—40 are in Africa, with nine already in debt distress (including Mozambique, Zambia, and Zimbabwe) and another 13 at high risk (see Table 1) (14).

Indeed, the challenge is significant, and this has been acknowledged by China. A recent report noted that the more than US\$100 billion worth of bonds maturing between 2023 and 2025 will likely exacerbate the debt and liquidity crises already besetting the continent (15). Countries that are unable to refinance their debt risk slipping into a vicious cycle of sovereign defaults, credit rating downgrades, and dwindling foreign currency reserves, with devastating consequences for dozens of low- and middle-income countries and their populations (16). The fear of contagion makes the risk of just one country defaulting problematic, and thus, all parties will have to contribute to restructuring the billions of dollars in debt owed to foreign creditors and help African countries avoid an escalating crisis.

Table 1: IMF's List of African Countries at Risk of Debt Distress

Country	Risk of debt distress	Country	Risk of debt distress
Benin	Moderate	Djibouti	High
Burkina Faso	Moderate	Ethiopia	High
Burundi	High	The Gambia	High
Cameroon	High	Ghana	In debt distress
Cabo Verde	Moderate	Guinea	Moderate
Central African Republic	High	Guinea-Bissau	High
Chad	High	Kenya	High
Comoros	High	Lesotho	Moderate
Congo, Democratic Republic of	Moderate	Liberia	Moderate
Congo, Republic of	In debt distress	Madagascar	Moderate
Côte d'Ivoire	Moderate	Malawi	In debt distress
		Mali	Moderate
		Mauritania	Moderate

Country	Risk of debt distress
Mozambique	In debt distress
Niger	Moderate
Rwanda	Moderate
São Tomé and Príncipe	In debt distress
Senegal	Moderate
Sierra Leone	High
Somalia	In debt distress
South Sudan	High

Country	Risk of debt distress
Sudan	In debt distress
Tanzania	Moderate
Togo	Moderate
Tonga	High
Uganda	Moderate
Yemen, Republic of	Moderate
Zambia	In debt distress
Zimbabwe	In debt distress

Source: IMF (2023) (17)

Chinese analysts place excessive blame on Africa's surging stock of international bonds, arguing that the higher interest rates, yield-hungry investors, and US\$-denomination of the bonds have significantly increased the size and cost of Africa's foreign debt and become a major factor for its debt distress. The point is fair; on average, African countries borrow at rates that are as much as eight times higher than those in the West (18). However, just as narratives of predatory Chinese debt-trap diplomacy "minimise the agency of African actors" and "disregard the marked heterogeneity" of lenders' approaches and motives (19), accounts of Western creditors luring emerging economies with vulnerable socio-economic structures and limited financial risk-management experience into a high-debt-risk trap are also unfounded (20). It is important to take into account the recent shocks caused by COVID-19, the war in Ukraine, and rising global rates. Many African countries have also fallen into their current debt spirals partly due to their own mounting fiscal pressures. According to an UNCTAD report (2022), weak tax systems, endemic corruption levels, and the failure to diversify commodity exports have contributed to persistently low revenue generation and made it difficult to service external debts (21). Several governments have also taken on debt with unfavourable terms, including higher interest rates, short repayment periods, and restrictive covenants that have further exacerbated these complex, multifaceted issues.

Thus, African nations will need to reach agreements with their public and private international creditors, which will likely involve new loans. However, many of Africa's most promising economies have now lost their hard-won access to international capital markets (22). Eurobonds, in particular, which had played a crucial role in the success stories of several countries, seem to have dried up as private lenders have

largely abandoned the continent and are now negotiating haircuts of up to 30 percent (23). Ghana offers perhaps the most compelling case; despite great advances enabled by foreign capital, the country was shut out of international markets after defaulting on its debt in 2022 and has increasingly resorted to borrowing domestically at interest rates of almost 30 percent, which has aggravated the risk of further defaults and forced its central bank to step in and provide emergency funding (24). The country has now reached an agreement with the IMF for a US\$3 billion loan, but only after agreeing to secure assurances from its bilateral creditors, which involved a dramatic debt restructuring process, and accepting a severe cut-down of vital public spending (25).

The case of Zambia is also an indicator of things to come. The country defaulted in 2020 and was close to reaching an agreement with its lenders in 2022, but while China (which holds a third of its external debt) had initially agreed to reduce interest rates, extend maturity dates, and take on losses, it began asking for the involvement of multilateral development banks (MDBs) in the haircut, which Western lenders bluntly opposed due to their preferred status (26). Although China has since dropped these demands in exchange for MDBs' accepting further concessional loans for countries receiving debt relief, several African leaders have echoed China's calls and said that MDBs should play a greater role in debt-restructuring efforts (27).

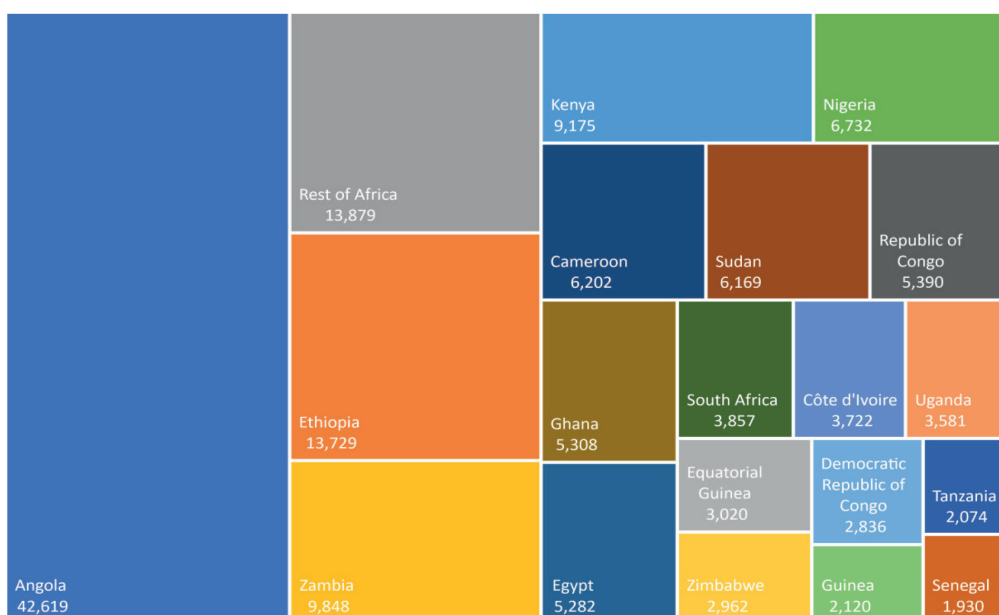
Thus, Africa's mounting debt problems are a testament to the complex nature of debt-sustainability challenges, demonstrating how these issues can rarely be attributed to a single lender or country and that, instead, all actors need to work together to find effective and lasting solutions. A key problem is the overall lack of transparency, with some countries failing to disclose the full extent of their debt or borrowing from non-traditional lenders like China. This is not conducive to collaboration and makes it difficult to conclude negotiations between China and the Paris Club—an informal group of the world's major industrialised creditor countries (28). Since the beginning of Russia's invasion of Ukraine in February 2022, debt-restructuring efforts in Africa and beyond have been increasingly jeopardised by geopolitical tensions between the US, its allies, and China (29). The politicisation of Africa's debt negotiations will only make matters worse, and the power rivalry between China and the West will need to be set aside to help countries achieve economic recoveries and return to investing in key areas such as health and education. There is a need for a new approach to cooperation on debt and investment in Africa, and the G20 must lead this effort.

The G20's Role

Africa's debt problems are complex, with each nation facing its own structural and country-specific challenges and the involvement of an increasing number of public

and private creditors, which makes already complicated debt-restructuring processes even more difficult. The irruption of new, non-traditional lenders like China into various African markets also adds to the complexity (Figure 1), as geopolitical tensions and ideological differences have often hindered effective solutions. This makes the G20, with its working groups and expert initiatives, the ideal platform to increase cooperation on debt and investment in Africa. The G20's high technical and organisational capacity has already been leveraged for numerous debt-relief efforts in the past, allowing for increased scope of efforts.

Figure 1: Top 20 Recipients of Chinese Loans in Africa, 2000–2020 (US\$ millions, unadjusted)

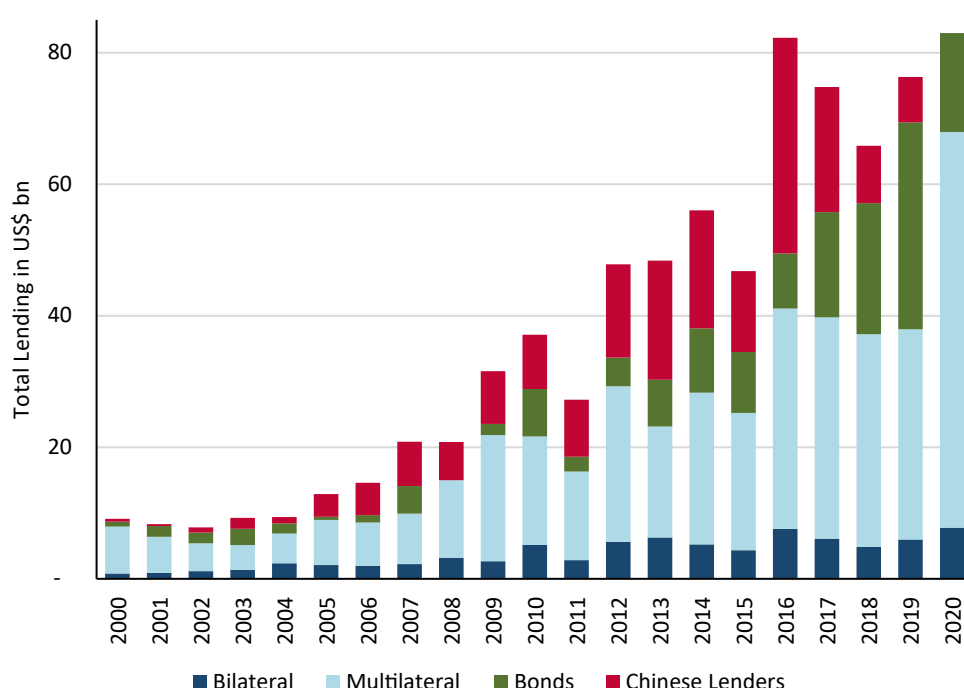


Source: Vines, Butler, and Yu (2022) (30)

However, the G20's landmark debt-restructuring schemes—the Debt Service Suspension Initiative (DSSI) and its successor programme, the Common Framework for Debt Treatments (CF)—have been unable to achieve immediate and long-term external debt relief (31). The DSSI saw relative success during the worst days of the pandemic owing to an outsized debt-relief effort by China (32), granting much-needed interest-payment suspension and new loans to poor countries that were suddenly at risk of defaulting on their debts (33). However, the short-lived initiative failed to rally support from many debtor countries and private lenders, who were largely left out of negotiations. To address the underlying issues behind the unsustainable debt levels of developing countries and deal with their protracted insolvency and liquidity problems, the G20 created the CF, which focused on providing more lasting relief through debt-restructuring measures tailored to the specific needs of a country. Although the CF

brought new, non-OECD debtor countries to the table, it replicated the structure of the Paris Club, despite its member states representing only a fraction of the total creditors of African countries (Figure 2), again leaving most private creditors without a say in the debt-restructuring process. Additionally, the G20 has attached harsh conditionality requirements on countries, which make it more difficult for certain countries to access the initiative (34); so far, only three African countries have applied to the framework—Chad, Ethiopia, and Zambia—but none of them have been able to complete the process yet (35). More recently, Ghana has also sought debt treatment under the CF and seeks assurances from its private creditors and bilateral lenders (36).

Figure 2: Creditors Driving Africa's Sovereign Debt Boom



Source: Miyalhi and Trebesch (2023) (37)

The G20 members will need to show greater resolve and remain committed to promoting Africa's debt sustainability despite their differences. They need to work with non-G20 countries and other actors, such as MDBs and private creditors, to ensure that African countries receive the debt relief that they desperately need. They could also help link debt-restructuring efforts to development goals and climate commitments to make the most of available synergies and help countries embark on a journey of sustainable, inclusive recoveries (38). Further, their assistance should be aimed at enabling the region to address the root causes of its escalating debt burdens.

Recommendations to the G20

Cooperation for debt relief

The G20 and Paris Club countries must work with China and the African Union on comprehensive measures to alleviate debt distress. For example, a recent deal between Ghana's official creditors demonstrated the potential of co-chaired committees to solve impasses and negotiate on equal terms. The country was in desperate need of an IMF bail-out that had been blocked by the lack of assurances from Ghana's bilateral creditors, but China and France managed to agree on a distribution of cuts in exchange for the WB providing additional grants and low-interest loans (39). The African country has become the first in the region to test such a compromise, and it could become a model for other economies in the region. The G20 should aim to facilitate similar exchanges and provide a framework for cooperation and coordination for future committees.

The increasing role of MDBs

Increasingly, many experts are calling for MDBs to be involved in debt-restructuring negotiations (40). The argument that they are preferential creditors and that such a move would call their legitimacy into question can be challenged by the fact that MDBs already provided debt relief in the mid-1990s through the Heavily Indebted Poor Countries Initiative (HIPC) and in the late 2000s with the Multilateral Debt Relief Initiative (MDRI). A recent meeting between African finance ministers, for example, called on WB shareholders to increase the low-interest funding available to countries through its International Development Association (IDA) fund and for the IMF to sustain its PRGT with additional funding (41). The G20 countries should provide necessary guarantees to make sure that such initiatives are available when they are most needed and that countries receive the appropriate funding to achieve their intended aims.

Private-sector participation in debt-relief efforts

Both the DSSI and CF failed to provide for adequate participation of the private sector. The CF has been modelled on the Paris Club logic that prioritises agreements by public lenders, followed by the private sector; however, such an approach has been rendered obsolete since creditors no longer consist solely of official debtor countries and multilateral institutions (Figure 2). This is a shortcoming that must be overcome, albeit through more than just collective action clauses (CACs), which have seen only moderate success in the past. The G20 must therefore overhaul the existing framework to allow for increased involvement of private-sector actors in debt negotiations to forge

new and more sustainable debt-relief talks. In turn, private creditors should be willing to participate in debt-service suspension discussions and grant some level of debt-payment forbearance (42).

Linking debt relief to development goals and climate commitments

As proposed by the Global Development Policy Center, governments that benefit from debt relief should align their policies to the 2030 Sustainable Development Agenda and the Paris Agreement and develop their own green and inclusive recovery and resilience strategies (43). The G20 should leverage its technical and organisational capacity to conceptualise an ambitious agenda that will allow it to tackle Africa's debt crisis while providing countries with the fiscal space they need to respond to their equally important sustainability crises. It should then encourage countries with unsustainable debts to participate in debt-restructuring talks and help orient relief efforts towards green, inclusive recoveries.

Expanding the Paris Club or accepting the African Union as a full member

The Paris Club is an informal group that comprises 22 rich Western countries that have been the traditional global lenders. However, many emerging economies, notably China, have now become international lenders, though their participation has not been appropriately incorporated into existing forums. The Paris Club should expand its membership and include all the G20 countries. Alternately, a new platform should be established to resolve debt-relief questions, possibly under the umbrella of the IMF. The G20 could also consider incorporating organisations like the African Union as full members to ensure increased cooperation and coordination channels with developing countries and involve them in future reforms of the global financial architecture (44).

Debt sustainability

The G20 should work with African countries to build resilient strategies. This could be done by developing frameworks in the short and medium term that allow African countries to balance their investments in economic development with their commitment to fiscal stability. This concerted effort would give nations greater access to financial resources and technical support to manage their debt. Here, the G20 could draw lessons from the Bridgetown Initiative—an action plan that aims to unlock climate finance for low-income countries with new mechanisms and ambitious reforms centred around liquidity support, debt sustainability, private sector investment, and development lending (45).

Enhancing transparency

Current debt restructurings are complicated because of a lack of transparency that benefits holdouts and free riders. Both creditors and debtors should be obliged to provide all relevant information to an international agency, perhaps managed by the IMF. This information should include all loans, covering amounts, terms, guarantees, assurances, and more. In the long run, this transparency might improve the lending process and the fiscal policy of the borrowers. If the underlying problems that lead to unsustainable debt are not analysed and tackled properly, they will persist in the future.

Supporting economic growth opportunities in debtor countries through trade

The G20 could support African governments in addressing the underlying challenges for achieving lasting debt sustainability by facilitating the removal of trade and investment barriers and strengthening global supply chains, thus ensuring that vulnerable economies that produce raw materials are protected and able to reap the economic benefits of an interconnected world.

The G20 is the ideal platform for coordinating global policies on trade, as evidenced by the recent success of its Trade and Investment Working Group (TIWG) in Mumbai, which is working towards finding common solutions to address gaps in the multilateral trading system (46). By prioritising the integration of African countries into global markets, the G20 could help the continent create more stable economic opportunities and become more resilient in the face of future crises.

Conclusion

Africa's long-standing and difficult history of international capital calls into question recent claims that only Chinese or Western predatory lenders are responsible for the region's debt sustainability challenges. Africa's mounting debt problems cannot be attributed to a single lender or country but rather to a complex set of factors that includes historical legacies, structural weaknesses, and bad governance. The recent shocks caused by COVID-19, the war in Ukraine, and rising global rates have further aggravated these issues, and although several debt-relief efforts have been initiated, with varying degrees of success, geopolitical tensions between the US and China have particularly stood in the way of negotiations, with profound impacts on the continent's most vulnerable countries. All actors should assume their responsibilities and work together to find effective and lasting solutions that can help African economies avoid an escalating crisis and return to a path of sustainable development. However, the pertinent question that needs to be addressed is what steps can be taken to increase

cooperation on debt and investment in Africa and how the G20 can support this process.

First, Paris Club members must learn to work with non-Western partners, notably China, on comprehensive debt-relief measures to help African countries achieve debt sustainability. MDBs as well as private international creditors should be involved in these debt-restructuring processes. Consequently, the G20 should reform its landmark initiative, the CF, to allow for adequate participation from all relevant actors and a fair distribution of responsibilities. Second, the G20 must provide necessary guarantees to keep money flowing into Africa to ensure that countries are able to provide vital welfare programmes for millions of vulnerable families and that the region is able to meet its sustainable development goals and climate commitments. Finally, the G20 countries need to collaborate closely with the African Union, addressing the fundamental issues that underpin the recurrent debt crisis in the continent. This can be achieved by working with African nations to construct resilient strategies, enhancing transparency in lending procedures, ensuring credit sustainability, and fostering economic growth avenues through expanded trade and investment opportunities.

In conclusion, the debt and investment challenges faced by Africa require a comprehensive, collaborative, and multifaceted approach. By embracing partnerships with diverse stakeholders, restructuring existing initiatives, and nurturing transparent, sustainable growth, the G20 can play an important role in securing Africa's future, therefore contributing to a more sustainable world.

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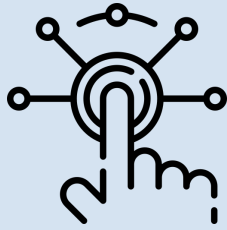
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**OUR COMMON DIGITAL
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Using Data to Advance the 2030 Agenda: Recommendations for the G20

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Abstract

AT THE OUTSET OF ITS G20 PRESIDENCY, India pledged that the principle of 'data for development' (D4D) would be integral to its tenure. Indeed, throughout its presidency, India retained a core focus on issues such as collecting, sharing, and analysing D4D more effectively, and strengthening data-related capacities. These efforts culminated in the unanimously adopted 'G20 High Level Principles on Harnessing Data for Development to Accelerate Progress on the SDGs'. In the context of these developments at the G20, and some of India's recent data initiatives, this essay draws attention to the highly uneven nature of the G20 data landscape, noting that some countries are performing better than others in leveraging data to achieve the SDGs. There are three main obstacles to current D4D efforts: (i) the prevalence of marked data divides between the Global North and South, and within countries; (ii) the difficulties posed by issues of data

privacy, security, interoperability, and sharing; and (iii) the need for greater technical and institutional capacity, particularly to rejuvenate legacy datasets by applying emerging and disruptive technologies (EDTs) and to produce next-generation datasets using EDTs. The essay proposes eight strategic actions that G20 member states could jointly undertake to address these challenges, promote D4D, and advance the 2030 Agenda.

Introduction

In November 2022, on the eve of India's assumption of the G20 presidency, Prime Minister Narendra Modi announced that the principle of data for development (D4D) would be integral to India's tenure (1). The G20 Bali Leaders' Declaration echoed his statement by reaffirming the role of D4D in promoting economic growth and social well-being (2). This approach has steadily gained traction within the G20 over the last nine years, and there is now a broad consensus that quality development data is the "foundation for meaningful policymaking, efficient resource allocation, and effective public service delivery" (3).

The year leading up to the Indian presidency (2022-23) was a watershed for consolidating the country's D4D space. The launch of several game-changing data initiatives, coupled with India's incumbent status as a global digital powerhouse, make the nation's voice an important one in the emerging global discourse on D4D. In May 2022, for instance, India unveiled the National Data and Analytics Platform (NDAP), a public web platform that aggregates and provides access to government datasets from across India's statistical infrastructure (4). The NDAP enables data delivery at scale, while adhering to stringent data-sharing standards, and supports users with tools for analysis and presentation. In the same month, the Indian government released the draft National Data Governance Framework Policy, which seeks to ensure that anonymised and non-personal data from public and private entities can be made available to the Indian research and startup ecosystem. It is expected that access to this database will support the training of AI models, catalyse innovation, and impact development and governance at all levels.

India has also come of age as a leader in using geospatial technologies, or the digital acquisition of data referenced to the earth and its use for modelling and visualisation. Speaking at the UN World Geospatial Information Congress in October 2022, Modi announced that "geospatial technology has been driving inclusion and progress" and described its role as an enabler of development (5). The following month, India released its forward-looking National Geospatial Policy, with a set of milestones to be met by 2035 (6). Also, in November 2022, India introduced the Digital Personal Data Protection Bill, which was a direct precursor of the pioneering Digital Personal Data Protection Act, passed in August 2023 (7).

The legacy of these approaches and ideas has fed directly into the Indian G20 presidency, and D4D has been a central pillar of the deliberations of the G20 Development Working Group (DWG). DWG members have underscored the importance of collecting, storing, and analysing quality data and transforming data sets into digital intelligence that can be leveraged to attain development goals. Other major points of discussion have included the need to boost D4D-related capacities, and to make D4D initiatives inclusive, transparent, and accountable. The consensus forged among G20 representatives on these issues culminated in the unanimous adoption of the G20 High Level Principles on Harnessing Data for Development to Accelerate Progress on the Sustainable Development Goals (SDGs). These principles articulate the G20's agreement to strengthen data-informed approaches to sustainable development, work towards improving data quality and strengthen data infrastructures, help bridge data divides and digital divides; focus on enhancing D4D capacities, and ensure the inclusive use of D4D by setting up responsible data governance frameworks that guide data sharing and deployment, among other measures.

The consideration of data as a digital public good (DPG) is often linked to the discourse on D4D. Building on the UN's identification of open data as a DPG (8), and its broader assertion that data must be harnessed to meet the SDGs (9), the multistakeholder Digital Public Goods Alliance has defined DPGs as "open-source software, open data, open AI models, open standards, and open content that adhere to privacy and other applicable laws and best practices, do no harm by design, and help attain the SDGs" (10). Concomitantly, the Alliance has developed nine indicators and requirements to determine whether or not an entity is a DPG (11). In many cases, datasets may not actually qualify as DPGs—they may not use an approved open license, for instance—but their application and use nonetheless contribute towards development efforts. Figure 1 illustrates a few of the myriad ways in which data—and its agglomeration into large, complex datasets, also known as Big Data—could generate insights that, in turn, could shape concrete on-ground actions to advance the 2030 Agenda.

Figure 1: Potential of Big Data to Address the Sustainable Development Goals



Source: UN's Big Data for Sustainable Development (12)

Impediments to Data Collection and Use

Despite the G20's recognition of D4D as a necessary approach, the international data landscape within the grouping remains highly uneven, with some member countries performing better than others in utilising data for development. In 2021, for example, the World Bank released its Statistical Performance Indicators (SPI) to assess countries' data ecosystems in terms of use, services, products, sources, and infrastructure. The application of the SPIs has indicated significant gaps between countries (including within the G20) in terms of their data collection abilities, alignment with international standards, and data reporting modalities (13). The following paragraphs outline some of the key challenges to executing D4D initiatives:

Data divides and inequalities: There is a marked "data divide" between countries of the Global North and those of the South, and even among different population segments within countries (14). While some of the latter lack access to even basic digital infrastructure, making it difficult to capture data that might benefit them (or for them to access digital data), other target populations often contribute to a 'data deluge' that adversely impacts the quality of insights extracted (15). Moreover, the

development of datasets as DPGs—i.e. in accordance with the stipulated criteria of DPGs (including those of being accessible, complete and well described)—is yet to become a mainstream practice and reach critical mass, at which point the potential flow and usability of data is likely to improve. This is another reason for prevailing data divides between regions and nations (16).

Privacy, security, and interoperability: There are significant disparities in the state of robustness of national data protection regimes (17). Not all G20 member states have sufficiently strong regulatory frameworks and laws governing data privacy and security, which could undermine personal and institutional trust in data-driven initiatives. At the G20, this has also sometimes led to concerns about the feasibility of cross-border data flows, and the notion of ‘data free flow with trust’. Moreover, digital information systems often lack interoperability, leading to data silos that impede the potential data exchanges that could strengthen development actions (18). Estimates from the World Economic Forum suggest that data sharing (including cross-border data transfers) can generate a direct economic benefit of between US\$19 billion to US\$36 billion by 2025 (19). However, data-sharing initiatives continue to face severe roadblocks across economies, including digital risks, personal data breaches, violation of terms on data reuse, and limitations on anonymising personal data (20). Finally, while the advocacy of cross-border data flows by several G7 and G20 countries has helped produce some related policies and processes (21), the lack of data interoperability continues to pose a crucial challenge, and mechanisms to support the pooling of development data within the G20 (for research and policymaking) are yet to be put in place.

Technical expertise and institutional capacities: A recent study has highlighted that emerging and disruptive technologies (EDTs) can generate value by identifying new data, capturing and assessing legacy and greenfield datasets, reducing barriers to data interoperability, aggregation and comparability, and mitigating the risks associated with data breaches, misuse or mis-sharing (22). At the same time, it becomes crucial to address the threats associated with the widespread use of EDTs. For example, big data analytics aided by EDTs significantly add to the scope of deanonymising scrubbed personal and non-personal data (23). Using EDTs to enhance statistical cooperation and mitigate associated risks requires specialised technical expertise. Presently, there is a marked capacity gap among several G20 members in these areas (24). Government and non-government institutions in the G20 developing countries tend to lack the capacities needed to optimise the use of EDTs to collect, process, ethically analyse, and act on D4D. In particular, these are the capacities to (a) power the shift from data to public value intelligence by applying Big Data analytics and AI to legacy datasets, and (b) to build wholly new datasets using EDTs, need to be strengthened.

The Role of the G20

The potential of D4D has been recognised by the G20 leaders since at least 2014. In the Brisbane Action Plan adopted under the 2014 Australian G20 presidency, the leaders committed to “maximise the potential of data and technology to drive growth, create jobs, and improve public services” (25). Since then, the G20 has consistently sought to conceptualise and drive international cooperation on expanding the D4D agenda, while emphasising the need for robust data protection measures. Broadly, the G20’s efforts have focused on helping strengthen data privacy and security, ensuring data availability, quality, and accessibility, and supporting initiatives that use data for sustainable development.

In terms of sectoral interventions, for instance, the G20 adapted the 2009 Data Gaps Initiative (DGI) in 2015 to accommodate the concept of D4D in its second phase (DGI-2) to improve data availability across sectors such as infrastructure, trade, and environmental sustainability (26). Moreover, expanding on the 2016 Blueprint on Innovative Growth and the vision of the G20 Digital Economy Task Force, the 2019 G20 Osaka Leaders’ Declaration drew attention to the need for targeted data-driven programmes across critical sectors such as health, agriculture, climate change and energy, and displacement and migration (27). More recently, in 2020, the G20 also stressed leveraging data to design sustainable cities and promote smart mobility.

The global data landscape had expanded to 59 zettabytes by 2020-21, and the G20 countries are the largest stakeholders in global data production, consumption, and storage (28). Accounting for over two-thirds of the global population, the G20 is the largest bank of data endpoints (29). Additionally, over 69 percent of the global data servers and cloud centres are in the G20 countries (30). Therefore, resource pooling, the use of data, and the creation of development datasets as DPGs by and across the G20 have significant potential for enhancing sustainable development for all. Besides, the G20’s influence on the global economy and over regional and multilateral development banks to offer financial support for expanding data-driven development initiatives could play a critical role in shaping the D4D agenda and accelerating efforts to achieve the SDGs by 2030.

The G20 has recognised that the increased need for data for development and international trade has generated concerns about data privacy, security, and interoperability. Consequently, the G20’s proposal for Data Free Flow with Trust (DFFT) in 2019 under the Osaka Track sought to build consensus around “cross-border data free flow with trust to harness the opportunities of the digital economy” and work towards developing a common data governance framework (31). Subsequently, the Riyadh G20 Leaders’ Declaration (2020) acknowledged the importance of DFFT and cross-border data flows, reaffirmed the role of D4D, and highlighted the need to “address the challenges related to privacy, data protection” (32).

The Rome G20 Leaders' Declaration (2021) endorsed that the G20 shall remain committed to ensuring “privacy, data protection, security and intellectual property rights” of the most vulnerable while enabling DFFT to foster interoperability in the future (33). The G20 has worked to streamline global best practices for managing and mitigating security risks associated with D4D and adopted high-level principles for specific use cases. In addition, the G20 Leaders' Summit in Bali and the G20 Finance Ministers and Central Bank Governors (FMCBGs) meeting endorsed the need for operational improvements in access to the private sector and administrative data and data sharing across borders enabled by the G20 DFFT framework (34).

India, in particular, has developed expertise in data-use efficiency for sustainable development and launched several transformative D4D initiatives in the run-up to its G20 presidency. Throughout the presidency, D4D was a core focus of the deliberations of the DWG, and these discussions became the basis of the pathbreaking ‘G20 High Level Principles on Harnessing D4D’. Given that the present G20 Troika is composed entirely of developing nations, it is a particularly consequential moment for India to help mainstream the idea of D4D into the G20 digital agenda and to actively promote Global South-focused collaborations in the space.

An Eight-Point Agenda for the G20

Given the prevalence of data divides within and among countries, and existing challenges to the generation and sharing of development data, the following eight actions may be taken by G20 member states.

Evolve a common minimum framework for G20 member states to protect and secure development data

The UN has emphasised the need to collect and analyse disaggregated data and to “generate more data relevant to the SDGs” (35). To build trust and secure the support of institutions and individuals with respect to data collection and processing, G20 member states could co-design a common minimum framework (CMF) for protecting development data. The framework should encourage four tiers of action. First, the G20 nations must evaluate whether their data protection laws and provisions adequately address the requirements of D4D, and, if not, consider amendments or the inclusion of policy guidelines to govern the management of development data. Second, G20 nations must create guidelines to strengthen the roles of institutional data controllers (who ensure the compliance of third-party data processors), and to enhance the capacities of data processors to anonymise datasets across the data processing ecosystem (36).

Third, cybersecurity measures must be strengthened to ensure data security and confidentiality, and a list of essential security measures must be drawn up for stakeholders. Fourth, knowledge about data protection and security must be mainstreamed into development education and continuous learning programmes for stakeholders. The creation and oversight of the CMF could be led jointly by the G20's DWG and Digital Economy Working Group (DEWG).

Facilitate cross-border flows of development data to enable research, innovation, and policymaking

There is growing recognition within the G20 that cross-border data flows and DFFT could greatly benefit international development. In thematic areas of the 2030 Agenda where development impacts are typically transnational or regional—including climate change and action, health, migration, energy and food security, and the sustainable use of oceans, seas, and terrestrial ecosystems—pooling data could support research and policymaking in multiple ways. Several complementary approaches could be operationalised by the G20.

For instance, member states could craft model contractual clauses to be put in place between entities seeking to exchange development data across borders. Second, the G20 countries could build on ongoing standard-setting efforts with the G7 and G20, and work towards creating global standards for particular classes of data (37). Third, they could work collaboratively to develop arrangements that promote interoperability among the privacy instruments of member states. Indeed, this could be an initial step towards creating a framework to harmonise data governance among the G20 nations that would enable the free flow of development data (as well as other kinds of data) between them (38). Finally, the G20 could set up data-sharing platforms that allow countries to share specific types of development data (such as climate or health data) in a secure and controlled environment.

Develop an actionable manifesto to promote the use of open data

The UN, the World Economic Forum, and a wide range of international bodies and national governments now recognise the importance of open data for steering development interventions. As the Digital Public Goods Alliance (DPGA) observes, “By using open data, societies can find new ways to foster economic and human development integral to the attainment of the SDGs” (39). The G20 could consider launching a new engagement group called the Data20 (D20), consisting of data scientists, D4D practitioners, and tech policymakers. The D20 would formally collaborate with institutions like the DPGA, UN Global Pulse and Data.org to develop a G20 Open Data Manifesto.

The manifesto will aim to outline a roadmap for promoting the use of open data across the G20 by raising awareness about its benefits, building the technical capacities required to develop open datasets as certified DPGs, creating the necessary digital infrastructures to make open datasets publicly accessible, and facilitating knowledge transfers from lighthouse projects such as India's Open Government Data (OGD) platform and the EU's Open Data Portal. The D20 will act as the nodal body steering the implementation of the Open Data Manifesto.

Create a G20 repository for sharing open development datasets

The G20 could jointly build and maintain a repository of open development datasets sourced from member states. As a first step, G20 member states should be encouraged and supported to build national-level repositories of development data, such as India's OGD Platform, the NDAP, and the massive platform for anonymised datasets soon to be made available under the National Data Governance Framework Policy (40). As a second step, datasets from member states' repositories should be made accessible through or hosted within a central G20 Institutional Digital Repository (GIDR). The GIDR would be a valuable tool for enabling access to development data across borders and promoting the use of D4D by making datasets openly available to the research, development, startup, and AI communities.

Rejuvenate legacy datasets to generate public value intelligence

Legacy datasets such as OGD and other conventional development datasets residing in institutional repositories are built using various approaches and are generally considered reliable and scalable. Using these legacy datasets to generate public value intelligence by applying data analytics and other tools could improve service delivery across sectors. Under the aegis of the DEWG, G20 member states could facilitate the creation of a consortium (including tech companies and government departments as members). The consortium will work towards identifying datasets that, if processed creatively, could unlock new opportunities for sustainable development.

The consortium will also act as a bridge to Startup20 (a new G20 engagement group recently launched during the Indian presidency) (41), providing access to the G20's startup community. The latter could be a crucial ally for developing a new generation of D4D applications and using EDTs to analyse and use legacy datasets in new ways. The consortium should also work towards improving data literacy by helping evolve newer kinds of data training and education programs in collaboration with the G20's Youth20 engagement group.

Invest in creating new datasets by harnessing emerging and disruptive technologies

The G20 should strive to expand the open-data landscape by creating greenfield datasets using EDTs. Countries like India have already started to rely on EDTs to obtain valuable real-time data across sectors such as agriculture and health. For example, Fasal, a precision AI-powered platform capturing land data, has helped farmers across India, particularly in Karnataka, Madhya Pradesh, and Maharashtra, bring down their crop disease management and irrigation costs by almost 50 percent (42). AI-powered drones are changing the agri-tech landscape—aiding sanitation, surveillance, and cost reductions simultaneously. A global research report by PwC estimates that EDTs will enable 80 percent of all data to be geospatial by 2025, generating a global economic impact of approximately US\$ 11.1 trillion (43). In consonance with the G20 Principles for Trustworthy AI, the G20 DEWG could prepare a document highlighting the best practices and specific use cases of EDTs to create greenfield datasets.

As the third phase of the G20 Data Gaps Initiative (DGI-3) ventures into newer domains of climate change-related and household distributional information data gaps, leveraging the true potential of the EDTs will be crucial (44). As a core component of the DGI-3 and for preserving continuity in subsequent phases, the G20 should collaborate to build an International Network for the Creation of Greenfield Databases, consisting of “data institutes” that support the production and storage of these new datasets and enable their efficient processing and analysis. The datasets produced by these data institutes should, eventually, feed into the central GIDR (proposed earlier). This would necessitate supporting member countries and other developing nations in their endeavour to extract and generate value from existing and new datasets, in line with Principle 4 of the G20 High Level Principles on Harnessing D4D (45).

Establish and coordinate funding mechanisms to build robust data ecosystems

The G20 has identified the need for coordinating financing and technology assistance in the G20 High Level Principles referred to above (46). To achieve this, countries can focus on four priority areas to unlock funding for a robust data ecosystem. First, at the national level, the G20 should focus on public sector investments or incentivise private sector participation in setting up critical data infrastructures. Second, the G20 can also foster innovation by investing in research and development, providing funding for startups and small businesses, and creating policies that promote the development and adoption of emerging technologies to create and maintain robust data ecosystems. Third, the G20 can develop a Menu of Funding Mechanisms for Data Ecosystems that highlight existing grants, loans, and tax incentives from across the G20 that are in operation or can be tailored to encourage investment in new datasets built from

EDTs. Fourth, at the apex, the G20 members can work together to conceptualise and identify mechanisms to sustain a Global Data Innovation Fund that will complement the Data Gaps Initiative (DGI-3). These strategies could help reduce the financial risks associated with such investments and promote innovation and growth.

Convene an annual G20 stocktaking conference to develop and measure progress against D4D targets

The G20 countries should hold an annual stocktaking conference to set targets, create roadmaps, and assess progress against the goals members set themselves with respect to their D4D infrastructures and interventions. The conference could take place on the sidelines of the annual G20 Leaders' Summit and can potentially establish itself as a premier international convention on D4D.

Future Directions

If the use of D4D is to become a mainstream developmental approach across the G20, several joint actions—such as those proposed in this essay—will need to be operationalised. Within the G20, there is already considerable interest and momentum around D4D, consensus about its benefits, and several ongoing initiatives in the space. The authors' recommendations build on these trends. To be sure, political intent will be crucial for actualising the suggested interventions. It is also important to perceive the existing data capabilities of the Global North, and tech innovations and scalable solutions of emerging economies as complementary strengths. That will likely make for more organic international cooperation across the Global North and South, and a stronger collective effort to achieve the 2030 Agenda.

India's institutionalisation of the 'G20 High-Level Principles on Harnessing Data for Development to Accelerate Progress on the SDGs' towards the conclusion of its presidency has been a landmark moment in the group's history. It provides a roadmap for action and a platform upon which the G20 member states can continue to build. As India hands over the leadership of the G20 to Brazil, there is every indication that D4D will remain a major priority. Brazilian President Luiz Inacio Lula da Silva has already announced "sustainable development" as one of the three key pillars of Brazil's upcoming tenure (47), and international voices have suggested that the establishment of "a new gold standard for data" during the Indian presidency will lead to a continued focus on D4D by Brazil and its partners at the IBSA (India, Brazil, South Africa) Forum, and at the G20 itself. This concerted focus could eventually go a long way towards helping attain global development goals (48).

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Service-Society Fit: A Governmental Framework for Designing Public Interest Technology

Arasy Pradana

Abstract

WITH USERS SPENDING AN AVERAGE OF SIX HOURS and 43 minutes a day online (1), introducing digital services seems a sensible approach to governance. So far, 154 countries have established a dedicated government body to manage their digitalisation efforts by adopting technology for delivering services (2). A study by economist Abdul Akim Wandaogo between 2006 and 2016 showed how the digital approach has increased the effectiveness of government services, especially in the developed world (3).

However, many governments—including those in the G20 and especially in developing nations (4)—are trapped in the ‘net-centric solutionism’ pit. The term was coined by tech-policy writer Evgeny Morozov in 2013, to identify a phenomenon where ‘innovators’

attempt to solve every problem using internet-based technology (5). Governments are competing to introduce technological solutions, mostly through digital applications (apps). In Indonesia, for example, as its own Ministry of Finance has admitted, at least 24,000 apps developed by different government offices encounter multiple fallacies (6). Many apps are poorly maintained, as their development is often treated as a time-bound project in collaboration with third parties and are not followed up with establishing a dedicated maintenance organisation. Many also lack a significant number of users and therefore fail to fulfil their main purpose. Such apps are a waste of public money.

To avoid such a problem from recurring, the G20 should ignite a rule-of-thumb for government innovation, especially in building technological solutions for government service and public interest. A policy reform may maximise the return on investment from digitalisation (7). This rule-of-thumb would serve to reduce unnecessary government spending in developing digital solutions by ensuring that the end-product meets public needs.

Conceptual Framework: Digitalisation, Government Innovation, and Public Interest Technology

While the meaning of ‘innovation’ in recent days has become mutually exclusive with the word ‘digitalisation’, governments worldwide are harnessing digital forms of public interest technologies to improve efficiency, citizen engagement, transparency, and service delivery (8). However, the exploration of digital government and technology development for the public requires careful consideration of the ethical, institutional, legal, technical, and societal challenges (9). This ensures the so-called innovation remain accountable, budget-wise, and in line with the public interest.

According to Sudrajat and Andhika, government innovation initially focuses on innovative action through various instruments that lead to the simplification of action towards quality public services (10). Such innovation thus covers a wide range of activities, from administrative reform and policy changes to introduction of new tools and platforms. Lewis et al. have identified several factors that influence a government’s capacity to deliver innovations, including the drivers (subdivided into structures, processes, and contextual factors), networking, and leadership (11).

Digitalisation then reshapes modern governance, as public officials discover new ways to operate, communicate, and deliver services with the help of technology. The Gartner Glossary defines ‘digitalisation’ as “the use of digital technologies to change a business model and provide new revenue and value-producing opportunities... the process of moving to a digital business” (12). This includes adopting technologies such as cloud computing, big data analytics, artificial intelligence (AI), and the Internet of Things (IoT).

The convergence of digitalisation and government innovation represents a dynamic interaction that is ideally manifested through the following aspects:

- **Digital culture:** Digitalisation acts as an enabler for government innovation by providing a technological base that facilitates the discovery and implementation of new ideas. Artificial intelligence (AI), data analytics, and blockchain enable governments to optimise data-driven policymaking. However, organisations need to also recognise the complexities that often arise following the adoption of a new technology. They should have the right mindset and capacity to tackle them.
- **Data-driven policymaking:** Digitalisation generates large amounts of data that can provide valuable insights for decision-makers (13). Advanced analytics enables governments to identify areas for improvement that more accurately address citizens' pain points (14).
- **Collaborative ecosystems:** Digitalisation encourages cross-partnerships by its design, by fostering an environment that facilitates multi-stakeholder collaboration and knowledge sharing between government, academia, industry, and civil society (15).
- **Citizen-centric design:** To some extent, digitalisation creates common ground for more democratic and responsive government practice. Innovation driven by technology should abandon the traditional approach to policymaking and service delivery, which is often based on top-down presumptions by high-ranking officials without strong validation of citizens' problems. By shifting to a new paradigm and leveraging interaction through multiple channels, governments should gather real-time feedback and bring about improvements in their bureaucracy (16).

Digitalisation combined with government innovation has immense promises, but also poses challenges. Issues such as data privacy, cyber security threats, and the digital divide need to be addressed to ensure that innovative efforts deliver positive results (17). Another problem is that many governments fail to plan their digital innovations properly, with their failed solutions costing the public exchequer. Certain exercises in digitalisation and public interest technology development by G20 members can be replicated by other governments to overcome these obstacles. Adopting best practices fits the principle behind the concept of 'public interest technology' itself, which according to Schank and McGuinness, contains "the application of design, data, and delivery to advance the public interest and promote the public good in the digital age" (18).

The G20's Role in Guiding Responsible Public Interest Technology

Many G20 countries have initiated innovations, including in their bureaucracy, that were later adopted by other nations. In 2011, for instance, the UK became one of the first G20 members to establish a dedicated agency, Government Digital Service (GDS), to handle digital transformation. The United States (US) has also established a body with a similar role, called 18F. Meanwhile, India pioneered the world's largest biometric identity system that has reached citizens in the remotest areas.

Almost all G20 members have now cemented their positions in Category A of the GovTech Maturity Index (19). This index gauges the ability to support core government systems, enhance service delivery, mainstream citizen engagement, and foster government technology enablers (20). Most members seem to excel in the digital transformation process, despite net-centric solutionism still plaguing some of their government agencies.

To avoid net-centric solutionism, the G20 introduced the Digital Government Principles in 2018, which encourage the application of digital government standards based on the principles of openness, transparency, and consensus. By combining these principles with the experiences and best practices of its members, G20 countries can move forward to provide a more practical framework in digitising government service. This framework can assist both G20 members and non-members to adopt digitalisation and develop public interest technology in a sensible manner. It may also help ensure that public expenditure is allocated effectively and delivers actual impacts.

The G20 Digital Government Principles acknowledge the importance of providing enabling frameworks for a government to seize new opportunities. This can be done through leveraging industry- and market-led standards. The private sector, which is more cost-sensitive and takes higher risks, could offer insights, and set benchmarks on keeping innovation alive and ensuring efficiency even with budget constraints.

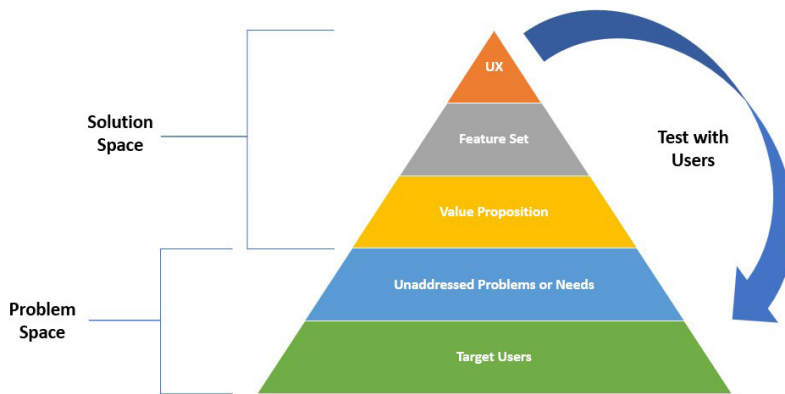
In the start-up economy, 'product-market fit' is broadly adopted as a framework while planning a new product to ensure that its development stays cost-efficient and does not surpass the budget cap. It requires strong identification with users and their unaddressed needs or problems to avoid jumping to a premature solution. A start-up can create new values for its products.

This essay focuses on further modification of the product-market fit framework to put the G20 Digital Government Principles into practice. As the government mostly deals with services as their end-product, barely looking at profit but focusing instead on society's interests, the concept of the product-market fit may need to be modified to suit 'the service-society fit' framework.

Proposed Framework: The Service-Society Fit

The service-society fit framework can be implemented through a model called the ‘service-society fit pyramid’—a modification of ‘the product-market fit pyramid’ conceived by ‘lean product’ guru Dan Olsen (21). In governmental and public interest technology development, the concept of ‘product’ and ‘market’ can be modified to ‘service’ and ‘society’ to emphasise the nature of government as a service provider of public goods, its central objective being to serve society.

Figure 1: Service-Society Fit Pyramid



Source: Olsen (22), modified.

As indicated in Figure 1, the service development process is divided into two spaces—the ‘problem’ space and the ‘solution’ space. The problem space consists of a strong identification with users’ needs. This is especially required to address the inefficiency behind user interactions with government services and create room for improvement.

Preconditioning the service-society fit by institutionalising a digital culture

As a policy framework in digitalising government services, the service-society fit should be preceded by the establishment of a digital culture within the government organisation. There are three factors that can undermine an organisation’s efforts to digitalise—the external landscape, the internal landscape, and limited skillsets (23). Organisations are often unable to comprehend the complex nature of digital transformation, including the fundamental changes required in organisational culture. They may also lack the ability to adapt to rapid changes in users’ needs. Digitalisation also requires a dedicated team with different skillsets, with the ability to quickly align with changes, and take up tasks

outside the conventional scope. Thus, institutionalising digitalisation needs political support, leadership, organisation, a well-skilled team, and clear purpose (24).

The situation becomes more complex in a governmental setting. Governments are bound by an established culture, which often poses obstacles (25). This culture may be contrary to many guidelines of digitalisation in the private sector, which promotes a 'lean framework' in developing a solution, product, or service. An organisation built on a lean framework is based on a feedback-loop of developing a product, measuring what matters, and learning from the insights. Instead of shipping a fully functional solution with perfect features, a lean framework encourages the introduction of the most viable product (MVP), which tests the initial hypothesis on which the product was created. As it receives feedback from users, the MVP is improved. This loop happens in a relatively short time, and improvements are made over a two-week development process, often called a 'sprint' (26).

A conventional government body may struggle to adapt to such a pace of working. Therefore, countries often create a separate body, responsible for managing the digitalisation process for the entire government or for a particular department, with greater flexibility in its business processes and compliance with standard digitalisation procedures (27). It is not surprising that such organisations adopt the lean framework. This also includes some G20 members.

The first benchmark of such an organisation was set by the UK, in the form of the GDS, which started as a small team in 2011. At that time, the UK government was dealing with over 2,000 different websites, and one of its principles while designing a technological solution involved starting with a small solution or a pilot that worked (28). It was similar to the concept of MVP in the lean framework. Another example is 18F, the digital service agency within the General Service Administration of the US government. It has adopted the lean framework while delivering digital services and technological solutions for the government.

If a government has limited ability to quickly adapt to the flexible nature of digitalisation, it may partner with the private or state-owned enterprises with a wealth portfolio in handling digital transformation. Such a partnership, however, will be different from the usual third-party vendors that a government engages for a limited time to build an app. This partnership should be designed to fully operate the complete lean feedback-loop, wherein the external agency is responsible for measuring the relevant matrix, iterating, and improving the solution it builds. This approach has been adopted by the Indonesian Ministry of Education and Culture, which is partnering with Telkom Indonesia, the country's largest telecommunications provider owned by the government, to create GovTech Edu and ship digital solutions to problems in Indonesia's educational system.

Table 1: Regular Third-Party App Vendors vs. Indonesia’s GovTech Edu Model

	Third-Party Vendor	Indonesia’s GovTech Edu Model
Organisational Model	Mostly a private entity or an individual consultant, hired through the government procurement process	A business department in a state-owned enterprise that works closely with Ministry of Education officials
Project Lifetime	Time-bound and project-based	Continuous
Output	Apps-only	Apps and their iteration cycle. The organisation is not only responsible for building apps but must also deliver the apps to users and gather data and insights for further development.

Such an approach to establishing a digital culture within the limits of bureaucracy is the first requirement for successful digitalisation. It precedes creating public interest in the technology itself.

Adopting the service-society fit as the main framework in developing public interest technology

In many cases of public interest technology development, the bureaucracy jumps to a solution and creates an app for it before clearly comprehending what their services really need. This solution is often an educated guess by government officials and may be implemented by individuals who lack digital skills, working within an organisation with gaps in its digital culture. It is, therefore, not surprising if the solution fails, since it does not reflect user needs nor is it maintained properly.

Therefore, designing a digital solution in the service-society framework should always start by stating the problem, which would allow the digital transformation team to work together to discuss who future users will be and the problem hypothesis. A good solution may not be the universal answer to every problem. Instead, the right solution is found by identifying and segmenting the users who will most benefit. It helps the team focus and prioritise what matters. After the user’s persona is created, the process moves to identifying the user’s underserved needs, especially based on the formulated hypothesis (29). This identification process may be conducted through quantitative and qualitative research methods, such as surveys, in-depth interviews, focus group discussions, and ethnography. In 18F, this process is called ‘Path Analysis’, which aims to enable a basis for solution design (30).

Once the organisation gains insights from this process, it can enter the solution space. Here it should create a value proposition that tries to address users' underserved needs. After identifying users' problems and needs, the organisation must decide which one to address by considering its capability as well as the most important need for users. This should shape the product design, before being shipped to users for the iteration process. This process should ideally have room for public participation, especially that of impacted stakeholders.

In practice, this whole framework is often operated by a dedicated product manager. But such a role is often missing in existing government structures. An organisation entering the digitalisation process without the capacity to build a public interest technology should hire someone with adequate skillsets for the product manager role.

Implementing citizen-centric design as the interface of the service-society fit

On the government side, a proper service-society fit can help save a lot of money, as shown by the UK's GDS. By introducing service designs by GDS that address actual user problems, the UK government claimed it was able to save over GBP 4 billion in expenses, within four years of the GDS being set up in 2011 (31). However, cost-effectiveness is not the only priority of good service design; it also helps the government offer actual solutions for what the public needs. To follow the path of the service-society fit, the implementing government should embrace public participation at almost every step. In the other words, the service-society fit framework is manifested through citizen-centric design.

There are several indicators of designs that meet citizens' needs. They should be easy to understand, simple, and meet a clear user need (32). Many G20 members have received praises for their efforts in implementing these citizen-centric design maxims in public interest technology. Argentina introduced a platform called Consulta Publica, which promotes public participation in the policymaking process, through which the public can start a debate with governmental stakeholders and increase civic engagement (33).

Another benchmark in delivering a simple and effective solution is India's Unified Mobile Application for New-Age Governance (UMANG). This app stands as the single entry-point for 2,000 of India's central government digital services. It addresses the problem of too many apps, which often arises in governments. The unification of all digital services into one super-app can give the citizen a seamless experience and avoid further confusion in accessing government services.

Promoting a citizen-centric design also means that the word ‘technology,’ as a tool for improving government services for the public, cannot always be interpreted as ‘digital’. The US Citizenship and Immigration Service’s (USCIS) effort, from 2005 to 2016, to digitise its immigration system is one such example. After spending more than 11 years and USD 1 billion, the project had to be restarted (34). Sometimes, the end-product burdens the operation unit with new tasks rather than simplifying their jobs (35). Therefore, it is important to comprehend the business process behind a service before trying to transform the service; sometimes, the solution may be improvement of existing procedures or a reduction in unnecessary paperwork.

Conclusion and Recommendations for the G20

The G20, through its Digital Government Principles has acknowledged and emphasised the importance of creating responsible innovation in government services by learning from the private sector. However, this still needs to be implemented more practically. The service-society fit aims to address this challenge by ensuring that the digital technology developed by a bureaucracy goes through a strong validation process to meet public needs. Its citizen-centric nature also creates room for contextualisation in different bureaucracies.

The next step is developing the framework into a concrete policy or government practice. Therefore, the G20 should actively promote the service-society fit framework to its members and non-members. The recent G20 Digital Economy Working Group meeting under India’s presidency has to try to deliver a general framework for systems of digital public infrastructure, with a similar motivation to the service-society fit framework. Under its collaborative principle, the framework emphasises “the development of user-centric solutions and facilitating widespread and sustained adoption and allowing innovators to develop new services.”

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Building an Information-Sharing Mechanism to Boost Regulatory Frameworks on Cross-Border Data Flows

Pramila Crivelli | Rolando Avendano | Jong Woo Kang

Abstract

DIGITAL TRADE, INCLUDING THE CROSS-BORDER SUPPLY of services, can be a game changer for developing G20 economies, which have yet to seize the full momentum of accelerating digitalisation. As different governance approaches to cross-border data flows (CBDF) co-exist, the significant information gap and the growing divergence in regulatory frameworks remain important obstacles to digital trade.

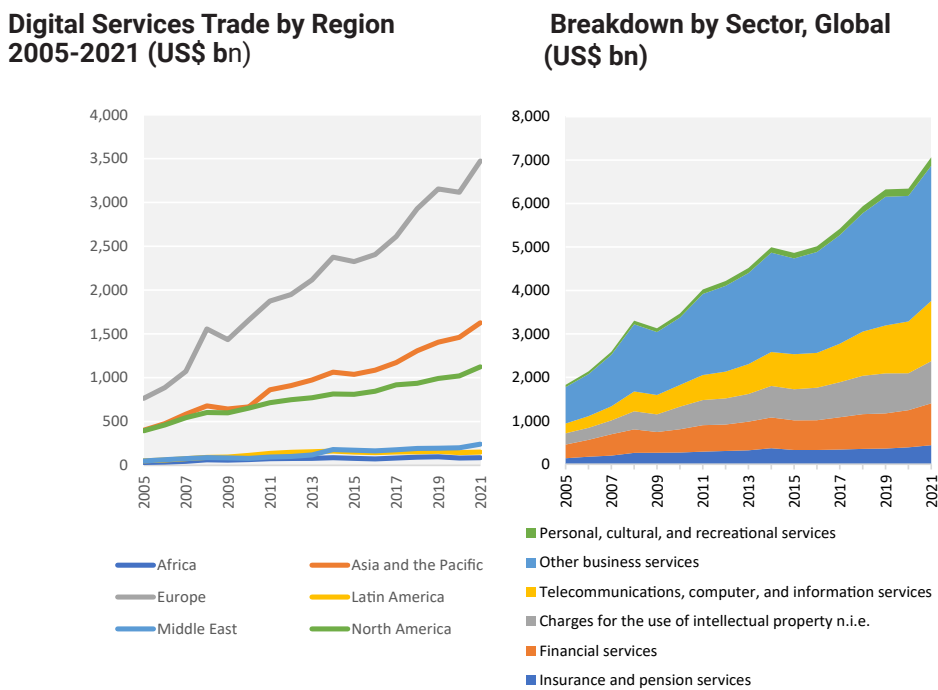
This essay examines existing national and international regulatory frameworks and recommends that the G20 economies work on the design and establishment of a centralised Digital Regulation and Information Repository (DRIR) comprising information on regulatory arrangements and institutional frameworks governing CBDF in different jurisdictions. A DRIR will not only enhance transparency and information

sharing but serve as an avenue to build consensus towards a successful and more inclusive regulatory framework. Further, it can be a valuable tool for future trade and digital agreements negotiations, and inform the economies of necessary policy and regulatory reforms.

Introduction

Digitalisation has emerged as a critical driver of high-quality economic growth in the post-pandemic world (1). Amid overlapping geopolitical risks and economic uncertainties, adopting digital technologies can help increase global output and efficiency by fostering the development of new products and more resilient production processes, while increasing the accessibility and affordability of goods and services worldwide. The widespread use of these technologies, such as e-commerce platforms, social media, and cloud computing, has enabled firms to reach a global marketplace and has facilitated the cross-border exchange of digital products and services (2). The ability to move data seamlessly across borders underpins the development of digital trade, particularly trade in digital services (3),(4) such as online education, telemedicine, and software development. Data flows are critical to enabling firms to access global markets, collaborate with partners and suppliers, and offer customised services to customers worldwide.

Figure 1: Trends in Digital Services Trade (2005-2021)



Source: Computed from UNCTADStat (5).

Digital services trade, which encompasses all internationally traded services that are digitally ordered or delivered, is growing significantly (6),(7). Between 2005 and 2021, trade in digital services globally almost quadrupled, rising from US\$1.8 trillion to US\$7.0 trillion (see Figure 1). Despite the pandemic, digital services trade demonstrated resilience, with a robust 11.4 percent global rebound in 2021. Europe, Asia, and the Pacific account for nearly 80 percent of the global digital services trade.

The rapidly increasing relevance of digital trade has led to a growing interest in making trade agreements embrace the digital agenda. Since 2000, more than 350 signed and in-force preferential trade agreements feature e-commerce chapters or provisions, and around 80 of these agreements are in Asia and the Pacific (as of 2022) (8). However, data flow restrictions are high and more prevalent in Asia (9). The proportion of data localisation measures by Asian economies is larger than the rest of the world, representing a share of around 70 percent. As for local storage requirements, Asia's share is relatively small. The proportion of conditional flow regimes in Asia is higher but remains modest compared to Europe and Latin America (10). Empirical studies show that data restrictions negatively impact imports of data-intensive services (11), and inhibit firms' ability to innovate (12). The cost of data flow prohibitions is particularly high for other business and telecommunication services (13). Data localisation and similar restrictive measures that discriminate against foreign suppliers of data and downstream goods and services providers were found to significantly undermine competitiveness, domestic output, and welfare gains from trade (14),(15),(16). Another layer of complexity is the heterogeneous nature of governance schemes and legal and regulatory environments across countries. The fragmentation of domestic regulations on data flows, the lack of public information on national institutional mechanisms (such as the division of labour across line and support ministries and coordination), and uncertainty about practices for the application of digital trade rules constitute major obstacles to the development and adoption of consistent interoperable digital standards (17).

Currently, data collection efforts by multilateral organisations and academic institutions are geared towards identifying shared interests in digital trade issues (for instance, the Digital Trade Inventory), mapping domestic regulations (such as the Digital Trade Integration Database), and culling digital trade-related legal provisions subsumed in trade agreements (the Trade Agreements Provisions on Electronic-commerce and Data, or TAPED, database).

A review of current initiatives monitoring cross-border data flow regulations

Several initiatives are now providing more granular information on digital regulations, including CBDF, improving to a great extent policymakers' understanding of the digital

regulatory landscape (18),(19),(20). Three major initiatives in this regard are presented in Table 1.

Table 1: Overview of Open-Access Databases on Digital Trade Measures

	Digital Trade Inventory	Digital Trade Integration Database	Trade Agreements Provisions on Electronic-commerce and Data (TAPED)
Host	Organisation for Economic Co-operation and Development	European University Institute	University of Lucerne
Release date	Up to date as of October 2020	October 2022	July 2021 (Updated November 2022)
Coverage	163 WTO members, 25 WTO observers, and 4 non-observers	100 countries	Over 370 preferential trade agreements concluded since 2000
Measures	12 broad policy areas, and 27 specific areas	12 pillars with a total of 65 indicators	5 pillars with a total of 114 commitments

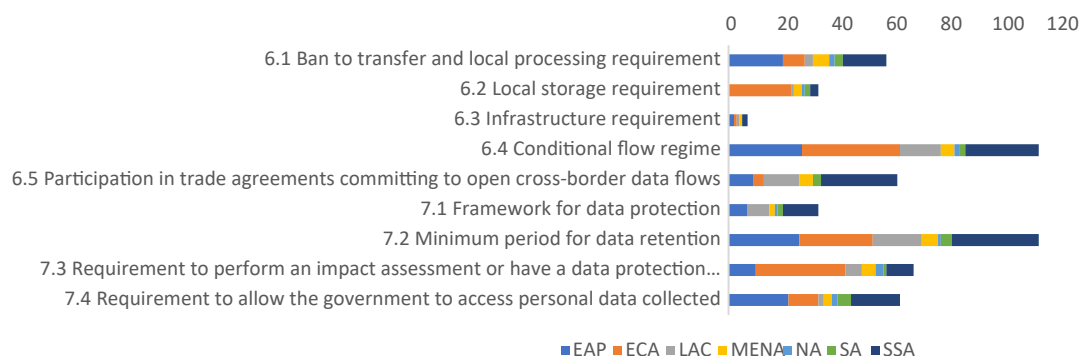
The OECD's Digital Trade Inventory describes a range of rules, principles, and standards on digital trade for areas complementary to the WTO (21). On the flow of information, the inventory tracks measures for cross-border transfer of information by electronic means, and local storage requirements, such as the location of computing facilities and the location of financial computing facilities. It also includes information on plurilateral agreements to foster data flows and ensure data privacy, including regional trade agreements containing provisions on CBDF and local storage requirements (22).

TAPED traces developments in digital trade governance (23). In the area of data flows, it maps information in the e-commerce/digital trade chapter (and outside dedicated chapters) covering provisions on the free movement of data, mechanisms to address data flows barriers, the banning or limiting of data localisation requirements, and ongoing discussions on the free flow of data. Finally, TAPED maps any reference of data flows in the telecommunications, audiovisual, and financial services chapter/provisions.

The Digital Trade Integration Database is structured into 12 pillars, with a total of 65 indicators observed across 100 countries providing information on policies affecting digital trade integration (24). Indicators on data flows are grouped into two pillars—cross-border data policies, and domestic data policies. The former includes bans on transfers, and local processing requirements, local storage requirements, infrastructure requirements, conditional flow regimes, and participation in trade agreements committing to open CBDF. Domestic data policies include frameworks for data protection, existence of a minimum period for data retention, requirements to perform impact assessments, requirements to engage data protection officers, and policies that allow the government to access personal data collected.

Small, open, and services-oriented economies generally show a more favourable policy environment to regional and global integration through freer data flows. Large economies, on the other hand, are more restrictive (25),(26). Rules on the storage, use, and transfer of data, content access, and domestic data processing show lower levels of integration and higher heterogeneity in large economies.

Figure 2: Digital Trade Measures Concerning Data Flows, by Geographical Region of Implementing Country



Note: Geographical categories follow the classifications as identified in the Digital Trade Integration Database. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and Caribbean, MENA = Middle East and Northern Africa, NA = North America, SA = South Asia, SSA = Sub-Saharan Africa.

Source: Computed from the Digital Trade Integration Database, accessed 4 April 2023.

Regionally, economies from Sub-Saharan Africa implement 27 percent of all data flow measures covered in the dataset, closely followed by economies in Europe and Central Asia (26 percent) and East Asia and the Pacific (22 percent) (see Figure 2). Measures pertaining to participation in trade agreements committing to open CBDF (Indicator 6.5), framework for data protection (Indicator 7.1), and minimum period for data retention (Indicator 7.2) are mostly implemented by Sub-Saharan African economies. On the other hand, 70 percent of measures on local storage requirements (Indicator 6.2) and close to 50 percent of measures on requirements to perform an impact assessment

or have a data protection officer (Indicator 7.3) are from European and Central Asian economies. East Asian and the Pacific economies have the most registered measures that ban transfers and require local processing (Indicator 6.1). The same economies also show a high number of measures allowing their governments to access personal data collected (Indicator 7.4).

International commitments through agreements and treaties: The case of the RCEP Agreement

With the Regional Comprehensive Economic Partnership (RCEP) taking effect on 1 January 2022, provisions on ecommerce seeking to promote electronic commerce among member economies also came into force, aiming to build an ecosystem of trust in the use of e-commerce and enhance cooperation among stakeholders for its development (27). This includes the transmission of data, information, and digital products over the internet or over private electronic networks. The TAPED database allows for a deeper assessment of digital trade commitments in preferential and regional trade agreements.

Table 2: RCEP Commitments Concerning Data Fows

Number	Data-dedicated provisions	Commitments	
		Soft	Hard
Data protection			
2.1.1	Does the agreement... include provisions on data protection?	✓	
2.1.2	...include provisions on data protection with no qualifications?	✓	
2.1.3	...include provisions on data protection according to domestic law?		✓
2.1.4	...include provisions on data protection recognising certain key principles?	No commitment	
2.1.5	...include provisions on data protection recognising certain international standards?		✓
2.1.6	...include provisions on data protection as a least restrictive measure?	No commitment	
Data flows in e-commerce/digital trade chapters			
2.2.1	Does the e-commerce/digital trade chapter...include a provision on the free movement of data?	✓	
2.2.2	...contain a mechanism to address barriers to data flows?	No commitment	
2.2.3	...contain a provision banning or limiting data localisation requirements?		✓
2.2.4	Does the agreement contain a provision on a future discussion/provisions or agreement on the free flow of data?	✓	
Data flows outside e-commerce/digital trade chapters			
2.3.1	Does the agreement... include a provision on the free movement of data outside the dedicated e-commerce/digital trade chapter?		✓
2.3.2	...include a mechanism to address barriers to data flows outside the dedicated e-commerce/digital trade chapter?	No commitment	
2.3.3	...include a provision banning or limiting data localisation requirements outside the dedicated ecommerce/digital trade chapter?		✓

2.3.4	...contain a provision on a future discussion/provisions or agreement on the free flow of data outside the dedicated ecommerce/digital trade chapter?	n/a
Reference to data flows or data transmission in service chapters/sections		
2.4.1	Is there any reference to the transfer of data or data flows...in the telecommunications chapter/provisions?	No commitment
2.4.2	...in computer and related services chapter/provisions?	No commitment
2.4.3	...in audiovisual chapter/provisions?	No commitment
2.4.4	Is there any reference to the transfer of data or data flows in the financial services chapter/provisions?	✓
Data and electronic government		
2.5.1	Does the agreement include... provisions on e-government?	No commitment
2.5.2	...a provision on open government data or open data?	No commitment
Data innovation		
2.6.1	Does the agreement contain a provision referring to data innovation, allowing data to be shared and reused?	No commitment

Source: TAPED, November 2022 version.

The RCEP agreement comprises commitments pertaining to data protection, including binding commitments based on domestic laws and international standards (see Table 2) (28). The agreement also features commitments related to limiting data localisation requirements (29). Annex 8A on ‘Financial Services’ and Article 9 on ‘Transfers of Information and Processing of Information’ enshrine commitments to free movement of data, while Article 12.14 on ‘Location of Computing Facilities’ prohibits any party from requiring a covered person to use or locate computing facilities in that party’s territory (30). On the other hand, analysis from TAPED reveals the absence of provisions on enabling mechanisms to address barriers to data flows, e-government and open government data, and data innovation.

The Digital Trade Inventory can complement the analysis by providing information on other international instruments tackling digital trade commitments, including regional initiatives concerning data flows. The Asia-Pacific Economic Cooperation (APEC) Privacy Framework enlists cross-border privacy and cross-border transfer mechanisms in Sections III and IV, which recognise the importance of protecting privacy while maintaining the free flow of personal information across borders. In addition, APEC member economies have developed the Cross-Border Privacy Rules System, which provides “a means for organizations to transfer personal information across borders in a manner in which individuals may trust that the privacy of their personal information is protected” (31). The Association of Southeast Asian Nations (ASEAN) Framework on Personal Data Protection, on the other hand, stipulates obtaining the consent of the individual for the overseas transfer of personal data or taking reasonable steps to ensure that the receiving organisation will protect the personal data consistently (32). More recently, the ASEAN Agreement on Electronic Commerce, which entered into force in 2021, provides a set of policies, principles, and rules to govern cross-border e-commerce within the ASEAN (33).

While these initiatives provide invaluable information on countries' regulatory stance with regard to their CBDF policy, they do not explore existing institutional arrangements and the adoption and implementation of these policies. Such an effort will require a more coordinated approach to translate progress in regulatory compliance and adherence to international standards into de facto indicators of digital regulatory cooperation. CBDF regimes are having a clear impact on global economic activity, and regulatory cooperation can bring multiple benefits. However, challenges to a common approach to CBDF continue to exist; domestic regulations are often non-coordinated, monitoring data protection measures is increasingly challenging, and comparability among domestic regulations cannot always be ensured. In addition, ensuring interoperability of domestic data regulations through international mechanisms, such as trade agreements, remains complex (34). The need of the hour, therefore, is to build an adequate platform where problems of digital regulatory fragmentation can be addressed and finally overcome.

The G20's Role

While a freer flow of data fosters business activities and helps generate economic benefits, the emergence of giant digital platforms that are monopolising the collection, use, and sharing of personal data poses growing challenges to privacy and data security. The G20 is well-positioned to lead in promoting the free flow of data while balancing the need for privacy and security. In 2019, the G20 adopted a set of principles, the Data Free Flow with Trust (DFFT), to encourage the free flow of data across borders (35). In 2022, the G20 Bali's Declaration emphasised the members' commitment to further enable data free flow with trust and promote CBDF (36).

In 2023, the G20 Digital Economy Working Group emphasised the development of open solutions, protocols, standards, and principles that are safe and accessible. The G20 recognised in its declaration voluntary efforts to make digital public infrastructure interoperable. It acknowledged the importance of DFFT and CBDF while respecting applicable legal frameworks. Other digital initiatives discussed in the G20 in 2023 made further progress, including the production of a Global Digital Public Infrastructure Repository, a toolkit for upskilling and reskilling programmes pertaining to digital skills and discussions on the macro financial implications of central bank digital currencies.

The G20 can create viable opportunities for promoting greater transparency and convergence of regulatory frameworks on CBDF. This could be achieved by creating coordinated mechanisms for the adoption and monitoring of domestic data regulations, as detailed further in the next section. The G20 can also play a vital role in providing technical and financial assistance to developing and emerging economies to help them identify and address gaps in the domestic regulatory framework and institutional arrangements.

Recommendations to the G20

While the DFFT principles represent a step forward in promoting the free flow of data, they lack concrete implementation mechanisms and are not legally binding. A comprehensive data system that links all areas of the digital economy, including information on institutional arrangements and implementation of digital trade regulations, will substantially help formulate and evaluate different economies' digital trade strategies. Additionally, it will help identify the technical assistance needed to narrow the digital divide among developing and emerging economies. As economies seek regulatory convergence to facilitate CBDF while securing national priorities, outlining how international commitments are translated into domestic laws or regulations—and vice versa—is important.

To help reconcile domestic regulations with international commitments on CBDF, the G20 economies can work on the design and establishment of a centralised DRIR comprising information on practices, degree of implementation, and institutional arrangements governing CBDF in different jurisdictions.

The DRIR will be a valuable tool to provide a common ground for future trade and digital agreements negotiations, informing economies of the necessary policy and regulatory reforms to be undertaken domestically to meet international commitments. It will also be able to offer institutional options for implementation practices, while fostering mutual recognition of different systems.

More specifically, G20 economies could consider the following steps:

Establish comprehensive mapping and collection of data on national legislation, regulations, and international commitments

- Review, consolidate, and complete existing mappings of national and international regulations on CBDF in G20 economies. This entails a comparative analysis to harmonise existing methodologies and ensure comparability among reporting economies; designing and reviewing a consolidated 'checklist' of commitments, and identifying missing dimensions (for example, enforcement mechanisms) or needs for refinements.
- Review and/or propose possible enforcement mechanisms: Enforcement mechanisms may apply at the domestic level (laws, statutes, rules, and administrative regulations) and at the international level (decisions and recommendations). Information on the binding or non-binding nature of the commitments and associated enforcement mechanisms (for example, through a

dispute settlement system) could provide insights into the depth, credibility, and implementation of the commitments. Specific information about safeguards (or exceptions) from specific economies should be included to gauge the scope and timeline to adopt international commitments.

- Design a standardised and user-friendly template (based on the consolidated 'checklist' of commitments) for data collection on CBDF regulations, policies, and international commitments.

Analysis of the degree of implementation, gaps, and constraints to the institutional framework faced by G20 economies

- Establish a measurement criterion to evaluate the degree of implementation of existing national policies, and the gap between domestic practices and international commitments.
- Based on the criteria defined to evaluate the degree of implementation of existing national policies, support the G20 economies in conducting surveys and consultations with stakeholders, such as businesses, government officials, and civil society organisations. Surveys can be used to gather quantitative data, while consultations can provide qualitative information on specific implementation challenges and opportunities.
- Collect quantitative and qualitative information on regulatory reform regarding CBDF based on: Input indicators (factors such as budget for regulatory policy and oversight, staff involved in regulatory policy, and training), and output indicators (such as of regulatory performance like laws and subordinate regulations and administrative burdens).
- Design a standardised reporting template on the degree of implementation, practices, and institutional framework of cross-border data flows. Organise intergovernmental and multistakeholder consultations with policymakers, regulatory agencies, and private sector to discuss the key entries for the DRIR based on initial findings. This includes sector of activity, name of leading regulatory agencies, mandate, size, organisational structure, focal point for implementation of CBDF policies, and regulations; and concrete steps to be undertaken to align domestic policies with international commitments, including timeline, leading agency, national stakeholder, and external development partners involved (if any).
- Raising awareness and providing technical and financial assistance to G20 economies to understand the template, collect relevant information, and report the data to the DRIR.

- Conduct research on data collected to identify best practices and needs for technical assistance in priority areas (37) for the implementation of cross-border data flow regulations. Possible areas include impact of domestic regulations and international standards in prompting digital (services) trade, digital regulatory convergence, and economic spillovers.

Conclusion

As more businesses and consumers continue to embrace digital transactions post the pandemic, it is becoming more evident that the economy of the future will be digital and data driven.

The importance of understanding data restrictions in the context of digital trade cannot be emphasised enough. Such restrictions often come with significant economic costs, stymieing the potential for growth, innovation, and collaboration. While trade agreements have been an increasingly viable forum to establish digital trade rules and cooperate on emerging digital issues, this study finds the measures that restrict cross-border data flows continue to rise, undermining competitiveness, output growth, and welfare gains from digital trade. Addressing these costs and their underlying causes requires an accurate knowledge base and precise analytical tools. In the absence of a consolidated database, it is not possible to quantify the impacts of these regulations, let alone devise strategies to mitigate their negative repercussions.

This study describes some of the digital trade datasets currently available, and highlights the lack of a coordinated, systematic approach in data collection, monitoring and evaluation of countries' evolving digital regulations. Such information gap further adds to the difficulty in ensuring interoperability of domestic data regulations. The establishment of a DRIR on cross-border data flow practices, through the G20's leadership, could help narrow these gaps and address digital regulatory fragmentation.

In the long run, the establishment of the DRIR stands to offer manifold benefits. Not only will it foster transparency and interoperability of data regulations, but serve as a tool for businesses, service providers, researchers, policymakers, and other relevant stakeholders to formulate strategies to align domestic policies, identify best practices, assess needs for technical assistance, and inform the group's future work on digital cooperation. By shedding light on areas of potential reform or collaboration, countries can work together to unlock the digital age's potential and transform its ample opportunities into tangible economic benefits.

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The Vision of a Digital Public Infrastructure for Agriculture

Ram Dhulipala | Nipun Mehrotra | Ajit Kanitkar

Abstract

AGRICULTURE MUST CONTEND WITH THE COMPETING challenges of enhancing productivity and raising the incomes of smallholder farmers while simultaneously also addressing concerns related to environmental sustainability. Digital technologies have the potential to tackle these challenges and transform agrifood systems in unprecedented ways. However, digitalisation without adequate safeguards could accelerate existing and create new inequities, leading to the exclusion of smallholders. Context-neutral building blocks, digital public goods, and digital public infrastructure could address some of these dangers and lead to more equitable outcomes. This essay conceptualises a digital public infrastructure for agriculture (DPI4A) approach for a more equitable and responsible development pathway for agriculture in the G20 countries. With requisite governing principles and enabling policies, DPI4A could be the

path to achieve an ecosystem approach as espoused by the India Digital Ecosystem for Agriculture (or IDEA) concept paper published in 2021 (1). The essay also highlights the role of the G20 and the need for leadership, financial backing, and orchestration of initiatives across stakeholders to realise this vision, while also stressing the need for public-private partnerships, ethical safeguards, and strong governance mechanisms.

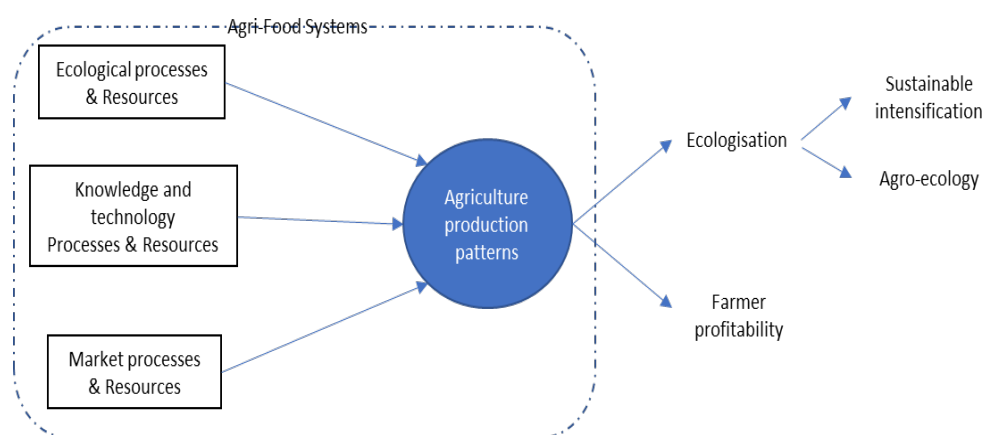
Agriculture in the Global South: Challenges and Opportunities

Agriculture in the Global South remains the primary catalyst for achieving prosperity for most citizens, while also contributing to fulfilling Goal 1 of the Sustainable Development Goals by lifting people out of poverty and creating a world free of hunger. Agriculture and allied activities are more than just livelihoods. They have positive impacts on promoting healthy nutrition among adolescents and adults, serving as a safety net against food insecurity and offering ecosystem services. The technologies and institutional processes introduced in the early 1960s and 1970s yielded significant outcomes in raising productivity and attaining food self-sufficiency in certain countries. However, the interventions and their intended impacts have since gradually plateaued.

There are competing challenges in today's world—agricultural development is expected to enhance the productivity of smallholders and raise their incomes, while also addressing concerns related to environmental sustainability. In India, for instance, agriculture uses 85 percent of available fresh water and 46 percent of the land, making it crucial to address these issues. Additionally, agriculture also plays a vital role in providing ecosystem services such as carbon sequestration (2).

Agriculture production patterns are determined by a set of related components: ecological processes and resources, knowledge and technology processes and resources (including, extension services and agricultural research, input suppliers, and also farmer knowledge), market processes and resources (input and outputs markets and patterns of demand), and policies and regulations (3). These interrelated components are embedded within the activities, processes, and workings of agrifood systems (AFS), as shown in Figure 1. AFS—which encompasses on-farm and off-farm activities, linking agriculture production with the processing, distributing, consuming, and disposing of foods—can be defined as a network of actors, processes, institutions (formal and informal), and market and non-market interventions (4). There are multiple entry points within AFS to influence agriculture production patterns and support the transition of agriculture along either of the ecologisation pathways. However, preparing AFS for such complex and multi-actor-dependent transitions requires new tools, processes, and capabilities that allow decision-makers and actors to comprehend the highly dynamic and entangled system variables and levers that characterise the increasingly complex AFS (5), and respond through suitable actions to address the complex problems AFS are confronted with on-farm and off-farm (6).

Figure 1: Components of an Agri-Food Systems and Its Competing Challenges



Source: Synthesised by authors from Conti, Zanello and Hall (7).; Schnebelin, Labarthe and Touzard (8).

Digital technologies have the potential to transform AFS in unprecedented ways. Unlike interventions of the past that were mostly on-farm, digital technologies are spawning innovations on-farm and at multiple points in the AFS value chain (9). The digital revolution in agriculture has a much broader scope, encompassing various aspects such as supply chains, access to finance and markets, contextual advisory services, and the establishment of farmer networks. Digital tools offer unique affordances (10) to AFS actors at various spatial (farm, village, county, regional, subnational, and national) and temporal (historical, current, and future) resolutions. Advances in data collection, computing technologies, and analytics enable an unprecedented opportunity to reimagine agriculture production and distribution (11).

Impact of Digitalisation on Farmers and Agrifood Systems in the Global South

Digitalisation results in the entry of new actors and institutions into agriculture innovation systems. The deployment of digital agriculture services or products needs an ecosystem of actors to work seamlessly. The digitalisation of agriculture is largely driven by the private sector—new-generation agriculturists and startup entrepreneurs keen to apply the benefits of technology, such as the Internet of Things, blockchain, and machine learning and artificial intelligence (ML/AI), to make agriculture operations efficient across the value chain.

The digitalisation of value chains can deliver benefits like financial inclusion and better market access for smallholder farmers and improve their access to extension services (12). Robert Jensen’s seminal study of Kerala fisherfolk provided a clear identification of the significant impact of cell phones on earnings, price volatility, and waste reduction

(13). Jenny C. Aker's work on small-scale African farmers also showed significant time and cost savings by using information and communication technology for extension services (14). Improving accessibility and timelines of dissemination of weather and market information can help farmers adapt their management to climate change impacts and build their resilience (15). Receiving climate information, especially about impending weather events, can help farmers take pre-emptive actions and minimise crop production losses from weather and climate-induced events (16). The penetration of mobile phones and advances in mobile wireless technologies create unique opportunities to reach remote and underserved farmers (17).

'Smart farming'—an umbrella term referring to the use of one or a combination of technologies like GPS, sensors, automation, and computing to manage and operate farms with unprecedented efficiency—is expected to sustainably intensify food production through the principles of precision agriculture by optimising the use of inputs like water, chemicals, fertilisers, and other inputs (18). Precision agriculture refers to a suite of technologies and processes to digitalise farms and farm operations to maximise profitability and sustainability of farms, using a combination of farm monitoring through sensors/remote satellites and variable rate equipment to enable autonomous targeted spraying and harvesting activities, allowing a more judicious use of harmful chemicals and more optimal use of precious natural resources like water (19).

Information and data on food production, certification, and value-chain traceability are becoming very important, and digital technologies enable feedback from end consumers to all upstream actors in the value chain (20). Digitalisation can make crop and livestock production more efficient and sustainable and create beneficial outcomes for farmers, consumers, and the society at large (21).

Theoretical framework for DPI in agriculture

Despite the obvious benefits of digitalisation and the anticipation of more equitable outcomes, the design and rollout of digital agriculture solutions needs the responsible innovation paradigm to navigate the broader societal issues and concerns (22). Further, socio-ethical considerations during the design of digital agriculture solutions can also alleviate the possibility of adoption failures (23). Normative assumptions about the positive impact and top-down approaches in the design and rollout of digital agriculture do more harm and sometimes reinforce the position and power of incumbent players. Technology developers carry implicit value judgement in the usefulness of developing a technology, and thereby ignore disproportionate exorbitant costs to develop such technologies (24). Decisions made under assumptions play out at multiple levels and, in some cases, they support dominant actors, reinforcing the existing power

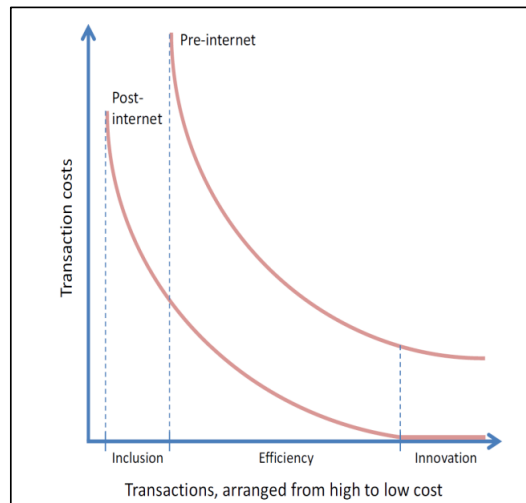
imbalances and leading to lock-ins (25). There is a particular apprehension about the concentration of market power by large agri-businesses further exacerbating the digital divide. For instance, key actors influencing innovation development and adoption might inadvertently exclude small and marginal farmers by prioritising data and tools relevant to large growers (26). Similarly, the availability of key agronomic data in the public domain also has a bearing on whether the supply of digital agriculture innovations will be more inclusive. There is also a need for methods that can quickly transform huge volumes of data into actionable information for farmers (27). If data is available in public domain, large and small players can use the data to develop new services for all categories of farmers, whereas in the absence of data, only large agri-businesses can create data through dedicated trials and partners to develop innovations (28). Digital innovations designed to be economically viable for large farms also exclude small farmers who do not find the adoption of such tools economically viable (29).

Digital agriculture solutions can be created as full-stack implementations (end-to-end solutions) by governments or large private sector firms. When private actors create innovative digital agriculture platforms and services, they target large farmers with the capacity to pay for such services since designing and deploying digital agriculture solutions for large and homogenous farms is less expensive, and there is clearer visibility towards cost recovery. However, catering to heterogeneous farming systems poses operational challenges that emerge from the difficulty in representing enough aspects of farms in a generalised way and collecting data/information to create customised digital tools and decision support systems (30). This results in a high cost of designing and deploying digital agriculture services that could provide context-specific advisories and services to smallholder farmers. Further, these costs are unlikely to be directly recovered from most smallholder farmers paying for such services since agriculture advisories are merit goods that smallholders might not see the immediate value in doing so (31). This naturally results in the exclusion of small and marginal farmers who, ironically, will stand to benefit most from digital services. On the other hand, when the public sector invests in and creates digital agriculture solutions, these solutions lack private entrepreneurs' customer-centricity, agility, and innovativeness (32). Additionally, trying to build large monolithic platforms that could account for the numerous localised (environmental, social, and cultural) variations will result in many complexities and substantial development costs (33).

Some of these pressing challenges with developing digital agriculture solutions could be overcome by adopting what is termed as a digital public infrastructure (DPI) approach. In the absence of a DPI approach along with "context-neutral" digital public goods (DPGs) and open datasets—also referred to as building blocks—digital agriculture products and services can only be created by either governments or large private sector firms as expensive, full-stack implementations, and therefore cater only to large farmers who can pay for such digital services. Such a pathway towards the

digitalisation of agriculture could lead to unintended consequences and inequitable outcomes, as previously described. To draw an analogy on how DPIs can bring about a systemic change, Figure 2 refers to the internet as an example. According to this framework, internet penetration leads to lower transaction costs and results in inclusion, efficiency, and innovation (34). Similarly, once DPIs are in place, the easy availability of foundational data and digital micro-services as open application programming interfaces (APIs) significantly lowers the cost of innovation and leads to plenty of startup-led experimentation in terms of new digital products and process innovations. Agtech firms, small and large, have a level playing field as they are not constrained by the huge upfront capex needed to create foundational digital infrastructure (35). Digital entrepreneurship enhances the supply of digital solutions for agriculture once such foundational infrastructure (in terms of connectivity, data, and so on) is in place (36). As a result, several startups and incumbent agri-businesses begin creating new innovations and creating the long tail of many different products and services catering to the real needs of the farmers. A long tail of innovations with many small and large actors providing products and services also inhibits power concentration, and, more importantly, can be an organic way to provide digital solutions in societies characterised by highly heterogenous smallholder farming populations.

Figure 2: Lowering Transaction Costs Leads to Inclusion, Efficiency, and Innovation



Source: Deichmann, Goyal, and Mishra (37).

India's DPI Experience and the IDEA Vision

India has taken the lead in leveraging DPI for the benefit of its citizens in a public-private partnership (PPP) mode. Almost all sectors of the economy, including financial services and direct benefit transfers (DBTs), witnessed significant benefits, as demonstrated during the COVID-19 pandemic. Additionally, the seamless nationwide rollout of vaccinations highlighted the efficacy of these systems.

The Indian government's efforts to also bring the digital revolution to agriculture was articulated through a concept called India Digital Ecosystem for Agriculture, or IDEA (38). The IDEA concept paper, published in 2021, serves as an inspiration for the digital public infrastructure for agriculture (DPI4A) concept.

An overview of the proposed DPI4A

The proposed DPI4A is a comprehensive solution to address critical bottlenecks of AFS in the Global South and address some of the inherent challenges that full-stack implementations might create. Significant capital investment should be directed towards the development of backend data processing, and computing and hardware infrastructure, which can be packaged as a DPI built jointly by the government and the stakeholders in the ecosystem. Such a public platform embraces the cardinal principles of interoperability, inclusivity, affordability, and accessibility. It must be a collaborative effort building on the strengths of the private and the public sectors, a PPP model where private sector investments can be crowded in to realise the development objectives of the public sector. DPI4A facilitates both tactical and strategic decision-making processes by leveraging multiyear and multisource information aggregated from the individual farms to the state and national levels. DPI4A efficiently handles large volumes of diverse agricultural datasets and employs tools such as video, voice, and vernacular translation to enhance farmer engagement. By doing so, it fosters platform economies and enables a wide array of digital innovations spanning the entire agrifood systems value chain. These innovations are developed by a range of actors, including small- and medium-sized agtech companies, as well as large incumbent agribusinesses.

Translating vision into reality

An open DPI4A 'agristack'—envisioned as an enabling framework of services (applications) and agri data around a data exchange—is needed to support several use cases, while encouraging data and application interoperability using APIs. Given agriculture's intricate complexities and the intersection with other sectors, such

as finance, supply chains, manufacturing, water, and chemicals, it is impossible to conceive of a monolith platform to adequately serve its needs. Hence, there are three fundamental building structures that come together to translate the vision into reality.

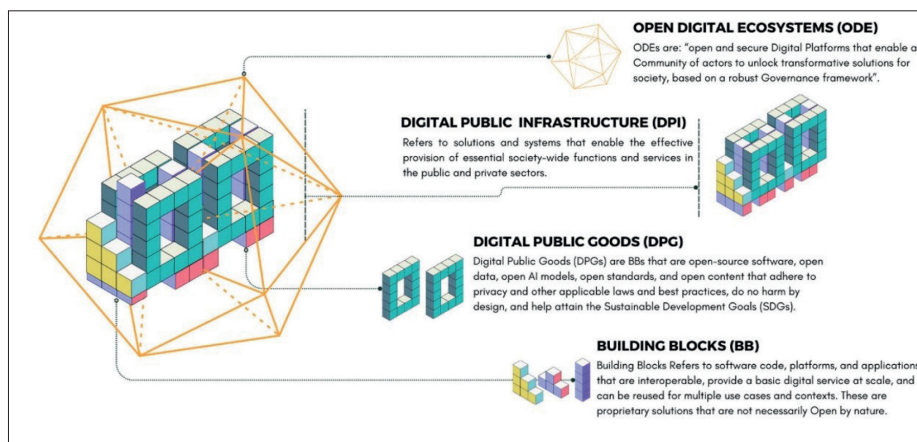
The first is several open-sourced, freely accessible ‘minimalistic’, discrete, building blocks with open content, which are secure and scalable nationally, as DPGs, to help make DPI4A a reality. DPGs necessarily must be co-created, well-governed, and transparent to earn the trust of the community and farmers. Some DPGs could be repurposed from other sectors, while a few new ones may also have to be conceived. Therefore, it is necessary to adopt a DPG for the DPI4A approach, which is the focus of this paper.

The second aspect to focus on, for the sake of completeness, is open agri data, which is the raw material for almost all the use cases, as well as for leveraging deep technologies like ML/AI. Due to the lack of standardisation, calibration, and certification, most agri datasets are ineffective for use and so deemed untrustworthy. Sound data interoperability policies are of utmost importance to improve ‘data trust’ and farmer adoption. Similarly, enabling data portability protects farmer interests when switching service providers.

The third is the DPI4A itself, which is an API-driven open framework that intricately leverages DPGs and agri data and reduces duplication by integrating data sources and a vast backend of new and existing applications.

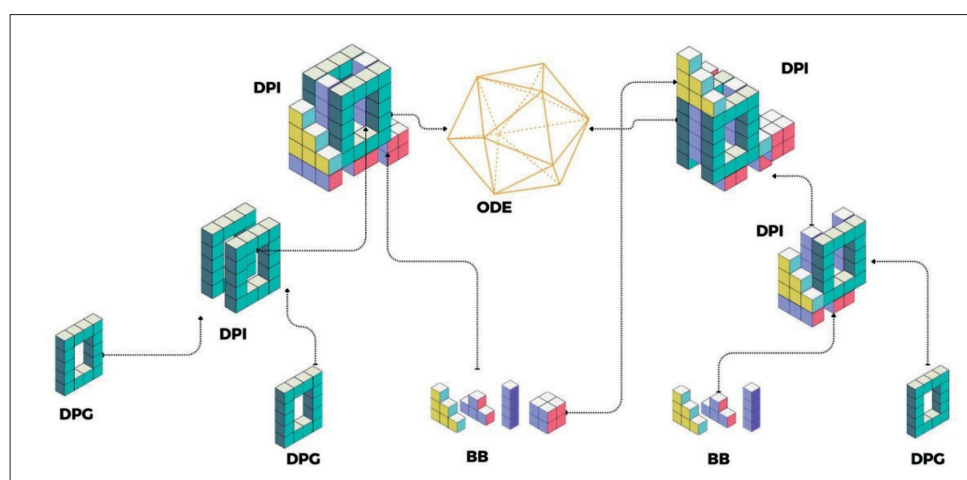
DPGs are not solutions on their own but enable other solutions, such as DPI and, very often, smaller DPIs along with other DPGs, to come together to form larger DPIs, as can be seen in Figures 3 and 4.

Figure 3: Definitions of a Well-Designed Digital Stack



Source: Synthesised by authors from Digital Public Goods Alliance and others

Figure 4: Structure of a Digital Stack



Source: Synthesised by authors from Digital Public Goods Alliance and others

Examples of DPGs include agriculture data exchange platforms, digital identities platforms, farmer registries, and land registries. The benefits of DPGs are explained using electronic farm records (EFR) as an illustrative example. The EFR could be a key, ‘context neutral’ building block that, if constructed as a DPG, could help unlock several agri-use cases.

An EFR, like an individual’s annual health record, can play a vital role in maintaining a historic record of the specific farmland and providing sufficient opportunities for analytics—for example, providing a comprehensive record of crop production, and a clear understanding of the farming activity and its potential risks, enabling farm credit and helping reduce financial lender’s risks. An EFR can become a key building block in a publicly built agristack.

The usefulness of each EFR component across several use cases has cascading benefits. Based on several stakeholder consultations, some essential EFR components identified are:

- Land Survey Number/Geolocation Coordinates: to identify the agro-climatic zone for crop recommendation, estimate land value for credit facility, render weather-based alerts for crop advisory, and identify vendors and buyers based on proximity
- Farm Ownership (Possession): to identify the individual or entity holding the land needed for availing credit against land as collateral.
- Financer Lien/Encumbrance Certificate: to ensure the farmland is free from any legal or monetary liability

- Soil Health Card: to generate recommendations on crops and input requirements.
- Crop Information: to personalise crop advisory, input requirements, and prepare crop calendars.
- Yield: to estimate crop arrivals and forecast the market price for the season.
- Irrigation Sources: to estimate the amount of water available (groundwater or canal) and do water budgeting, and recommend suitable crops, irrigation schedules, and water harvesting structures.

Governance for DPI4A

While DPI4A can break down data silos and create shared technology infrastructure, it is a unique experiment in public-private citizen collaboration to deliver innovative solutions. It can also raise concerns about privacy, data-driven behavioural manipulation, identity theft and fraud.

As such, in translating the articulated vision into reality, DPIs should not only be based on a strong technological foundation, but also adhere to the highest standards of ethical governance that follow core values and principles. Dr Pramod Varma, a leading architect of several population-scale DPIs, identifies six “first principles” for using a DPI approach to problem-solving that were used while designing digital infrastructure (39).

This chapter proposes the following core pillars for such a governance system.

- There is full transparency in governance.
- The platform is open source and inclusive, embracing diverse stakeholders in the ecosystem. It is agnostic to small, medium, and large actors. It also must be language, crop, and region agnostic to embrace the diversity of agricultural operations.
- DPI4A is based on mutual trust among all stakeholders. This is key to the success of a common infrastructure when dialogue between governments, the private sector, and citizens is not always congenial and healthy.
- The core belief is to co-create, collaborate, and thrive on the spirit of partnership. Thus, working in silos and standalone efforts must give way for a participatory and collaborative mode of working, thereby avoiding duplication and one-upmanship.

- The platform spurs innovations, improvisations, and learning. There is a huge interest among startups in addressing critical bottlenecks. Incubation and venture support of new solutions and cross-sectoral learning from successes in other areas— Unified Payments Interface (UPI), Open Network for Digital Commerce, and others—needs to be promoted.
- Data security and privacy rights of individuals are core values and must be respected with built-in checks and balances to ensure privacy.

The G20's Role in Agriculture Development

The Paris Ministerial Declaration of June 2011 spelt an elaborate action plan on food price volatility and agriculture for the G20 (40), and the meeting also announced the launch of an Agricultural Market Information System. The action plan prioritised food security and addressing food price volatility as some of the key challenges for the global community. It highlighted five key objectives as directions for future work:

- Improve agricultural production and productivity
- Increase market information and transparency
- Strengthen international policy coordination
- Improve and develop risk management tools for all stakeholders
- Improve the functioning of agricultural commodities' derivatives markets.

The G20 summits, from Paris to the 2022 summit in Indonesia, were dominated by discussions on various concerns, including food security and nutrition, sustainable resource use in agriculture, volatility in international and domestic food prices, the looming threat of climate change on agriculture and allied activities, the growing role of women in agriculture, and asymmetric market information among stakeholders. Simultaneously, new opportunities for sustainable solutions became a salient feature of the G20 declarations, showing pathways to the international community to tackle the abiding challenges faced by agriculturists. Specifically, the 2022 Bali Declaration mentioned digital agriculture as one of the potential solutions: "We recognize that research, innovation, technical progress, and the use of digital technology in agriculture carry the potential to further revolutionize food systems by contributing to improve resilient and sustainable food production. We acknowledge the gaps in respect of technology viability, accessibility, and affordability. We highlight the importance of collaboration among national and international research institutions and adequate funding to develop and scale innovations, including digital agriculture technology,

through private and public pathways to give farmers around the world the widest range of options to achieve their aspirations. We emphasize the importance of digital transformation in agriculture alongside other innovations to improve farmers' livelihoods through enhanced productivity and production in a sustainable manner, and broadening market access and opportunities" (41).

The G20 offers a unique platform and opportunity to build further on the discussions over the last 12 years beginning with the Paris Declaration. While the consensus is clearly on problem articulation and the vision for sustainable agriculture, what was missing was a clear roadmap to achieve these. There were indeed some breakthroughs in identifying solutions; however, those were either not comprehensive enough embracing all the stakeholders of the ecosystem or addressing the entire value chain. The world after the COVID-19 pandemic has demonstrated the potential power of digital interventions in mitigating and responding to—if not overcoming—some of the crises, be it in health, education, citizen care, financial inclusion, and mental health. Breakthroughs in technology, such as generative AI, are now a reality. The startup social enterprise sector attempting to address social deficits is now a global phenomenon. Global and domestic philanthropy is accelerating the flow of funds to agriculture and other sectors. India's experiences during the pandemic are significant in ensuring the vaccination of over one billion citizens and recording each dose of vaccination due to the massive deployment of digital tools. The DBT of food grains to 800 million citizens and the ongoing expansion of digital payment systems through the UPI route are two other examples of the reach, scale, and impact of a publicly built digital infrastructure. India has provided technical assistance to at least five other countries on the UPI success story. These are all live examples of a country using DPI to deliver public goods at scale and efficiency. A unique aspect of India's experience in building and scaling DPI is forging successful partnerships between the public and private ecosystems across sectors. The G20 is a great platform where India's learnings from building such population-scale DPI could be used to give shape to a DPI4A, which aligns with the G20's goals and ambitions around digital agriculture.

Recommendations to the G20

The vision articulated in this essay is attainable through concerted and dedicated investments from the G20 countries spearheading this effort. The following recommendations can translate this vision into reality:

- The G20 members can constitute an inter-ministerial group and a task force to encourage domain-expert institutions (such as CGIAR centres) that are well placed to pool global and regional knowledge. The task force can identify potential building blocks or DPGs, enabling DPI4A globally, and further developing reference architectures for them.

- Donor harmonisation and grant investments with longer time horizons are a prerequisite to building identified potential DPGs. The G20 could create platforms or venues to channel such patient capital.
- The G20 must advocate for the thoughtful development of DPI through a whole-of-society approach and create synergies of positive, actionable ideas emanating from the private, public, and citizen sectors, research institutions, multilateral and UN organisations, and philanthropies.
- The G20 should lay down the principles to ensure DPIs built are farmer-centric, ensuring data privacy, transparency, and the highest standards of ethical governance.
- The G20 can facilitate concurrent and real-time learning and knowledge exchange as countries embark on the path of building a DPI4A.
- The G20 could provide thought leadership to other countries by pooling best practices that will guide the next steps in DPI4A, such as Aadhaar and UPI in India. It can help create a time-bound action plan that is backed by adequate resources to achieve the vision.
- The G20 must ensure that digital cooperation safeguards human rights, contributes to governments' digital sovereignty, and is grounded in local digital ecosystems (42).

Conclusion

As encapsulated in the DPI4A vision, a DPI approach offers opportunities to transform the global AFS, addressing the critical concerns of climate change, farmer welfare, and equity in a responsible way. However, to realise this potential, collaboration and partnerships across the public, private, technology, and startup sectors need to be institutionalised (including through establishing standards); global pilots and experiments should be co-ordinated and executed; and a building block approach (DPG) should be adopted.

Further, patient capital needs to be channelised to such efforts while creating frameworks that facilitate knowledge exchange and collaboration across countries.

Past G20 summits have highlighted the areas to work on. The intensive churning of ideas during the G20 summit augurs well for realising the dreams from a DPI4A.

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TF-3

LIFE, RESILIENCE, AND VALUES FOR WELLBEING

Towards a Gender-Inclusive GDP

Devkanya Chakravarty | Manoranjan Pattanayak

Abstract

THE GROSS DOMESTIC PRODUCT (GDP) is an imperfect measure of the economic size of a country as it excludes essential enablers of economic health from its ambit, such as unpaid domestic and care work. GDP's widespread use in policy and popular discourse can create several issues, including overestimation of the benefits of a policy—such as if an associated increase in GDP is merely the result of a transition from unpaid to paid work—or an underestimation of the level of economic activity—such as in cases where a country relies heavily on unpaid household services. This is also important as women face the disproportionate burden of such work. Divorced from a monetary value, they are perceived as being a part of a woman's 'natural duties'. Better

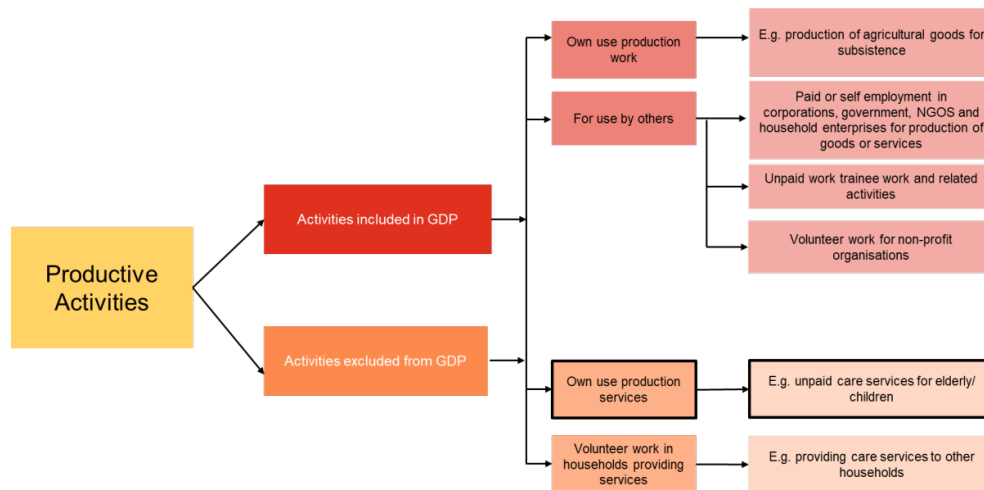
economic measurement and strong behaviour-change efforts can aid the inclusion of household chores as economic activities. This chapter highlights the importance of including unpaid domestic and care work as economic activities to move towards a more gender-inclusive measure of GDP.

The Challenge

Gross domestic product (GDP) is calculated as the final value of the production of goods and services in a country over a specific period. Developed in the 1930s by Simon Kuznets to understand the impact of the Great Depression in the US and refined thereafter during the Second World War, most countries today produce standardised statistics on GDP that enable comparison across geographies and years (1). Countries routinely measure the success of their policies based on their impact on GDP. In media and policymaking, a higher GDP is often conflated with improved economic welfare.

There are, however, criticisms of this ‘GDP fetishism’, including the inability of GDP or its per capita equivalent to indicate the state of economic inequality or consider environmental degradation that often accompanies GDP growth but can worsen the quality of life of citizens (2) (3). Despite these shortcomings, even the most popular alternative measures meant to encapsulate welfare, such as the UNDP’s Human Development Index (HDI), include GDP per capita as a metric.

Figure 1: System of National Accounts Boundaries and Forms of Work



Source: UNSTATS (2020) (4)

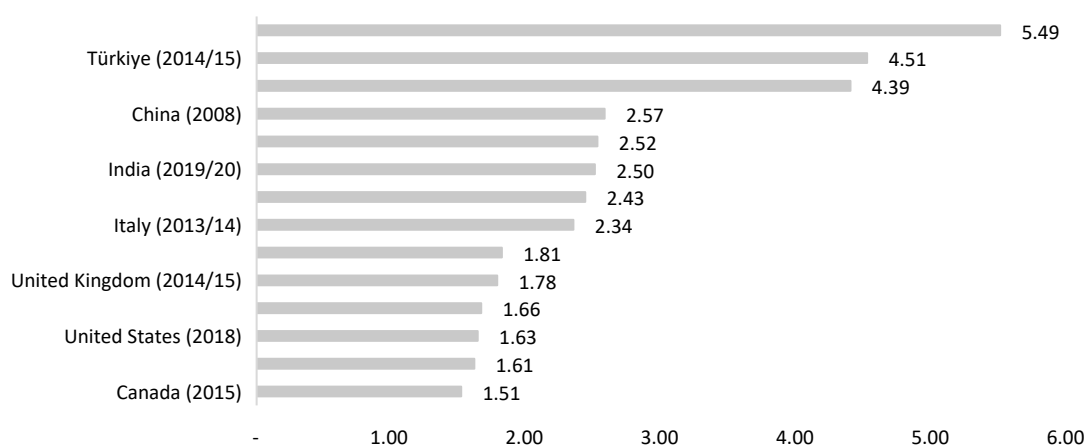
However, there is a gap in how GDP is conceived, even as a technical measure of economic activity. Specifically, GDP does not include the value of unpaid domestic and care work in the economy. The United Nations’ System of National Accounts (SNA) is

an internationally agreed-upon set of rules that guides the compilation process of GDP data in countries. It classifies activities based on whether their monetary value should be included when estimating GDP (Figure 1). As per the SNA, unpaid work in households producing services for own use is an activity that is excluded from GDP. For example, a parent teaching a child at home without being paid or an individual providing care services to an elderly parent is not included in the GDP (5). This is anomalous because other unpaid work—such as producing goods sold in the market or for a household’s own consumption—is included in GDP.

At the core, the exclusion of unpaid domestic and care work is a methodological issue that can mean that, for the same level of economic activity, the GDP may change based on a transition from unpaid to paid work or vice-versa. To quote American economist Paul Samuelson, “If a [woman] arranges with her neighbour for each to clean the other’s house in return for US\$5,000 a year, then the [GDP] would go up by US\$10,000” (6).

This could underestimate economic activity in countries that disproportionately consume unpaid domestic services or overestimate the benefits of policies that increase paid work at the cost of unpaid work. For instance, the success of an economic policy is judged on its perceived impact on overall economic activity by using GDP as a proxy. Without accounting for unpaid work, at least some part of the increase in GDP because of a policy such as trade liberalisation would simply be a substitution between unpaid work and paid work, without a corresponding increase in the level of economic activity (7). Similarly, comparing per-capita GDP between countries may lead to the underestimation of total well-being in countries that disproportionately depend on the consumption of services for their own use relative to other countries (8).

Figure 2: Ratio of Time Spent on Unpaid Work by Women and Time Spent by Men (Latest Available Year) in Selected G20 Countries (9)



Source: OECD (2020) (10)

The reason for this methodological issue being viewed through a gender lens is that the burden of unpaid work disproportionately falls on women globally (Figure 2) (11). In 2016, for instance, women in Japan spent, on average, five times the time spent by men on unpaid domestic and care work. Even in the best-performing country, Canada, women spend 50 percent more time on unpaid work than men as of 2015.

This could have a significant impact on the life outcomes of women:

- **Lower female labour force participation rate (LFPR):** The burden of unpaid work could hinder the ability of women to participate in the workforce, resulting in either absence from the labour market or reliance on part-time work. In countries where women spent an average of five hours a day on unpaid care activities, 50 percent of women in the working-age population were economically active (i.e., employed or seeking employment). On the other hand, in countries where women spent three hours a day on unpaid care activities, 60 percent of women were in the labour force (12).
- **Occupational downgrading among women:** The burden of unpaid work could lead to women choosing jobs below their skill level, which might entail poorer working conditions (13).
- **Wage gaps:** The higher prevalence of women in part-time work may also lead to widening gender wage gaps. In countries where women spent twice as much time as men in care activities, they earned only 65 percent of what their male counterparts earned for the same job. This fell to 40 percent when women spent five times the amount of time on unpaid care work as men (14).
- **Lower social protections:** Social benefits such as paid time off, life insurance, savings, pension, and healthcare insurance are tied to (formal) employment, which puts unpaid domestic and care workers and informal workers at a disadvantage (15) (16).

This gendered burden of unpaid work, and consequently its valuation, could have policy implications.

- Since LFPR is inextricably linked to the issue of unpaid domestic and care work, any policy measure to promote greater female labour-force participation will require the measurement and valuation of the magnitude of this work and steps to reduce the burden of the same on women. For example, extended GDP estimates may be used to inform budgetary outlays on components of care infrastructure, such as creches, elderly care, and the length and availability of maternity and paternity

leave. Countries with age structures resembling what the country forecasts for itself may serve as a benchmark.

- Depending on the tools used, including unpaid domestic and care work in GDP, could enable an *a priori* impact analysis of economic and social policies on households in terms of the redistribution of domestic work, LFPR, and GDP. For instance, the measurement and valuation of unpaid care and domestic work could help measure the impacts of infrastructure investments in household water connections, roads, transport infrastructure, and so on, influencing paid labour–unpaid care and domestic work–leisure trade-offs within the household.
- The valuation of unpaid work could reinforce the benefits such work brings to the economy. For instance, unpaid work is a subsidy for market activity and government provisioning of public infrastructure. Without unpaid work at home, it is likely that the cost of maintaining a similar lifestyle, and thus demanded wages, will be higher. Similarly, unpaid work may result from inadequate government provision of services such as healthcare, education, or transportation that necessitate a substitution by home-based production of services for own use (17).
- The quantification of unpaid domestic and care work in GDP, and their treatment as economic activities, could increase the perceived worth of this work and correct the perception that it is just part of women's natural duties. This might also propel more men to participate in these activities.

This essay provides recommendations to the G20 countries on how to move towards a more gender-inclusive measure of GDP.

The G20's Role

The valuation of unpaid domestic and care work aligns with G20 priorities. Since 2008, the G20 has made approximately 63 core commitments on gender equality, including on issues such as increasing female LFPR and improving workplace conditions (18). Women20 (W20), an official engagement group, was established in 2015 to ensure that gender considerations are streamlined into G20 discussions and translated into policies and commitments for women's empowerment (19).

At the Brisbane Summit in 2014, G20 leaders resolved to achieve a 25-percent reduction in labour force participation gender gap by the end of 2025 (20). This is also aligned to the Sustainable Development Goal (SDG) 8 on sustainable and inclusive growth of the economy, full and productive employment, and decent work for all and SDG 5 on gender equality and women's empowerment (21).

The G20 countries have already taken substantive steps towards valuing unpaid work. Almost all member countries conduct time-use surveys. There have also been attempts to set a monetary value for this work in Mexico, Argentina, Australia, Canada, and the UK (22). However, varying methodologies make inter-country comparisons difficult. This necessitates a standardisation of methodologies, to which the G20 can contribute (23).

Overview of methods

a. Methods for valuing unpaid work

There are typically two methods used to value unpaid work (24):

- **Input method:** This measures the hours spent in unpaid care and domestic activities and multiplies it with a price-per-hour. The price-per-hour is a comparable wage rate. The data on hours is available through time-use surveys that elicit detailed responses on how men and women spend their time in a typical day. The comparable wage rate may be the opportunity cost or the replacement cost. The use of the 'right' wage rate is the subject of some debate.

Opportunity cost refers to the hourly wage a worker would have earned in the market for paid employment. This could be challenging to determine if the individual does not or has never held a paid job. However, a notional value of this opportunity cost could be estimated. For example, an employment survey could be used to model wage as a function of individual characteristics such as age, sex, education, parental background, and other covariates. The evolution of this opportunity cost could also provide important insights into the nature of labour-force dynamics.

Alternatively, the replacement cost method could be deployed. This uses the wage rate applicable to someone who could have been hired to do the same work. This could be a specialist (e.g., a cook for cooking activities, a nanny for child-rearing activities) or a generalist helper, who could provide all necessary services.

A recent approach has also been to use prevalent minimum wages to assess the value of unpaid work (25).

- **Output method:** This measures the results of unpaid production by assigning a price to the quantity of services produced. This would require that the volume of output produced be determined. For example, in childcare, the total output will be the total number of child hours for which an activity is undertaken rather than the number of hours that a childcare provider works.

The output method is more consistent with national accounting methods but will require separate data collection. The input method is relatively more straightforward as it relies on time-use surveys that are already in place in many countries.

b. Integrating unpaid domestic and care work into GDP

There have been varied approaches to separately account for women's work in GDP calculations. One approach is to disaggregate conventional GDP by gender. This attempts to shed light on the share of GDP accruing to women and men based on paid work. Measures such as these could help provide quick insights into relative contributions to the economy by men and women, along with gaps in labour-force participation, quality of work, wages, assets, and capital ownership, depending on data availability. If measured regularly, such metrics may reveal progress or deterioration of the participation and status of women overall and by the economic sector. For example, a report published by the National Statistics Agency of Canada used tax records to classify entrepreneurial and labour income for men and women (26).

While these methods could constitute an important input into policy analyses, it is necessary to examine the incorporation of unpaid work into GDP or other measures of economic welfare. There are two broad approaches that are adopted for this. The first approach moves beyond GDP by seeking to assess welfare more holistically. It encompasses measures like the Measure of Economic Welfare (MEW), the Index of Sustainable Economic Welfare (ISEW), and the Genuine Progress Indicators (GPI). The second approach corrects for the methodological issue in GDP as it is currently measured through household satellite accounts (HSA).

- **Approach 1: New measures of welfare**

The MEW was conceptualised in 1972 by William Nordhaus and James Tobin and made three adjustments to GDP. First, MEW excludes all 'unnecessary' intermediate expenditures, such as personal commuting costs and government expenditures on systems necessary to run an 'industrial nation-state' such as police, military costs, and sanitation. Second, it excludes the value of activities that reduce welfare, such as pollution and crime. Third, it includes the consumption of leisure and non-market productive activity to reflect the principle that reducing hours of paid work would increase utility and welfare, even when reducing GDP (27).

The ISEW, later revised and proposed as GPI, is similar to the MEW but also accounts for the deterioration of natural capital (28). Additionally, its starting point is inequality-adjusted household expenditure (29).

While relatively easy to implement, both the MEW and the ISEW lack a theoretical foundation and involve a high degree of subjectivity. They are also difficult to compare with existing GDP measures. The second approach overcomes this.

- **Approach 2: Household satellite account**

Supply-use tables are used in conventional national account estimation to ensure consistency between data on different industries and sectors of the economy. They represent the structure of the economy, showing how industries combine raw materials from other industries with labour, land, capital, and entrepreneurial ability to produce output. Simultaneously, they also represent how the output of any industry is demanded as raw material in other industries or by households or governments for their consumption. For instance, to produce potatoes, inputs from agriculture (tubers, manure), manufacturing (threshers, tractors), and services (wholesale and retail trade, transportation, storage) are used. In turn, potatoes may be demanded in agriculture (as tubers), manufacturing (for producing potato chips), and services (such as in restaurants to serve french fries). Additionally, households buy potatoes for consumption at home. The supply-use tables consistently represent all this information for all sectors that are included in the GDP.

The HSA enables a comprehensive accounting of the own-use production of services in a manner consistent with the above system. In effect, they extend supply-use tables by treating the household as an additional industry (30). This would mean that the demand for some industries that are currently classified as household consumption will be reclassified as raw material or capital goods into the production of household services. For example, books used in home-schooling could now be a raw material in the household education industry. Similarly, domestic appliances used in cooking, or a car used to provide household transportation services (such as dropping a child to school) could now be a capital good. These raw materials and capital goods will then be combined with labour engaged in producing these services to produce output (31).

While there are challenges to this estimation, including the need for data and use of assumptions in its absence, HSA has many uses in policymaking (32). It can be used to show the extended GDP impact of interventions, such as household water connections and formal childcare, that reduce the unpaid work of women. It can also deduce the impact of economic policies; for instance, a study of the effects of trade liberalisation on male and female work in Nepal found that higher LFPR for women did not equivalently reduce the time spent on domestic work but reduced their leisure time (33).

Recommendations to the G20

The G20's adoption of the measurement and valuation of unpaid domestic and care work could be short-term—i.e., requiring less than five years for implementation—or long-term—which may be implemented over a longer duration.

a. Short-term recommendations

- **Standardise data collection through time-use surveys:** Although most G20 countries have time-use surveys, they should be standardised and made more regular for international comparisons and progress tracking. Guidance from UN Women may be referred to for methods of data collection (34). A higher periodicity of such surveys, especially in the same year as that of GDP base revision, will be beneficial. 'Lighter' surveys, conducted by appending a module to the labour force or living standard surveys, could also provide insights in the interim. Leveraging technologies such as an electronic diary for built-in validation checks, interactive voice-response technology-based data collection in areas of low literacy or digital connectivity, and artificial intelligence for analysis of text data could further reduce the resource intensiveness of the process (35).
- **Commission further research through a multi-country initiative on methodological questions:** The Think20 and W20 can identify priority research areas on measuring time use, such as the treatment of multitasking, distinguishing between leisure and domestic work activities, and the correct wage rate to be used in the input approach and its adjustment depending on use (36). This will help formulate the standardised, common methodology that may be followed by all G20 countries in estimating the GDP value of unpaid work in the economy.
- **Pursue cross-country collaborations and learnings between the G20 countries to develop a standard methodology for including unpaid domestic and care work in GDP:** The existing experience of the G20 countries, especially learnings from countries with existing methods of valuations and HSAs (such as Australia, Canada, and the UK) can be leveraged for this purpose.
- **Release preliminary comparable estimates of the value of domestic work:** Based on the methodologies researched, G20 countries could start releasing estimates based on a common, comparable methodology. A compiled document released during the G20 summit would help generate visibility for these estimates and encourage other countries to do the same. In the short term, this may be a simpler valuation based on the input approach without creating more detailed HSAs.

b. Long-term recommendations

- **Release and institutionalise comparable HSAs:** Based on the developed methodologies, the G20 countries could start releasing HSAs based on a common, comparable methodology. A compiled document released during the G20 summit will help generate visibility for these estimates and encourage policy research. This will also enable the development of use cases for such data.
- **Enable a transition from analysing economic growth to analysing economic well-being** by using these estimates for policy analysis. Integrating home production of services when analysing economic policies will ensure the market economies address the unpaid work that enables and subsidise their operation (37).

Conclusion

GDP is an imperfect measure of the economic welfare of a country as it does not account for inequality or environmental degradation that often accompanies economic growth. Moreover, GDP is an imperfect measure of economic size as it excludes unpaid domestic and care work. This creates a methodological issue, creating problems in intertemporal and international comparisons of economic size. Moreover, not valuing unpaid domestic work impacts women's life outcomes as they face the disproportionate burden of this work. Specifically, spending more time on unpaid work can lead to lower labour force participation, more precarious employment, lower wages, and weaker social protections for women than men.

The G20 countries are aiming for a 25 percent reduction in labour force participation gender gap by the end of 2025. They are also in the process of fulfilling gender equity goals under SDG 5 and SDG 8. These commitments will be well served by the valuation of unpaid domestic and care work. An extended GDP measure accounting for unpaid work can influence government policies towards providing adequate care facilities and time-saving infrastructure to fully serve the interests of women, whose effort subsidises the operation of markets. It can also allow for *a priori* impact estimation of planned policy measures and better monitoring. Valuation, when accompanied by strong behaviour change efforts, could underline the economic nature of household chores, and promote the 'de-feminisation' of these activities.

While there are several methods and tools available and already in use by governments, the G20 consortium provides an opportunity for member countries to coordinate and consolidate their efforts for visible global impact. Research and learning collaborations resulting in comparable data could enable other countries to benefit from these efforts and help move the world towards a holistic and gender-inclusive measurement of GDP.

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data is not strictly comparable. For instance, Australia covers everyone aged 15 and above, whereas China covers individuals aged between 15 and 74 years. There are also differences in the way Mexico conducts its time-use survey. For India, the data has been taken from the NSSO Time Use Survey 2019, accounting for unpaid caregiving and domestic services only.

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Diversity in Agriculture and Consumption: The Basis for Healthy and Sustainable Eating

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Abstract

THE CHALLENGES FACING CONTEMPORARY PRODUCTION and consumption patterns are reflected most clearly in the agri-food system, which accounts for one-third of greenhouse gas emissions. Technological advances have led to homogenous agricultural landscapes and the standardisation of animal breeds, which puts farming expansion at risk. This homogeneity is the basis for the supply of ultra-processed foods, which rely on a few agricultural products that are transformed by chemical ingredients, making them attractive to the consumer. Contemporary scientific literature also corroborates the link between ultra-processed foods and the global obesity pandemic. Multilateral cooperation boosted by G20 initiatives can help reduce the adverse outcomes of the current agri-food system and improve local, healthy, and diversified production. This requires both a drastic reorientation in subsidies for agriculture and

livestock farming globally, as well as policies that encourage the diversification of production and diets to promote human health.

Introduction

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) recognises contemporary agricultural growth (1) as the primary global driver of biodiversity destruction. According to the Food and Agriculture Organization (FAO), emissions from the global agri-food system released 16.5 billion tonnes of greenhouse gases in 2019—a 9 percent increase since the beginning of the millennium (2). The production patterns underlying the technological innovations that have dominated agri-food supply since the late 1970s no longer fit the Earth's boundaries (3).

The central feature of these production patterns, enshrined in the technologies of the Green Revolution, is the monotony of agricultural landscapes and their consequent reliance on chemicals. Together, these features lead to soil depletion and often, the contamination of rivers and ecosystems has ramifications on human health and contributes to progressive loss of habitats and biodiversity (4). The standardisation of contemporary animal husbandry and the routine use of antibiotics also contribute to the worsening global trends in antibacterial resistance (5) and the loss of production and consumption potential in agrobiodiversity.

This productive standardisation is the basis of food consumption, whose increasing monotony is one of the most critical threats to health (6). The dependence of human feeding on the global trade of a few products distributed by a few companies represents a threat that multilateral cooperation must confront (7). Such confrontation involves the strengthening of productive capacities, the promotion of diversity, and local food and culinary cultures within the framework of a nature-based knowledge economy (8) (9). Modern farming aims to provide food diversity and to regenerate ecosystem services that have been systematically destroyed by the expansion of crops and animal husbandry. This regeneration also involves a drastic reduction in food loss and waste, estimated globally at almost one-third of all food produced (10).

Globally, 7,039 species of plants have been catalogued as edible, of which 417 are cultivable. There are increasing discoveries of new plants and fungi that can compose food biodiversity, characterised by the diversity of foods that make up a local, regional, or national ecosystem (11). Despite this, Brazil, one of the most socio-biodiverse countries in the world, has been suffering from the degradation of its biodiversity (12). As a result, from the total availability of food at present in Brazil (an average of 1,092 grams per day), only 7.09 grams are represented by foods from Brazilian biodiversity, of which 5.89 grams are from native fruits and 1.20 grams from native vegetables (13).

The contrast between the potential for a biodiverse diet and current agri-food patterns is stark: 90 percent of what human beings eat come from no more than 15 crops, with 66 percent concentrated in just nine products; wheat, corn, and soy constitute 50 percent of the supply (14). The loss of genetic diversity is also a characteristic of products originating from animal husbandry and has disastrous consequences on biodiversity. The FAO estimates that the world has lost 75 percent of the diversity of global crops in the last 100 years, which reinforces the significant role of gene banks (15).

The geopolitical consequences of the current agri-food system are also of concern. More than 60 percent of the global agricultural supply is concentrated in five countries (16), representing a systemic risk that the war in Ukraine made further evident. Droughts like the ones that hit India, France, and the Colorado River in the US in 2022 and caused immense agricultural losses in the Cerrado region and southern Brazil are increasingly becoming a global phenomenon, in addition to the unprecedented heatwaves worldwide. The costs of such destruction are not expressed in the regular price system; in 2021, the costs of environmental externalities of the current global agri-food system reached US\$7 trillion (17).

Currently, closely related to the lack of diversity, the agri-food systems are marked by imbalances and inconsistencies that materialise in the opposite of what would be the basis for healthy and sustainable diets, since they promote excessive global consumption of ultra-processed foods, sugars, and animal proteins, and a deficit in the consumption of fresh foods (18).

Although calls for an assumed need to increase global protein production in the coming years are frequently made, such an idea ignores the fact that most of the world population, including many of those in developing countries, already consume far more protein than is necessary for a healthy life (19). In contrast, global fruit and vegetable consumption only reaches a level compatible with the needs of human metabolism in the industrialised countries of Asia. At the same time, the supply of animal proteins is linked to the monoculture of global grain exports, of which more than 41 percent is used to feed animals.

Finding production methods that enhance animal feed from products that don't compete with human food is necessary and possible, given the global oversupply of proteins. This can be achieved through moderate intensification of production, which respects planetary boundaries, and by shortening supply chains. Such actions are also necessary to provide fresh fruit and vegetables with reduced food loss and waste and to make food systems resilient to shocks and global trade failures (20).

Equally important is dealing with the problem from the perspective of food demand. According to the Intergovernmental Panel on Climate Change (IPCC), among the response options to mitigate, adapt to, and combat desertification and strengthen food security, food demand and consumption-based responses—especially those related to dietary change—have the greatest probability of impact, lowest cost, and highest confidence of delivering the expected results.

It is estimated that, by 2050, 80 percent of food consumption will occur in cities (21), where the need to diversify diets becomes most urgent. As recently acknowledged by the United Nations, the high rates of urbanisation and the consolidation of rural–urban continuums along the world increase the threat of a gradual standardisation in dietary patterns based on consumption of highly processed foods. Such demographic trend reinforces the need for policies that promote healthy food environments, both formal and informal, and empower consumers to make nutritious food choices.

Short circuits, compared with long supply chains, tend to preserve agrobiodiversity (22) while reducing food losses and waste and contributing to educating consumers about healthy and sustainable eating habits. Moreover, it has ecosystemic effects, such as the reclamation of degraded areas, enhancement of insect and pollinator biodiversity in the urban environment, reduction of food loss, and carbon sequestration within cities. Shortening food supply chains and applying this rural–urban continuum lens involves rethinking food environments, incentives for transitioning to a circular economy approach (23), and, as urged by the UN, supporting smallholder farmers in urban and peri-urban agriculture (24).

Today, 70 percent of calories from the top 10 global agricultural products are for uses other than feeding people. What may disrupt achieving the Sustainable Development Goal (SDG) 2 (Zero Hunger) by 2030 is not production shortages, but the growing gap between agricultural production and the plates of those who need food most. The situation is even more worrisome because crop yields for products intended directly for human consumption have grown much less than those for export, industrialisation, or animal feed over the last 50 years (25).

Fundamental to this is the reorientation of the agricultural sector and the industries responsible for an increasing part of the food supply. A 2022 study found that 71 percent of the food products displayed on North American supermarket shelves are ultra-processed (26). This is a global pattern, and the monotony in agricultural supply and its disastrous consequences on biodiversity cannot be separated from the monotony in industrialised food supply and its destructive consequences on human health.

It is not a question of opposing industrial processing but of advocating for the transition from an industry that transforms agricultural monotony into food monotony (27)

through the introduction of chemical components that are today largely responsible for the diseases that kill most in the contemporary world.

The G20 is responsible for stimulating an integrated approach to agricultural and food policies that responds to the global orientation contained in 'One Health,' in which healthy diets, regeneration of ecosystem services, and animal welfare are seen in an organically articulated way and not as distinct compartments separated by guidelines and administrative bodies that have little connection with each other (28).

These policies affect not only the countries that make up the G20 but many others over which the G20 exerts influence. One should not ignore the inequalities that plague the entire world, as well as the growing number of vulnerable populations, i.e., many people who depend heavily on agri-food systems. Therefore, the G20 can approach these problems from the perspective of security and world peace, which the war in Ukraine has left very latent.

The growing awareness about the threats of this monotony is expressed through two fundamental components, which are the focus of this chapter: the need to face the growing ubiquity of ultra-processed products in today's food patterns and the urgency of strengthening protected areas and promoting forms of agriculture that regenerate biodiversity and reduce greenhouse gas emissions and the erosion of biodiversity.

The G20's Role

Reversing the ubiquity of ultra-processed foods

After the Second World War, global priority was focused on increasing food production, the shelf life of food products, and their safety. These requirements, however, could not prevent food from being a vector for a wide range of non-communicable diseases that are of most concern to 21st-century medicine (29).

Obesity tripled globally between 1975 and 2016, and the demographic aged 5–19 years affected by obesity multiplied fourfold in the same period. Most of the world's population is concentrated in countries where obesity is a more frequent cause of death than hunger (30).

This weight gain is at the root of the most disabling and deadly chronic non-communicable diseases. There are 17 million premature deaths per year—one every two seconds (31). According to WHO, 86 percent of these deaths occur in low- or middle-income countries (32). These diseases account for most health system expenditures.

Costs arising from health problems linked to the agri-food system are estimated at US\$11 trillion (33).

One of the hypotheses explaining the explosion of obesity goes far beyond what the nutrition sciences of the twentieth century taught: it is not enough to say that obesity results from consuming more calories than are expended through daily activities. The 'obesogen hypothesis' proposes that chemicals "influence individual susceptibility to obesity by interfering with metabolic systems that regulate appetite, weight gain and fat development and distribution, and thereby have contributed to the rise in obesity" (34).

In the last two decades, a new paradigm has been developing in nutritional science. More important than examining the caloric, macro-, and micro-nutrient food content is knowing the composition and number of industrial substances, originally absent from nature and everyday cooking, which are increasingly becoming a part of people's diets.

The NOVA classification is being increasingly used in current scientific research. First proposed in 2009, the NOVA classification brought industrial processing as a key to understanding, more comprehensively and systemically, the linkages between food and health, especially regarding obesity and chronic non-communicable diseases (35).

NOVA classifies all foods and food products into four groups according to the extent and purpose of the industrial processing they undergo. It considers all physical, biological, and chemical methods used during food manufacturing, including additives (36). In this classification, foods are grouped into four major groups: unprocessed or minimally processed foods, processed culinary ingredients, processed foods, and ultra-processed food products. This last group includes formulations of food substances often modified by chemical processes and then assembled into hyper-palatable foods and beverages with industrial-only substances and cosmetic food additives. Ultra-processing makes them highly profitable, extremely attractive, and intrinsically unhealthy. The processes that make ultra-processed foods possible involve multiple steps and different industries, with little or no whole foods (37).

The NOVA classification is an indispensable reference in the scientific literature on the challenges of contemporary eating and for the food guides adopted by a growing number of countries, which stands at more than 100 today. Consequently, the damage of ultra-processed foods to health, society, the environment, and public finances is already entering the radar of the world's most important business organisations, such as the World Economic Forum (38).

Because of the importance of G20-originating companies in the agri-food system (particularly in the food industry), their contribution to combating the advancement

of ultra-processed foods and the global obesity pandemic is crucial. This contribution should have at least four components, which are proposed at the end of this chapter.

Strengthen biodiversity in protected areas, in agriculture and animal breeding

The fight against the global growth in the supply of ultra-processed foods will succeed only if this industrial transformation correlates with the emergence of regenerative agricultural practices. These practices presuppose the protection of forests, above all, the protection of tropical biodiverse forests (39).

The Forest Protection Pact signed by Brazil, Indonesia, and the Congo is critical in this regard. The contribution of the G20 in financial support and the dialogue on the governance of such an agreement is fundamental to stopping the advancement of destruction and promoting the regeneration of the socio-biodiversity of tropical forests. The sustainable use of forest socio-biodiversity must meet the requirements of the Nagoya Protocol regarding the rights of peoples and communities whose knowledge makes a decisive contribution to contemporary research.

It is evident that forests and other protected areas (including rivers and seas) will always have a much greater biodiversity than areas with massive conventional agri-food production. However, it is fundamental that these areas are managed in such a way as to drastically reduce their dependence on nitrogen fertilisers and, above all, on agrochemicals. Currently, agriculture exceeds the safe operating space regarding the use of agrochemicals. In 2020, the global limit for nitrogen and phosphorus losses has been exceeded by a factor of 1.7 and 2, respectively (40).

Soil depletion, crop losses, and increasing temperatures in main production areas are some of the factors leading contemporary research to seek alternatives to conventional methods of increasing agricultural supply. The recovery of soil biodiversity is one of the most essential premises to avoid the collapse of agricultural supply. Research around agroforestry and agroecology systems indicates that these are a solution to biodiversity loss and can capture more carbon than ordinary reforestation (41).

Similarly, animal husbandry should be the focus, considering the methods and techniques applied on a large scale so far. Genetic transformation (especially in poultry and pigs), breed homogeneity, and densification are strong hallmarks of this breeding operation, favouring the spread of viruses and bacteria, and justifying the application of antibiotics for 'disease prevention' and 'growth promotion' (42). In Germany, during the 200 days of a pig's life, antibiotics are administered for 48.5 days. In Brazil, these drugs are absorbed during 78 percent of the lifetime of the dominant pig farms (43).

This brings us to the alarming figure that 73 percent of the antibiotics produced today (93,000 tonnes in 2020 and, according to current estimates, 150,000 tonnes in 2030) are destined for the animals of these intense breeding operations. The consequence is the advance of resistance to antimicrobials, which exposes society to the emergence of viruses and bacteria that known drugs cannot combat.

Public discussion of this matter is recent. In 2000, only five countries publicly reported the consumption of antimicrobial products. This number has risen, but today only 47 countries report this data. Brazil, with almost 8 percent of global consumption of animal antibiotics (second in the world, well behind China with 45 percent of the total, but ahead of the United States with 7 percent) has no open record of this use, and the state supervision of the problem could hardly be more precarious (44). A recent document issued by several science academies of the G20 nations (45) urges their governments to take various actions to tackle the global advance of antimicrobial resistance. This can be managed using methods and techniques that improve animal welfare and reduce densification.

Recommendations to the G20

Acknowledging that the current monotony of agriculture and the influence of ultra-processed products have jeopardised food patterns by reducing the diversity of food available, the G20 should commit to finance and provide adequate incentives to biodiversity-friendly practices and approaches, like those recognised by FAO (46): organic agriculture, sustainable soil management, agroecology, sustainable forest management, agroforestry, and diversification practices in aquaculture and fisheries.

Given that the large agri-food industry (naming a few, but not exhausting: Archi-Daniels Food, Bunge, Cargill and Dreyfus—known as the ‘ABCD,’ Danone, General Mills, Kellogg, Kraft, Mondelēz, Mars, Nestlé, PepsiCo, Unilever) originates in G20 countries (47) (48), a commitment must be made by the G20 and these industries towards a significant reduction in the supply of ultra-processed foods, thus contributing to human health. This would be possible only by establishing a global multi-stakeholder task force especially focused on that.

The G20 should strengthen the guidance currently prevailing in dietary guidelines (led by the Brazilian example and strengthened by FAO recommendations) to favour the consumption of fresh or minimally processed products, preferably those of local origin, and to reduce the rising trend of ultra-processed products. In addition, adopting the Pan American Health Organisation’s nutrient profile model for front-of-package nutrition labelling regulations and the marketing restrictions for ultra-processed foods are the most effective evidence-based solutions to discourage the consumption of these harmful products (49).

The G20 must commit to the taxation of ultra-processed products (whose low prices often hide substantial social and environmental costs) as recommended by the World Bank to advantageously use health finance tools to mitigate the growing burden of non-communicable diseases. This can occur through higher taxation (for example, the WHO's recommendation to increase the prices of ultra-processed beverages by 20 percent) or reduced use of subsidies on fresh or minimally processed food categories.

The G20 should strengthen the European decision to ban the marketing of agricultural products from recently deforested areas. This positive sign encourages total dissociation between food supply and forest destruction.

The G20 must promote active, multilateral, and multistakeholder coordination for a global reduction in chemical inputs that compromise soil life, human health, animal welfare, and water quality. It is not a matter of suddenly eliminating the use of these inputs, but rather, of recognising that their reduction is a global challenge that requires international technical cooperation.

The G20 must support and establishes mechanisms to achieve the most important objectives of the Convention on Biological Diversity (COP15) on the protection of 30 percent of land areas, oceans, coastal areas, and rivers and the restoration of at least 30 percent of what has already degraded.

Subsidies should be directed to meeting social and environmental targets that allow for the regeneration of the losses that agricultural growth and the monotony of crops have imposed on current societies. The G20 should support the reduction of agricultural subsidies that support the destruction of ecosystem services, following the lead of the COP15 documents (which propose decreasing subsidies by US\$500 billion annually) (50).

The G20 countries must commit to developing urban food system policy strategies based on the circular economy concept to deal with local food (diversity) production as well as fight food loss and waste and secure healthy urban food environments, as guided by the Ellen MacArthur Foundation and the Urban Food Systems Coalition (51) that emerged from the 2021 UN Food Systems Summit.

Conclusion

UN Secretary-General Antonio Guterres, in his Statement of Action on the UN Food Systems Summit 2021 (52), emphasised the urgency of a systems approach to food aligned with the 2030 Agenda, embracing the complexity of our world to deliver the transitions we need. By July 2023 (53), the secretary-general acknowledged once more

that the world was losing the fight against climate change and biodiversity loss, and that the international community, international financial architecture and businesses need to rethink food systems to shift their focus towards people, not profit, and ensures outcomes for people and planet.

As evidenced in this chapter, sustainable food production is linked to healthy diets and decent livelihoods. In other words, both the state of the world's food and nutrition security and the fight against climate security will not advance with solutions lacking a food systems lens.

The G20, as an intergovernmental forum to deal with the global economy, financial stability, climate change mitigation, and sustainable development, comprising the world's major economies and two-thirds of the world's population, can and must play an important role in the fast emergence of an agri-food system that is entirely decoupled from forest destruction, is less dependent on chemical inputs that are harmful to the ecosystem services on which we all depend, and free of malnutrition. Correcting and adjusting incentives and disincentives along the global agri-food system is absolutely necessary to strengthen global security and ensure healthy diets are provided to all within planetary boundaries.

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An Ethical Framework for Measuring Prosperity

Colin Mayer | Dennis J. Snower

Abstract

THIS ESSAY ADVOCATES A COMPREHENSIVE SHIFT for the G20, transcending relying solely on GDP as an economic yardstick. In addition, it recommends the integration of social prosperity—embracing solidarity and agency—and environmental sustainability. Represented by the acronym SAGE (solidarity, agency, material gain, and environmental performance), this framework offers a nuanced view of prosperity's multidimensionality. Aligned with ethical prosperity, this approach equips policymakers to confront collective G20 challenges effectively. The proposal recommends G20 members adopt the SAGE dashboard for annual national prosperity assessment and establish international, national, and corporate accounting (INCA) standards. This ensures consistent and ethical prosperity evaluation across the G20 states and timeframes.

The Challenge

Numerous global challenges, including climate change, biodiversity loss, financial instability, and socioeconomic disparities, stem from moral shortcomings within the market economy. These issues represent collective action dilemmas that conventional economic incentives fail to address adequately. While individuals should consider the broader repercussions of their actions on collective flourishing, the market economy often encourages self-serving pursuits at the expense of others.

A fundamental aspect contributing to these inadequacies is the insufficient measurement of national and business prosperity. Traditionally, the assessment of these outcomes has been confined to GDP and shareholder value. The resulting misalignment between economic prosperity and human flourishing does not stem from inherent flaws in capitalism, but rather from the failure to gauge success within the system in ways that promote collective well-being.

GDP and shareholder value calculations overlook the degradation of the environment and the breakdown of social cohesion. For instance, the threats posed by climate change and biodiversity loss to humanity's present and future are not acknowledged when progress is solely measured through GDP and shareholder value. The resultant social fragmentation impedes collaborative efforts required to tackle such challenges. Furthermore, the impact of globalisation and automation on community social fabric is often marginalised in the assessment of national and corporate prosperity.

Capitalism operates as a mechanism for mobilising resources and endeavours toward predefined objectives. Yet, if these objectives are inappropriately defined and measured, the entire market system is prone to misalignment. Thus, rethinking the measurement of prosperity at the national and business levels becomes a key to the redirection of capitalism towards meeting the needs of people and the planet.

To realign the capitalist system, a paradigm shift is needed in prosperity measurement, along with accounting and reporting on this new basis. By gauging prosperity in ways that mirror the attainment of substantial individual and collective well-being in the present and future, the function of capitalism can be reimaged in the service of society and the natural world, rather than vice versa.

The key to the redirection of capitalism is to measure prosperity ethically, in line with universal aspirations for the promotion of human flourishing, individually and collectively. The measures of prosperity should be consistent across countries so that progress can be compared across space and time. Without transparent comparability, it will be impossible to identify good practice and to assess whether such practice could be relevant elsewhere. Each measure of prosperity should track an ethical objective,

which can be used to align policymaking across nations and communicate the need for such policymaking to the public.

The measures of prosperity should cover not just economic desiderata, but also social and environmental ones. What is good for the economy is not necessarily good for society and the environment. Nor can economic gains be understood as compensating for social and environmental losses. Instead, economic, social, and environmental desiderata are “on a par” (1), in the sense that people need prosperity in each of these dimensions in order to flourish.

Prosperity measurement should remain simple—not exceeding four indicators—so that the public can keep the main drivers of prosperity in mind at one time. These indicators need to be recognised as valuable components of human flourishing across national and cultural boundaries.

The four indicators proposed here satisfy the various criteria above since they cover four fundamental needs that all people share: solidarity (embeddedness in one’s communities), agency (individual and collective empowerment), gain (material sufficiency), and environmental sustainability. These may be summarised by the acronym SAGE.

Since the redirection of capitalism will involve not just a fundamental change in policymaking, but also in business practice, it is important for the new measurement of prosperity to cover not only national but also business activity. National performance and business performance should be measured consistently to promote collaboration of policymaking and business in addressing major global challenges.

Overall, the recalibration of prosperity evaluation transcends immediate financial gains, acknowledging broader human and planetary considerations. Reconceptualising prosperity assessment will enable policymakers within the G20 and beyond to make informed decisions that prioritise human well-being and environmental sustainability, fostering a more cohesive global approach to addressing complex challenges.

The Role of the G20

The G20 wields substantial influence on market economies, covering many aspects of economic, social, and environmental concerns in its various heads of state meetings, ministerials, tracks, working groups, and engagement groups. The proposed measurement of prosperity could serve as a yardstick for evaluating the efficacy of G20 policies across the relevant domains of human flourishing. By assessing prosperity through economic, social, and environmental lenses, the G20 can gain a more holistic perspective, redefining genuine societal progress.

Traditionally, the G20 agenda focused on global economic affairs, primarily covering the coordination of fiscal and monetary policies. As such, the G20 achieved substantial results in limiting the aftereffects of the 2008 global financial and economic crisis. At that time, the world was in the throes of the severest recession since the interwar period and, under these circumstances, doing what is good for the economy also meant doing good for society. Since then, the G20 agenda has expanded to include a variety of proliferating global problems, such as climate change, biodiversity loss, cybersecurity, food and energy security, sovereign debt vulnerabilities, and much more. These latter problems have social and environmental repercussions that are often decoupled from economic growth.

In response, it is necessary for the G20 to rely on a measurement of prosperity that extends well beyond economic and financial success. Measuring prosperity in terms of SAGE (solidarity, agency, gain, and environmental sustainability) provides a more encompassing framework for evaluating the performance of the G20 countries, relevant to the economic, social, and environmental problems that they face. On this account, the adoption of the SAGE dashboard in the G20 can lead to more comprehensive and balanced policies that address the overall well-being of people and the planet.

Addressing the diverse concerns that are on the G20 agenda year after year often involves diverse perspectives and interests among the member states. When success is measured solely by GDP and environmental performance, it frequently leads to disagreements, as countries prioritise their individual economic interests. Introducing social indicators of solidarity and agency can make it easier to find common ground, as countries consider not just economic gains but also social ones.

Besides, solidarity implies cooperation and mutual support, which are essential for addressing global problems. Agency is necessary to encourage countries to take ownership of their actions and collaborate for positive global change. The social indicators of solidarity and agency provide an empirical groundwork for incentivising collective action in the G20.

Many of the obstacles to G20 policymaking arise because global trends such as globalisation and automation have important social consequences that remain overlooked in GDP statistics. The SAGE indicators can provide a more transparent and accountable way to evaluate the impact of G20 policies, fostering a sense of fairness and encouraging responsible policy decisions.

Recommendation to the G20: Developing the SAGE Dashboard

The SAGE dashboard has the following indicators:

- Solidarity (S), covering the needs and purposes of people as social creatures, with a sense of belonging within their communities;
- Agency (A), covering the need to shape one's life through one's own efforts, individually and collectively;
- Gain (G), covering the goods and services that meet one's material needs; and
- Environmental sustainability (E) in the widest sense, encompassing not just environmental services, but also the human need to contribute to a flourishing natural world.

Measuring capitalist activity along these lines means focusing on the pursuit and achievement of moral values. Solidarity derives its normative foundation from communitarianism; agency is based on classical liberalism; gain derives its meaning from materialistic utilitarianism; and environmental sustainability rests on eco-ethics. These values figure prominently in the literature on ethics. For example, according to American social psychologist Jonathan Haidt's moral foundation theory, solidarity is covered by the values of care, loyalty, authority, and sanctity, while agency is covered by liberty and fairness (2).

Invariably, the inability to address collective action predicaments stems from moral deficiencies. Moral values are instrumental in fostering innate collaboration within communities and mitigating detrimental self-interest. These values equip individuals to tackle communal challenges, including those related to public goods and shared resources. Within this framework, economic activities that contribute to environmental degradation or the fragmentation of communities are ethically flawed.

An imperative arises for prosperity to be evaluated in ways that facilitate the resolution of collective action predicaments across various scales—local, regional, national, multinational, and global. This necessitates a deeper and more comprehensive measurement of human well-being than what GDP and shareholder value offer. One key concept of wellbeing is 'hedonic happiness,' encompassing physical and emotional pleasures; a second is 'life satisfaction,' which is a subjective assessment of overall well-being throughout an individual's lifespan; and a third is 'eudaimonic happiness' evaluates subjective achievements such as meaning, mastery, and social engagement, tied to mental states and functional competence.

A fourth dimension rests upon pursuing and achieving moral values, inherently significant across diverse cultures and nations. These values encourage collective collaboration beyond self-interest, curtailing destructive competition. This dimension, influencing life satisfaction and eudaimonic happiness, underscores the importance of values that foster cooperation in the face of shared challenges.

The ethical assessment of prosperity is pivotal in reshaping capitalism towards human flourishing. Herein, the G20 holds the potential to spearhead a global measurement endeavour, suggesting the adoption of an ethical framework for prosperity assessment among its members. This will mark a significant step towards aligning policies and practices with values prioritising human and societal well-being while harmonising with environmental imperatives. By advocating an ethical approach to prosperity measurement, the G20 can catalyse a transformative shift in economic and policy paradigms, fostering a world where collective welfare and sustainability are at the forefront.

Development of an Empirical SAGE Dashboard

In light of advancing comprehensive policy paradigms, the G20 recognises the imperative for enhanced well-being assessment mechanisms. The development of an empirical SAGE dashboard can be guided by six overarching objectives:

- **Universal Applicability:** The dashboard shall discern key normative well-being dimensions transcending cultural, national, and religious confines.
- **Simplicity:** Emphasising efficiency, the focus shall centre on four fundamental facets of human flourishing—solidarity, agency, material gain, and environmental sustainability.
- **Regularity:** The measurement rhythm shall align with GDP assessments, ensuring consistent evaluation of normative well-being components, with an annual cadence aligned with the G20 presidency.
- **Global and Temporal Perspective:** To foster comprehensive comparability, the dashboard shall encompass all G20 member states and a diverse array of countries beyond, thereby enabling robust cross-national and temporal analyses beyond GDP metrics.
- **Holistic Business Evaluation:** Extending the measurement ambit to the corporate sphere, the dashboard shall facilitate a longitudinal assessment of business performance, transcending conventional shareholder value metrics.

- **Harmonised Policy-Business Framework:** Ensuring coherence, the dashboard shall deliver congruent assessments of national and business performance, thus enabling nuanced policy-business interplay and aligning indicators of policy efficacy and business influence.

Development of Stock and Flow Statements Based on SAGE

In pursuit of a comprehensive assessment framework, the dashboard shall encompass:

- A flow statement, gauging the annual stream of solidarity, agency, material gain, and environmental sustainability and
- A stock statement, measuring the associated stocks driving these flows. Social capital underpins solidarity, capabilities underscore agency, physical and human capital drive the flows of goods and services, while natural capital generates the flows of environmental services.

These stock and flow statements are to be comparable to a company's income statement and balance sheet, which are indispensable for evaluating prosperity.

The stocks above act as enablers of the flows rather than direct generators. Consider the stock of social capital, which enables an environment of trust and cooperation, catalysing the flow of solidarity. Likewise, the stock of capabilities invigorates the flow of agency, while the stocks of physical and human capital underscore the flow of goods and services. Correspondingly, the stock of natural capital fuels the flow of environmental services.

Unlike physical assets, where flows tend to erode stocks, the dynamics are distinct in natural, human, and social capital. Nature's benefits, for instance, can be consumed without eroding its regenerative capacity, provided consumption remains within sustainable bounds. Similarly, human knowledge and social capital can be drawn upon without diminishing their stocks, granted ethical and responsible usage prevails. The dashboard envisions an ecosystem where flows can be sustained without jeopardising their enabling stocks.

The empirical development of the SAGE dashboard has already been embarked upon, with a preliminary flow statement developed for over 160 countries in the last two decades. The underlying methodology and preliminary results are described in Lima de Miranda and Dennis J. Snower (3). This methodology can be linked to the rich literature on well-being measurement, exemplified by the OECD's 'Better Life Index' (4), the Social Progress Imperative's 'Social Progress Index' (5), and other notable initiatives. On this

account, the SAGE dashboard does not supplant existing approaches but stands as an empirical endeavour committed to distilling and categorising available data.

Develop an International, National, and Corporate Accounts Standards Framework

Leveraging the measurement initiative, the avenue to forge a normative accounting framework for national and business domains is viable, harmonising with well-being components. Specifically, the avenue entails the conception of international, national, and corporate accounts (INCA) within both the public and private sectors.

Essential is the establishment of a harmonised suite of accounts bridging the macro-micro continuum, encompassing international, national, and corporate dimensions. This comprehensive framework shall encapsulate established stocks and flows of human, social, and natural capital, interwoven with extant measures of financial and material products and services, spanning assets, liabilities, income, and profit and loss statements.

This methodology draws upon extant frameworks that quantify total wealth and assessment impact. These assessments of stocks and flows are to be integrated into the reporting of policy effectiveness. They are expected to become integrated into reporting on business performance as well.

This facilitates consistency between the measurement of material gain, which is the economic driver of a capitalist system, and the other components of the SAGE dashboard. Inconsistency creates a tension between financial motivation and the interests of individuals, societies, and the natural world. Financial and material incentives should not conflict with human and planetary flourishing (6). The SAGE dashboard can resolve this by recognising the costs of maintaining, preserving, and protecting solidarity, agency, and environmental sustainability in the measurement of GDP and profit.

This proposition stands to render a transformative impact on the stewardship of human, social, and natural resources, akin to the seismic influence wielded by the establishment of national accounts in the 1950s on macroeconomic oversight. Embarking on a normatively rooted well-being dashboard (SAGE) and harmonising the policy-business juncture, concomitant with a normative accounting infrastructure (INCA), marks an initial stride toward cultivating a framework of “moral capitalism.”

Conclusion

Genuine progress in the G20 can only be established when advancements are registered with regard to the fundamental human needs of solidarity, agency, material gain, and environmental sustainability.

In the realm of policymaking by the G20, this multidimensional approach carries profound implications. As one of the world's most influential forums, the G20 possesses the capacity to shift global paradigms by endorsing and implementing such a comprehensive measurement framework. By advocating for the incorporation of solidarity, agency, and environmental sustainability alongside traditional economic metrics, the G20 can guide nations towards a more balanced and equitable understanding of progress.

The G20's endorsement of the SAGE dashboard can usher in a novel era where policymaking transcends narrow economic parameters. Policymakers can be equipped with a broader spectrum of data, enabling them to craft strategies that foster economic growth while simultaneously addressing social well-being and environmental preservation. Such a holistic perspective can discourage policies that yield gains at the expense of fundamental human needs, social cohesion, or the natural world.

Moreover, the SAGE dashboard's integration into G20 policy discussions can foster international cooperation on shared challenges. As nations align their goals with the dimensions of solidarity, agency, and environmental sustainability, they may find common ground and mutual interests more readily. For instance, issues like climate change and biodiversity conservation, which can be contentious when evaluated solely based on GDP and profit, may garner broader support when measured in the context of a comprehensive well-being framework.

In conclusion, the G20's potential to steer global policymaking towards a more inclusive and sustainable future is undeniable. By championing the implementation of the SAGE dashboard, the G20 can catalyse a paradigm shift that transcends traditional economic measures. Embracing a multidimensional approach to prosperity assessment will not only align policies with ethical imperatives, but also cultivate solidarity among nations, empower individuals, and safeguard the environment. As the G20 acknowledges the interplay between economic success and holistic well-being, it can drive policy convergence and cooperative solutions to global challenges.

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Channelling Disaster Finance Resources in Small Islands in G20 Countries

Hafida Fahmiasari | Danang Parikesit | Fauziah Zen

Abstract

SMALL ISLANDS IN THE G20 COUNTRIES face unique challenges related to isolation, limited resources, and a pronounced vulnerability to climate change and natural disasters. A potential solution is to channel financial assistance to reduce disaster risk in these small islands by identifying their most pressing needs. The G20 countries can create financing mechanisms to support sustainable development, climate adaptation, and disaster risk reduction in their small islands. Collaboration and coordination among the G20 countries, their small island communities, and other stakeholders are essential to promote sustainable development and resilience in these unique regions.

Introduction

The long-term planning and management of disaster risk needs pre-event mitigation, event response, and post-event recovery. Managing disaster risks entails having the technical capacity to plan and prepare and the managerial competence to lead field response, establish contingency plans, and evaluate the results. Disaster-related financing could be more balanced, with the majority coming from humanitarian budgets for responses delivered by partners after a disaster event rather than development funding and not for recovery, prevention, risk reduction, and preparedness before an event (1).

While small islands (2) belonging to the G20 countries have a distinct economic scale than small island developing states (SIDS), their natural vulnerability may be comparable. Small island landscapes are geographically exposed to the surrounding marine conditions, including water and weather. Increasing climate change effects impact tiny islands' landscape (and inhabitants) more than on the big islands and mainland.

The difficulties stem not only from natural dangers to the safety of the people who live on the islands but also from the increased expense of constructing sufficient infrastructure due to their tiny economic size, remote locations, and reliance on imported goods and capital. They also face higher investment risks due to natural disasters, climate change, and environmental deterioration.

Normal market-based finance systems may need to be improved to meet the capital development demands of small islands. The central governments of emerging economies such as Brazil, China, India, and Indonesia need more budgets to spend on their small islands. Small islands with low populations will be under budget, especially if fiscal spending per capita is used as one of the primary variables in budget allocation.

Small island economies are typically primarily reliant on tourism and fishing. Due to limited and susceptible environmental capacity, scaling up mass tourism is also a challenge. Meanwhile, natural disasters and climate change are wreaking havoc on the fishing industry. Rising water temperatures impact fish stocks and alter fish migration patterns. It may also kill vital biota in the ocean ecosystem and reduce the availability of sea products.

This essay aims to analyse the status and potential alternatives for channelling catastrophe finance resources to tiny islands belonging to the G20 economies.

Literature Review

Disaster Risk Finance

Disaster risk financing uses financial mechanisms and procedures to minimise the repercussions of events that negatively influence the financial resources essential for sustaining an organisation (3). Risk financing can be pre-arranged (ex-ante) or initiated following an event and the recognition of resource needs (ex-post). Disaster risk finance refers to the financial strategies and instruments used to manage the financial impact of natural disasters. Disaster risk finance is an important tool for development and can help countries become more resilient to natural disasters.

The choice of instruments in disaster risk financing depends on the disaster's expected severity and frequency (4). Contingent credit can increase the financial response capacity of developing country governments in the aftermath of natural disasters while protecting their long-term fiscal balance (5). Financial protection against natural disasters requires strong leadership by a country's finance ministry (6). It combines disaster risk management, fiscal and budget management, public finance, private sector development, and social protection. A study by the Disaster Risk Finance Impact Analytics Project has significantly contributed to the understanding of how to monitor and evaluate existing or potential investments in disaster risk finance from a development perspective (7).

Finance Challenge in Small Islands

Small islands are particularly susceptible to various disaster risks due to their geographical isolation, limited resources, and climate sensitivity. Financing disaster preparedness, response, and recovery in these regions is complex. Conventional funding mechanisms often fail to address their distinctive needs, revealing the necessity for innovative approaches. It is necessary to emphasise prioritising and coordinating infrastructure development across multiple sectors to achieve the Sustainable Development Goals (8). Small islands in developing states require significant investment to close existing infrastructure gaps, keep up with growing demands for new infrastructure, maintain existing infrastructure, and mitigate infrastructure vulnerability to climate-related risks (9). It is important to consider the environmental carrying capacity and vulnerability when developing infrastructure in small islands (10).

Role of International Organisations and Initiatives

Conventional disaster financing mechanisms, such as insurance, governmental budgets, and international aid, are fundamental, yet their applicability to small islands is

limited. In 2017, the OECD wrote a recommendation concerning disaster risk financing strategies, offering directives for crafting strategies to manage the financial aspects of disaster risks (11). Some instances in small islands have been explored in case studies by the World Bank, such as the Caribbean Catastrophe Risk Insurance Facility (CCRIF). Formed in 2007, the CCRIF was primarily instituted to address the immediate liquidity challenges faced by Caribbean governments following catastrophic events. The CCRIF operates as an exempted company under the legal jurisdiction of the Cayman Islands, holding an insurance license and adhering to a trust deed. Operating as a collaborative reserve mechanism, the CCRIF extends coverage to participating governments, offering protection against the impacts of disasters (12).

Annually, approximately US\$1.5 billion is expended by federal and state authorities in Mexico towards the reconstruction of public infrastructure and low-income housing following natural calamities. This expenditure can escalate significantly during adverse years; for instance, in 2010, the reconstruction cost surged beyond US\$5 billion due to extensive floods. To address the recurring necessity for reallocating budgets post-disaster to facilitate reconstruction, the Government of Mexico initiated the Fund for Natural Disasters (FONDEN) in 1996. Originally conceived to furnish substantial financial reserves for federal and state reconstruction endeavours, FONDEN's inception aimed to ensure such funding to maintain established government expenditures (13).

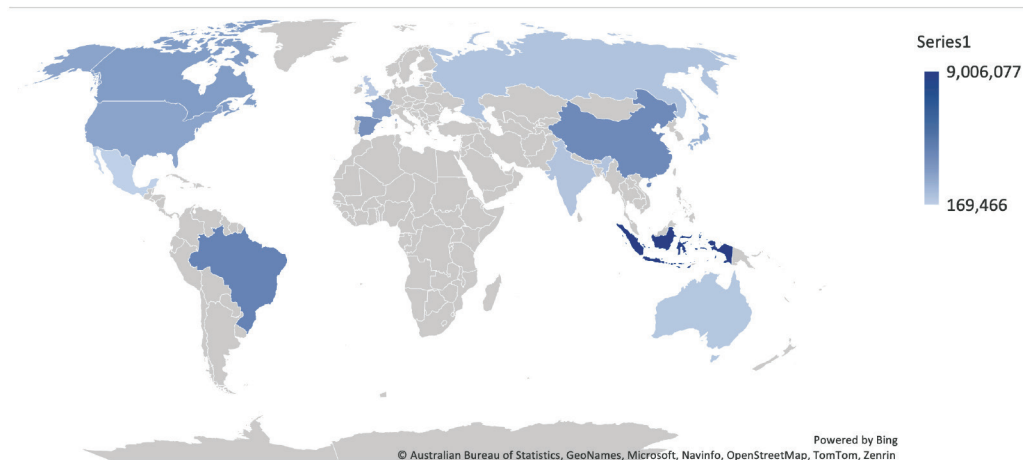
The Challenge

Of the G20 countries, Indonesia, Japan, Australia, the US, China, Brazil, and certain EU countries (Netherlands, France, and Italy) have significant populations on their small islands. The definition of small islands—*islands with at least 1.5 million population*—has high generalisation, meaning significant differences across the world's small islands remain uncaptured. To capture realistic conditions, this essay includes GNI per capita and its deviation from the national average, variables that represent each small island's fiscal and economic capacity.

Within the G20, Indonesia has the largest population on its small islands—over nine million people reside in its 22 small islands. Brazil, China, Spain, Canada, and the US also have significant populations on their small islands (see Figure 1).

The small islands' often-distant location from the mainland and unique topographies have resulted in somewhat varied economic growth levels compared to their mainland, primarily in countries with low GNI per capita, such as Indonesia, India, Brazil, and Mexico. As such, in addition to climate change impacts, these small islands must also confront challenges such as limited economic activity and the dearth of investments.

Figure 1: Population Distribution on Small Islands Within the G20 Countries



Source: World Bank Data (14)

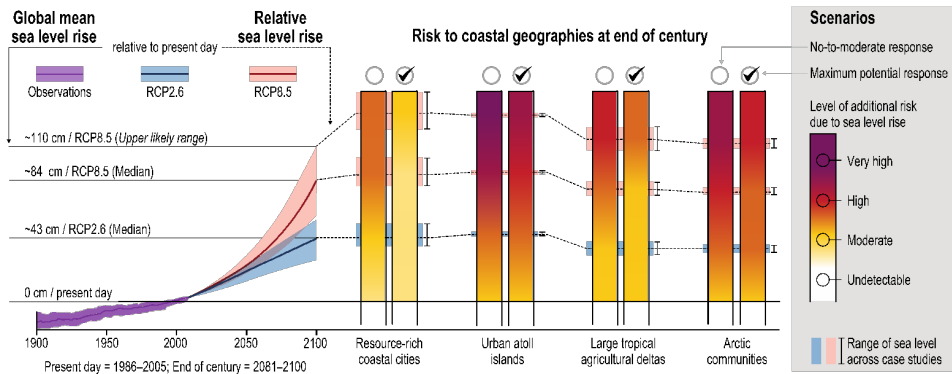
Climate change impacts

China, the US, India, Russia, and Japan—all G20 countries—are the top five carbon emitters globally, contributing to 56 percent of global carbon emissions. As such, the G20 has an obligation to act on this issue. Climate change is predicted to result in a global rise in sea levels in the coming century. Coastal areas, including small islands, will be severely impacted.

The interests of the small islands within the G20 countries need to be better represented in terms of their funding needs to tackle climate-related events. The G20 must establish a facility to allocate finance fairly to these prioritised areas within the grouping.

The projected global mean sea level is about 0.43-0.84 m by 2100 relative to 1986-2005 levels. This will depend on significant local and regional variations and warming scenarios. Figure 2 indicates that the urban atoll islands with relatively lower GNI than the resource-rich coastal cities will have significant additional risk due to sea-level rise.

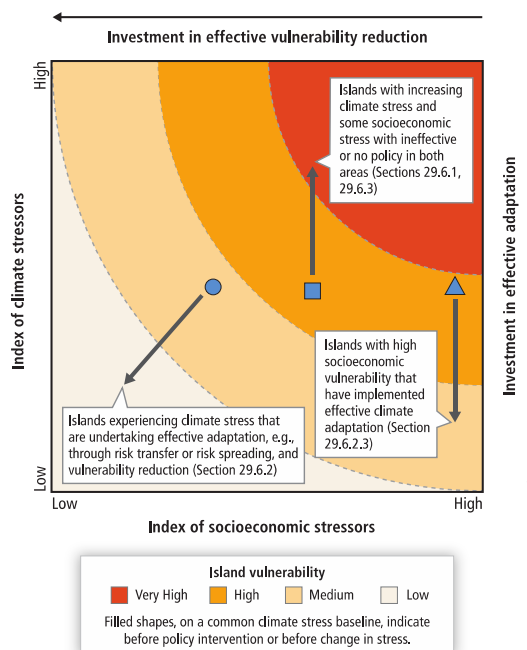
Figure 2: Risk to Coastal Geographies at the End of the Century with Different Scenario Projections



Source: IPCC (15)

Small islands are more intensively impacted by climate change. This is mainly because their locations typically face the large ocean, while their small size makes it relatively difficult to build buffer zones. Many small islands develop their infrastructure and commercial and residential areas near the shore since it is more efficient and practical. However, the rise in sea levels and frequency of storms increases the danger to people and infrastructure. Many small islands' economies are dependent on tourism and fisheries. Increasing sea temperature jeopardises fish stocks and the ocean ecosystem, while natural disasters drive away tourists from the islands. Figure 3 highlights the vulnerability of islands that do not see sufficient investment and disaster mitigation policy response and indicates that their recovery will be more challenging.

Figure 3: The Impact of Alternative Climate Change Adaptation Actions and Policies

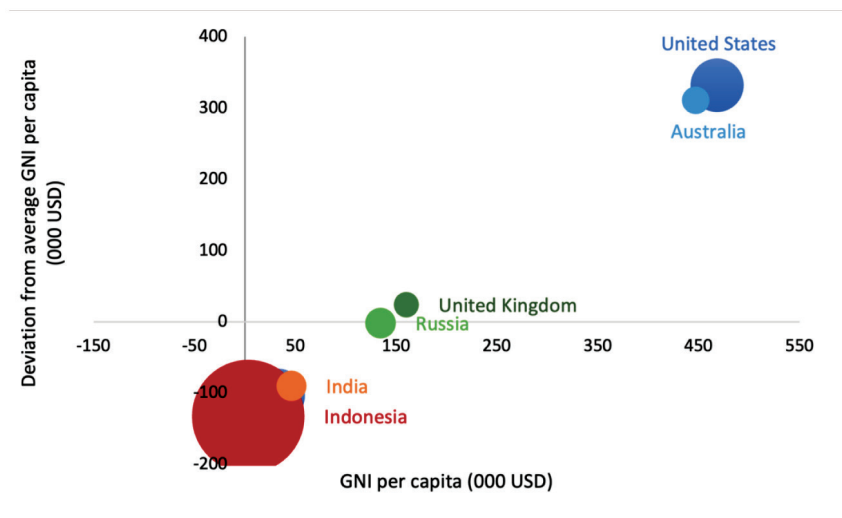


Source: IPCC (16)

Limited economic activities

The small islands in the G20 group, especially those in Indonesia, are characterised by low economic activity compared to the mainland. The GNI per capita of such small islands (17) differs from the GNI per capita of their countries. Figure 4 shows the relationship between population, GNI per capita, and its deviation from the average GNI per capita in the G20 group. The GNI per capita axis shows each corresponding country. Indonesia, China, and Brazil have many small islands and the highest negative deviation from the average. This indicates that their small islands are relatively worse than developed countries like the US and Australia.

Figure 4: Relationship Between Population (Bubble Size), GNI Per Capita, and Deviation of GNI Per Capita Average in G20 Countries with Small Islands



Source: World Bank and Related National and Regional Statistics (18)

Table 1 lists countries whose small islands have the highest and lowest vulnerability. The vulnerability can be linked to the size of the population (exposure size) and the capability of these islands to recover from disaster (GNI per capita). The hypothesis is that the highest vulnerability will be experienced in a country whose population is large and the deviation from GNI per capita is negative (for example, Indonesia). Conversely, the vulnerabilities of small islands in developed countries like the US and Australia are very low.

Table 1: Deviation from GNI Per Capita Average in G20 Countries with Small Islands

Country	Small islands population	GNI per capita (US\$, 2022)	Deviation from GNI per capita average (US\$, 2022)
US	2,031,474	468,165	331,845
Australia	542,000	447,079	310,759
United Kingdom	449,400	160,138	23,818
France	2,098,053	32,487	-103,833
China	3,352,477	14,571	-121,749
Brazil	3,766,358	18,071	-118,250
Mexico	169,466	12,338	-123,982
Indonesia	9,006,077	3,378	-132,942

Source: National and Regional Data (19)

Current funding programmes are usually focused on the SIDS, with little consideration of the small islands that are part of other developing countries. The G20 forum must direct funding to these specific regions in its member countries by observing the needs of small islands in mitigating and adapting to climate change.

Inadequate investment

Small islands are typically unattractive investment destinations with no economies of scale and significant natural challenges. Private investors must hedge their risks, while the insurance and reinsurance of these risks, especially in developing economies, are rare and come at high premiums. Public finance deals with limitations, and its budget allocation competes. In democratic countries, the governments care more for highly populated areas due to the size of the voters. Small islands with a small population are typically of less priority.

Building infrastructure is expensive, especially if it must be adaptive to climate change impacts. Meanwhile, the negative effects of not having adequate and climate-adaptive infrastructure are significant. However, the positive impacts of good infrastructure are difficult to monetise, leaving them as externalities (off-sheet). This means the cost-benefit analysis is not comprehensive because it may include the potential financial risks but not the potential benefits from saving the damages and minimising the fatality toll. The underestimated net benefit calculation results in the rejection of the project. Therefore, to attract private investments, national governments, and not-for-profit organisations can intervene and leverage the bankability of the projects.

The G20's Role

The G20's role in providing direct funding for disaster reconstruction efforts in the SIDS is intermittent. Yet, it remains attuned to the vulnerabilities the SIDS face in the wake of natural disasters. Recognising this vulnerability has prompted the G20 to take measures aimed at bolstering the resilience and recovery of these states.

A notable instance of the G20's engagement is the establishment of the G20 Initiative on Supporting Industrialisation in Africa and Least Developed Countries in 2016. This framework supports the SIDS, signifying a concerted effort to cultivate sustainable industrialisation. The initiative's overarching objective is to stimulate job creation, enhance productivity, and foster economic growth by promoting sustainable industrial development in these countries.

Furthermore, the G20's commitment to disaster risk reduction and resilience-building is palpable through the G20 Africa Partnership, launched in 2017. This collaborative effort encompasses disaster risk reduction initiatives and resilience enhancement projects within African countries, encompassing the SIDS within its purview.

The support for the African countries and the SIDS within the G20 framework underscores the pressing necessity for similar assistance to the small islands of the G20 member nations. In this regard, the proposed comprehensive seven-step framework can serve as a strategic pathway to channel financial resources and fortify resilience while mitigating disaster risks in these regions (see Figure 4).

Figure 4: Framework to Channel Financial Resources to G20 Countries' Small Islands



- **Define a criterion:** Defining a criterion for identifying small islands within the context of the G20 countries is paramount. A comprehensive criterion encompassing variables like population, GDP, and distance to the capital city can effectively capture the diversity of small islands. Including specific parameters tailored to different economic contexts, such as larger resource exporters versus tourism-based economies, ensures an accurate delineation of the target islands. This approach acknowledges each category's nuanced vulnerabilities and resource requirements, contributing to equitable resource allocation.
- **Identify the needs of the small islands:** The identification of needs is a pivotal step in channelling disaster risk funds effectively. This process involves assessing the financial requirements for post-disaster reconstruction, climate change adaptation, and the establishment of sustainable infrastructure. A holistic understanding of the financing demand emerges by evaluating the costs associated with each aspect. Moreover, incorporating climate adaptation and sustainable development facets underscores the necessity to address long-term resilience beyond immediate disaster response, ensuring comprehensive resource allocation.
- **Develop a new financing mechanism:** Exploring innovative financing mechanisms tailored for small islands is essential. Member countries' funds can be a source, offering grants, loans, and other financial support options. Alternatively, expanding the mandates of existing frameworks designed to support the SIDS can facilitate the inclusion of G20 member countries' small islands. This step reflects a strategic blend of adaptation and customisation, aligning financing mechanisms with the distinct requirements of small islands in the G20 nations.

- **Define the eligibility to receive funding:** Defining the eligibility criteria ensures that disaster risk funds are directed to those in most need. Parameters like the severity and frequency of natural disasters, economic development levels, and proactive climate change mitigation efforts are pivotal in determining eligibility. A multidimensional assessment must acknowledge the varied vulnerability and capacity of the different small islands. Integrating these aspects will contribute to a targeted approach, channelling funds where they are most impactful.
- **Determine the funding sources:** Determining the sources of funding involves a multifaceted approach. Contributions from member countries, investments from the private sector, and philanthropic donations form a diverse financial foundation. Each source brings unique advantages and implications, fostering a multitiered financing structure that enhances sustainability and resilience. By diversifying funding sources, the channelling of disaster risk funds becomes resilient against economic fluctuations and varying levels of financial support.
- **Developing monitoring and evaluation systems:** Developing robust monitoring and evaluation systems is integral for transparent and accountable resource utilisation. Incorporating performance intelligence mechanisms allow for a comprehensive tracking of infrastructure development, encompassing both social and hard dimensions. This holistic approach enables stakeholders to assess the effectiveness of resource allocation, track project outcomes, and facilitate evidence-based decision-making, thus enhancing the efficiency of disaster risk funds.
- **Establish partnerships:** Strategic partnerships with international organisations and regional development banks augment the effectiveness of disaster risk fund utilisation. Collaborations extend beyond national governments to include multilateral agencies and philanthropic organisations. These partnerships bolster the bankability of projects, reduce risk exposure, and enable blended finance schemes that combine environmental and social values. Additionally, partnerships facilitate knowledge exchange, capacity-building, and the mobilisation of resources, contributing to the overall success of disaster resilience projects.

Considering the dynamic challenges of disaster risk in small islands, the G20's evolving commitment to enhancing their resilience necessitates a coherent and adaptable framework. Such a framework should ideally encompass proactive disaster risk reduction strategies, targeted resource allocation, capacity-building initiatives, and knowledge-sharing mechanisms. Emphasising the specific context of each small island, this proposed framework can serve as a guiding tool to facilitate the sustainable channelling of financial resources, aligning with the G20's intent to nurture resilience and bolster disaster risk reduction efforts in its member countries' small islands.

Overall, the G20's sporadic financial engagement for disaster reconstruction in the SIDS is balanced by recognising the need for broader support mechanisms encompassing resilience-building and risk reduction. Establishing initiatives beyond direct funding underscores the group's commitment to fostering sustainable development in the face of recurrent natural disasters.

Conclusion and Recommendations to the G20

Engaging new players to finance the G20's small islands programmes and projects

Insurance and reinsurance institutions are missing players in financing infrastructure in disaster-prone regions. Given the high vulnerability of such projects, financiers, especially private investors, seek special protection for their invested funds. There are only a few insurance and reinsurance companies with specific businesses in this field. However, multilateral agencies can establish and develop such entities. For instance, the World Bank and the Japanese government have established the Pacific Catastrophe Risk Financing and Insurance Initiative to create a market-based disaster risk insurance.

The Secretariat of the Pacific Community's Applied Geoscience and Technology Division implemented an updated information risk platform called PACRIS for six Pacific Island countries. The project provided post-disaster budget extension guidelines to the six governments (tools for managing financial demands after natural disasters).

Similar post-disaster guidelines can also be established for the small islands within the G20 countries based on their current condition and needs. The G20 must explore potential ways to encourage new sources of financing for infrastructure development on their member countries' small islands. Local engagement will be crucial to increase ownership and market participation. This is a key step in the proposed framework to channelise funding for the G20's small islands.

Furthermore, the G20 can promote innovative financing mechanisms, such as climate bonds, green bonds, or insurance instruments, to provide additional sources of finance for small island communities. These mechanisms can leverage private-sector finance and reduce the burden on public financing sources.

Advancement of comprehensive risk assessment processes

This enables the estimation of vulnerabilities and financial exposures through the following strategies:

Facilitating the advancement of monitoring and assessment technologies: Efforts should be directed towards fostering the growth of technologies and proficiency for monitoring and evaluating disaster risks. This responsibility should be shared among government entities, the private sector, non-governmental organisations, and scientific and academic communities. Collaboratively, they can leverage expertise and capabilities, tapping into the private sector's adeptness in constructing risk assessment and exposure models. This synergy ensures a well-rounded approach to comprehending and mitigating disaster risks.

Enhancing data availability for quantifying potential exposures: Crucial data about assets, structural vulnerabilities, hazards, and historical losses essential for quantifying potential exposures should be systematically generated, compiled, shared, and publicly accessible. This endeavour should respect applicable confidentiality and privacy stipulations. Efforts to standardise national, regional, and international data collection and reporting should be undertaken. Additionally, conducting post-disaster loss assessments following consistent methodologies in collaboration with the private sector is vital. This practice furnishes the requisite data for ongoing evaluations of disaster risk exposures.

Holistic assessment of impacts and scenarios: Inclusivity in impact assessment is crucial, necessitating the evaluation of both direct and indirect consequences. Furthermore, a comprehensive evaluation encompassing both typical and extreme scenarios is essential. This approach ensures that the assessment considers the full spectrum of potential outcomes, contributing to a well-rounded understanding of the multifaceted implications of disaster risks.

Managing knowledge through collaboration and coordination among G20 countries and small island communities

The G20 countries should work together to identify common challenges and opportunities for collaboration to bolster their small islands. This could include sharing best practices and expertise in disaster risk reduction, climate adaptation, and sustainable development. Collaboration could also involve pooling resources and expertise to provide targeted support to small island communities. In addition to existing efforts in financing infrastructure, especially in developing economies, the G20 may need to establish a coherent strategy to establish a knowledge hub

for infrastructure investment to be more efficient and multiply the impacts of this agglomerated intelligence. For instance, it can begin by focusing on specific sectors like water and mobility investment. Learnings from such a project can be replicated in the larger area of infrastructure development.

The G20 countries should involve small island communities in decision-making to ensure their voices are heard. This could include establishing mechanisms for consultation and engagement of these communities in designing and implementing programmes and projects.

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TF-4

REFUELLING GROWTH: CLEAN ENERGY AND GREEN TRANSITIONS

The Myth of Mobilising Private Finance for Climate Action and Pivoting to Scale

Manon Fortemps | Jens Sedemund | Özlem Taskin | Amarendra Bhattacharya |
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Abstract

ACTING ON CLIMATE AND DELIVERING THE SUSTAINABLE DEVELOPMENT GOALS (SDGs) requires significant innovation and the right scale of finance. The world needs a new roadmap on climate finance that can mobilise the US\$1 trillion per year in external finance that will be needed by 2030 in developing countries. There is significant potential and need to increase private sector investment and finance for climate. Momentum is growing among mainstream investors, partly driven by the commitment to net zero. However, a set of cross-sectional risks impedes the mobilisation of private climate finance at scale. This essay proposes a framework of solutions for the G20 to make blended finance work for the SDGs by undertaking actions in enabling environments, instruments, and institutions. In doing so, the G20 can take the lead in supporting enhanced and concerted action between the public

sector, private investors, Multilateral Development Banks (MDBs), and International Financial Institutions (IFIs) from both developed and developing countries to provide solutions to tackle systemic and transaction-level constraints.

The Challenge

There is need for a major investment push to achieve a transition to sustainability globally. This aims to drive strong and inclusive growth and progress on the Sustainable Development Goals (SDGs) while keeping the Paris Agreement goals within reach. A focus on developing countries is especially required, as they account for most global investment needs, particularly in infrastructure, and are projected to account for more than three-quarters of future emissions (1) (2). Therefore, a new roadmap on climate finance to mobilise US\$1 trillion per year in external finance by 2030 in developing countries would be beneficial (3).

Addressing the conjoined agenda of climate and the SDGs requires a significant step-up in the mobilisation and alignment of finance. The overall solution will imply the mobilisation of the full array of development finance sources, including substantial increases in international public finance, including concessional finance. At the same time, there is recognition of the need to unlock private finance for investments in developing countries. For a rapid scaling up of investments, the most significant increase in financing will have to come from the private sector (4). Against this background, there are significant expectations from the enhanced mobilisation of private climate finance through the deployment of financial interventions and instruments, which are broadly captured through the concept of blended finance.

Despite growing momentum, the required volumes of private climate finance to close the climate and SDG financing needs far exceed what is being presently mobilised. From 2016 to 2021, US\$120.8 billion was mobilised from the private sector by official development finance interventions (5). US\$97.7 billion (representing 81 percent of the total) targeted only climate change mitigation; US\$13.7 billion (11 percent) was mobilised for adaptation; and US\$9.5 billion (8 percent) for both mitigation and adaptation (6). Furthermore, mobilised private climate finance was concentrated in developing countries with lower-risk profiles, i.e., middle-income countries (85 percent) as well as the energy and banking sectors (55 percent). Only 15 percent of country-allocable mobilised private climate finance benefited low-income countries, and 4 percent was in support of social infrastructure and services (7). The discrepancy between the amounts required and mobilised, especially in low-income countries, is largely explained by a set of risks and impediments which, if not managed properly, will lead to a significant escalation of the cost of capital, further hindering the mobilisation of private finance.

The end goal of market creation and the exit of public development finance should drive the approach to mobilisation of the investment push for climate and sustainable development objectives. In this regard, mobilisation alone, as a transaction-based approach, has inherent limitations. To contribute effectively to the objective, mobilisation needs to be situated in a broader context of support to developing countries, notably the creation of a broader enabling environment both through regulatory and policy measures as well as through enhanced capacities, skills, and institutional development. The starting point for a big investment push must be strong country ownership and actions. Thus, this brief proposes an architecture of solutions to be endorsed by the G20 to overcome the underlying causes of insufficient private climate finance mobilisation in developing countries.

The G20's Role

The G20 is well positioned to give a major impetus to private climate finance mobilisation. It can foster solutions to make blended finance work for the SDGs and climate by promoting actions in enabling environments, instruments, and institutions, as follows:

- a. Provide capacity building to developing countries to strengthen the investment climate, tackle systemic risks, and enhance the development of bankable project pipelines;
- b. Help design risk-mitigation instruments to achieve scale, including through portfolio approaches to de-risking;
- c. Support multilateral development bank reform, engage the private sector, and develop emerging sustainable finance hubs into gateways to the Global South.

Recommendations to the G20

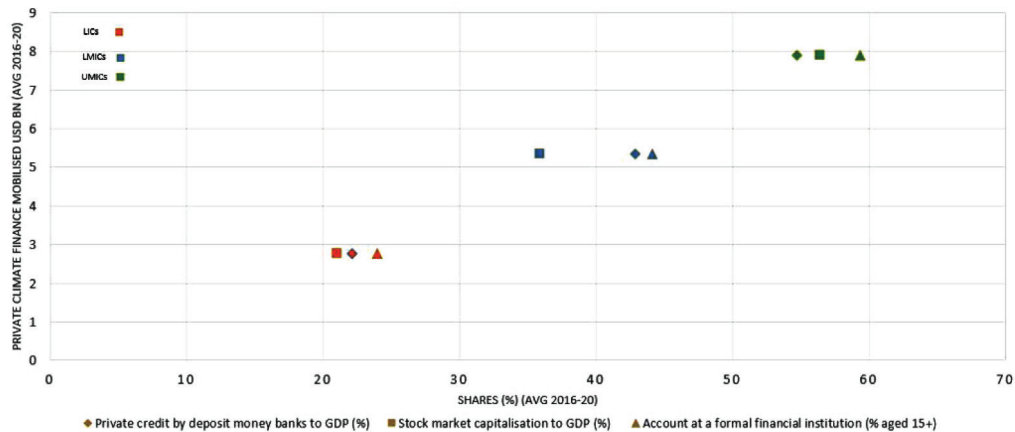
At the country level, provide support to developing countries to strengthen the enabling environment and tackle systemic risks

The scaling up of urgently needed private climate finance in developing countries is hampered by weaknesses in the enabling environment, including real and perceived policy risks, as well as the scarcity of well-identified investment opportunities.

Financial development, as a fundamental dimension of the overall development process, is a key determinant of how effectively countries can mobilise and allocate finances

to investment needs and priorities. There is ample research stressing the importance of financial depth and access to finance (8) (9). Plotting volumes of mobilised private climate finance relative to the key indicators of financial sector development have consistently yielded a strong positive correlation (Figure 1) (10),(11).

Figure 1: Mobilised Private Climate Finance and Financial Sector Development



Note: Left axis: Avg. 2016–2020 private climate finance mobilised (US\$ billions). Bottom axis: The depth of financial institutions is proxied by the share of private credit by deposit money banks to GDP over the period 2016–2020. The depth of financial markets is proxied by stock market capitalisation as a share of GDP over the period 2016–2020. Access to financial institutions and services is proxied by a country’s accounts at a formal financial institution (as a share of people aged 15 or more) over the period 2016–2020. Values are 2016–2020 averages.

Source: OECD data on mobilised private finance, [oe.cd/mobilisation](https://data.oecd.org/mobilisation/); World Bank Global Financial Development database, <https://databank.worldbank.org/source/global-financial-development>.

The lack of financial sector development is both a symptom and a cause of the scarcity of finance. It translates into a high cost of capital, which is a key feature of a country’s development status and associated financing constraints. Notwithstanding its inherent link to the overall development process, constraints that limit the scope of private financing and contribute to keeping the cost of capital high can be categorised into three dimensions—the enabling environment, intermediation, and the generation of concrete investment opportunities. These can be further broken down into several key constraints (12):

- a. **Weak investment climate**, which leads to policy-induced risks, including off-take risk and creditworthiness risk of key players in the energy sector.
- b. **Exchange rate risk**, which invariably arises if international finance needs to be mobilised, as local financial markets do not have the required depth to service domestic needs.

- c. **Pipeline and associated limits to scale**, where the lack of sufficient high-quality investable projects and high upfront costs make initial investments uneconomical, while financing volumes and liquidity profiles result in a mismatch between cross-border finance supplied and local demand.
- d. **Asymmetrical information on developing countries**, leading to high-risk premia required by global private sector financiers and investors for investing in new, frontier markets.
- e. **Lack of data** for investors to assess risk, including through standardised taxonomies and accessibility.
- f. **Lack of risk-mitigation instruments** for risks that are unmanageable to investors.
- g. **Mobilisation constraints**, in the form of incentive structures of development finance institutions that limit the mobilisation and unlocking of private investment and financing.

In the long term, the solution to scaling up investment is sustainable economic growth and development, driven by country ownership and action, with enhanced support from international partners. However, a big investment push is essential to enable developing countries to overcome the present crisis, restore momentum to the SDGs, and make the transition to net-zero, climate-resilient growth (13). The success and viability of such an investment push will hinge on the ability to identify systemic solutions that can strengthen the enabling environment and overcome the constraints to private investment and financing in developing countries.

Country ownership must be at the centre of these systemic solutions. There is growing momentum for the establishment of country and sector platforms that bring together key stakeholders in support of country-led investment and transition strategies to foster climate action and investment, with a focus on energy transition, both within the official sector (G7 and G20) and the private sector (14), such as the Just Energy Transition Partnership model (15). Such platforms can incentivise a country to set out clear strategies and investment programmes, tackle policy impediments, establish structures for scaling up project preparation, and create replicable and scalable financing models.

Tackling systemic constraints requires more concerted action to generate common direction and momentum and scale systemic solutions. The assets, capacities, and resources of international public development finance providers, the private sector, and philanthropic organisations can generate solutions to overcome systemic constraints. Aligning behind a common effort and approach magnifies the scope for overcoming

systemic bottlenecks and unlocking market creation through addressing key priorities such as enhanced pipeline development, standardisation of data and project features for improved cost-effectiveness and scalability, systemic risk-mitigation solutions at scale to tackle foreign exchange risk and policy risk, and moving blended finance from a transaction to a portfolio approach (16).

At the instrument level, deploy blended finance more strategically and develop risk-mitigation solutions at scale

When engaging in developing countries' markets, the private sector often faces several transaction and systemic risks, such as exchange rate risk, policy risk, and high intermediation costs, all of which significantly raise capital costs (17),(18). To better manage these risks, investors need to gain access to fit-for-purpose and simple risk-mitigation instruments. Blended finance solutions such as development guarantees, insurance, and hedging provided by donor agencies and development banks can be used to mitigate these risks and improve the credit rating of a project.

Blended finance has been broadly defined as the strategic use of development finance to mobilise additional finance towards sustainable development in developing countries (19). It can play a key role in unlocking and financing climate investments, given the risks and the long-term nature of returns associated with such investments (20). So far, however, efforts have not yielded the expected increases or followed the required trajectory. In 2021, only US\$1.9 billion, or 1.2 percent of Official Development Assistance (ODA), was directed towards development-oriented private-sector instrument vehicles or blended finance instruments (21).

By deploying development finance in a way that addresses investment barriers and improves the risk-return profile of investments, blended finance operates as a market-building instrument that helps attract commercial finance for climate and development (22). Situating transaction-level mobilisation within the broader context of catalysing private finance flows by adopting more systemic solutions towards climate and other SDGs in developing countries is a central principle of blended finance (23) (24). Potential solutions to improve the strategic use of blended finance include building on successful models and initiatives, scaling up portfolio approaches, aiming for both impact and volume, strengthening governance to ensure value for money, and tackling the public-private culture gap (25).

Risk allocation balance in blended finance can be achieved through scaling up portfolio approaches. The IFC's Managed Co-Lending Portfolio Program (MCP) and the proposed Global Clean Investment Risk Mitigation Mechanism (GCI-RMM) are examples of replicable structures which adopt a portfolio approach to mobilise new sources of capital for sustainable infrastructure. Successfully implemented structures

(e.g., MCPP) identify a clear and precise problem, secure the commitment of an asset owner or manager to tackle the problem by allocating internal resources, mobilise seed money, and develop a solution that can be replicated by other investors (26). New proposals such as the GCI-RMM could help lower the costs of risk mitigation by collectively de-risking large, geographically diversified project portfolios (27).

There is great potential to smoothen the public–private culture gap and accelerate the implementation of risk-mitigation solutions through knowledge sharing, as the Blended Finance Taskforce has sought to do over the last few years (28). The Egypt COP27 presidency-mandated *Sharm El-Sheikh Guidebook for Just Financing* is a good example of a successful multistakeholder initiative which intends to capture opportunities to leverage and catalyse finance and investments to support the climate agenda (29).

At the institutional level, support the reform of development banking, involve the private sector, and facilitate the transition of emerging sustainable finance hubs into gateways to the Global South

Mobilising private finance has typically fallen to the private sector arms of multilateral development banks (MDBs) and development finance institutions (DFIs) which, alongside ODA providers, develop the projects, portfolios, and ultimately, the SDG markets to crowd in commercial capital. As they understand risk and development, these institutions benefit from structures, instruments, and skills that allow them to engage in financial transactions with varying levels of risk and returns. Besides, many MDBs and DFIs have a credit rating, which enables enhanced fundraising and credit support. Yet, MDBs are inadequately focused on mobilisation, and their incentive structures create a risk of ‘crowding out’ private capital instead of driving the co-investment and mobilisation of additional private capital (30). This pattern is even more striking when considering the leveraging mechanisms used by MDBs and DFIs to mobilise private climate finance (Figure 2) (31).

Figure 2: Leveraging Mechanisms Used by MDBs and DFIs to Mobilise Private Climate Finance (2016–2021)



Note: 2016–2021 average. CIVs = Collective Investment Vehicles. Leveraging mechanisms are shares (in percentage) of total mobilised private climate finance. OECD data on mobilised private climate finance are collected for the following instruments: syndicated loans, guarantees, shares in collective investment vehicles, direct investment in companies, credit lines, project finance, and simple co-financing arrangements. The methodologies for reporting on amounts mobilised are defined by the instrument, based on the principles of causality and pro-rated attribution.

Source: OECD data on mobilised private finance, oe.cd/mobilization

From 2016 to 2021, MDBs and DFIs mobilised 85 percent of the total climate finance from the private sector through official development interventions. While being critical actors in the ecosystem, over half of their mobilisation came from direct investment in companies and SPVs (47 percent), followed by guarantees (23 percent) and syndicated loans (17 percent). Conversely, they hardly made use of simple co-financing (1 percent) or shares in Collective Investment Vehicles (5 percent) (32). The low share of co-financing is noteworthy, given that these institutions would appear naturally suited to co-finance with private financial institutions, with a relatively clear scope for synergies and complementarity. Together with their high share of direct financing, it may point to continued constraints to operations or institutional incentives to go beyond traditional approaches in enhancing a focus on mobilisation (33).

The ongoing reform discussion of the international development finance system has revealed a growing recognition of the need for a change in the mandate, operating models, and scale and mix of financial support required from MDBs to enable them to respond to current global and development challenges, including climate change. Research points to three main areas of action for both institutions and their shareholders to fully tap into the potential of MDBs and DFIs to mobilise private capital, including for climate action (34):

First, broaden the use of development banking. Till date, direct financing is at the core of the business models of development banks. Conversely, blended finance approaches to mobilise private resources for development are a small part of development banks' financing toolkits (35).

Second, support a stronger focus on mobilising additional private finance. Shareholders need to back development banks and DFIs to focus their institutional objectives on crowding in new investors and sources of finance for climate investments. This, in turn, will facilitate the development of future-proof markets and country-owned catalytic activities, such as domestic resource mobilisation. Such a shift in business models towards additional mobilisation calls for shareholders to reduce their expectations for return on equity and rethink their allocation of concessional resources (36).

Third, target performance indicators towards mobilisation and impact. Integrating mobilisation indicators in corporate scorecards and considering the career advancement paths of individual officers will be key to aligning incentive systems with mobilisation objectives.

To close the climate and SDG financing gap, reforming the financial architecture for development must go beyond MDBs and DFIs and involve private stakeholders. Several private sector-led initiatives have been launched to scale up finance for sustainable investments in developing countries. For example, the Glasgow Financial

Alliance for Net-Zero, the Sustainable Markets Initiative, and the Global Investors for Sustainable Development Alliance provide frameworks and platforms for private sector commitment and action. Likewise, asset owners and other stakeholders, such as the Africa50 platform and the Amundi Green Bond Fund, are among the most promising innovations to learn from when it comes to blending public and private sector funding and deploying guarantees to mobilise institutional capital. These initiatives should work together proactively and in partnership with MDBs and countries for the identification and development of projects and the reduction, sharing, and managing of risks to bring down the cost of capital (37).

Lastly, emerging sustainable finance hubs in large developing economies, such as the GIFT IFSC in India, could play a key role in linking international capital with investment opportunities in the Global South. Developing such initiatives as conduits of capital to countries beyond their immediate jurisdiction can help bridge gaps in the financial systems of developing countries. Thus, these initiatives should be encouraged to expand their focus beyond vanilla debt and equity to blended finance.

Conclusion

There has been a growing momentum in 2023, starting with the Paris Summit on a New Global Financing Pact, to enhance the financing capacity of the international financial system to make it better suited to combating global challenges such as climate change and the pursuit of the SDGs. The advancement on the agenda of the capital adequacy framework review, the wider reform of MDBs, the channelling of special drawing rights towards climate-vulnerable countries, and disaster clauses in sovereign debt are evidence of intergovernmental platforms increasingly recognising the need to bolster institutions and innovate in terms of instruments. The recommendations outlined in this Brief aim to further support the growing momentum for action.

The more effective deployment of blended finance is necessary to unlock private sector investments at scale. At the country level, a major push is needed to unlock investments at scale, including through wider adoption of country and sector platforms. At the instrument level, adopting portfolio approaches to de-risking can help address both systemic and transaction-level risks more cost-effectively. At the institutional level, the ongoing discourse around the reform of MDBs should ensure the enhanced capacity of these institutions to deploy blended finance instruments as one of the outcomes. Besides multilateral institutions, new sustainable finance hubs in developing countries could play a key role as conduits of capital flows to the Global South. Lastly, these measures must be complemented by improvements in enabling environments across developing countries.

While the discourse on sustainable finance at intergovernmental platforms is proceeding in the right direction, the urgency to combat climate change mandates quicker progress. With India's G20 presidency closing, COP28 in Dubai will provide the next opportunity to advance the global finance agenda.

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Accelerating Just Energy Transition Through Enhanced and Integrated Critical Minerals Supply Chains

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Abstract

CLEAN ENERGY TECHNOLOGY WILL BE CRITICAL to meet global net-zero emission targets. Large economies in Asia, Europe, and North America are intensifying efforts to accelerate the deployment of clean energy technologies and maintain their manufacturing capacity. However, securing a sustainable and resilient supply of critical minerals poses several challenges, including the lack of mineral governance to manage the environmental, social, and economic impacts, and the lack of an ecosystem to support the emerging market and developing economies (EMDEs) in maximising the benefits from resource extraction. This essay proposes that the G20 should strengthen the soundness and resilience of global critical mineral supply, support the establishment of downstream capacities in EMDEs, and foster regional value chain networks.

Introduction

Critical minerals are essential inputs for clean energy technologies, such as renewable power, nuclear power, electricity networks, electric vehicles, battery storage and hydrogen. The extraction, processing, and refining of minerals is currently highly concentrated in a small number of countries. For lithium, cobalt, and rare earth elements (REE), the top three producing nations control over three-quarters of global output. Australia and Chile dominate in lithium supply, China in REE, and the Democratic Republic of the Congo in cobalt. The picture for copper and nickel is slightly different, but still around half of the global supply is concentrated in the top three producing countries. Chile, Peru, and China dominate in copper supply, while Indonesia, the Philippines, and Russia control nickel output. The concentration level is even higher for processing and refining operations, in which China has gained a strong presence (1).

As the world shifts towards a clean energy system, the demand for critical minerals is expected to dramatically increase in the coming decades. This brings new revenue opportunities for industries along the value chain, creates jobs for society, and helps diversify the economy. However, high geographical concentration also implies geopolitical and economic risks. Any change in the major supplier countries, such as rising resource nationalism, supply chain bottlenecks, geopolitical tensions, political instability, policy changes, and natural disasters, could create disruptions to supply security. In return, volatility and vulnerabilities of critical minerals' supply may affect the deployment, cost, and sustainability of energy transition technologies (2).

Several G20 members, including the US, the European Union (EU), Japan, Canada, and Australia, have adopted and updated critical mineral strategies. Partnerships have been formed among some G20 members to address challenges to critical minerals.

- The US State Department launched the Energy Resource Governance Initiative (ERGI) in 2019 to promote improved mining-sector governance and resilient supply chains for critical minerals. The founding partners—Australia, Botswana, Canada, Peru, and the US—released the ERGI Toolkit to share and reinforce best practices.
- Geoscience Australia, the Geological Survey of Canada, and the US Geological Survey launched the Critical Minerals Mapping Initiative in 2019 to promote critical mineral discovery and improve knowledge sharing in the three countries.
- The European Raw Materials Alliance was announced in 2020 as a key part of an action plan on critical raw materials.
- Australia, Canada, Finland, France, Germany, Japan, South Korea, Sweden, the UK, the US, and the EU announced the Minerals Security Partnership (MSP) in

2022 to catalyse investment in the mining, processing, and recycling of critical minerals. MSP partners also announced support for a shared commitment to high environmental, social, and governance (ESG) standards.

However, there is a lack of coordination in the G20 to tackle the challenges of securing global critical mineral supply. Many of these initiatives are limited to like-minded partners. More inclusive cooperation with major players from the developing world, such as Argentina, Brazil, China, India, Indonesia, Mexico, Saudi Arabia, South Africa, and Türkiye, is needed for the G20 to play a leading role in the development of a sustainable, responsible, and affordable global supply chain of critical minerals.

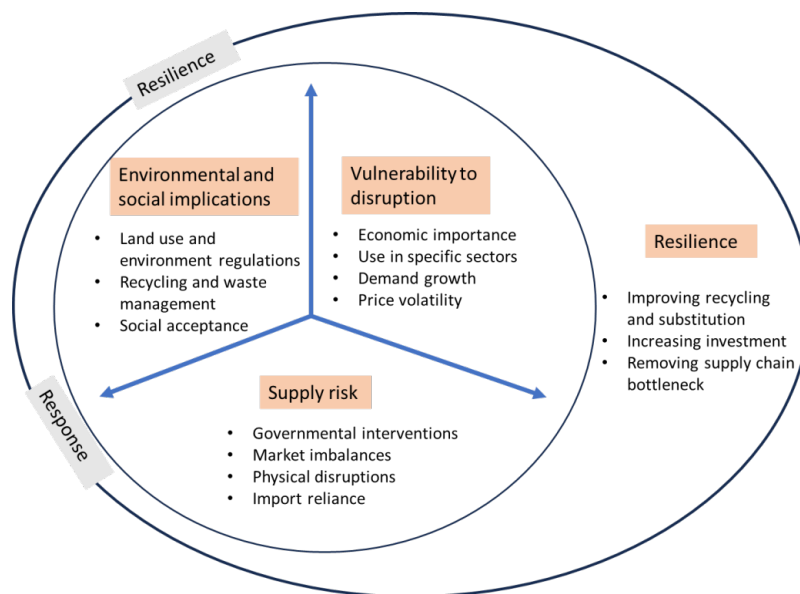
Assessing the risks of critical minerals' supply and improving the governance and policy practices requires a holistic review of the market dynamics and changes in economic, geopolitical, and technological factors. Based on literature review of the assessment methodologies, this essay analyses the challenges in global critical minerals supply, assesses the pros and cons of existing global initiatives, and proposes policy interventions that the G20 could take lead to improve the sustainability and reliability of critical minerals supply and facilitate a just clean energy transition.

Literature review and assessment framework

The implications of rising mineral demand triggered by clean energy transition can be examined through multiple lenses. Many studies analysed risks associated with geopolitics, economics, and ESG capacity within the general framework of classic risk theory (3). Graedel et al (4) used a 3D methodology to assess criticality related indicators at the corporate, national, and global levels based on a two-dimensional criticality matrix developed by the US National Research Council (5). Frischknecht and Jolliet (6) suggested the importance of building connections between anticipated risks factors through cause-and-effect mechanisms. Schrijvers et al (7) systematically reviewed indicators used to assess mineral criticality and categorised the theme of analysis into five aspects: supply disruption, vulnerability, substitutability, environmental and social impacts, and resilience.

Research and methodology are extremely diversified in this area, and there is also an overlap in the type of indicators that are used to assess the risks and impacts. Based on the literature review (8), this essay extracts some common ground and formulates a framework that can analyse the risks, the impact, and the mitigation options in a systematic approach. As shown in Figure 1, this framework incorporates four core elements—the risks of supply, the impact of disruption, environmental and social sustainability, and the strategy to improve resilience.

Figure 1: Methodology Framework to Assess Critical Minerals Supply Resilience



Source: Authors' own

The risk of supply, often referred to as the probability of a supply disruption, is widely covered in most research. Supply disruptions may stem from governmental interventions, market imbalances or physical disruptions of the supply chain. To capture the probability of a supply disruption within current or future supply structures, the diversity of producing or supplying countries, measured by the Herfindahl-Hirschman Index, is often used in combination with political stability, measured by one or more sub-indicators of the Worldwide Governance Indicators (9).

The impact of supply restriction, also referred to as the vulnerability to a supply disruption, is used to reflect the relative importance of the material for a system disruption (10). The assessment may include the use of material in emerging technologies or specific sectors, the price of the material or the revenue or GDP that could be impacted by a supply disruption (11).

Mining activities can have detrimental effects on land loss, soil erosion, and pollution, and extraction activities can exacerbate water stress (12). There is also growing concern on the impact of the mining sector on indigenous communities, human rights, and labour conditions (13). In some assessments, environmental and social issues are considered within supply risk (14), and some with vulnerability assessment (15). Recent developments in critical minerals have requested the international community to prioritise and present environmental and social sustainability as a separate dimension (16).

The development of resilience theory for supply chains of raw materials offers an effective theoretical framework to study how systems respond to disruptions and constraints. This forward-looking approach can help assess the potential mitigation options and fill in the gap between the current and future status (17). Major mechanisms, for example, may include diversifying supply, stockpiling of materials, improving material properties, and material substitution. Encouraging greater recycling rates within the framework of the so-called circular economy (18) could be another option.

Challenges of Securing Supply Chain Resilience

Supply risk

The share of the top three producers of critical minerals in 2022 has remained unchanged or increased further, especially for nickel and cobalt (19). The risk index of resource nationalism increased significantly in 34 countries, covering most resource-rich states in Africa, Latin America, and Asia (20). The global incidence of export restrictions on critical raw materials saw an over five-fold increase over the last decade, with several countries significantly intensifying use of these measures (21). The combination of political instability, policy and legal uncertainty, lack of transparency, poor transport and infrastructure deters investments in mineral exploration and mine development, adding further pressure on an already strained supply.

For some critical minerals, global imports are more concentrated than exports. This means major importers may have similar levels of economic leverage to key exporters. In other words, concentrated exports can be a source of disruption, and important concentration can also impact some critical materials supply chains (22).

Many resource-holding nations are seeking positions further up the value chain, while many consuming countries want to diversify their source of refined metal supplies. However, the world has not yet successfully connected the dots to build diversified midstream supply chains.

Vulnerability assessment

Critical minerals experienced broad-based price increases in recent years, accompanied by strong volatility, particularly for lithium and nickel. Most prices began to moderate in the latter half of 2022 and into 2023 but remain well above historical averages (23). This has highlighted the importance of material prices in the costs of transforming our energy systems. Clean energy technology costs continued to decline until the end of

2020 due to technology innovation and economies of scale, but high material prices then reversed this decade-long trend.

While base metals may not be as significant as oil in global economic activity, they are important in the economic activity of about one-third of emerging markets and developing economies (24), of which some rely heavily on export revenues from their mining. More than 80 percent of the export revenues of Botswana, the Democratic Republic of Congo, and Guinea, for instance, is derived from the mining sector (25). The development of mineral industries may create jobs and economic benefit for other sectors of the economy, for example in the service, transport, and maintenance sectors. However, this contribution is limited in these countries due to the lack of technology, skills, and funding to develop industrial ecosystem.

Environmental and social sustainability

EMDEs will likely remain vital suppliers of critical minerals for the foreseeable future given the recent upswing in their demand. In many countries with large critical mineral deposits, mining sector governance remains weak. IEA assessments show companies are making headway in community investment, worker safety, and gender balance (26). However, environmental indicators are not improving, greenhouse gas emissions remain high, and water withdrawals almost doubled from 2018 to 2021. The mining sectors are also vulnerable to disruptions that may arise from natural disasters and pandemics, and are tied to concerns around human rights, corruption, and political instability.

There is a need for both national and international governance mechanisms to build more sustainable global supply chains that mitigate the environmental and social impacts of the sector, as well as developing innovative tools to manage such impacts, such as life-cycle assessment (LCA) tools (27). Without support to strengthen the policy and regulatory capacity in EMDEs, scaling up and ensuring a sustainable global supply of critical minerals will be unpredictable.

Supply chain resilience

The net-zero transformation has generated huge industrial, economic, and geopolitical shifts across the globe. Major G20 members (such as the US, the EU, the UK, Canada, China, and India) have stepped up their efforts, rolling out supportive measures to increase investment in clean energy infrastructure, facilitate domestic production of critical minerals, and improve technology innovation and material recycling. Industrial policies, including tariffs, subsidies, preferential loans, tax breaks, and local content

requirements, are increasingly being used to build economic advantages from the clean energy and minerals supply chain.

Compared to major players in the midstream, however, most of the resource-rich EMDEs face significant challenges in generating sustainable social and economic benefits from mineral resource development. While many battery minerals are mined in developing countries in Africa, Asia, and Latin America, the actual value-addition work (such as smelting, refining, cell assembly, and EV production) often takes place elsewhere (28). Climbing up the value chain is politically and economically appealing but challenging for many EMDEs. Limited incentive policies and regulatory frameworks, a lack of adjacent industries, constrained infrastructure, and inadequate technical capabilities present difficulties for EMDEs to design and implement industrial strategies that could boost the domestic market for clean energy technologies and create value-added downstream industries for critical minerals. International support and cooperation is needed to improve the enabling ecosystem in EMDEs and ensure a fair and sustainable energy transition.

Meanwhile, investment in critical minerals mining and development is far below what is needed to accelerate the clean energy transition. The IEA estimates that the total global anticipated investment in critical minerals mining until 2030 will be between US\$180 billion and US\$220 billion against a required investment of US\$360 billion and US\$450 billion to achieve the net-zero target (29). The mineral-rich countries in the developing world hold most of this untapped potential. In general, the cost of capital is higher in EMDEs than in advanced economies due to heightened macroeconomic risks, underdeveloped financial systems, and less fiscal space to support economic recovery and transition. The lack of de-risking policies and financing channels imposes difficulties for increasing investment in capital-intensive net-zero technologies and clean energy infrastructures.

Recommendations to the G20

Strengthening the soundness and resilience of global critical mineral supply

The G20 can lead the development of the global minerals supply chain with better governance and higher resilience through enhanced cooperation between its member countries and extended support to EMDEs.

Fostering cooperation and knowledge sharing among the G20 members and with major mineral producers: Proven reserves for most critical minerals are more geographically widespread than current production. This suggests considerable opportunities for

increasing investment and exploration activities among the G20 member countries. Improving information sharing and R&D coordination in the G20 to advance the development of substitute materials and improve the practice of reuse and recycling is also important to address critical mineral supply chain challenges.

The G20 can foster cooperation among members and extend knowledge sharing with non-G20 major mineral-producing countries. Productive actions may include creating databases on the geological occurrence and distribution of critical minerals to support information collection and study of commodity-specific mitigation strategies. It is also important to conduct assessments to help with mineral exploration and the development of conventional sources (minerals obtained directly through mining an ore), secondary sources (recycled materials, post-industrial, and post-consumer materials), and unconventional sources (minerals obtained from sources such as mine tailings, coal byproducts, extraction from seawater, and geothermal brines) (30).

Promoting a globally recognised minerals governance framework: Decisions within the mining industry are based on several factors and are largely shaped by complicated government frameworks and bodies operating within globalised mineral value chains. There is an urgent need to coordinate and reform this governance landscape to address enduring challenges such as commodity price volatility, lack of linkages between mining and other economic sectors, inadequate management of environmental impact, and sociopolitical and geopolitical risks of mining (31).

International organisations have created some platforms to promote sustainable and responsible extraction, such as the World Bank's Climate Smart Mining Initiative, Global Battery Alliance, International Council on Mining and Metals (ICMM), and the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development. However, an overarching international governance framework for critical minerals and a coordinated policy action between major critical minerals producers and consumers are still lacking.

At the international level, the G20 can support the creation of an International Minerals Agency, or the signing of an international agreement, to coordinate and share data on economic geology and mineral demand needs and promote transparency on impacts and benefits. The existing international platforms could serve as fora for negotiating an international consensus regarding the specific policy options and programmes for the implementation of the new global governance framework for the extraction sector.

Supporting the adoption of better ESG practices in EMDEs and major industrial players: Regulatory safeguards need to be strengthened across sectors in the EMDEs. The performance of corporate responsibility policies and ESG practices varies significantly among industry actors, and challenges are more substantial in resource-

rich developing countries. Governments play a critical role in adopting better policies and moving beyond ESG reporting toward public disclosure, transparent supply chain tracking, and international certification of critical minerals.

The G20 could provide both financial and technical support to decision-makers within EMDE governments to strengthen their institutional and regulatory capacity. Standardising guidelines issued by a cluster of ESG-focused organisations such as the Responsible Minerals Initiative and the ICMM is also necessary to boost the sector's environmental and social acceptability. In addition, promoting the use of digital tools can help the mining industry in tackling the challenge of tracking, monitoring, and managing ESG performance.

Promoting the use of life-cycle analysis in policy design and implementation in EMDEs:

LCA in the metals and mining sector is a tool to systematically evaluate the potential environmental and social impacts of products, services, and technologies across the entire life cycle. Mining and processing activities are an integral part of most complex material cycles, and so the application of LCA to minerals and metals has gained prominence (32). As the clean energy transition progresses, more comprehensive and accurate information is needed in policy, planning, and investment decisions. In the EU and the US, the LCA has been applied as a tool and framework for evaluating energy technology pathways and policy options. Recent work has focused on broadening the traditional LCA framework to integrate environmental, social, and economic aspects at varying spatial levels, also referred to as life-cycle sustainability assessment (33). However, limited interest from industries and governments and a lack of data and capacity have restricted using LCA in EMDEs to support sustainable development.

The G20 could promote using LCA to eliminate any discordance between the benefits of renewable technologies and the impacts associated with critical minerals, especially in EMDEs. The G20 can support the establishment of centres of excellence on LCA to facilitate best practice-sharing and capacity building for government officials, research scholars, and industrial players. Encouraging EMDE governments to adopt and implement LCA methodologies and procedures in policy assessment for energy and mining industries is important. However, making it a mandatory requirement might be costly and inappropriate for EMDEs at this stage.

Building robust downstream manufacturing capabilities in EMDEs

The G20 can mobilise resources to support EMDEs in improving the ecosystem for downstream industries and facilitating the establishment of a regional value chain network for clean energy technologies.

Improving the ecosystem in EMDEs for downstream industries: Mineral-rich developing economies have a strong desire to nurture downstream industries and capture better economic and social benefits from the clean energy transition. For example, Indonesia has banned the export of unprocessed nickel and Zimbabwe has banned raw lithium export to encourage value added activities within its borders (34). Many more developing countries have implemented export taxes and non-automated licensing procedures to safeguard domestic supply, promote further processing, and protect the local downstream industry (35).

A balanced and co-operative approach in foreign policy engagement requires the importing states to support industrial development in developing countries beyond extractive patterns in critical material supply chains. This entails fostering partnerships, advocating responsible sourcing practices, supporting capacity building in producing countries, promoting transparency and accountability, and investing in sustainable initiatives (36).

The G20 could help improve the industrial ecosystem in EMDEs through concerted financial and technical support. Knowledge-sharing and technical assistance programmes delivered by multilateral development agencies and international organisations could be expanded to include programmes for building industrial manufacturing capacity in EMDEs. Specialised funding can be convened for education and training programmes, as well as creating apprenticeships and other workforce development initiatives. The provision of blended capital from international and development finance institutions is critical to attract private investment at early stages of readiness.

Promoting regional integrated value chains of critical minerals: The regionalisation of the supply chains has offered opportunities for new economic growth in the era of clean energy transitions. The EU has the most integrated institutions, infrastructure, technologies, corporate governance systems, currency, and harmonised rules and regulations. This deep integration has allowed companies to exploit economies of scale and universities to share information and collaborate. Similarly, under the Regional Comprehensive Economic Partnership, 15 nations, including China, Japan, and the ASEAN countries, take on tariffs and make local content rules easier to navigate (37). Similarly, the US-Mexico-Canada Agreement is advancing an integrated North American supply chain.

In comparison with these three blocs, South America, Africa, and West Asia have room to grow. Coordinated energy market designs and regulatory frameworks can scale up the market. Further, access to a larger regional energy market can increase the region's attractiveness for investment in manufacturing capacities. A regionally coordinated approach to local content requirements can improve the overall efficiency of resource

allocation and help small economies overcome hurdles to capturing the benefit of clean energy industrialisation (38).

The G20 could encourage and support the development of regional hubs of clean energy value chains. For example, the Gulf Cooperation Council aims to develop the advantages of hydrogen and carbon capture, utilisation, and storage hubs through shared carbon storage capacity and transport infrastructure. Africa and South America present significant opportunities for creating regional hubs for solar and wind components manufacturing. North America continues to race ahead in EV manufacturing.

The G20 could support the creation of regional, shared R&D centres for clean energy technologies, and the development of unified standards and accredited testing facilities. This can help reduce technical barriers to the interregional trade of components and intermediates and improve regional integration of clean energy technology value chains.

Additionally, the G20 could facilitate the establishment of regional platforms to enhance cooperation along the critical minerals value chain. These regional platforms, in the form of regional industrial associations, can play an active role in incubating green manufacturing projects and mobilising industry participation.

Conclusion

Future G20 summits should consider aligning national and multilateral strategies to address critical mineral concerns. A joint platform in the G20 will become essential to prioritise principles of fairness and equity and use the Sustainable Development Goals as an overarching framework to ensure economic, social, and environmental concerns are addressed coherently (39). The G20 could promote public-private partnerships, encourage knowledge-sharing among members, and develop better investment and trade agreements with resource-rich countries. The G20 also needs to make a concerted effort to minimise negative trade-offs that may arise as a result of attempts to address critical minerals supply chain vulnerabilities and account for consequences for non-member countries. These actions are crucial to achieving the long-term climate mitigation goals and just transition.

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Creating a Climate-Friendly Investment Climate

Matthew Stephenson | Samir Saran

Abstract

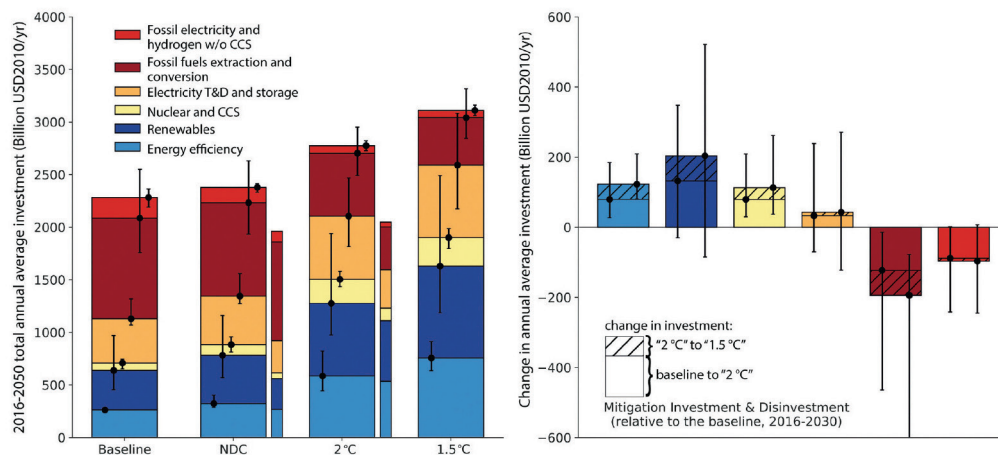
MORE INVESTMENT IS NEEDED TO ACHIEVE THE GOALS of the 2015 Paris Agreement. This essay suggests that the solution is increasing climate foreign direct investment (FDI)—cross-border investment aligned with climate goals—by creating a ‘climate-friendly investment climate’. The authors recommend four targeted measures, drawing from a new ‘Guidebook on Facilitating Climate FDI’, published by the World Economic Forum in collaboration with fDi Strategies: (a) Align investment promotion agency (IPA) strategies, key performance indicators (KPIs), incentives and de-risking instruments to climate goals; (b) Create a database of sustainable suppliers and a supplier development program to help domestic firms become sustainable; (c) Map multinational enterprise climate commitments and create a pipeline of endorsed and vetted carbon-neutral investment projects that help multinational enterprises (MNEs)

deliver on their commitments; and (d) Include climate FDI provisions in international investment agreements and national legal frameworks. Finally, a ‘Coalition of IPAs for Climate’ is proposed to increase knowledge, facilitate cooperation, and drive action to increase climate FDI. The coalition can use the measures to help facilitate two-way climate FDI, resulting in mutually beneficial outcomes.

Introduction

According to IPCC estimates, about US\$800 billion in new investment in energy systems is required annually between 2012 and 2050 to reach the Paris Agreement goal of limiting global warming to 1.5°C (1). This is in addition to current investment trends. Estimates place the baseline investment in energy systems at US\$2.38 trillion of yearly investments, compared to the US\$3.2 trillion that is needed (2).

Figure 1: Historical and Projected Global Energy Investments in Different Scenarios (2016-2050)



Note: The left figure uses six global models to represent four different scenarios: investment in energy systems that continue along the current baseline (i.e., pathway without new climate policies and measures beyond those already in place), increasing investment to achieve nationally determined contributions, increasing investment to keep global warming to 2°C, and increasing investment to keep global warming to 1.5°C. The bars represent the model means, while the whiskers the full model range. The right figure represents the needed change in investment to keep global warming at 2°C or 1.5°C relative to the baseline. Whiskers show the full range around the multi-model means.

Source: Rogelj et al. in IPCC 2022 (3).

What about beyond energy systems? Earlier OECD estimates place the total investment needed at around US\$6 trillion (see Figure 2, red outline). These are astoundingly large figures.

Figure 2: Energy Investments vs Other Investments for Climate Goals (2015–2035)

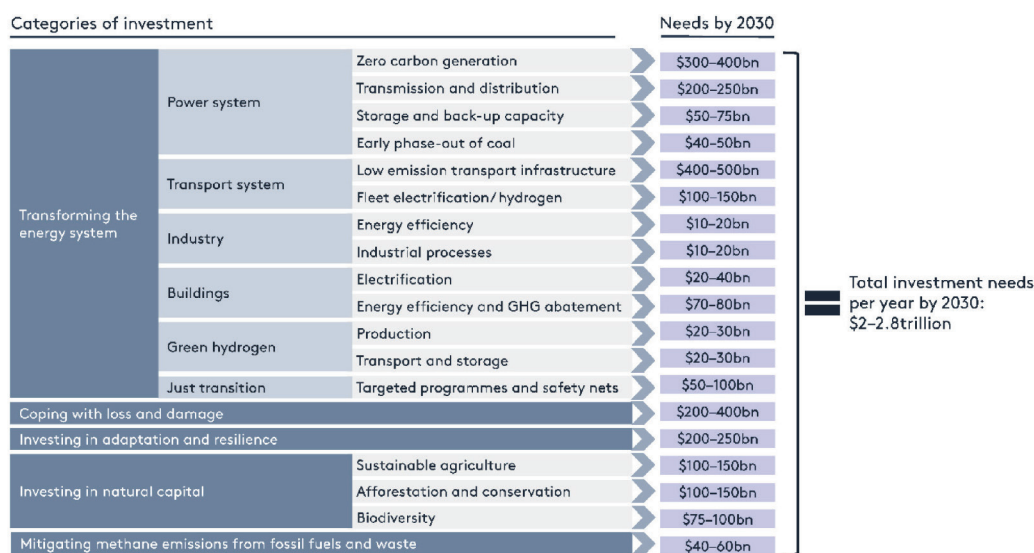
	Energy Investments	Of which Demand Side	Transport	Other Infrastructures	Total	Ratio to MER GDP
IAM Baseline (mean)	1.96	0.24			1.96	1.8%
IAM NDC (mean)	2.04	0.28			2.04	1.9%
IAM 2°C (mean)	2.19	0.38			2.19	2.1%
IAM 1.5°C (mean)	2.32	0.45			2.32	2.2%
IEA NDC	2.40	0.72			2.40	2.3%
IEA 1.5°C	2.76	1.13			2.76	2.7%
Mean IAM-IEA, 1.5°C	2.38	0.54			2.38	2.53%
Min IAM-IEA, 1.5°C	1.38	0.38			1.38	1.6%
Max IAM-IEA, 1.5°C	3.25	1.13			3.25	4.0%
OECD Baseline					5.74	5.4%
OECD 2°C	2.13	0.40	2.73	1.52	6.38	6.0%

Note: Estimated annual world mitigation investment needed to limit global warming to 2°C or 1.5°C (2015–2035 in trillions of USD at market exchange rates).

Source : de Coninck et al. In IPCC 2022 (4).

More recent estimates suggest that between US\$2 and US\$2.8 trillion in investment may be needed yearly to reach climate goals, as shown in Figure 3 (5). This may not always require new investment but a combination of mobilising new investment and reallocating existing capital.

Figure 3: Investment Needs for Climate Action Per Year by 2030



Source: Songwe et al., 2022 (6).

How will the world mobilise new investment and reallocate existing capital? The capital must come from public and private sources, but much more is needed to unlock and crowd-in private capital in this area.

The challenge is creating the right conditions to grow such investments or, in other words, creating a ‘climate-friendly investment climate’.

The solution lies in a combination of institutional capacity and domestic reforms through improved policies and measures (7). Creating a climate-friendly investment climate will need to include policies and measures on the demand side (encouraging increase in the consumption of low-carbon goods and services) and the supply side (encouraging increase in the production of low-carbon goods and services) (8). Policies and measures will also need to address risks associated with scale-up in climate investments, including political, commercial, technological, and currency risks. Policies and measures must also promote, attract, facilitate, and incentivise such investments.

The question is, what, exactly, should policymakers do?

Recent Empirical Work

Two recent analyses attempted to answer this question—one provided an initial list of potential policies and measures (9), while the other defined climate FDI (10) and helped build a list of 15 different potential policies and measures (11).

While this was a good start, greater clarity and precision was needed, and the World Economic Forum facilitated a way forward. Across 2022 and 2023, the Forum convened a series of technical meetings with investors, investment authorities, and experts to build on and further refine climate FDI policies and measures (12). The aim was to produce a ‘Guidebook on Facilitating Climate FDI’ (13) that can be used by investment authorities to help grow climate FDI flows (14). The guidebook, published in July 2023 in collaboration with fDi Strategies (part of the *Financial Times*), is made available for free to provide a ‘how-to’ for four categories of measures identified as particularly important to increasing climate FDI. The four were selected and refined through in-depth consultations (see endnote 12), especially considering which measures were most suited to public-private collaboration.

For each of the four priority measures, the guidebook will lay out: (a) a step-by-step approach; (b) considerations related to implementation and the stakeholders that need to be involved; and (c) potential risks and mitigation strategies. This essay aims to capture the primary suggestions to help inform G20 deliberation and action.

The G20's Role

The G20 is the proper forum to support the scaling of climate FDI for at least three reasons.

First, climate is one area where G20 economies agree that more action—especially coordinated action—is needed. For example, in 2021, the US and China, notwithstanding their tensions, issued several joint statements and declarations on climate (15). This indicates that climate action is one area where cooperation is possible, even between strategic rivals.

More recently, the US and the European Union (EU) took decisive action to grow climate FDI, whether through the European Green Deal or the US Inflation Reduction Act (2022). The former will encompass €1.8 trillion (US\$1.9 trillion) in investments (16), while the latter includes US\$400 billion to help achieve climate goals.

India is also exploring options to attract greater international investment to green sectors, as its remarkable success in expanding green energy has primarily been driven by domestic investments. As of 2020, tracked green finance in India reached US\$44 billion. Around 83 percent of this was from domestic sources, with the private sector contributing about 59 percent of the domestic investment. However, the annual flows are only one-fourth of the amount needed to achieve the country's nationally determined contributions (NDCs) (17). Thus, it is imperative that international flows must increase rapidly for India to remain on track to achieve all its NDCs. Within this, FDI will be a priority area for India. Several sectors of the Indian economy are already fairly open to FDI, with minimum regulation; indeed, certain sectors, such as renewable energy and electric vehicles, have already seen inflows of some form of climate FDI, and the International Finance Corporation estimates India has the potential for US\$3.1 trillion in climate-smart investments from 2018 to 2030 (18). India is keen to scale existing climate FDI investments and tap into this potential while ensuring that these investments do not come with any conditions that may compromise its ambitious plans to establish a robust manufacturing ecosystem for green industries.

Second, firms carrying out the bulk of FDI are from the G20 economies, and therefore helping them grow climate FDI will have a big impact on the world's climate outcomes (19). Third, once G20 economies adopt policies and measures supporting climate FDI, this will create both a signalling and demonstration effect for non-G20 economies to consider similar approaches.

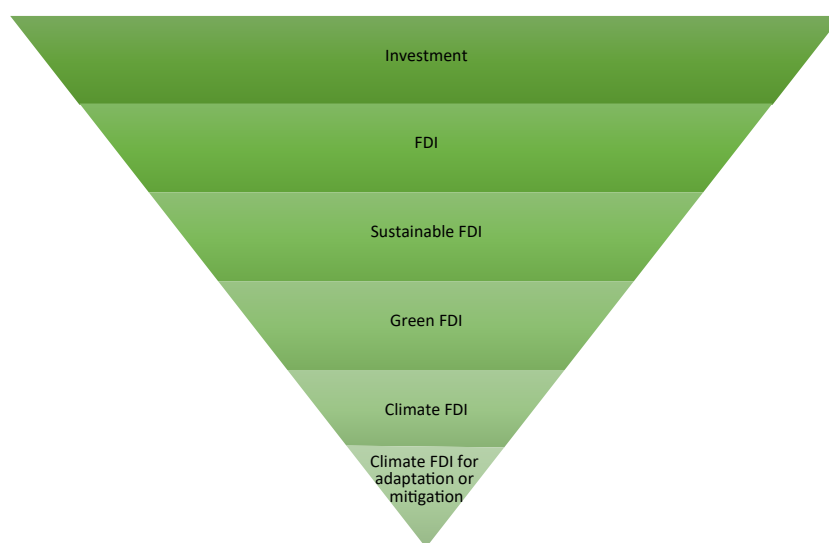
Recommendations to the G20

Consider adopting a conceptual framework and definition of 'climate FDI' to facilitate coordination and cooperation

The way to think about climate FDI can be captured in an upside-down triangle that shows the relationship between different types of investment (see Figure 4).

The broadest category includes any investment, whether portfolio investment or direct investment (either foreign or domestic). Then comes FDI as a subset of investment, and then sustainable FDI as a subset of FDI. Sustainable FDI can be defined as FDI that follows principles of responsible business conduct and contributes to environmental, social, and governance (ESG) goals. Continuing down the narrowing conceptual path, green FDI is FDI that aligns with and contributes to the 'E' part of ESG or the environment. Finally, climate FDI is FDI that aligns with and contributes to the climate dimension of the environment. Within climate FDI, certain projects can contribute to climate adaptation and others to climate mitigation.

Figure 4: Conceptual Framework for Climate FDI



Source: Based on Stephenson and Zhang, 2022 (20), updated and revised.

It is worth illustrating the difference between green and climate FDI to avoid confusion. Consider an FDI project that ensures that effluents are cleaned before flowing into a river ('clean river' example). This would be an example of green FDI, as it does not have a climate impact. Now consider an FDI project that uses cleaner energy in production that was previously used in that location for that activity ('clean energy' case). This would be an example of climate FDI, as it has a climate impact (see Figure 5).

Figure 5: Green FDI vs Climate FDI—The Clean River vs Clean Energy Examples



Consider endorsing and using the 'Guidebook on Facilitating Climate FDI' within G20 and non-G20 economies through capacity building and technical assistance

The overall recommendation to the G20 is to consider endorsing and using the guidebook to grow climate FDI in their own and in other economies. G20 policymakers can ensure that their investment authorities consider the guidebook, especially IPAs. In addition, G20 economies may wish to provide technical assistance and capacity building to authorities in emerging markets and developing countries to consider implementing measures in the guidebook. This will bring about two interrelated benefits. It will help improve the climate-friendliness of investment climates in these economies, and thus help facilitate G20 climate FDI into those economies. At the same time, it will help lower emissions and the carbon content of investment projects worldwide, which is needed given the inherently global nature of the climate challenge. Nevertheless, it is important to realise that emerging markets and developing countries may not be able to decarbonise as quickly as more developed nations. The solution is to be guided in terms of the depth and direction of climate FDI measures by commitments in each country's NDCs as, by definition, these climate commitments align with the priorities and capacities of the country in question.

Finally, different measures will be more relevant to different economies at different times. The guidebook provides four categories of policies and measures to consider, though policymakers may wish to adopt and implement specific measures according to the political and economic conditions in each country.

- **Measure 1: Align IPA strategies, KPIs, investment incentives and de-risking instruments to NDCs**

The first category of measures is to align IPA strategies, KPIs, investment incentives and de-risking instruments to climate goals identified in the NDCs. For instance, ensuring that investment incentives are aligned with—and thus help deliver—NDC goals. Incentives should include not just the fiscal (21) and financial but also those of a non-monetary nature.

Examples of non-monetary incentives can be captured by the heuristic of a ‘red-green-gold’ approach: speed of approvals (red carpet treatment), expedited customs clearances (green channel process), and targeted aftercare (gold status treatment). De-risking instruments such as purchase guarantees (such as, renewable power purchase agreements) and investment insurance are also important to help crowd-in climate FDI. It is worth noting that insurance may need to address different types of risk, such as political risk, commercial, currency risk, and the risk of technology changing and making some technological choices obsolete before the end of the project’s lifetime.

Figure 6: Steps to Roll Out Measure 1



Source: World Economic Forum and fDi Strategies, 2023 (22).

- **Measure 2: ‘Match and catch’**

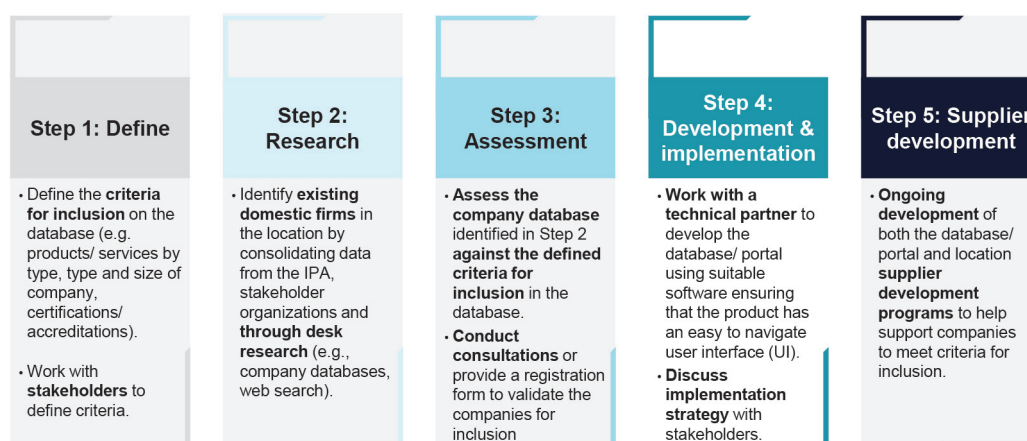
The second category of measures is to create a database of domestic suppliers with sustainability dimensions, along with a supplier development program to help domestic firms become more sustainable. This helps ‘match’ investors to domestic suppliers and helps domestic firms ‘catch up’ to the level required by investors.

Having a database of domestic suppliers facilitates investment because it helps overcome information asymmetry between foreign and domestic firms, providing foreign investors with information on domestic suppliers of goods and services they can source domestically. This will lower the time and cost for foreign firms to operate, since they can source inputs domestically that they would otherwise have had to produce or import.

Supplier databases can be designed to include not only traditional information, such as the goods and services offered and contact information, but also information on how domestic firms are operating sustainably. This can help foreign firms select and negotiate contracts with domestic firms that are operating in a climate-friendly manner. It will also encourage domestic firms to increasingly shift to a climate-friendly way of doing business to attract and qualify for foreign capital that either aims or requires to be contracting with firms that are operating in such a manner. This has been called a ‘virtuous sustainable investment cycle’ (23).

At the same time, supplier development programmes can help with the technical assistance and capacity building needed for domestic firms to provide goods and services at the quality, cost, and scale required by foreign firms. Supplier development programmes can also be oriented to helping domestic firms acquire the certifications and reach standards of sustainable operations, which can be reflected in the supplier database. When information regarding sustainable operations is included in a supplier database, the database is known as a ‘supplier database with sustainability dimensions’ (SD2). The first SD2 was created by the Council for the Development of Cambodia, with the support of the World Economic Forum (24). Other economies may wish to ensure that their supplier databases also include sustainability dimensions.

Figure 7: Steps to Roll Out Measure 2



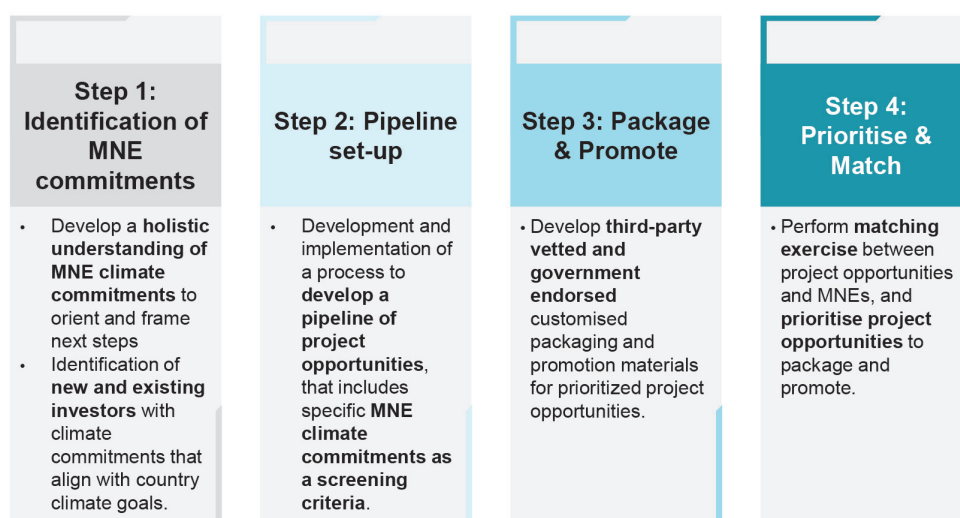
Source: World Economic Forum and fDi Strategies, 2023 (25).

- **Measure 3: 'Help them help you'**

The third category of measures is to map the climate commitments of MNEs to investment opportunities in host economies and create a pipeline of endorsed and vetted carbon-neutral climate-friendly investment projects that would help MNEs deliver on their commitments. Endorsement by the host government of the pipeline of investment projects de-risks investment in countries that may have relatively more risk or unpredictability.

At the same time, vetting by a third party provides validation and verification that the investment would be designed and implemented in a climate-friendly manner. This creates more certainty for investors to carry out climate investment, as the evidence shows that certainty and predictability are of utmost importance for investment decision-making.

Figure 8: Steps to Roll Out Measure 3



Source: World Economic Forum and fDi Strategies, 2023 (26).

How can investment authorities determine MNE climate commitments? Table 1 provides a snapshot of the different platforms where this information may be available. This can help kickstart the search for a good fit between these public commitments and the climate FDI projects that an economy can propose.

Table 1: Potential Sources to Identify MNE Climate Commitments

Platforms	Description	Strengths and Weaknesses	Examples
Company websites and social media	<ul style="list-style-type: none"> MNEs may publish their climate commitments, corporate sustainability reports and progress reports on their own websites. This allows MNEs to showcase sustainability efforts and report on progress made in achieving targets to a wider audience. Platforms like LinkedIn and Twitter can be used to publish progress reports and engage in conversations with stakeholders. 	<ul style="list-style-type: none"> Direct engagement with stakeholders and key interest groups. MNE is accountable to the wider public if climate commitments/pledges are published online. MNE controls messaging on their websites. No requirement for commitments to be specific, or mandatory progress reporting to be published on websites. 	<ul style="list-style-type: none"> Nestlé published a commitment to net-zero emissions by 2050, using 100% renewables in its operation by 2025 (27) American Airlines published their ESG Report, which states their action plan of reaching net zero carbon emissions by 2020 (28)
Sustainability and reporting platforms/ rankings	<ul style="list-style-type: none"> Several third-party platforms publish and report on MNE climate commitments to manage their environmental impacts. In most cases, this information is self-reported and, in some cases, independently verified. Key metrics that are collected and reported on include: GHG emissions, renewable. electricity usage, supply chain emissions, carbon reduction targets and progress made in achieving them. 	<ul style="list-style-type: none"> Publishing commitments on a recognised third-party platform can increase the credibility of a company's climate commitments. Publishing commitments on a third-party platform may garner the MNE greater visibility (beyond their own website/social media). Several reporting platforms and rankings offer benchmarking services that will allow MNEs to compare their commitments and performance against peers or the industry standard. Participating in a third-party platform may not always be free (e.g. fee for participation, data collection, consultation). 	<ul style="list-style-type: none"> SBTi (29) CDP (30) Ecovadis (31) Sustainability Accounting Standards Board (32) The Climate Pledge (initiative supported by Amazon and Global Optimism) has been joined by more than 300 businesses across 51 industries and 29 countries (33)

Platforms	Description	Strengths and Weaknesses	Examples
Industry-specific initiatives	<ul style="list-style-type: none"> Some industries have their own sustainability initiatives and platforms for industry players to publish their climate commitments/pledges. 	<ul style="list-style-type: none"> Allows comparison and comparability of MNE commitments across the industry and can promote collaboration as companies share best practices in achieving climate commitments. May promote a one-size-fits-all approach to climate commitments, which may not be meaningful depending on industry composition. 	<ul style="list-style-type: none"> First Mover Coalition (34)

Source: World Economic Forum and fDi Strategies, 2023 (35).

• **Measure 4: The 5 Cs of climate in international investment agreements**

The fourth category of measures is to include climate FDI provisions in international investment agreements (IIAs), with the aim of complementing approaches outlined above with legal instruments.

Under efforts of both UNCTAD (36) and OECD (37), a new generation of IIAs is being developed, reforming earlier IIAs and helping develop instruments that accurately reflect society’s climate goals. Concretely, there are several ways that climate FDI goals can be integrated into clauses and provisions within a new generation of IIAs (see Figure 9).

These can be captured by the five Cs of climate in IIAs:

- *Clarification* clauses/provisions on how the treaty relates to and covers climate goals
- *Coordination* provisions that encourage the facilitation of climate FDI between parties
- *Competence* provisions that convey the state’s right to regulate for climate goals
- *Compel* provisions that require the parties and their firms to adhere to standards or actions
- *Carve out* provisions that do not provide the same protection to climate negative investments

Figure 9: Ways to Include Climate FDI Provisions in IIAs and Examples

Suggested IIA areas	Description	Example IIAs
1. Preambular clauses reaffirming environmental protection and climate action	<ul style="list-style-type: none"> Preambles that contain references to climate action and sustainable development reaffirm the overall objective of the IIA, and the how the agreement should be interpreted. It is recommended that IIAs should include preambular clauses referencing commitment to combat climate change 	<ul style="list-style-type: none"> Myanmar-Singapore BIT (2019), Preamble Belarus-Hungary BIT (2019), Art. 2(7)
Suggested IIA areas	Description	Example IIAs
2. Defining treaty scope	<ul style="list-style-type: none"> IIAs will need to clarify treaty scope to ensure that all investments, especially climate-friendly and climate-harmful investments, fall within the remit of the treaty. This can be performed through providing a clear distinction between climate-friendly and climate-harmful investments or high-carbon emission and low-carbon emissions in the scope of the IIA via negative lists, schedules or annexes that are periodically reviewed and updated. 	<ul style="list-style-type: none"> Japan-United Arab Emirates BIT (2018), Art. 1 Mexico-Panama FTA (2014), Art. 10(1)
3. Protecting the State's right to regulate for climate action	<ul style="list-style-type: none"> The inclusion of language within IIAs that reaffirms a State's right to regulate for climate action is recommended. This should be done without overly jeopardizing the benefits of investment predictability and protection overall. This will preserve a State's regulatory autonomy to achieve legitimate policy objectives such as those enshrined in international agreements to promote sustainable development. 	<ul style="list-style-type: none"> Rwanda-United Arab Emirates BIT (2017) Art.9 Canada-EU CETA (2016)
4. Inclusion of carve-outs for climate action	<ul style="list-style-type: none"> Introducing climate action carve-outs and clarifications in provisions dealing with indirect expropriation, national treatment, fair and equitable treatment (FET) clauses. The presence of these clauses may impede climate action, especially in scenarios where preferential treatment is given to climate-friendly investments over climate-harmful investments, or if domestic regulation is changed to favor the development of climate-friendly industries. 	<ul style="list-style-type: none"> India-Kyrgyzstan BIT (2019), Art. 5(5) – Expropriation China-Mauritius FTA (2019), Art. 8(9) – Performance requirements Iran-Slovakia BIT (2016), Art. 4(3) – National treatment and most favored-nation treatment
5. Investor obligations and responsibilities	<ul style="list-style-type: none"> Inclusion of language that specifically obliges investors to comply with requirements for sustainable investment like environmental impact assessments and the maintenance of environmental management systems. 	<ul style="list-style-type: none"> Morocco-Nigeria BIT (2016), Art.14

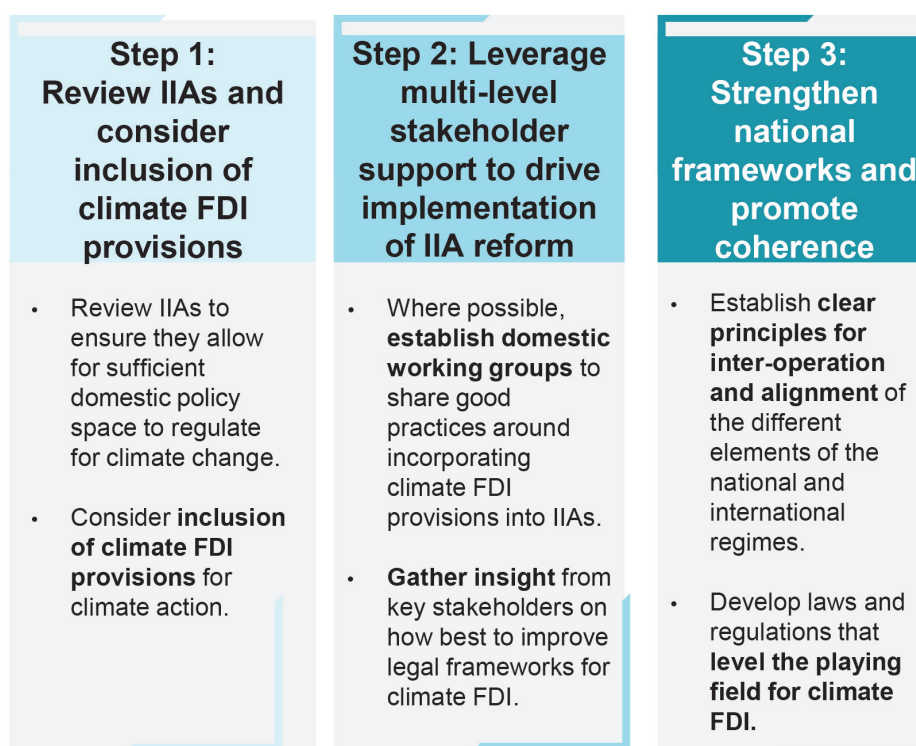
6. Promotion and facilitation of sustainable investment clauses	<ul style="list-style-type: none"> • IIAs may also include clauses that emphasize the promotion and facilitation of sustainable investment or investment facilitation approaches that can be employed by contracting parties to promote and develop alliances in the field of environment. • In addition, clauses that encourage technology transfer of low-carbon and sustainable technologies may also be included in IIAs to promote these activities. 	<ul style="list-style-type: none"> • Australia-United Kingdom FTA (2021) • Japan-Mexico Economic Partnership Agreement (2012)
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Source: World Economic Forum and fDi Strategies, 2023 (38) based on UNCTAD (39) and OECD (40).

When reviewing and reforming IIAs or developing new IIAs, it is important to ensure that the text aligns with sustainable objectives and climate objectives, while also promoting, facilitating, and protecting investments. One suggested aspect to consider is the inclusion of clauses that encourage and facilitate climate FDI (or sustainable investment more broadly), as *prima facie* this would only have upsides and no downsides, in that it is likely to help support climate FDI flows while not undermining the stability and predictability of the IIA-supported investment regime.

It is worth acknowledging that approaching climate FDI from the legal side will take longer than any of the earlier measures that are easier to facilitate. However, notwithstanding the greater time and effort this may take, over time, climate FDI provisions in legal instruments are likely to have a significant impact on growing these investments. Figure 10 suggests how investment authorities may approach this process.

Figure 10: Steps to Roll Out Measure 4



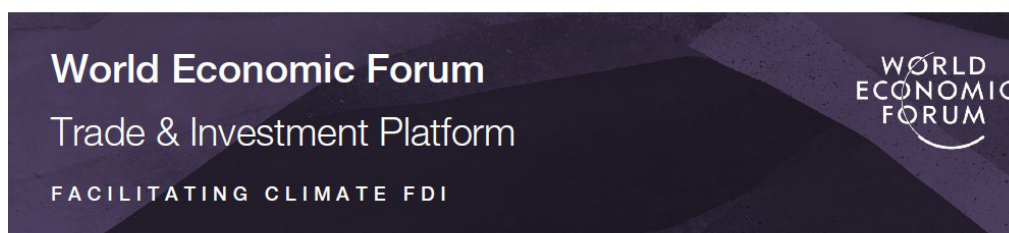
Source: World Economic Forum and fDi Strategies, 2023 (41).

Consider Creating a Coalition of IPAs for Climate

One way to help operationalise climate FDI measures and scale collaboration on growing such investment is through a potential Coalition of IPAs for Climate (42). This idea is currently under discussion, including consultation planned at the World Association of Investment Promotion Agencies (WAIPA) World Investment Conference in New Delhi in December 2023 with the aim of potentially launching such a coalition in Davos in January 2024. WAIPA, which supports the initiative, will play an important role.

What would the coalition do in practical terms? As a first step, coalition members would first endorse (at the CEO level) a statement—circulated and discussed in Davos in January 2023 (see Image 1)—on the importance of increasing climate FDI and the opportunity to use climate FDI measures to do so. As a second step, coalition members would aim to use the guidebook to implement climate FDI measures.

Image 1: World Economic Forum text: Facilitating Climate FDI



There remains a huge gap in the capital required to achieve a carbon-neutral economy, especially in emerging markets and developing countries. At the same time, more than 110 countries have reached a *Draft Agreement Investment Facilitation for Development* at the World Trade Organization, which mentions the importance of growing investment to achieve sustainability. This signal and commitment present an excellent opportunity to help grow climate FDI – foreign direct investment that helps achieve climate goals.

Business, government and civil society can collaborate on growing climate FDI. Investment promotion agencies (IPA) are uniquely placed to support this agenda, thanks to their expertise, mandate, and networks.

IPAs can help grow climate FDI through four channels:

Raising awareness

Sensitise stakeholders from policymaking and business communities on the challenges and, moreover, the opportunities of climate FDI, as well as the enabling environment required for its scaling.

Adopting Targeted Measures

Implement climate FDI facilitation measures such as, de-risking instruments, aligning incentives with climate goals, developing green supplier development programmes and supplier databases, mapping multinational enterprise climate commitments and providing a pipeline of vetted climate-positive projects that can help deliver on these commitments, among other, to effectively attract and facilitate climate FDI.

Sharing knowledge

Use platforms such as the World Association of Investment Promotion Agencies (WAIPA), World Investment for Development Alliance (WIDA), OECD IPA Network, World Economic Forum, and others, to share experiences, identify good practices and enable peer learning in climate FDI facilitation.

Growing cooperation

Consider options to collaborate to grow climate FDI within economies and collectively at the global level. This can include the creation of a Coalition of IPAs for Climate (CIPAC), to better attract, promote and facilitate investments that help achieve climate goals, e.g., through using climate FDI facilitation measures. The World Economic Forum's Annual Meeting in January 2024 could serve as a platform to highlight such efforts, including the potential launch of CIPAC.

The present community agrees on the pivotal role that IPAs can play in enhancing climate FDI flows, and encourages the World Economic Forum to further explore the creation of a coalition of IPAs for climate in the coming year.

Davos, 18 January 2023

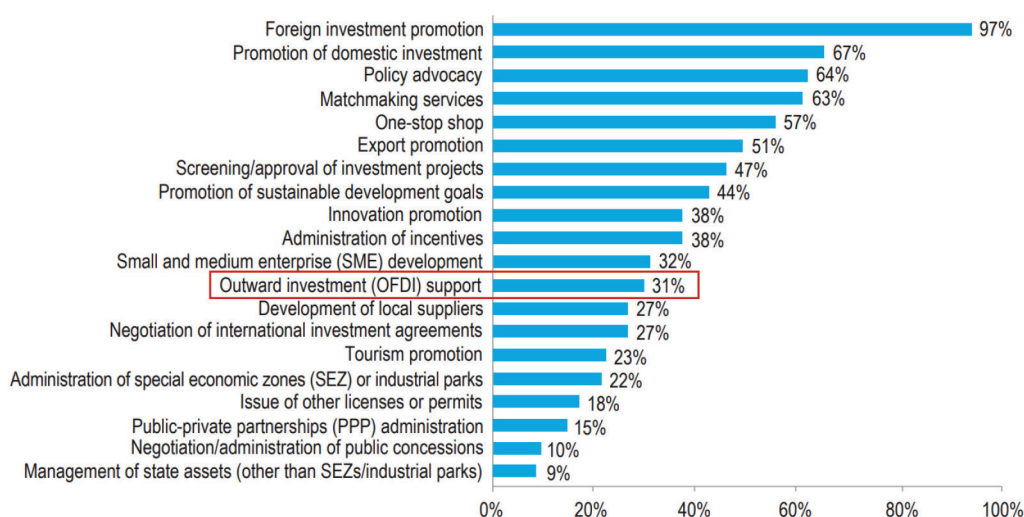
Source: *World Economic Forum*

While there have been a number of other coalition mechanisms to mobilise action in support of climate goals, this would be the first time that IPAs specifically add their voice and muscle to the effort. To illustrate, the First Movers Coalition brings together 65 companies and at least 10 government partners so far, that have committed to support carbon goals through procurement decisions (43). Meanwhile, the Coalition of Trade Ministers on Climate brings together ministers from 50 countries that have

agreed to leverage trade for climate goals (44). Adding the investment piece to this puzzle could help all parties better achieve climate goals, given that investment and trade are two sides of the same coin, and that procurement can be considered a form of investment.

In addition, FDI flows are increasingly two-way, with IPAs facilitating not only inward FDI, but also outward FDI (see Figure 11, red outline). This is due to the realisation that outward FDI can lead to increased growth and competitiveness of firms and home economies, acting as complementary channel to inward FDI for development (45). As a result, there is scope for two-way, mutually beneficial climate FDI facilitation between IPAs of G20 economies, as one economy’s inward FDI is another economy’s outward FDI (46).

Figure 11: Incidents of Mandates of IPAs (2019, n = 91).



Source: Sanchiz Vicente and Omic, 2020 (47).

Conclusion

The world needs more investment to help achieve and deliver its climate goals—but where to start? This essay outlined four concrete, practical measures, providing step-by-step suggestions for how to do so. These measures are captured—and further developed—in the Guidebook on Facilitating Climate FDI, which provides more detail on each, and can serve as a complementary resource. A Coalition of IPAs for Climate could also help catalyse and scale cooperation in this space, providing mutually beneficial outcomes for each IPA’s economy, and the world.

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Endnotes

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TF-5

**PURPOSE &
PERFORMANCE:
REASSESSING THE GLOBAL
FINANCIAL ORDER**

The Green Development and Investment Accelerator: Promoting Large-Scale Private Sector Global Climate Investment Flows

Uday Khemka | Aaran Patel | Katherine Stodulka

Abstract

TO STAY BELOW 1.5 DEGREES OF WARMING, emerging markets and developing economies (EMDEs), excluding China, need US\$1 trillion of investments a year in climate action by 2025 and US\$2.4 trillion per year by 2030. Much of this investment will be needed for 'green infrastructure'. Less than 20 percent of the required capital is currently flowing. Much of this capital could come from the private sector into opportunities that are—or soon will be—commercially attractive as technology tipping points make these investments viable. Solving two critical barriers will be the key to mobilising private capital: (a) lowering the cost of capital in EMDEs; and (b) increasing the volume of bankable projects. This essay proposes tackling these barriers by launching a Green Development and Investment Accelerator (GDIA) to facilitate comprehensive de-risking processes on a country and sector basis, accelerate access to risk-sharing instruments,

and streamline pipeline development to increase investable deal flow. The GDIA would work in partnership with existing regional financial institutions. It could also build on the track record of the G20 in pioneering blended finance mechanisms through the Global Blended Finance Alliance under Indonesia's presidency in 2022 and the Global Infrastructure Hub and Facility launched under Australia's presidency in 2014.

The Challenge: Limited Private Finance

Over the last few years, the COVID-19 pandemic, the war in Ukraine, and the tightening of global financial conditions have complicated an already challenging financial outlook for many EMDEs. These events have put further pressure on constrained public finances, both domestic and multilateral, and threatened to cut off such markets from many key private financial flows, jeopardising financing for important development outcomes. Such EMDEs must now simultaneously mobilise resources not only for longstanding economic and social development goals but also to move their economies to low carbon trajectories while making them resilient in the face of increasing possible climate impacts. Faced with this daunting challenge, EMDEs need to mobilise greater financial resources than ever before. With limited domestic savings pools, such economies cannot rely on domestic resources alone to achieve this but must turn to international financial flows.

At the core of this financing challenge is the issue of mobilising vast resources for the new power, transportation, building, and industrial infrastructure sectors that EMDEs require, and, especially, the additional finance required to ensure that this new infrastructure is 'green' (low carbon) and climate resilient.

Making the global financial architecture work for green infrastructure investment in EMDEs, therefore, should be an urgent priority of the G20. This crucial objective has been highlighted by Vera Songwe, Nicholas Stern, and Amar Bhattacharya in their 'Finance for Climate Action' report launched at COP27 in 2022 (hereafter, the SSB report) (1). The report notes that "Emerging markets and developing countries other than China will need to spend around [US]\$1 trillion per year by 2025 (4.1% of GDP compared with 2.2% in 2019) and around [US]\$2.4 trillion per year by 2030 (6.5% of GDP)" on transforming the energy system, responding to the increasing vulnerability of developing countries to climate impacts, and investing in sustainable agriculture and restoration of ecosystems and biodiversity (2). The SSB report estimates that around half of the finance needed could come from domestic sources of public finances, which is "challenging but feasible and an essential foundation given the importance for core public spending priorities, recurrent spending and creditworthiness." It also estimates that EMDEs will require "an additional [US]\$1 trillion per year by 2030 [...] in external flows and private finance by 2030 to meet the projected investment needs" (3).

However, there is a significant gap in the current flow of climate finance investments; the global total was US\$1.62 trillion in 2022, well short of the projected US\$4.3 trillion required annually by 2030 to meet globally shared climate objectives (4,5). The regional disparities in the flows of climate finance are also concerning, as “more than 90% of the increase in clean energy investment since 2021 has taken place in advanced economies and China” (6). There is a particularly acute shortfall of private climate finance outside China and advanced economies in Western Europe and North America (7). Increasing capital for EMDEs is essential to prevent the lock-in of carbon-intensive infrastructure that will be a source of future emissions growth and transitional risk going forward (8). In contrast, transformative investments in clean energy systems will power growth and development.

Yet, with public debt levels already high in most G20 economies, rising interest rates, inflation and the other demands on public finances, public sector resources clearly cannot provide the full answer to such needs. On the other hand, unlike during the period when the Bretton Woods system was first established, private capital markets today dwarf public sector resources in advanced economies. Resources have been accumulated over decades in private-sector institutions (such as asset owners, asset managers, banks, and insurance companies) with the scale and sophistication to make significant global investments. These institutions, in turn, face the need for growing and predictable cash flow streams to match liabilities that large-scale green infrastructure projects in EMDEs can often provide. In return for such predictability, asset owners and managers are, in theory at least, willing to accept reasonable risk-adjusted returns, which could facilitate the lower cost of capital that is crucial for the development of EMDEs. Much of the capital required for green infrastructure that will keep the 1.5 degrees Celsius goal alive could, therefore, come from private sources into sectors that are investible, or soon will be.

Despite this potential, the reality is disappointing—private capital is not flowing nearly fast enough or at the scale required. Over the decade from 2011-2020, “The growth rate of private climate finance was slower (4.8%) than that of the public sector (9.1%) and must increase rapidly at scale” (9). The reasons for this are well documented, from scale to transaction costs. Perhaps most important is the mismatch between real and perceived risk in project opportunities in these EMDE markets on the one hand and the needs (and perceptions) of international institutional investors on the other. These risks can be partially mitigated through carefully structured ‘blended finance’ mechanisms like guarantees or first-loss capital. This understanding has led to accelerated efforts to mobilise public resources from donors, multilaterals, and climate funds to structure more efficient de-risking instruments with lower transaction costs, a clearer focus on climate outcomes and earlier engagement with countries and private capital.

Despite such efforts, large-scale private institutional capital is not flowing at the speed and scale required to meet the opportunities and challenges EMDEs face. Mobilising new fiscal resources and scaling and replicating blended finance instruments that work must remain a key part of the solution, building on the vision laid out in the SSB Report to align stakeholders around a clear roadmap to unlock large volumes of climate/transition finance in EMDEs. Multiple organisations and initiatives are working on different parts of this roadmap, including revamping the role of multilateral development banks (MDBs) as major lenders to EMDEs and leveraging blended finance to tackle debt and liquidity issues faced by many of these countries.

Yet, a complementary approach must urgently be put in place significantly to increase the effectiveness of such blended finance flows in mobilising private capital. The key to this is a multi-stage process of country-sector platform ‘de-risking’ involving all key stakeholders, this approach has already been validated in certain EMDEs, and the institutionalisation of this vision can, therefore, massively increase the leverage of public finance and the scale of private financial flows.

This essay builds on the SSB Report roadmap to explain how, through a comprehensive, systematic, and multistakeholder process of ‘de-risking’, the greatest possible resources can be raised within the limits, at any one moment, of blended finance available.

The recommendations in this essay are based on the authors’ experiences with some of the largest long-term private investors in the world (including sovereign wealth funds and pension funds) on mobilising funding for green infrastructure for the EMDEs. The clear conclusion of this work has been that the lack of significant bankable deal-flow with appropriate risk-adjusted returns is perceived as a central—if not the most important—obstacle to scaling climate finance to EMDEs. Additionally, the authors consulted widely with various relevant organisations, including the Glasgow Financial Alliance for Net Zero, the Green Finance Institute, the European Development Finance Institutions, the Global Infrastructure Hub, members of the Independent High-Level Expert Group on Climate Finance, the Impact Investing Taskforce, and the Blended Finance Taskforce.

The Green Development and Investment Accelerator: Promoting Comprehensive Risk Mitigation Processes to Accelerate Private Climate Investment in EMDEs

Rationale

Expert discourse analysing and laying out risks to private climate infrastructure investing is exhaustive and longstanding. Approaches have ranged from sectoral

analysis/project type (10) to project development stage analysis (11) and various other analytical approaches. All are overlaid with the recognition that these specific risks are bounded by three considerations: institutional (especially counterparty), regulatory, and country and currency risk. The latter are often analysed more generally through economic analysis agencies (such as credit rating agencies and the IMF). Similarly, solutions proposed to mitigate risk often involve a long list of suggestions to host governments and international financial institutions, development finance institutions (DFIs), and MDBs. Often these suggestions appear to be a list of possible measures without much structural link to each other, and many are “outside in” and related more to G7 government actions outside the control of host governments.

What existing approaches may benefit from is an answer to a central additional question: “What can a deeply committed host EMDE government do in a comprehensive and well-ordered way optimally to de-risk country-sectoral investment pathways to leverage large-scale private institutional investment?”

Based on the success of actual EMDE case studies in attracting real large-scale private institutional capital, the comprehensive implementation of de-risking processes based on multistakeholder consultation is a critical factor in effective private capital mobilisation. One among several cases in point is the success of India in attracting finance for a growing and successful renewable energy sector and early signs of similar approaches and success in the country’s sustainable transportation scale-up. Based on this and similar case studies, this essay highlights the need for similar integrated de-risking processes.

Such comprehensive de-risking processes could be led by existing global, regional, and national financial and planning institutions. They could, however, also be further catalysed through a purpose-built institution to promote de-risking—the creation of a GDIA would significantly accelerate the flow of bankable projects by serving as a global institution to support country-specific de-risking initiatives and scale best practices globally. Ongoing feedback and experience working with institutional investor initiatives clearly support the need for such an accelerator to help reduce investment risk and develop a pipeline.

The proposed GDIA would create one coherent de-risking, learning, best practice and process hub that leverages and binds together individual de-risking initiatives (currently conducted by fragmented networks of actors working in different sectors and countries) to develop and accelerate actual projects in large-scale decarbonisation infrastructure around the world. These processes can also be made available to and embedded in MDBs, DFIs, international NGOs (INGOs) and other such institutions. Conversely, the significant existing expertise and experience of such institutions can effectively be shared through such a coordinating hub.

While many of these institutions and national governments have de-risking processes, the authors believe that these could be conducted in a more systematic way and made much more effective through a ‘trilateral process’ that specifically and formally brings together institutional infrastructure investors, key federal and local government actors, and private sector developers in a structured and comprehensive way to optimise de-risking.

The GDIA would accelerate such de-risking processes at the global scale but concentrate in specific sectors and geographies. For instance, after three years of working on the zero-emissions mobility financing challenge, a large collaborative (12) launched the Collective for Clean Transport Finance (CCTF) at COP27. The CCTF, incubated by the World Business Council for Sustainable Development (13), aims to reduce risk and transaction costs to attract large-scale private finance to clean transport projects in EMDEs. “Country-specific sectoral” approaches could also be adopted by willing national or international actors or consortia, whether related to the just energy transition partnerships or in other circumstances.

This essay proposes to complete the design for the GDIA and launch it in the context of the G20.

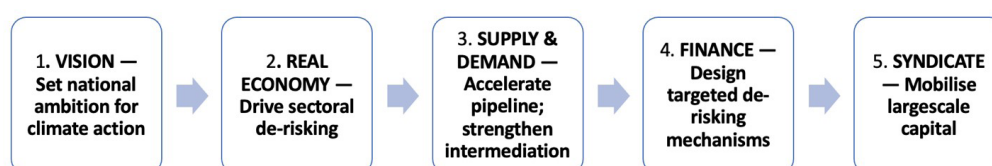
An Integrated De-Risking Framework for Private Capital Mobilisation

At the core of the GDIA’s approach to private-capital mobilisation is implementing a comprehensive approach to sectoral de-risking processes in specific country contexts. This framework proposes five key steps to be implemented through the trilateral process consultation:

1. **Vision—Set clear and timebound national ambitions for investment and climate action:** Provide a clear signal for markets of policy direction; institutionalise strategic targets for action across key domestic and international stakeholders via interaction with the stakeholders. A tangible, clear, realistic, and chronologically defined national vision setting significantly de-risks investment.
2. **Real Economy—Drive sectoral de-risking:** Translate such economy-wide ambitions into sector-based specific transition planning in several key ways:
 - By strengthening the enabling environment and reducing information asymmetry with investors, including through best practice formulation of policy, regulation, contractual mechanisms to reduce uncertainty, and data sharing to bridge information gaps;

- By driving multi-sectoral coordination processes involving industry, government, and finance fundamentally to synchronise and de-risk individual sectors, including with respect to supply chains, development critical path, co-dependency de-risking, and so on.
 - Aggregation: Several EMDE green sectors involve individual assets that are sub-scale in themselves, but once aggregated, can create investment opportunities attractive to institutional investors.
3. **Supply and Demand—Accelerate pipeline, strengthen intermediation:** Build local capacity to drive deal-flow of high-quality, transition-aligned bankable projects, leverage international expertise and scale/optimize project preparation funding, and support investor engagement and local presence to match supply and demand (for example, through country platforms).
 4. **Finance—Design and mobilise targeted de-risking finance mechanisms to bridge “residual risk”:** Address key risks (country, technology, currency, and customer) through efficient financial solutions, including through better blending of concessional and commercial capital in fit-for-purpose instruments/vehicles/platforms, and optimise the role of MDBs/DFIs and other contractual, policy, and private sector actions to manage risk. Reducing the cost of borrowing and increasing the amount of non-sovereign lending will increase the pace of deployment of critical green infrastructure. Steps 1-3 will allow blended finance to address risks that cannot be easily addressed domestically. The role of EMDE governments is to co-design such blended finance programmes and instruments with international actors (investors, MDBs) to maximise effectiveness in identifying and addressing these “residual risks”.
 5. **Syndicate—Mobilise large-scale capital:** Syndicate investment opportunities to risk/return-specific pre-identified investor categories and create mechanisms that help unlock large pools of institutional investment. (Many potential de-risked deals are not effectively intermediated to investors with diverse risk appetites because of significant information gaps and the lack of engagement of traditional capital markets intermediaries.)

Figure 1: and Investment Accelerator’s Five-Step De-Risking Process



Source: Khemka Foundation/Blended Finance Taskforce

Given the scarcity of concessional capital (concessional finance was 16 percent of total climate finance between 2011 and 2020) (14) and limited fiscal capacity of governments, this series of de-risking processes will enable more efficient leverage of this capital. Such de-risking processes could use limited blended solutions for residual de-risking (stage 4 of the five-step process) rather than earlier in the process. This strategy will require fewer units of concessional capital for investments in large-scale green infrastructure.

Working with the Global Blended Finance Alliance launched under the Indonesian G20 presidency, the GDIA would create one coherent hub that leverages and binds together individual de-risking centres in fragmented networks of actors working in different sectors and countries to develop and accelerate actual projects in large-scale decarbonisation infrastructure around the world.

The G20's Role

The transition to a low-carbon and more inclusive global economy is both urgent and investible. Mobilising capital at the speed and scale required—especially in emerging markets—will require a coordinated and strategic plan of action that the G20 is ideally positioned to lead to building a new highway to unlock private investment. Aligning around a clear narrative and priorities to manage risk, reduce the cost of capital, build a high-quality pipeline, and empower the right stakeholders will be critical to leveraging the growing momentum and activating leadership in 2023. This will mean utilising critical platforms, including India's G20 presidency, the COP28, the Bridgetown Agenda (Macron/Mottley Summit), the World Bank's Annual Meetings, UN General Assembly/Climate Week, ASEAN and other key convenings of public, private sector, and finance sector leaders.

The G20 has, however, an especially important role to play as the group represents 85 percent of global GDP, nearly two-thirds of the world's population, and produces 80 percent of global greenhouse gas emissions. With the largest source of both wealth and emissions on the planet, it is incumbent upon the G20 to use its processes and resources towards addressing climate change while accelerating economic development. Over the last few years, G20 countries have increasingly mainstreamed climate change into the group's agenda. For instance, in 2022, the Sustainable Finance Working Group and the Bali Declaration emphasised the G20 countries' commitment to supporting developing countries in mobilising climate finance. Under the Indonesian G20 presidency, the Global Blended Finance Taskforce outlined how blended finance can play a "pathfinder role" in bringing commercial capital into sectors and regions where the financing needs are the largest, and how the global financial architecture might optimise incentives and instruments towards increasing private investments in EMDEs (15).

The Indian G20 presidency is accelerating the momentum of previous G20 summits and shaping the path forward on critical sustainable finance priorities, amongst other global issues. Recognising the unique nature of this geopolitical moment and the urgent imperative to bridge global climate finance gaps, the authors believe that the presidency has a unique historic opportunity to adopt the launch of the GDIA.

Recommendations

Based on this analysis and the global imperative to accelerate the pace and scale of investments in climate action (especially mitigation-focused green infrastructure), this essay offers the following actionable recommendations to the G20:

Launching and institutionalising the GDIA: The G20 countries could establish the GDIA as a global body that coordinates processes to reduce the transaction costs of designing and accessing risk-sharing instruments and catalytic capital, effectively becoming a hub for domestic de-risking centres like the G20 Global Blended Finance Alliance. At the global level, the main purpose of this/these institutions would involve convening the trilateral processes to identify key challenges to the flow of capital, developing solutions to these challenges by engaging the appropriate stakeholders, and creating the mechanisms for the syndication of this deal flow at the end of this process. At the regional and domestic level, as noted in the SSB, “Country/sector platforms driven by countries can bring together key stakeholders around a purposeful strategy, scaling up investments, tackling obstacles or binding constraints, ensuring a just transition and mobilising finance, especially private finance” (16). At the moment, no such comprehensive institutional process exists.

As such, the GDIA itself will not be a provider of capital but rather would be instrumental in reducing obstacles and friction costs to the flow of finance. Therefore, the GDIA will only require operating capital and not balance sheet capital.

Governance: The governance framework should be discussed and agreed amongst both funders and decarbonisation stakeholders in an equitable manner through the G20 process. Design principles could include:

- Thinking strategically about key decarbonisation priorities by both geography and sector;
- Setting strategic priorities where multistakeholder processes, best practices, and other efforts can lead to the largest scale of the potential of decarbonisation with the highest private sector capital;

- Ensuring that the ethos of the GDIA should not be of a ‘top-down’ funding-style institution but rather that of a multistakeholder process convening, best practice sharing, and facilitation organisation both at the global (especially sectoral best practice) and geographical (especially country – sectoral) levels.

Governance may be provided at two levels:

- An advisory board chosen for thought leadership and experience in this space, including representatives of G20 governments. The board’s purpose will be to set overall strategy and direction.
- A fiduciary board of directors established with a strong focus on multisectoral representation (equality between government, private sector, civil society, and long-term institutional finance). This board will allocate resources correctly to allow the GDIA to play its facilitation and best practice-sharing role most effectively.

Given the urgency of the climate and development challenges, both boards must remain nimble and meet regularly.

Location and International Structures: The physical location(s) of the GDIA may be agreed on, taking into account the high investment expertise, convening capability, and critical mass of key financial centres in the Global North and the crucial importance of retaining the perspective of emerging markets in the Global South where most decarbonisation strategies and projects need to be accelerated through de-risking and funding. One idea may be to have the central organisation located in two parallel headquarters offices in G20 countries, one in a northern ‘finance hub’ and the other in a major emerging market.

The GDIA’s ‘best practice’ methodology: The central GDIA Secretariat would be a world-class coordination hub of best practice de-risking strategies, structures, standards, facilities, and so on, assisting de-risking centres that could be established in individual emerging market countries. Such de-risking centres would be established with the support of the federal executive of the relevant country, in line with that country’s decarbonisation priorities and nationally determined contributions. (Each de-risking centre may establish an advisory council involving stakeholders such as planning authorities, domestic development, finance, and institutions). The GDIA would be a global hub assisting and supporting domestic de-risking centres in varied themes, such as:

- best practices in governmental target setting and incentive creation to decarbonisation sectors;

- contractual, policy, and regulatory best practices at the sectoral level;
- coordination mechanisms and processes to crack bottlenecks across the supply chain and across multisectoral stakeholders in complex new sectors to enable significant scaling up;
- pipeline development for best practices and resources;
- access to blended finance principals or hubs established to reduce friction costs and promote access;
- provide best practice for local deal syndication but also a global hub for such syndication.

In all cases, the local de-risking centres would be treated as equal partners not only to benefit from the expertise of the GDIA but also to share knowledge and co-innovate. Standardisation will be balanced by localisation. For example, one of the central functions of the GDIA will be to research best practices on de-risking strategies, standards, practices, and mechanisms. The GDIA will aim to contextualise world-class best practices by working with national de-risking centres to leverage local flexibility and needs.

Coordination with MDBs, DFIs, and INGOs: Both the GDIA and the local de-risking centres would establish appropriate coordination platforms at the global and regional levels with MDBs, DFIs, and INGOs. In all cases, the strategy would be to coordinate best practices and not replicate them. Such institutions are not only a source of financial de-risking support but also have considerable and rich national, sectoral, and multistakeholder de-risking experience and expertise to share and benefit from.

Conclusion

Ultimately, the GDIA could play a fundamental role in addressing the key challenges to mobilising private capital in EMDEs, building on the momentum and leadership within the G20 massively to unlock investment for green infrastructure through a comprehensive, multisectoral de-risking approach to reduce the cost of capital and build a much greater pipeline of bankable projects. The launch of the GDIA, the induction of comprehensive country-sectoral de-risking approaches in existing financial institutions, MDBs, IFIs, and national development institutions complemented by the encouragement of domestic de-risking centres in EMDEs like the G20 Global Blended Finance Alliance, can significantly catalyse the development of and investment in green infrastructure projects in EMDEs, both fundamental to driving economic development and resilience alongside critical climate action around the world.

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Reshaping the Long-Term Development Investment Framework for LMICs

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Abstract

ACHIEVING THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS (SDGs) by 2030 has become more difficult following the COVID-19 pandemic. For low- or middle-income countries (LMICs), particularly, the financing gap has worsened from US\$2.5 trillion to US\$4.2 trillion annually (1). This article suggests ways to close the gap and reshape the Long-Term Development Investment Framework for LMICs.

Introduction

Progress in achieving the Sustainable Development Goals (SDGs) was already falling short even before the COVID-19 pandemic, with the annual financing gap estimated at

US\$2.5 trillion. Low-income countries were short by US\$500 billion, while the rest of LMICs accounted for the remaining US\$2 trillion (2), which was equivalent to additional annual spending of 15 per cent and 4 per cent of gross domestic product (GDP), respectively, for them (3). Even at the time, LMIC governments' budget capacity was highly constrained. Tax revenue in 46 of the 125 LMICs was less than 15 percent of GDP; in the remaining 79, it was less than 20 percent (4). This is lower than the minimum threshold for a state to function effectively (5).

The condition was exacerbated by the COVID-19 pandemic. Many LMICs (especially the poorest ones) saw increased pressure on their SDG financing levels due to rising public debt and debt servicing costs. The estimated financing gap rose to US\$4.2 trillion annually until 2030 (6). In 2019–20, as the pandemic broke out, total financing volume for sustainable development flows to LMICs (excluding China) declined by 17 percent, with government revenue and private capital flows experiencing the sharpest drops (7). Several LMICs also went into an economic downturn with weaker fiscal buffers than during the 2008-09 financial crisis. In 2019, 50 percent of the 69 countries included in the International Monetary Fund's (IMF) low-income countries' debt sustainability framework were either "in debt distress" or "at high risk of debt distress," compared to 23 per cent in 2013 (8).

This increase could set in motion a vicious cycle of climate vulnerability, reduced creditworthiness, and lower debt sustainability. In part, the deterioration in creditworthiness stems from a growing realisation that climate risks are no longer in the future but affect assessments here and now. A 2020 IMF study found a significant negative effect of climate vulnerability on creditworthiness (9). The absence of adequate financing capacity to address climate-related challenges will compound LMICs' financing issues, further undermining their creditworthiness, and worsening their debt sustainability. Creditworthiness could continue to decline, leaving these countries in an ever-difficult position to access climate financing.

Government debt, too, has risen due to expectations of rapid growth, particularly in low-income countries. It had declined in the 2000s following the Heavily Indebted Poor Countries (HIPC) initiative of the World Bank and the IMF to ensure that no country's debt became unmanageable, but since then has gone up on average by 20 percentage points. Non-financial corporate debt has also ballooned in emerging markets, from US\$1.6 trillion to US\$3.8 trillion between 2009 and 2019, leading to vulnerabilities and "sudden stops" in international credit (10). This translates to a need for aggregate investment and development spending of US\$1.3 trillion by 2025 and US\$3.5 trillion by 2030 (11).

Raising Investments in LMICs

Raising funds on such a large scale to get development financing back on track will require global collaboration, particularly in light of the Addis Ababa Action Agenda's commitment to "align financing flows and policies with economic, social, and environmental priorities" (12). Despite the commitment, there remains a significant funding gap for SDGs.

As for the development agenda of LMICs, the discrepancy between estimated figures and implementation is also pronounced. Despite their commitment to the SDGs, many of these nations are frequently constrained by limited fiscal flexibility and binding external financing constraints. Even before COVID-19, large-scale attempts by LMICs to pursue at least one development priority, such as decarbonisation, frequently entailed abandoning other development budgetary items critical to long-term economic advancement, such as roads, schools, or hospitals. COVID-19 has worsened fiscal restrictions for LMICs, forcing them to prioritise short-term economic recovery associated with consumption above long-term investment demands.

In addition, their domestic financial markets are not sufficiently deep to raise enough finance for a full-scale sustainable development effort in the face of ongoing revenue shortfalls. A relatively shallow domestic financial market means that bond issuance, even in local currency, will have to be partially absorbed by international investors. This poses a vulnerability issue for both exchange rates and government bond yields in the medium term. A rise in global interest rates may result in enormous capital outflows. Financing through the issuance of bonds in hard currencies also carries medium-term risks, as hedging in LMICs' currencies tends to be expensive, and bond issuance that is not hedged may expose LMICs' borrowers to a highly unsustainable fiscal position if global interest rates rise and their currencies depreciate at the same time. Thus, tapping into the international pool of funds to close the SDGs financing gap comes with difficulties and high costs.

Leaving LMICs to shoulder the full cost of pursuing SDGs is not only unfeasible, given their fiscal constraints, but also unfair since realising SDGs will bring common benefits to all countries, not just the LMICs. The economic costs are asymmetrical and skewed against LMICs in relative terms; LMICs, in general, face a higher cost of capital (both financial and economic). If they have to allocate resources which could have been used for other long-term development needs to SDGs instead, it means that the opportunity costs of sustainable development for them are also higher than for developed countries. Mobilising funds from developed countries into LMICs for sustainable development at a low cost is therefore critical to achieving the common goal of SDGs at the global level.

At the same time, the unprecedented budget deficits caused by the ongoing recovery efforts from COVID-19 have put strains on the fiscal circumstances of many industrialised countries as well, preventing large-scale intergovernmental transfers in the short- to medium-run. The rising debt-to-GDP ratio and domestic political constraints of developed nations have left them little fiscal room, which means that feasible allocations through traditional financing instruments to LMICs, such as government-to-government soft loans and/or direct aid, will fall short of what is required to assist the latter meaningfully. Restructuring the development investment framework and creating alternative low-cost funding sources for sustainable development projects in LMICs is thus even more necessary.

The G20's Relevance and Role

Most of the LMIC debt is financed by G20 countries. If the former's capacity to service debt is not secured, the latter will also be affected. Providing adequate investment to ensure that LMICs achieve their SDG targets is not only important for those countries but also carries advantages for the G20 nations and the global community. Thus, addressing the shortfall in development financing, particularly for LMICs, is vital for the G20. Some steps by which the G20 can reform the development investment framework are listed below:

G20's Role in International Financial Institutions

Creating a robust long-term development investment framework requires the involvement of global financial institutions, especially the IMF and the World Bank. With voting power at the former and being major shareholders at the latter, G20 countries can influence them to establish such a framework.

G20's Role in Enhancing Private Financial Flows

Private financial flows are becoming increasingly important, surpassing official development assistance (ODA) and other public flows. LMICs must effectively harness private flows for long-term investment while maintaining macroeconomic stability. In this context, the G20 forum can play a significant role in discussing and exploring possibilities, as it includes countries with major private investors. Despite past failures in implementing Public-Private Partnerships (PPPs) for infrastructure development, it is crucial not to abandon using private funds. Rather, there is a need to focus on designing and implementing well-structured projects that attract private investment. This entails improving the investment climate and enhancing the efficiency of the governmental sector in LMICs. The G20 can call for constructive cooperation between

the North and the South to foster successful PPP models. It can also encourage LMICs to establish healthy domestic financial resource circulation, which includes promoting domestic saving, domestic investment, tax collection, and public investment. Such efforts can build sustainable and self-reliant economies in LMICs, leading to long-term development outcomes.

G20's Role as the Biggest Multilateral Forum

Increasing investment flows into LMICs requires global collaboration and coordination. The G20, as the largest multilateral forum, can play a pivotal role as it represents the world's 20 biggest economies, accounting for 80 percent of global GDP, 75 percent of international trade, and two-thirds of the global population.

Further, LMICs that are members of the G20 have a moral obligation to voice the needs of other LMICs that are not part of the group. By leveraging the G20 platform, LMICs can advocate policies, initiatives, and resources that promote inclusive and sustainable development, particularly for countries facing financial constraints. The G20 can foster cooperation, coordination, and mutual support among member countries and beyond to facilitate investment and development outcomes in LMICs.

Reshaping the Long-Term Development Investment Framework

Given the current state of investment in LMICs, bridging the current financing gap for SDGs will require a structural overhaul. The Long-Term Development Investment Framework for LMICs will have to be reshaped. Some suggestions:

Review the existing development financing schemes of Multilateral Development Banks (MDBs)

There is a need to review existing development financing schemes to ensure their effectiveness and relevance. A comprehensive review will enable policymakers and institutions to better understand the strengths and weaknesses of the current system and identify areas for improvement.

Develop domestic credit markets in LMICs

Shallow and underdeveloped credit markets in LMICs often result in inefficiencies in investment allocation, as funds may not be channelled to their most productive uses. The development of domestic credit markets has the potential to boost the productivity of funds significantly. When robust and well-functioning, credit markets

are a dependable and efficient means for businesses to access funding, which in turn can stimulate economic growth and employment, and contribute to poverty reduction. Developing domestic credit markets can mobilise domestic savings further and reduce reliance on external financing for long-term investment projects. The G20 could take the leadership role to provide technical assistance and develop a framework to boost the domestic credit market in LMICs. It could also invite MDBs to participate.

Reform the private capital market credit rating system

The difficulties faced by poorer nations in accessing development financing have highlighted the need for reforms in the credit rating system. SDG-related criteria should be incorporated into them. This would enhance the creditworthiness of countries seeking loans to meet their SDGs, leading to more affordable financing for them.

Many financial institutions are already trying to include sustainability scoring in their credit assessments, which could be reformed further by including the SDG criteria. G20 countries could facilitate discussions with the private sector and rating agencies to ensure credit rating assessments reflect progress on the SDGs criteria.

Restructure existing official debts for long-term low-interest finance

As LMICs continue to deal with the fallout from the pandemic, outstanding loans limit not just their fiscal room to respond quickly to the crisis but also their future development. Numerous LMICs, particularly those with low income levels and shallow domestic capital markets, already struggling to service existing debt but needing immediate and massive financing, have found it too expensive to borrow sufficiently to facilitate economic recovery. Even if they have access to the capital market, their new debt burden will impede them for years by lowering their credit ratings and increasing the cost of borrowing, decreasing their prospects for long-term economic development.

One historical challenge has been the limited participation of private creditors in debt restructuring initiatives. This is due, in part, to the lack of financial incentives for private creditors to accept below-market interest rates, as seen with the G20's Debt Service Suspension Initiative (DSSI), begun in the wake of the pandemic, to which only one private creditor responded (13). Another challenge is the absence of unified private creditor committees, which makes it difficult to achieve a unified perspective, as seen in the recent case of Argentina (14). Recent research suggests private creditors could wield a de facto preferred creditor status among sovereign borrowers (15). This highlights the need for reforms in the debt sustainability framework to enable greater private creditor participation in debt restructuring efforts. It could include exploring

mechanisms to align financial incentives for private creditors to participate in debt restructuring, enhancing coordination and cooperation among private creditors, and ensuring a level playing field among different classes of creditors.

The DSSI, established by the G20 in May 2020 and continuing till December 2021, allowed LMICs to suspend official bilateral debt service payments. However, it provided a mere US\$13 billion in temporary relief to 48 low-income countries (16). The measures taken by the international community to date have not sufficiently addressed the worsening debt sustainability problem.

The G20 has proposed a Common Framework for debt treatment beyond the DSSI to address insolvency and protracted liquidity problems. But this has its shortcomings, too, such as excluding middle-income countries and lacking a mechanism for meaningful private creditor involvement. Consequently, only three countries (Chad, Ethiopia, and Zambia) have taken part in the Common Framework so far. In each case, there have also been significant delays in helping them out. The process has discouraged other countries that need debt relief from participating under this framework. The IMF and World Bank have acknowledged that the Common Framework does not work well (17).

An alternative framework that enables restructuring official debts for more affordable long-term financing is needed. The G20 countries and the Independent Financial Institutions (IFIs) should explore alternatives, such as debt-for-SDG swaps, that include the SDGs indicators within their framework. Middle-income countries that were excluded under the DSSI and the Common Framework should be eligible to participate.

Integrate blended financing in development financing schemes by involving philanthropies and private companies

A massive share of the LMIC debt is held by the private sector. Thus, the private sector and other players, such as philanthropies, could be more closely involved in development financing schemes. Blended financing schemes could be introduced under this proposal. Besides restructuring existing debts, more blended financing would be useful in leveraging development financing alternatives for LMICs.

Create a coordination and cooperation body of global, regional and national development financial institutions to aggregate capital and coordinate between institutions involved in development financing

Currently, development financing initiatives are generally taken by institutions, such as MDBs and IFIs, both at the global and regional levels. Several national institutions

are also pushing for greater participation. However, all the initiatives are happening in isolation. There is a need to create a body involving global, regional, and national development financial institutions to aggregate capital and coordinate between institutions. Such a body would synchronise agendas and could leverage, upscale, and enhance overall financing capacity. Information sharing will also enable more strategic and impactful investment.

Establish national-level development banks in LMICs to finance investment at the sub-national level

The supply of funds to support sustainable development agendas must be matched by a country's ability to deliver on its projects. Experience shows that many projects in LMICs that may be socially beneficial are un-bankable. The private sector will only participate, and donor countries will only assist if the investment is made viable.

The gap between the availability of funds and the ability to utilise the funds in meaningful projects often depends on the institutional capacity of domestic stakeholders. To address this, LMICs must establish their own National-level Development Banks (NDBs). MDBs and IFIs should support the NDBs to ensure their institutional and technical capacities are adequate to utilise the investments gathered. However, operationalising will depend on the NDBs' capacity. NDBs will also be responsible for sustainable development investment at the national and sub-national levels.

Conclusion

Current investment flows fail to address the financing gap in meeting the SDGs. The annual SDG financing gap was US\$2.5 trillion even before the COVID-19 pandemic; post-pandemic, it is estimated at US\$4.2 trillion. If left unchecked, it will widen further in the coming years, threatening humanity. It must be addressed quickly; time is indeed of the essence.

But that will not be easy. Despite the numerous research that has been undertaken on the effects of climate change and the countless meetings that have been organised to make progress on this subject, the act of taking concrete action and real progress has been slow. One of the primary reasons for the disparity between global consensus and global action is disagreement over who should do what (18). It is the developed countries that have massive financing resources, but it is the LMICs that need the investment towards SDGs. Many of the latter also find themselves constrained by their limited fiscal space and binding external financing constraints. Thus, narrowing this gap requires a collective and substantial global effort. The G20 is the only forum with the influence and participation to resolve the financing gridlock.

The G20 should take the leadership role in restructuring the agenda of the Long-Term Development Investment Framework, especially for LMICs. This article has outlined a series of specific steps it can take.

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Financing Africa's Resilient Climate Infrastructure

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Abstract

AMIDST THE RAPIDLY ESCALATING CLIMATE CRISES, there is an urgent need to enable African countries to remodel existing financial infrastructure to strengthen climate resilience and develop green infrastructure. As the world scrambles towards decarbonisation, the G20 nations, which account for 85 percent of global GDP, are well equipped to support vulnerable countries. This chapter discusses the urgent need for global partnership in financing resilient infrastructure in Africa. It argues that the G20 is uniquely positioned as a vital partner. It proposes three mechanisms whereby the G20 can support African countries: (a) providing grant funding and technical assistance to the Programme for Infrastructure Development for Africa (PIDA) to increase the number of high-quality bankable projects and mobilise financiers; (b) strengthening the coordination of climate financing from the G20 countries to the continent; and (c)

unlocking financial technology and entrepreneurship to mobilise financing for bankable projects. Furthermore, it recommends that the G20 use its technical capacity, financial muscle, and convening power to put African countries on the path towards climate resilience.

Introduction

The scale of financing required to support African countries through climate change is considerable. Though African countries contribute a cumulative 3.8 percent to global emissions, they are highly vulnerable to the consequences of climate change and lack the resilience to withstand them (1). Only three Sub-Saharan African (SSA) countries scored at or above the global average (49/100) on the Notre Dame Global Adaptation Index, which assesses a country's susceptibility to the effects of climate change, such as sea-level rise, disease, and drought, and its readiness to adapt to such changes and improve resilience (2),(3),(4). Evidence from the African Development Bank (AfDB) shows that African countries are expected to lose 5–15 percent of their GDP growth per annum to climate change (5).

Amidst rising debt challenges from commodity prices and the COVID-19 pandemic, it is becoming increasingly difficult for African countries to turn to borrowing (6). Of the 38 SSA countries covered in the joint World Bank–IMF Debt Sustainability Framework for Low-Income Countries (LIC–DSF), 25 are either already in or are at high risk of debt distress; the remaining 13 are at moderate risk (7). This has left little available public financing for infrastructure or other climate objectives (8). According to the AfDB, Africa's shortfall in infrastructure financing remains between US\$68 billion and US\$108 billion per year (9),(10). There is a particular need in Africa for green and resilient infrastructure to cope with the effects of climate change, mitigate the damage wrought by natural disasters, and limit emissions.

Donor partners and private capital have an important role to play. However, donor support remains fragmented and inefficient (11). Meanwhile, private capital, which is needed at scale, is facing structural challenges, including limited investment, tightening monetary policy conditions leading to increased cost of borrowing, and an array of political and economic risks (12). Amidst global economic uncertainty, de-risking vehicles can incentivise the private sector to take on additional risk. Especially important is de-risking adaptation initiatives, which remain underfunded compared to mitigation efforts by both private and multilateral sources alike (13). While adaptation is vital to protecting the world's poor, who remain most susceptible to the inimical effects of climate change, financing flows for adaptation remain five to ten times below projected needs—a gap that has only widened since 2019 (14).

Urgent action is needed to adapt global financial networks to increase both infrastructure and development finance to strengthen Africa's resilience to climate shocks. Leveraging comparative advantages of the private sector, fintech, and bilateral and multilaterals partners is critical to fill the significant climate financing gap. This chapter makes a case for G20 to be uniquely positioned as a catalytic partner in financing Africa's resilient infrastructure.

Financing African Green Infrastructure: Challenges and Opportunities

It is an increasingly accepted fact that advanced and large emerging economies are the primary sources of global emissions. However, low-income countries, including those in Africa, are disproportionately affected by climate change. In fact, African countries have contributed little to global emissions. Like other shocks, such as COVID-19 and the Ukraine–Russia war, climate risks are global, calling for global solutions. The solutions for climate change come in two forms: (a) mitigation and adaptation measures for climate impact; (b) climate finance.

Challenges

Climate impact is a life-and-death proposition for low-income countries, including in Africa. The adverse social impacts of climate change include health hazards and food insecurity resulting from droughts. The consequences of climate change can push millions into poverty.

The economic losses can also be staggering, resulting from damage to property, infrastructure, and even financial systems. For African countries, deficit in climate mitigation and adaptation will be detrimental in terms of not achieving the UN Sustainable Development Goals (SDGs) and the African Union Agenda 2063, commonly known as AU Agenda 2063. In addition, the effects of climate change and risks must be incorporated in the implementation of the highly promising continental free trade agreement [African Continental Free Trade Area Agreement (AfCFTA)]. As for the bottom-line economic impact, recent data from the AfDB estimates climate change could cost Africa 5–15 percent of GDP (15).

Commensurate with the climate impact challenge, we face a financing challenge. The infrastructure financing gap for a resilient and green infrastructure alone is estimated between US\$68 billion and US\$108 billion per year (16). The financial pledges over the years for global solutions have been considerable, but there has been a huge delivery gap. A glaring example is climate funding. It should be recalled that during the 15th

Conference of the Parties (COP15) in 2009, there was a bold agreement to provide climate funding of US\$100 billion annually by 2020 (17). By 2020, only US\$80 billion of the US\$100 billion had been met annually. It is encouraging, though, that the delivery gap in climate funding pledge got prominent attention at the 2023 Paris Summit with the convener of the Summit, President Emmanuel Macron, confidently announcing that the pledge gap in the delivery of US\$100 billion (per annum) will be bridged by the end of 2023 (18).

The 2023 Paris Summit for a global financing pact has generated momentum to reform existing financial infrastructures so that they work for the development requirements of low-income countries, including Africa. Overall, the development financing gap is so huge that it cannot be bridged by the traditional sources of finance and financiers. For the starter, the official development assistance is minuscule relative to the requirements, and it is expected to remain low in the foreseeable future. The role of bilateral and multilateral financiers would still be critical, but there are delivery challenges as discussed earlier. Therefore, it is time now to unlock private capital with scale. This cannot be unlocked without the enabler of the public sector. Hence, the role of the public sector is crucial in providing de-risking vehicles to incentivise the private sector.

Opportunities: Africa is Part of a Solution

Africa is abundantly endowed with resources for clean and renewable energy such as wind, solar, and hydropower. African countries can be agents of climate action. They can lead their own resilient development agenda while benefiting from globally available technical assistance and technologies. This is, in fact, an opportune time for African countries to minimise dependence on carbon-heavy industrialisation and leapfrog into a new global economy characterised by resilience and inclusivity.

Many African countries have begun capitalising on the opportunities afforded by the new green economy. They are transitioning toward low-carbon economies and resilient infrastructures. Numerous measures for climate adaptation are surfacing across the continent: scaling up renewable energy, low-carbon transportation and urban transits, sustainable land-use systems, and reducing industrial emissions. This is encouraging, given that Morocco, South Africa, and Nigeria, for instance, are among the countries leading the way. Morocco is known for building the largest concentrated solar facility in the world to generate vast renewable energy. South Africa has introduced the Carbon Tax Act. A carbon tax has a dual impact. It disincentivises carbon emissions. Simultaneously, it is a means of revenue generation in helping bridge the development financing gap.

There is a growing recognition in Africa for putting into place measures for self-reliance and domestic resource mobilisation, consistent with the AU 2063 agenda. Tax system reforms for enhanced tax base and efficiency in tax collection are part of policy agendas. This is a low-hanging fruit since the opportunities for domestic resource mobilisation are grossly under-exploited relative to the advanced economies, and even compared with other peer low-income countries. In particular, Sub-Saharan African countries have the lowest tax revenue/GDP ratio (16.5 percent); contrast this with the global average of 34.3 percent (19).

Another key self-reliance strategy is accelerating the development of well-functioning financial markets, encompassing both bank and non-bank finance. These markets are fragmented and thin. There should be greater consolidation and integration of the thin and fragmented markets across borders. Again, the new continental agreement can be seen as a vehicle of financial integration. The G20 countries can play an important role in the provision of technical assistance and building internal capacity of African financial systems.

There should be an enabling environment in Africa for innovative green financing, as well as development of a pipeline of bankable and investable projects. This calls for robust public-private partnership to unlock private capital for development. The newly created continental trade agreement, AfCFTA, should be used as a facilitator of collective action continentally.

The African countries are becoming agents of climate action. They are also engaged in proactive measures in domestic resource mobilisation. Unfortunately, this transition to a new green economy requires abundant financial resources, including technical assistance from global partners. In particular, the G20 partnership would be crucial both for financial resources and technical support. As discussed below, the G20 is uniquely positioned to do so. It will also play a catalytic role in helping unlock the full potential of African countries in contributing to climate solutions.

G20: The Preferred Partner

The G20 comprises 19 countries and the European Union and represents two-thirds of the world's population, and is responsible for 85 percent of global GDP and over 75 percent of global trade (20). The group also emits 80 percent of global greenhouse gases (21). The G20 is, therefore, simultaneously the most potent driver of climate change and the best equipped to lead a response.

The G20 countries are increasingly incorporating climate change into their agenda. The formation of the Sustainable Finance Working Group in 2021 and the Bali Declaration

in 2022 evince a greater emphasis on helping developing countries mobilise climate finance (22). More recently, at the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP27) (23), a dedicated fund was established to assist developing countries cope with loss and damage. The G20 consists of three developing countries, including Brazil, India, and Indonesia, which continue to be affected by climate change. With the G20 presidency rotating among these three countries between 2021 and 2024, it allows emerging markets and African countries to place their demand for climate financing. This period holds the potential for the G20 leadership to assist in boosting and coordinating the different sources of finance.

The G20 is already at the forefront of global coordination to resolve the sovereign debt crisis. It spearheaded the Common Framework for Debt Treatment in debt restructurings and resolution. However, challenges remain in implementation, resulting from creditor coordination and limited private creditor participation. Successful debt resolutions can free up resources to help bridge the considerable gap in financing Africa's resilient infrastructure. In fact, the Common Framework for Debt Treatment should be aligned with sustainable investments associated with the AU Agenda 2063 and the UN SDGs.

Thus, G20 has experience in coordinating efforts to mobilise financial resources and technical assistance. On the technical part, for instance, G20 can help accelerate the implementation of the newly established AfCFTA. This is a key channel for advancing financial integration in Africa for increased capacity to deliver resources for a resilient economy. In this essay, the focus is on the G20 as a partner for financing Africa's resilient infrastructure and providing specific delivery mechanisms.

Delivery Mechanisms for the G20 Partnership

The previous section highlighted the urgent need to remodel existing financial infrastructure to equip African countries to strengthen their climate resilience and develop green infrastructure. This chapter proposes three mechanisms: (i) providing funding and technical assistance to the Programme for Infrastructure Development for Africa (PIDA) to increase the number of high-quality bankable projects and mobilise financiers; (ii) strengthening the coordination of various climate financing efforts to maximise outcomes; and (iii) unlocking financial technology and entrepreneurship to mobilise financing for bankable projects.

Mechanism 1: Provide grant funding and technical assistance for the Programme for Infrastructure Development for Africa (PIDA) to strengthen the identification and development of bankable projects

Africa's investments in infrastructure are estimated at between US\$130 billion and US\$170 billion, annually, with a shortfall between US\$70 billion and US\$100 billion (24). Although infrastructure spending has increased over time, project preparation remains a bottleneck, given that it is an expensive, complex, and risky process. It requires rigorous economic and financial analyses, fiduciary assessments, social and environmental safeguards, and climate-resilience evaluations vital for sustainability. The lack of adequate grant funding has severely constrained the preparation of high-quality bankable projects in Africa (25). However, African countries are taking measures to bridge the financing gap for climate-resilient projects, for example, the PIDA.

PIDA is a continental initiative that creates a rich pipeline of bankable cross-border projects. It lays out the continent's strategic vision for infrastructure until 2040 for more integrated transport, energy, information and communications technology (ICT), and transboundary water networks. PIDA uses the Priority Action Plans, which outline immediate steps to attain its long-term goals. The shortlisted projects were adopted in February 2021 and approved by the African Union heads of state after a long period of consultations and rigorous assessments by the African Union Commission, the AfDB, the African Union Development Agency (AUDA-NEPAD), and the United Nations Economic Commission for Africa (UNECA) (26).

Moving forward, the G20 can provide PIDA with grant funding to support the development of bankable projects and leverage its convening power to mobilise financiers.

- **Providing grant funding to PIDA.** Project preparation and design costs are approximately 5 percent of the project costs. Thus, a relatively small G20 grant funding could yield substantial returns by enabling the completion of the preparation and de-risking of some of the priority projects already identified by PIDA. This would ensure that a rich pipeline of well-assessed bankable projects is available to investors. Just US\$5 billion would provide significant support for project preparation and thereby de-risk priority projects identified by PIDA in February 2021 (27).
- **Leveraging the convening power of G20 to mobilise financiers.** A convening hosted by the G20 can bring together a consortium of pension funds, insurance companies, sovereign wealth funds, and other financial institutions looking to finance bankable projects across Africa while yielding stable long-term returns. This can help increase deal flows to the Africa Investment Forum (28), an initiative of eight institutions accelerating transactions and attracting investors to close

Africa's evident infrastructure gap. In essence, the availability of well-assessed bankable projects will send a clear message to investors worldwide that Africa is seriously open for business (29).

Thus, the support of the G20 strengthens the capacity of PIDA to carry out its functions as a coordinating umbrella to support green infrastructure development in Africa.

Mechanism 2: Improving coordination and harmonisation among climate financiers and donors

Africa's climate financing landscape is marked by fragmentation, which is a microcosm of the complexity of developmental cooperation. There are four groups of financiers: (i) bilateral climate funds (Germany, France, Japan, and over 25 other countries); (ii) the European Union; (iii) Multilateral Development Banks (MDBs) (World Bank, African Development Bank, and seven other regional MDBs); and (iv) multilateral climate funds (Global Environmental Facility, Climate Investment Funds, Green Climate Funds, and over 15 other funds). Each of these stakeholders bring specific objectives and approaches to tackling the climate change problem in the continent.

Climate financing remains decentralised, and a plethora of financing options, implementation channels, and thematic priorities have given rise to innovation as well as inefficiency arising from poor coordination, overlapping mandates, limited accountability, and inefficient resource mobilisation. There is room to strengthen coordination (30). These challenges have also given rise to difficulties around monitoring, reporting, and verifying climate finance flows.

Therefore, coordination must be improved across the various stages of climate finance, including mobilisation and accounting, the architecture of funds, and the allocation and channels of delivery. Coordination requires fostering coherence in funded activities and enhancing oversight of disbursed funds.

The G20 can harmonise climate financing initiatives and provide capacity building for African countries.

- **Capacitating a single G20 institution to be the focal point for all climate donor funds and support the capacity building of a single government department in recipient countries to manage incoming funds.** This has multiple benefits: (i) reducing the duplication of efforts and funds by combining interventions and resources, and replacing one-off interventions with programmatic approaches to improve sustainability; and (ii) significantly reducing administrative costs borne by

recipient countries, enhancing the efficiency of funds received, and improving the implementation of interventions (31).

- **Increasing donor information exchange by harmonising funding and reporting requirements, procedures, and standards.** Although the reporting requirements are similar for financing initiatives that fall within the United Nations Framework Convention on Climate Change (UNFCCC), they differ considerably across non-UNFCCC architecture, which most climate finance initiatives fall under. Harmonisation of climate financing data can help donors identify gaps, improve administration, and expand financing to priority areas as well as promote transparency, completeness, and accuracy by cross-checking data across countries (32).

Mechanism 3: Mobilising resources to unlock financial entrepreneurship to finance bankable projects

Financial entrepreneurship is critical in mobilising climate finance for bankable projects because of inadequate financing from traditional sources, including the public sector. Financial entrepreneurship can be unlocked through fintech startups made possible by the digital revolution. For most African countries, the actual financial inclusion fall short of the predicted values, except for the upper-middle-income African countries (33).

Fintech is rapidly expanding in Africa for savings, credit, insurance, and other digital financial services. Evidence shows that, in 2021, there were nearly 600 fintech startups (34) in Africa that mobilised over half of the US\$2 billion raised by the aggregate African startups (35). Still, the fintech space remains nascent, limiting the development of products, such as agriculture insurance to strengthen the sector's resilience to climate shocks, and financing for green investments. Strengthening fintech requires developing an enabling policy environment with central banks, developing human capital investments, and strengthening infrastructure (36).

G20 and other international organisations can partner to create an enabling environment for fintech to fill the financing gap for green investment. Some key areas for partnership are as follows.

- **Mitigating information and communications technology (ICT) infrastructure challenges.** Despite the rapid expansion of fintech, it remains limited due to infrastructural constraints, such as internet connectivity. The G20's support for Africa's quest for digital transformation would be key in financing and providing technical assistance to the development of public-private partnerships for ICT infrastructure.

- **Developing talented financial manpower.** Success in the fintech startup movement requires supporting human capital development in finance and technology. The G20 support in capacity building for talent that is fit for the purpose would be vital. One related problem is that the region faces the flight of such talent to more advanced countries, including those in the G20. Partnership with African countries in averting brain drain and fostering brain banks (diaspora) would require multiple incentives that require financial and non-financial resources.
- **Strengthening the regulatory environment.** In addition to the weakness of the current regulatory regimes, including anti-money laundering and KYC (know your customer) compliance, there is limited capacity for regulations. Regulating digital financial services has been a challenge globally. The G20 partnership is key to supporting African central banks in strengthening their regulatory systems to prevent financial instability amidst the rapid advent of fintech.
- **Facilitating financial integration to support regional fintech growth.** Rapid technological changes are transforming the financial system and how central banks execute core functions, such as payment systems and currency execution (37). However, fragmented regulatory frameworks exist across the region, making compliance challenging and inhibiting fintech from operating in multiple jurisdictions. Financial integration and harmonising financial systems, aligned with the AfCFTA, is key for adopting fintech solutions regionally. Technical assistance from the G20 can accelerate financial integration, growth of regional fintech, and financial entrepreneurship.

Recommendations to the G20

Making existing financial infrastructure work for Africa has assumed renewed significance, as Africa's debts have risen considerably since the start of the pandemic, and global liquidity has become increasingly strained. Mounting debt servicing costs have made it difficult for Africa to finance key investments toward development objectives, especially climate resilience and green infrastructure. The G20 partnership can be vital in strengthening existing financial infrastructure to attract climate finance for African economies. This chapter has analysed three specific proposals for the G20 partnership to mobilise resources for climate-related development objectives.

- **The G20 should provide grant financing and technical assistance for institutions,** such as PIDA, that assess project potential and establish cost-effective, bankable projects.

- **The G20 should harmonise climate financing** initiatives by mandating a single G20 institution to lead global climate-related financing and communications to engender economies of scale and improve information flow. The G20 should also support the dedication of a specific government department in recipient countries to coordinate climate-related financial inflows.
- **The G20 should bolster fintech and financial entrepreneurship** in Africa by supporting its efforts to improve digital infrastructure, partnering with Africa's governments to avert brain drain, and establishing reliable capacity-building opportunities. This would help Africa strengthen its regulatory environment and facilitate its regional and global financial integration through the AfCFTA.

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TF-6

**ACCELERATING SDGs:
EXPLORING NEW
PATHWAYS TO THE 2030
AGENDA**

Evidence and Lessons from Brazil's Food Procurement Programme

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Abstract

BRAZIL'S PROGRAMA DE AQUISIÇÃO DE ALIMENTOS (PAA) is a food procurement programme that allows the government to directly purchase produce from family farmers to distribute to vulnerable families, identified through local welfare services. Since 2003, the programme has guaranteed the commercialisation of family farmer production, ensuring that they have access to a regular income and promoting access to adequate and healthy food in quantity and quality to families experiencing food insecurity. This essay (1) recommends the adaptation of the PAA in other countries as it could accelerate progress towards the Sustainable Development Goals (SDGs).

Introduction

Fast-developing technologies over the last few decades have led to the expansion of agricultural systems, resulting in an increase in food production and supply, but food access and nutritional security continue to be a challenge. A report by the Food and Agriculture Organization of the United Nations (FAO) highlights the inequality among countries in post-pandemic economic recovery coupled with the slow recovery from the global repercussions of the war in Ukraine. Despite progress in reducing hunger in Asia and in Latin America, hunger continued to rise in Western Asia, the Caribbean, and all subregions of Africa. The FAO estimated that in 2022, hunger affected 282 million people in Africa (or 20 percent of the population), 402 million in Asia (8.5 percent of the population), and 43 million in Latin America (6.5 percent of the population) (2).

Moreover, according to the FAO, new issues of “overnourishment” and obesity, and associated diseases, add to the long list of global challenges. Rising costs in food production systems, largely driven by increases in prices of agricultural inputs such as fertiliser (3), lower prices for producers, depleted natural resources, and ecological imbalances further compound the complexities faced by food producers, especially family farmers.

Public food purchases (PFP) are public policy initiatives that use government purchasing power and continuous demand for food as an instrument for creating demands with social objectives, aiming to address issues primarily related to increasing small farmers' access to commercialisation channels for their production and the promotion of food security for groups in vulnerable conditions. PFP can adapt to different contexts, ranging from low-income to high-income economies. As part of the design and implementation of PFP, governments shall put in place regulatory frameworks for the purchase of food that define what type of food will be purchased, from whom and under what type of food production systems. It considers the structure of local markets, the quality of the food locally available, and the coherence with local food production and consumption habits. In addition, producers must respect labour and human rights, and adopt environment-friendly production practices so that public purchases act as an incentive for constructing a more sustainable food system (4).

This essay aims to present Brazil's food procurement programme, *Programa de Aquisição de Alimentos* (PAA), as a tool to fight hunger and malnutrition and to support family farmers. The PAA is a public policy instrument with the twin objectives of expanding the access of family farmers to markets and promoting food security. The success of the PAA, as a policy to support family farming and foster food security among vulnerable families, has turned it into one of the most demanded public policies that countries wanted to learn from Brazil. It became a sort of ‘ambassador’ for international cooperation in the area of food security and nutrition, having served

as inspiration and model for the design and implementation of PFP aimed at family farmers in several Latin America, Caribbean, and African countries. The PAA experience also served as the basis for the reform of the *Programa Nacional de Alimentação Escolar* (PNAE), Brazil's school feeding programme, that made it mandatory that a minimum of 30 percent of purchases under the programme were made from family farmers (5).

The Brazilian Food Procurement Programme: An Overview

The objective of the PAA is to promote family farming and combat food insecurity. Through the PAA, the government purchases produce from family farmers and donates to vulnerable families as identified by local social welfare services (6), (7).

Before the programme's launch in 2003, family farmers in Brazil, who were responsible for most rural farms, occupied only a small percentage of the total arable land. However, they did produce an excédent that could generate some income, but faced difficulties in accessing markets in a profitable way (8). While there were several public policies (9) to promote agriculture, they proved inadequate and insufficient (10), and rural farmers continued to live in conditions of hunger and poverty (11).

The PAA was created during President Luiz Inacio Lula da Silva's first term and under the government's flagship strategy known as 'Hunger Zero'. The platform integrates into a single public policy aspect from two different policies by (i) creating an institutional demand capable of structuring the production of family farmers through the guarantee of the market by purchasing the products and by promoting food supply through the formation of strategic stocks; and (ii) promoting access to food through direct donations for food-insecure vulnerable families (12).

The PAA expands the access of family farmers to the market by allowing them to participate in the public food procurement held by the government. As per Brazil's existing law on public procurement, when a government institution needs to purchase any product, it is mandatory to conduct a bidding process (13). The latter, however, requires cumbersome bureaucratic work for sellers, which is particularly costly for family farmers and prevents them from participating in the process. The PAA changed the rules of the bidding process by giving autonomy to the newly created PAA management committee (GGPAA, its acronym in Portuguese) to adapt purchase norms and procedures to the local context and to the productive capacity of family farmers, since previous methodologies for calculating purchasing prices were aimed at large, non-local producers (14).

The GGPAA is a collegiate body with a deliberative function, which defines the guidelines related to the PAA, having been instituted by the same law that created the programme. Its last formation contained representatives from the Ministry of Social Development, the Ministry of Agriculture, the Ministry of Economy, and the Ministry of Education (15).

The PAA has two sets of beneficiaries—suppliers (family farmers who sell their produce to the programme) and consumers (those who receive the products through donations organised by local welfare services). Family farmers can participate in the programme either individually or collectively through cooperatives and associations through which they can sell more produce because the annual limit on amounts paid to farmers is higher.

At present, the programme operates in five modalities, each having its own operational rulers, implementing agency, annual limit on amounts paid to farmers, and type of access to the programme (see Table 1).

Table 1: Description of PAA's Modalities

Modality	Description	Family farmer access type
Purchase with Simultaneous Donation (CDS in Portuguese)	Purchase of food for immediate donation to welfare services that cater to the needs of people in situations of food insecurity.	Individual or cooperative and association
Direct Purchase	Purchase of specific products defined by the PAA management committee when there is no market or price for any of these products.	Individual or cooperative and association
Stockage	Financial support to farmers' associations and cooperatives for building up food stocks for later commercialisation to obtain a more adequate price for sale.	Cooperative and association
Incentive to the Production and Consumption of Milk (PAA-Milk)	Purchase of milk in specific regions with large milk production and high levels of rural poverty.	Individual or cooperative and association

Modality	Description	Family farmer access type
Institutional Purchase	Purchase of family farming products (food and seeds) via tenders and public calls to meet the demands of the purchasing agency. It can be used to supply channels such as hospitals, military barracks, prisons, and university restaurants.	Cooperative and association

Source: Perin et al. (16)

The different modalities make it possible to implement the PAA at the national level. In addition, more than one modality can be implemented simultaneously in the same locality as long as the programme criteria are met. Due to this flexibility, more family farmers can sell their produce, and more people in situations of food insecurity can have access to healthy food. The programme has a complex institutional structure integrating different implementers locally and the local management committee in charge of monitoring the entire process (17).

The price of produce is set by the National Supply Company (CONAB in Portuguese) (18), which conducts local surveys to estimate the reference prices that will be valid for one year. Thus, despite the variation in market prices throughout the year, the produce purchased by the PAA will have the same value for the duration of time that the proposal is in force (19). This approach to set prices has led to some complaints from farmers, who argue that, at times, the price list used by the programme is below the price value practiced in the market (20). However, a 2020 study found that the prices paid by the PAA were better (higher) than those observed in the local market—this has led to an increase in demand for participation in the programme under the CDS modality (21).

Opportunities Created by the PAA

Since 2003, the PAA has provided a guaranteed market to family farmers with the surety of commercialisation and a regular income flow to help them plan their production. An impact evaluation carried out in 2022 revealed that the PAA CDS modality led to a 13.2-percent increase in the family farmers' incomes between 2009 and 2017. The impact was higher for the poorest family farmers in the 10th income quantile (first decile), the lowest according to this methodology, who experienced an increase of 56.8 percent in their incomes, leading to a reduction in rural poverty (22).

The increase in income is a direct effect of factors such as market guarantee, suitable prices, and crop diversification. For many family farmers, it is common not to be able to sell everything they produce, which may prevent them from investing more as they do not have enough demand. By accessing the PAA and having the guarantee of sales, suppliers start to increase the cultivated area, knowing that those that produce already have a guaranteed market (23). Such guarantees lead family farmers to invest in producing new and diversified crops to meet PAA institutional demand (24). This also results in new investments such as the acquisition of new equipment—either for production or for transportation—as well as improvements in infrastructure and irrigation, and the employment of more animals for farm work. Farmers have also indicated that they have used the income from the PAA to improve their living conditions and that of their families through the acquisition of durable goods (25).

In addition to reducing risks and increasing incomes, the crop diversification fostered by the PAA also contributes to the production of food with greater nutritional value. A 2022 study showed that 97 percent of the produce purchased by the PAA were *in natura*, mainly fruits and vegetables, and minimally processed, such as seasonings, beef meat, cassava flour, and pasteurised milk. The produce contributes to the food security of its direct beneficiaries and to the promotion of a more sustainable food system (26). The PAA also allows the purchase of processed products such as jams, fruit pulp, cheese, bread, and cakes produced by farmers, encouraging them to invest in processing to add value to fresh food (27).

In some cases, the insertion of regional products in the list of food purchased by the programme stimulated the production and consumption of such types of food, adding value to family farming and local purchases (28). By encouraging trade in products at the local and regional level, PAA encourages short marketing circuits, which reduces distances between family farmers and consumers, thereby decreasing transportation costs (29).

A 2016 study found that the PAA provided people with a regular intake of food items that they would otherwise not be able to consume due to higher costs, such as tilapia fish, cashew nuts, yogurt, and meat (30). A 2020 study showed that introducing food received by the PAA in school meals promoted changes in students' performance, resulting in higher attendance rates and improvements in overall health due to a greater intake of fruits, vegetables, and meat, and by replacing nutritionally poor ultra-processed food (31).

Since 2004, the programme has been purchasing organic products, which are priced up to 30 percent higher for having the 'organic' certificate. However, few families benefit from it due to the high direct and indirect costs of obtaining the certificate. The certificate requires a great degree of technical knowledge and organisation of farming

activity. Even without such a certificate, family farmers deliver produce that is grown without pesticides or chemical/synthetic fertilisers; however, they do not receive the additional 30 percent in value (32).

The participation in some PAA modalities requires suppliers to be officially organised in cooperatives or farmers' associations. This has incentivised the creation of associations and strengthened existing ones (33).

The CDS modality intends to have a minimum percentage of 40 percent of women from the total number of supplier beneficiaries and 30 percent in the PAA-Milk modality. This quota has helped increase the participation of women by giving them visibility, as they previously often participated in the programme by supporting production and marketing but were not recognised as participants. This has increased their income, autonomy, and self-esteem (34).

Recommendations to the G20

The PAA has proven to be a successful public food procurement programme, as per the evidence summarised in this essay. Moreover, its goals are aligned with the 2030 Agenda for Sustainable Development and Principle 2 of the 2023 G20 Deccan High-Level Principles on Food Security and Nutrition (35), which has also been endorsed by the G20 New Delhi Leader's Declaration. Principle 2 states that the G20 countries should foster the "progressive realisation of the right to adequate food in the context of national food security, improve consistent access and availability of safe, affordable, diverse, and nutritious food (and) promote targeted food and cash-based safety net programs sharing best practices and experiences with countries in need for effective policy, program design and implementation." Thus, it is recommended that the G20 foster and support the adaptation and implementation of PAA-inspired interventions worldwide to ensure the right to food and foster the availability, affordability, and diversity of nutritious food jointly with the implementation of food safety-net programmes. The specific actions highlighted below are important components for any PAA-inspired interventions to achieve similar outcomes.

Implement a public food procurement programme for family farming: This will work as a guaranteed market for the purchase of produce from family farmers, which will help address two challenges—the lack of access to an adequate market for family farmers to sell their produce, and the lack of access to healthy food in adequate quantity and quality for people experiencing food insecurity.

Clarify the scope of 'family farmers': In Brazil, Law no 11.326 (24 July 2006) defines a family farmer as someone who works in rural areas and simultaneously meets

the following requirements—has a maximum cultivated area of four fiscal modules (these modules vary by region); predominantly uses the family's own labour force in economic activities of the farm; has a minimum percentage of family income originating from economic activities of its farm; and manages the establishment with family support (36).

Prioritise women as suppliers: It is important to recognise the role of women in agriculture. Women are already active in the process of production and commercialisation, and a PAA-like food procurement programme will allow them to earn their income. This, in turn, raises their sense of autonomy and self-esteem.

Decentralise the preparation and implementation of proposals: Although there are some standard requirements, it is important to give autonomy to local governments that will implement the programme to define jointly with family farmers and representatives of beneficiary welfare services which products will be produced, how they will be delivered, and the calendar and frequency. Proper arrangements can then be made to meet each specific target.

Stimulate the participation of cooperatives and associations of family farmers: Allow suppliers to participate in the programme even when organised in cooperatives or associations, and stipulate a higher sale limit than when they participate individually. The reliance on the cooperative's infrastructure can help family farmers better manage and plan their production, share transportation costs, fill out documents to participate in other public policies, and access specialised technical assistance and extension services.

Favour local food procurement and local distribution: Promote short circuits where family farmers sell their produce in the municipality where they live or nearby, reducing their transportation costs and promoting local development as the supply chains are shortened, as are the distances between producers and consumers. This contributes to the sustainability of the agrifood system.

Create financial incentives for the farming of organic produce: The PAA pays family farmers up to 30-percent higher for produce that is certified as organic. A similar approach can be followed by other countries.

Prioritise the purchase of regional produce: Facilitate consumer acceptance because they are already familiar with the products. This strategy helps stimulate the preservation of regional food cultures.

Conclusion

This essay presented the PAA as a tool to fight hunger and malnutrition and support family farmers. Over 20 years of implementation, the PAA has promoted positive effects on its supplier beneficiaries' income, especially of the poorest family farmers, and on production diversification. It has also contributed to promoting food security by offering nutritious food in quantity and variety to people experiencing food insecurity, in addition to encouraging the production of organic food and aligning with the regional culture.

The main characteristics of the PAA's design that have contributed to its success are the clear definition of family farmers, the prioritisation of women as suppliers, the decentralised preparation and implementation of proposals, access to the programme through cooperatives and associations of family farmers, local food procurement and distribution, financial incentives for the farming of organic produce, and the prioritisation of regional produce purchase.

Considering the PAA's specific design elements when planning to replicate the model for other PFP with the same objective is key to a successful implementation. Equally important is adapting them to the needs, possibilities, and complexities of each context since the success of such policies can shape food systems and accelerate progress towards achieving the Sustainable Development Goals.

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Endnotes

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A Digitalisation Roadmap for Climate-Smart Agriculture in India

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Abstract

CLIMATE-SMART AGRICULTURE REQUIRES A DIGITAL INTEGRATION of climate and agriculture information. India is digitalising rapidly, and so its policies and practices to achieve climate-smart agriculture must also promote digital integration. This essay presents a framework and process guide to: (a) digitally integrate India's agriculture and climate information; (b) analyse India's extant agriculture and climate information policies within the framework; (c) highlight their strengths, weaknesses, and oversights; and (d) recommend pathways for the future. The essay will help determine the known effective pathways to climate-smart agriculture that must be reinforced, the known ineffective pathways that must be redirected, and the unknown new pathways that must be discovered and explored. It will thus develop a comprehensive roadmap for effective digitalisation pathways to climate-smart agriculture in India and other G20 countries, individually and collectively.

Introduction

Agricultural systems and climate change

The agricultural sector contributes to—and is impacted by—climate change. Climate change has already negatively impacted agrifood systems directly and indirectly through increasing temperatures, shifting precipitation patterns, soil degradation (1), increasing extreme weather and disasters from floods, droughts, pest, and disease outbreaks (2). It will continue to be a major threat to agrifood systems, especially increasing the vulnerability of the poor who depend on agriculture for livelihood (3).

Simultaneously, the global agrifood system contributes to greenhouse gas (GHG) emissions. In 2019, 31 percent of global anthropogenic emissions were contributed by agrifood systems (4), with direct farm-gate emissions contributing 7 billion tonnes CO₂eq, pre- and post-production processes 6 billion tonnes, and land use change 4 billion tonnes CO₂eq (5). Between 1990 and 2019, emissions increased by 16 percent (6). The G20 countries are the largest emitters from agrifood systems: China, India, Brazil, the US, and Indonesia.

Sustainable Development Goals

The focus of goal 2 of the Sustainable Development Goals (SDGs) is squarely on agrifood systems—end hunger, achieve food security and improved nutrition and promote sustainable agriculture. However, progress has been slow overall and, for some indicators, trends are reversing. In 2017, as many as 821 million people were undernourished, and the Food and Agriculture Organization (FAO) estimates that the prevalence of undernourishment is again on the rise after many years of decline (7). Increasing populations, changing diets, and growing incomes increase the demand for food and other agricultural commodities. The FAO estimates that to meet food demand in 2050, crop and livestock production will have to increase by 60 percent compared to 2006 levels (8).

Climate-Smart Agriculture

In this context, the concept of climate-smart agriculture (CSA) was launched by the FAO in 2010 with three goals, to improve food security sustainably, provide mitigation benefits, and increase resilience by facilitating adaptation to climate change (9). CSA goes beyond agricultural practices and technologies to include institutions, enabling policies and financing mechanisms (10), and a broader acknowledgement of the need for integrated landscape management for multiple benefits, i.e. “climate-

smart landscapes” (11). For the effective implementation of CSA, Lipper et al. (12) recommended four priorities (a) building evidence and assessment tools, (b) strengthening local and national institutions, (c) coordinated, evidence-based policies, and (d) increasing, effective financing mechanisms.

Role of Digitalisation in Climate-Smart Agriculture

The application of digital technologies continues to change the agrifood system dramatically (13). For CSA, this has been informed by building the knowledge base, and monitoring and reporting tools developed over the past decade with the help of case studies and indicators. Case studies on CSA, along with lessons learned from scaling-up CSA activities, have developed from, for example, South Asia (14), and in 11 case studies in Asia, Africa, and South America (15). The roles that digitalisation can play in CSA are many, including:

- Setting baselines, monitoring progress, and reporting, such as the FAO’s indicator framework (16) and the World Bank’s CSA indicators (17).
- Enabling market access, knowledge sharing (extension and information dissemination), weather and pest prediction (18), gaining access to carbon markets, and related benefits of engaging in CSA practices.
- Tools such as radio programmes and information and communication technologies can be used (19)

Ontological Frameworks

CSA is a combinatorially complex challenge. An ontological framework can be used to visualise the challenge concisely, clearly, and comprehensively in structured natural English (and other languages). It can be used to determine: (a) effective pathways and reinforce them, (b) ineffective pathways and redirect them, and (c) innovative pathways and experiment with them. Such frameworks have been used to analyse national challenges of local climate change (20), sustainable growth (21), river water sharing (22), pollution management (23), waste management (24), healthcare management (25), higher education (26), and others. In the following, we present a brief literature review and an ontology of CSA digitalisation in India and recommend policies based on it. The ontology is based on based on the extensive experience of the authors (27) and selected literature.

Literature Review and Ontology for CSA Digitalisation in India

In recent years, the literature surrounding CSA has witnessed an upsurge in research efforts aimed at unravelling the potential of digitalisation for sustainable transformation. Notable contributions have emerged, shedding light on the interplay between digital technologies and the complex dimensions of productivity, resilience, and emissions management (28).

Jules Pretty, Camilla Toulmin, and Stella Williams (29) delve into sustainable intensification within the context of African agriculture. Their study accentuates the significance of harnessing digital tools to amplify productivity while navigating the challenges of environmental sustainability. They argue that a symbiotic relationship between technology and agricultural practices is integral to achieving climate-smart objectives.

In a pivotal theoretical exploration, Holger Meinke et al. (30) emphasise the urgency of adaptation science in agricultural and natural resource management. Their insights underscore the theoretical underpinnings required to harmonise digital interventions with the imperatives of resilience in the face of climate-related disruptions. The authors advocate for a systematic framework that integrates digital technologies with adaptive agricultural practices.

Leslie Lipper et al. (31) contribute substantially to the discourse by highlighting CSA as a linchpin for food security. Their research accentuates the role of digitalisation in facilitating access to real-time data and information crucial for enhancing both productivity and resilience. The authors assert that a concerted effort towards digital integration in agriculture can lead to significant strides in tackling food insecurity challenges.

The relationship between these outcomes is both symbiotic and conflicting, necessitating careful management. For instance, maximising productivity may come at the cost of reduced resilience or heightened emissions. The multifaceted challenges posed by the global food system's contribution to GHG emissions add complexity to the digital transformation of CSA. Aligning emissions management with productivity and resilience objectives poses a key challenge in the realm of digitalised CSA.

CSA is a part of India's and the G20 countries' SDGs vision. It is a complex, mega-scale challenge. The ontology of the digitalisation roadmap for CSA in India is a clear, concise, comprehensive visualisation of the challenge, and a 'map' of the pathways to meet the challenge (see Figure 1). The digitalisation of CSA can be understood as the integration of digital technologies in agrifood systems, specifically related to the achievement of

CSA goals. Agrifood systems refer to the global food systems, comprising the entire supply and value chains.

The objective of CSA is to optimise a country’s agriculture productivity, resilience, and emissions in response to climate change (long-term, irreversible changes in temperature, precipitation, humidity, pressure, and wind; Figure 1 – Climate Change). The strategies must be specific to a country’s different crops, namely cereals, pulses, oil seeds, fruits, vegetables, spices, fodder, and cash crops (Figure 1 – Crop). They must also be local to a country’s agriculture regions (Figure 1 – Region) and their subregions.

CSA integrates knowledge about the agricultural effects of climate change in real-time. It provides timely feedback and feedforward to policymakers and practitioners by sensing, monitoring, processing, translating, communicating, and archiving (Figure 1 – Function) the data, information, interpretation, and knowledge (Figure 1 – Semiotics) (32). It learns and adapts through feedback (33).

Figure 1: Ontology of the Digitalisation Roadmap for Climate Smart Agriculture in India

[Digital]	Digital		Climate Change	Crop	Agriculture		Outcome
	Function	Semiotics			Region		
Sensing	[of] Data	[about effects of] Temperature	[change on] Cereal	[crop in the] Eastern Himalayan	[region in India for effective agriculture]	Productivity	[management]
Monitoring	Information	Precipitation	Pulses	Western Himalayan		Resilience	
Processing	Interpretation	Humidity	Oil seed	Lower Gangetic Plains		Emissions	
Translating	Knowledge	Pressure	Fruit	Middle Gangetic Plains			
Communicating		Wind	Vegetable	Upper Gangetic Plains			
Archiving			Spices	Trans-Gangetic Plains			
			Fodder	Eastern Plateau and Hills			
			Cash	Central Plateau and Hills			
				Western Plateau and Hills			
				Southern Plateau and Hills			
				East Coast Plains and Hills			
				West Coast and Ghat			
				Gujrat Plains and Hills			
				Western Dry			
				The Islands			

Source: Formulated by the authors

The ontology encapsulates 43,200 (6*4*5*8*15*3) pathways for digital CSA. Each pathway is a concatenation of a word/phrase from each column of the ontology together with the adjacent connecting words/phrases. The pathways include, for example:

- The digital sensing of data about the effects of temperature change on cereal crops in the Eastern Himalayan region in India for effective agriculture productivity management.
- The digital processing of interpretation about the effects of wind speed changes on fodder crops in the southern plateau and hills region in India for effective agriculture emissions management.

- The digital communicating of knowledge about the effects of precipitation changes on spice crops in the eastern plateau and hills region in India for effective agriculture resilience management.

The challenge is to systematically discover and reinforce the known effective digital pathways to CSA, redirect the known ineffective pathways, and explore the unknown new pathways. There is currently no validated model to address this challenge.

The G20's Role in Addressing the Challenge

The G20 must play a key role in addressing the challenge of CSA by adopting the ontological framework, method, and recommendations to set the agenda for (a) research, policy, and practice; and (b) the translation of research to policy to practice through feedback and learning. The G20 must constitute a committee to formulate a systemic agenda for systematic research, policies, and practices for the digitalisation of CSA in a country using the ontology. The Think20 Engagement Groups provide research and policy advice to the G20 and are ideal forums to develop the ontological framework as the G20 presidency rotates between the member countries each year. In addition to providing research policy guidance through the task forces' policy briefs, these platforms could also engage experts who could facilitate the creation of country-specific ontological frameworks, and track progress using appropriate indicators.

There is no similar unified framework or concerted effort to address the challenge and provide a roadmap. The committee's agenda must inform and be informed by the constituent country (and local) agendas, and those of multilateral actors like the FAO and World Bank.

The ontology of CSA must be adopted globally as a framework for all G20 countries by adapting the crop and region taxonomies to each country. This can then be used as a global framework adapted to local requirements. Within the framework, each country can choose its pathways based on its local requirements, priorities, and resources. The adoption of a common framework will help formalise and transfer the knowledge about and feedback and learnings from the implementation within a country to across the G20 countries, and non-G20 countries as well. It will help transform the cycle of the generation and application of knowledge on the challenge from a selective, segmented, and siloed effort to a synoptic, systemic, and systematic one.

The framework must be used to periodically map the state of the research, need, and practice of CSA by a country. Analysing the gaps between the three will help guide the translation of research into policy and practice and then back to research, creating a virtuous feedback and learning cycle (34) to achieve the SDG-3 vision (good health and well-being).

Thus, the G20 committee must help countries collaborate in their efforts, coordinate their policies, and communicate their learnings. It must set the trajectory for the digitalisation of CSA within the G20 and globally and must provide a 'map' for the global effort.

Recommendations to the G20

The following recommendations can guide the creation of agriculture digitalisation policies to address the key requirements for CSA in India. Such policies can also be generalised to other G20 countries and non-G20 countries. The recommendations are organised by the five dimensions of the ontology—outcome, region, crop, digital function, and digital semiotics. The climate change dimension is exogenous, and its effects must be understood and addressed by the policies.

Outcome Management

The ontology can be seen as an input-process-output model with three outcomes: productivity, resilience, and emissions. The three outcomes are both independent and interdependent. Consequently, there is always a trade-off between them that needs to be managed. For example, maximising productivity may reduce resilience and increase emissions. The global food system is a major contributor to GHG emissions. Harmonising the emissions outcome with those of productivity and resilience is part of the challenge of digitalising CSA. The potential policies are listed by the three outcomes.

Productivity

- Encourage adopting sustainable soil management practices such as organic farming, conservation tillage, and crop rotation through education and training programmes for farmers.
- Provide subsidies and financial incentives for using efficient irrigation techniques such as drip irrigation and rainwater harvesting.
- Invest in the research and development of improved seed varieties that are adapted to local growing conditions and are resistant to pests and diseases.

Resilience

- Promote crop diversification through the development of value chains for different crops and the provision of market infrastructure and support.

- Develop and implement a comprehensive risk management strategy that includes insurance products and financial support for farmers affected by climate-related disasters.
- Support the adoption of agroforestry practices through the provision of financial incentives, technical assistance, and extension services.

Emissions management

- Develop and implement policies that promote reduced tillage practices such as conservation tillage and no-till farming.
- Provide financial incentives and support for adopting renewable energy technologies such as solar, wind, and biomass energy.
- Develop and implement regulations and standards for sustainable livestock management practices, including reduced use of antibiotics and hormones, improved feed management, and manure management to reduce methane emissions.
- Develop and implement policies that reduce emissions from practices such as crop residue burning.

Regional Management

To effectively differentiate CSA management across regions in India, it is essential to utilise digitalisation tools and technologies. This can help gather real-time data and information on regional variations in climate, soil type and fertility, crop diversity and cropping patterns, landholding patterns and ownership, and socioeconomic conditions and access to resources.

Digital platforms can help deliver customised and region-specific extension services to farmers, including weather forecasts, soil health reports, and crop advisories. This can enable farmers to adopt practices and technologies that are suitable for their unique agroecological and socioeconomic conditions. They can help respond to sea-level rise due to climate change and its impact on coastal agriculture, fisheries, and aquaculture communities. The use of digital tools such as sensors, drones, and satellite imaging can continue to help in optimising resource use and promoting precision agriculture.

Furthermore, digitalisation can also aid in stakeholder engagement and collaboration, bringing together farmers, policymakers, researchers, and other stakeholders to

exchange knowledge and best practices. This can facilitate the development of region-specific policies and programmes that promote CSA practices and technologies.

In summary, digitalisation can play a crucial role in enabling the differentiation of CSA management across regions in India. It can aid in gathering and delivering region-specific data and information, promoting precision agriculture, and facilitating stakeholder engagement and collaboration. This can help in promoting practices and technologies that are suitable for the unique agro-ecological and socioeconomic conditions of each region.

Crop Management

To promote the effective use of digitalisation in climate-smart crop management, it is important to consider the following policy suggestions:

- **Differentiation of CSA management across crops:** This involves identifying the unique agroecological and socioeconomic conditions of each crop and designing region-specific policies and programmes that promote CSA practices and technologies. Digital platforms can help deliver customised and crop-specific extension services to farmers, including weather forecasts, soil health reports, and crop advisories.
- **Integration of CSA management across crops:** This involves promoting the use of integrated crop management practices that focus on optimising resource use, reducing GHG emissions, and enhancing productivity across multiple crops. Digital tools such as sensors, drones, and satellite imaging can continue to help in optimising resource use and promoting precision agriculture, which can result in reduced input costs and increased yields.
- **Precision crop management:** This involves adopting precision agriculture techniques that utilise real-time data and information to optimise resource use and increase productivity. Digital technologies such as artificial intelligence, machine learning, and the Internet of Things can be leveraged to monitor crop health, soil moisture, and nutrient levels, and provide real-time recommendations to farmers.

Overall, the use of digitalisation in CSA crop management can help in promoting sustainable farming practices, optimising resource use, and increasing productivity. Policymakers can encourage the adoption of digital technologies by providing incentives and support to farmers, promoting the development of digital infrastructure, and facilitating stakeholder engagement and collaboration.

Digital Semiotics Management

India can use data, information, interpretation, and knowledge of temperature, precipitation, humidity, pressure, and wind regime changes on crops in agriculture regions for effective crop productivity, resilience, and emissions in the following ways:

- **Collect and analyse weather data:** India has a vast network of weather stations across the country that collect data on temperature, precipitation, humidity, pressure, and wind fields. This data can be used to analyse weather patterns and identify trends that affect crop growth and yield. Machine learning algorithms can be used to process the data and provide real-time insights to farmers on weather forecasts, pest and disease outbreaks, and optimal planting and harvesting times.
- **Develop crop-specific models:** India has a diverse range of crops grown across different regions, each with unique requirements for temperature, precipitation, and other climatic factors. Crop-specific models can be developed using data and information on climate variability to predict crop yields, identify potential risks, and optimise resource use. These models can be integrated into digital platforms to provide farmers with tailored recommendations on crop management practices.
- **Promote precision agriculture:** Precision agriculture involves the use of digital technologies such as sensors, drones, and satellite imaging to monitor crop health and growth, and provide real-time recommendations to farmers. This approach can help optimise resource use, reduce GHG emissions, and enhance crop productivity. By incorporating weather data and information into precision agriculture technologies, farmers can make data-driven decisions that are tailored to the local climatic conditions.
- **Build farmer capacity:** To effectively use data and information on climate variability, farmers need to have the skills and knowledge to interpret and apply this information to their farming practices. Training programmes and extension services can be developed to build farmer capacity in using digital tools and interpreting weather data. These programmes can be designed to be accessible and affordable to all farmers, including smallholder farmers.

Overall, the effective use of data, information, interpretation, and knowledge of temperature, precipitation, humidity, pressure, and wind regime changes on crops in agriculture regions can help farmers in India enhance crop productivity, resilience, and emissions management. By leveraging digital technologies and building farmer capacity, India can promote sustainable and climate-resilient agricultural practices that benefit farmers and the environment.

Digital Functions Management

The digital functions of sensing, monitoring, processing, translating, communicating, and archiving are cyclical and ongoing. The ongoing cycles must provide the feedback and the feedforward necessary to achieve the outcomes efficiently and effectively. The feedback and feedforward loops must reinforce the correct trajectories of CSA and redirect the incorrect ones.

The infrastructure for and the governance of digital functions must be motivated by legislative, economic, regulatory, fiscal/financial, informational, contractual, legal, and social policies (35). The object of these policies must be twofold: (a) to sustain the CSA informatic function cycle, and (b) to foster CSA informatics integration. The policies must seek to enhance the drivers of these objectives, establish norms for their performance, and diminish the barriers to the same.

CSA Management

In summary, digitalisation can provide farmers and policymakers with access to real-time data, information, and knowledge, it can improve decision-making, and support the effective implementation of policies to promote productivity, resilience, and emissions management in agriculture.

- **Improved data collection and analysis:** Digital technologies can enable the collection of accurate and real-time data on soil health, water availability, and climate conditions. This information can be used to develop targeted policies and interventions to promote productivity, resilience, and emissions management.
- **Precision agriculture:** Digital technologies such as satellite imaging, drones, and sensors can continue to help farmers optimise their use of resources such as water, fertilizers, and pesticides. This can help to increase productivity, reduce costs, and minimise environmental impacts.
- **Access to market information:** Digital platforms can provide farmers with real-time information on market prices, demand, and supply. This can help farmers make informed decisions on what crops to grow, when to sell, and at what price.
- **Training and extension services:** Digital platforms can be used to provide training and extension services to farmers on sustainable farming practices, risk management, and CSA.
- **Monitoring and evaluation:** Digital technologies can help policymakers monitor and evaluate the impact of policies and interventions on productivity, resilience, and

emissions management. This can help to identify areas where further investment and support are needed.

Conclusion

The digitalisation of CSA requires a roadmap. This essay provides a clear, concise, comprehensive framework to negotiate the labyrinth of pathways to CSA. The framework can be used to govern systems for digitalisation locally, nationally, and internationally. It can be the basis of learning CSA systems at all levels. Addressing the challenge of CSA is a prerequisite to meeting the challenge of food security, and digitalisation is essential to this task.

Climate change is the major driver of CSA. India and other countries worldwide have accumulated and continue to accumulate large volumes of data about the change. At the same time, the countries have large volumes of data on their agriculture. Yet, the two silos of data do not speak to each other. There are policy, research, and practice barriers to: (a) integrating the two silos, and (b) semiotically transforming the data into knowledge for CSA. There must be a systemic roadmap for systematically driving the integration through the many stakeholders in policy, research, and practice.

Stakeholders from the various sectors of the economy affected by CSA, academic researchers, policy analysts, and government policymakers must be engaged in determining the barriers, establishing the norms, and mobilising the drivers for CSA. The engagement of the stakeholders is necessary, but they will need a map of the challenge to navigate effectively.

The ontological framework is a systemic grid to map the state of policy, research, and practice in CSA in a country. It can be used to map elements and pathways that have been: (a) emphasised frequently, infrequently, and never; and (b) effective, ineffective, and unexplored. An ontological meta-analysis of the policy documents, research publications, and practice guidelines will highlight these states. It will highlight the gaps within policy, research, and practice domains and the translation between the policy-research, research-practice, and practice-policy domains. It will provide feedback for guidance and direction for agenda within the three domains, and for translation between the domains.

The proposed ontology-based approach to digitalisation for CSA should help effectively manage the symbiotic relationship between agriculture systems and climate change to achieve the country's SDGs. It should help capitalise upon the digitalisation of all sectors of the economy to advance CSA for the economy and the country.

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Preparing for the Next Crisis: The G20 and the Pandemic Treaty

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Abstract

THIS ESSAY DISCUSSES THE ONGOING NEGOTIATIONS of the 'pandemic treaty' that aims to improve pandemic preparedness and response by enhancing global cooperation. The challenges include a lack of inclusivity and diversity in global health governance, a need for a comprehensive and integrated approach to pandemic response, and the social position of countries that can impact the negotiation and adoption of the treaty. To address these challenges, the essay recommends prioritising equity, strengthening global health systems, investing in research and development, promoting transparency and accountability, engaging diverse stakeholders, and aligning with existing frameworks. The G20 should prioritise these principles in their individual and collective contributions to the ongoing negotiation of the pandemic treaty to ensure that the final text is comprehensive, inclusive, and effective in addressing the complex and multifaceted challenges of pandemics.

Introduction

The aftermath of the COVID-19 pandemic has highlighted the critical role of global health governance in shaping the management and mitigation of such crises. It has emphasised the importance of effective governance structures in facilitating a coordinated response, ensuring equitable access to healthcare, and promoting transparency and accountability. The pandemic has demonstrated the need for a coordinated and inclusive approach to global health governance, as countries face complex and interconnected challenges.

Global health governance encompasses various institutional arrangements and processes that aim to coordinate and guide collective action on global health issues. It involves collaboration between multiple stakeholders, including governments, international organisations, civil society, and the private sector, to address health challenges at the global level (1). The dysfunctions and limitations of existing global governance structures have been exposed, necessitating a reevaluation, and strengthening of international cooperation through existing diplomatic groupings, such as the G20 (2).

The G20 has a track record of addressing global challenges and has played a significant role in ensuring financial stability and controlling imbalances in the aftermath of the 2008 financial crisis (3). Additionally, the G20 has been involved in combating base erosion and profit shifting by implementing the Standard for Automatic Exchange of Financial Account Information (4). The G20's role in crisis management has evolved over time. For instance, under the Turkish presidency (2015), the G20 expanded its agenda to address issues such as the war in Syria and the migrant crisis (5). Also, the G20 Health Working Group was formed in 2017 during Germany's presidency to establish a shared global agenda on topics such as enhancing healthcare systems, eradicating malnutrition, responding to health crises, and intensifying efforts against pandemics (6). Several G20 presidencies have emphasised antimicrobial resistance and climate change as global health priorities.

In an era defined by unprecedented global challenges, the need for collaborative and inclusive frameworks in addressing crises has become even more evident (7). The COVID-19 pandemic has emphasised the pressing requirement to enhance global collaboration and modify global governing mechanisms to aptly react to global health crises. This essay will highlight the importance of a robust pandemic treaty in addressing global health issues through platforms such as the G20.

Urgent Need for Cohesive Global Health Governance: Addressing the Crisis-Driven Imperatives

The COVID-19 pandemic has highlighted the need for a unified approach to global health governance. In 2021, a Special Session of the World Health Assembly agreed by consensus to unanimously establish an intergovernmental negotiating body (INB). This body aims to draft a convention, agreement, or other international instrument for pandemic preparedness and response under the purview of the World Health Organization (WHO) (8). The planned 'pandemic treaty,' proposed by Chile and the European Union, garnered support from global leaders and the WHO (9). This treaty seeks to enhance pandemic preparedness and global collaboration. Negotiations to establish the treaty, led by the INB, are ongoing, building on a zero draft of the treaty presented in February 2023. These negotiations are taking place against the backdrop of stark inequalities in COVID-19 infection and mortality rates and deepening social and economic disparities arising from the 'syndemic' of COVID-19 with chronic diseases and social determinants of health. There are high hopes for the treaty, which has been termed the 'Bretton Woods moment' for health (10). Just as the Bretton Woods Conference laid the foundation for the post-Second World War international economic order, this treaty can potentially redefine global health governance and cooperation for generations to come (11).

Learning from the Past: Insights from Previous Epidemics Informing Governance

In the context of global health governance, the lessons learned from past epidemics and pandemics hold significance. A retrospective and prospective evaluation of the West African Ebola outbreak highlighted the essential role of robust national health systems and an empowered WHO in crisis management (12). This underscores the value of robust health programmes, surveillance mechanisms, healthcare delivery, and evidence-based strategies in response efforts. These insights can inform the ongoing negotiations for the pandemic treaty and contribute to developing a comprehensive and integrated approach to the pandemic response.

In addition to the West African Ebola epidemic, other pertinent literature offers insights into global health governance and pandemic preparedness. A study advocates for a novel global health architecture that effectively tackles pandemic challenges and health crises (13). The authors argue for a more inclusive and participatory approach to global health governance, encompassing diverse stakeholders and addressing social determinants of health (14). This perspective aligns with the goals of the pandemic treaty and emphasises the importance of addressing the governance vacuum highlighted by the COVID-19 pandemic.

Studies delve into the challenges of coordinating global responses, ensuring equitable access to medical countermeasures, and balancing individual rights with public health measures (15),(16). These insights hold pertinence for the pandemic treaty negotiations, shaping its provisions. The ongoing efforts to fortify global health governance, through mechanisms like the proposed pandemic treaty, necessitate a parallel scrutiny of the WHO. While the Working Group on Amendments to the International Health Regulations seeks to refine existing international health regulations (IHRs) in response to the shortcomings witnessed during COVID-19, the INB is crafting a new framework for pandemic prevention and response. Yet, underlying these efforts is the WHO's vulnerability to geopolitical influences, evident in the criticism faced by the director general's office during COVID-19. There is a compelling case for organisational reforms that transcend mere procedural adjustments, insulating the office from geopolitical biases. With multilateral engagements such as the United Nations General Assembly High-level Meeting (17) on the horizon, there is an opportune moment for member states championing reforms (like India), to bolster the WHO's structure, ensuring it remains a neutral, effective epicentre of global health governance (18).

Addressing Inclusivity and Diversity in Global Health Governance

The road to achieving a meaningful and impactful treaty is laden with challenges, such as the lack of inclusivity and diversity in global health governance. Historically, decision-making in global health has been dominated by a few powerful countries, and the voices of low- and middle-income countries (LMICs) and marginalised populations have been neglected (19). This has fostered mistrust towards the global health system and compromised the effectiveness and equitability of the pandemic response. While the WHO's 'one state, one vote' system is intended to deliver equity in decision-making, high-income countries have tended to wield disproportionate influence, particularly relative to smaller countries whose delegations have historically been marginalised in negotiations. Despite this, in recent years, the countries of the Global South, particularly African countries, have become more effective at coordinating their efforts to increase their effectiveness in negotiations (20). Whether the pandemic treaty ultimately reflects the interests of the populations most exposed to pandemic risks will be a key measure of its success in overcoming historical shortcomings that were evident in the global response to COVID-19. This will depend critically on the commitment of the G20.

Towards a Comprehensive and Integrated Approach to Pandemic Response

Effective implementation and compliance with a pandemic treaty are crucial for addressing the multifaceted challenges posed by pandemics. Without robust mechanisms to ensure adherence, the treaty's provisions may not be universally

upheld, diminishing its overall effectiveness. Past experiences with the IHRs highlight this risk, as resource limitations hinder many LMICs from fulfilling IHRs obligations (21). The IHRs' efficacy also hinges on the goodwill and voluntary cooperation of states in reporting outbreaks, which cannot be assumed. The COVAX facility, designed to ensure equitable access to COVID-19 vaccines globally, encountered difficulties due to funding and supply issues. Wealthier nations prioritised vaccine acquisition for their populations, contradicting COVAX's principle of shared risk and benefit (22). Both cases underscore the paramount importance of robust, adequately financed, and enforceable international health agreements underpinned by equitable distribution of resources and steadfast international cooperation.

The pandemic treaty aims to address the lack of a comprehensive and integrated approach to pandemic response. However, the treaty's legal structure remains undecided. If it takes the form of a framework convention, parties might not be automatically bound, leading to varied obligations (23). While some governments assert the necessity of a binding agreement to ensure global preparedness, others advocate for a non-binding approach to foster flexibility and collaboration. Despite differing views, consensus exists on the need for corrective action to address global health system gaps and enhance pandemic preparedness. Discussions focus on identifying areas for improvement, including data sharing, early warning systems, and capacity building in developing nations (24).

Regardless of the treaty's legal form, member states must agree to its provisions, adhere to them, and ensure implementation. The G20 countries must recognise the consequences of a fragmented and siloed global health governance structure and advocate for a comprehensive instrument. The pandemic treaty must include clear, specific, and unambiguous definitions and guidelines for implementation, as well as a system for monitoring and reporting on compliance, to ensure its effectiveness in addressing the complex and multifaceted challenges of pandemics.

Among a variety of possible framings, Regime Complex theory provides a valuable lens through which to view these challenges (25). The theory argues that no single institution or actor can effectively address complex global challenges, such as pandemics. Instead, a network of international institutions and actors can work together to create a more comprehensive and integrated approach to pandemic response. In the context of the pandemic treaty, the theory suggests that addressing implementation and compliance concerns requires establishing a network of international institutions and actors. This network would collectively oversee the treaty's implementation and adherence, comprising global organisations like the WHO, national governments, civil society groups, and other stakeholders. Applying this perspective to implementation highlights the importance of mechanisms that promote collaboration, including information sharing, capacity-building, and the establishment of norms and standards across the

international network. This could involve mechanisms to share best practices, enhance capacity in low-income nations, and foster a culture of transparency and compliance. These efforts could be significantly bolstered by the commitment of the G20, and their ability to foster such a collaborative network.

The G20's Role

Stakeholder Engagement and Participatory Negotiation Process

The inclusiveness and participatory nature of the treaty's development and negotiation will be paramount to its success. The INB, which includes representatives from 194 WHO member states, is a good start. It is vital that this process engages diverse stakeholders from different sectors and backgrounds, and prioritises the perspectives and needs of vulnerable populations, including women, children, refugees, and people living in poverty, who are disproportionately affected by pandemics (26). From inequalities in mortality and morbidity rates when comparing high-income countries and LMICs, to gender-based inequality experienced as long-term social impacts of the disease, the discriminatory nature of the impacts of the pandemic should be fully acknowledged (27). While these principles are embodied in the zero draft of the treaty, how far the finally-agreed instrument goes in addressing the underlying and embedded causes of health inequities remains to be seen. Groups such as the G20 should explicitly commit to this principle, which will rely upon purposeful collaboration and coordination across sectors and actors, including governments, civil society organisations, and the private sector.

Leveraging Existing Frameworks for Inclusivity and Vulnerability Analysis

The social position of countries, such as their level of economic development, political power, and influence in the international community, will have a significant impact on the development and implementation of a pandemic treaty. Countries with greater political power and influence could wield a stronger role in treaty negotiation and adoption. Correspondingly, high-income countries may have a greater capacity to implement and comply with the treaty's provisions due to their greater access to resources and infrastructure. This is disconcerting, given the disproportionate impact of the pandemic on LMICs, which face limited access to essential resources like vaccines, medical equipment, and financial aid.

The pandemic also showed the might of the global scientific establishment; following the successful development of several COVID-19 vaccines, there are around 200 mRNA-based medicines for different conditions under clinical trial across the world.

Yet, the pandemic's experience raises scepticism regarding equitable access to these scientific achievements worldwide. The negotiation around the pandemic treaty provides a narrow window of opportunity to address these disparities.

A multifaceted approach is needed to understand and address the diversity and complexity of challenges in global health governance. Three theoretical frameworks—the Kingdon Model (28), Diderichsen Model (29), and Dahlgren-Whitehead Model (30)—provide valuable contributions to an understanding of differential vulnerability in the context of the pandemic treaty:

- **The Kingdon Model** suggests that policy development is influenced by three streams: problems, politics, and policies. When the three streams cross, there is an opportunity for change. Applying this lens to the pandemic treaty illuminates social position and differential vulnerability by identifying problems such as the uneven distribution of vaccines and medical equipment among countries, politics that prioritise the interests of more powerful countries, and policies that disproportionately benefit these countries.
- **The Diderichsen Model** provides an alternative but complementary lens focusing on the social determinants of health and highlights how factors such as income, education, and occupation can influence health outcomes. In the context of a pandemic treaty, such a perspective can help address social position and differential vulnerability by drawing attention to measures that address the social determinants of health and ensure equitable access to vaccines, medical equipment, and financial support for LMICs.
- **The Dahlgren-Whitehead Model** emphasises the importance of addressing the multiple levels of influence on health outcomes, including individual behaviour, social and community networks, and the broader socioeconomic, cultural, and environmental contexts. In the context of a pandemic treaty, this framing can address social position and differential vulnerability by highlighting the importance of measures that address the broader social and economic factors that contribute to the disproportionate impact of the pandemic on vulnerable populations, such as low-income groups, marginalised communities, and people with pre-existing health conditions.

By making use of these established theoretical frameworks in their deliberations, those involved in the development of the pandemic treaty can ensure that they are attentive to the needs of all countries while pursuing a treaty that prioritises equity.

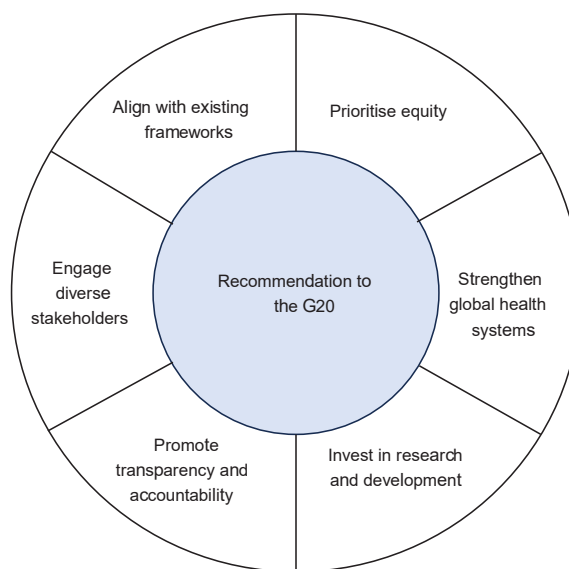
Alignment with Existing Global Health Governance Mechanisms

The treaty negotiations include an explicit aim to build on and synergise with existing frameworks for global health governance, such as the IHRs, incorporating lessons learned from the failures and inadequacies, rather than replicating them (31),(32). The successful alignment of the treaty negotiation process with the ongoing process to revise IHRs is thus paramount. In addition, the pandemic treaty should adopt a comprehensive and integrated approach to pandemic response. Aligning with the WHO’s Universal Health and Preparedness Reviews (UHDRs) will ensure that the treaty goes beyond a narrow focus on medical aspects of pandemics, to take full account of the social, economic, and political factors that contribute to their spread and impact (33). Similarly, investments made by the Pandemic Fund should be aligned to address critical gaps in capabilities needed to implement the treaty fully. The G20 should consider this in wielding its significant influence in the processes that shape these mechanisms and how they work together.

Recommendations to the G20

Based on the challenges and solutions outlined above, this essay recommends the G20 countries embrace the following principles for enhancing inclusivity, diversity, and vulnerability analysis in global health governance in their contribution to the ongoing negotiation of the pandemic treaty, individually and collectively (see Figure 1). The G20 has a key role to play in ensuring that these principles are made concrete and operationalisable in the treaty negotiations, which represent a unique window of opportunity to establish a unified approach to global health governance.

Figure 1: Recommendations to Prioritise



Source: Authors’ own

- **Prioritise equity:** The pandemic treaty should prioritise equity in access to healthcare. This means ensuring that all countries, regardless of their level of development, have access to the resources needed to implement the treaty's provisions. Efforts are needed to bridge the gap between the rhetoric of scientific triumphalism and the reality of the lack of access to medicines and technologies to produce them.
- **Strengthen global health systems:** The pandemic treaty should prioritise strengthening global health systems, including the development of robust health information systems, capacity building for healthcare workers, and the provision of essential medicines and medical supplies.
- **Invest in research and development:** The pandemic treaty should prioritise investment in research and development to improve preparedness for future pandemics. This includes the development of new vaccines, treatments, and diagnostics.
- **Promote transparency and accountability:** The principles of transparency and accountability embodied in the zero draft of the treaty must be carried forward into the final text and the implementation of its provisions. This includes ensuring that all countries are held accountable for implementing the treaty, and that there is transparency in the allocation and use of resources.
- **Engage diverse stakeholders:** Besides reflecting diverse member state interests, the pandemic treaty should be developed through a participatory and inclusive process, engaging stakeholders from different regions, sectors, and backgrounds. This process should prioritise the perspectives and needs of vulnerable populations, including women, children, refugees, and people living in poverty.
- **Align with existing frameworks:** The treaty must be fully aligned with the revised IHRs and new instruments, such as the Pandemic Fund and UHPR, to ensure that the combination of mechanisms functions optimally.

Conclusion

The onset of the COVID-19 pandemic has not merely been a health crisis, it has been a stark revelation of the frailties and fissures inherent in the global health governance system. The resulting disparities in health outcomes, vaccine distribution, and socioeconomic impacts have further underscored the inequalities that have long been embedded in global structures. The pandemic treaty proposal goes beyond a reaction to a single health event, embodying a collective desire for proactive anticipation and

mitigation. Yet, as history has shown, the path to creating robust international treaties is fraught with complexities. Therefore, the true measure of success for the pandemic treaty will lie not just in its creation but in its design, inclusivity, and the mechanisms it establishes for genuine collaboration and accountability. The role of institutions such as the G20 in this process cannot be overstated. As influential stakeholders, they should ensure the treaty serves global majority interests, including the Global South. This includes enhancing capacity building and response capacities, strengthening the implementation of regulation such as IHR, ensuring fair, affordable, and equitable access to health innovations, and integrating the learnings from past health crises. Therefore, a multidimensional approach that incorporates insights from diverse fields is essential.

The pandemic treaty signifies more than a response to COVID-19. It is a clarion call for a renewed vision of global health governance with equity, foresight, and genuine collaboration. It is an opportunity to not just mend the cracks exposed by the pandemic but to rebuild a more resilient, inclusive, and agile global health architecture. This moment in history is a testament to the adage in every crisis lies opportunity. The international community now stands at the precipice of monumental change, and the choices made now will echo through generations to come. It is, therefore, incumbent upon global leaders, institutions, and communities to come together, with unwavering commitment and vision, to craft a future where health is not a privilege of a few but a fundamental right for all.

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Bridging the Gender Pay Gap

Sumita Ketkar | Roma Puri | Sahana Roy Chowdhury

Abstract

THE GENDER PAY GAP (GPG) is a complex issue that various forums, including the G20, have attempted to discuss. Mitigating GPG requires large-scale transformative changes, but constraints on financial resources and public spending, along with contextual nuances, make it a difficult task. Proposed actions, therefore, must be economically prudent and actionable. This essay examines the causes of the pay gap in the G20 and proposes five recommendations that the group can implement to help bridge the gender pay gap. These include introducing pay transparency legislation; mandating data-driven gender budgeting; increasing emphasis on parental leave and promoting women into STEM subjects; and engaging with the industry by proposing initiatives such as exclusive women-only portals, reporting on gender, facilitating leadership programmes and 'de-biasing' organisations. These actions can help policymakers move the needle on gender equity, promote social justice, and improve economic outcomes.

Introduction

Gender imbalance in employment plagues women across the world. One such form of inequity—the Gender Pay Gap (GPG)—relates to economic disparity due to gender. Most G20 countries have laws to promote gender equality. These include equal pay for equal work, access to occupations, and maternity benefits. Yet implementation is not prioritised, and the gap persists in the formal and informal sectors across the G20 nations. Even though female participation in the labour force has steadily increased, men have continued to surpass women in terms of better opportunities, accelerated careers, and higher pay.

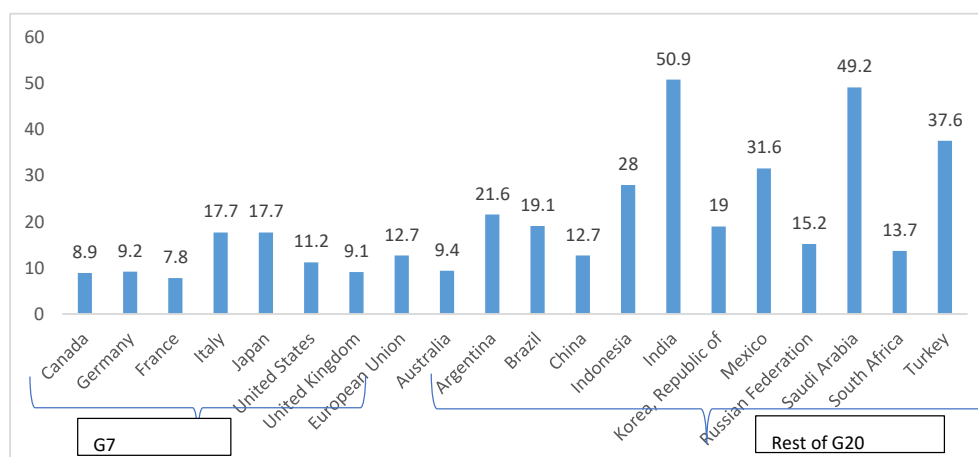
Research exploring the causes of the pay gap indicates that a complex set of factors—such as lack of equal opportunities and pay transparency, lack of commitment of employers, and active choices by women due to socially defined gender roles—hinder pay parity. Actions have been fragmented and have not led to the alleviation of the gap. Recently, the World Economic Forum estimated that it would take approximately 132 years to close the gender wage gap (1). Prioritising action on gender wage equity by influential groups such as the G20 is crucial to change deeply embedded attitudes about women in the workforce.

Based on a review of research on GPG, this essay critically analyses its causes and proposes implementable solutions to tackle this complex challenge.

The GPG Challenge

GPG is calculated as “the difference between median earnings of men and women relative to median earnings of men” (2). On average, women earn about 20 percent less than men (3), though the rate varies across countries (see Figure 1).

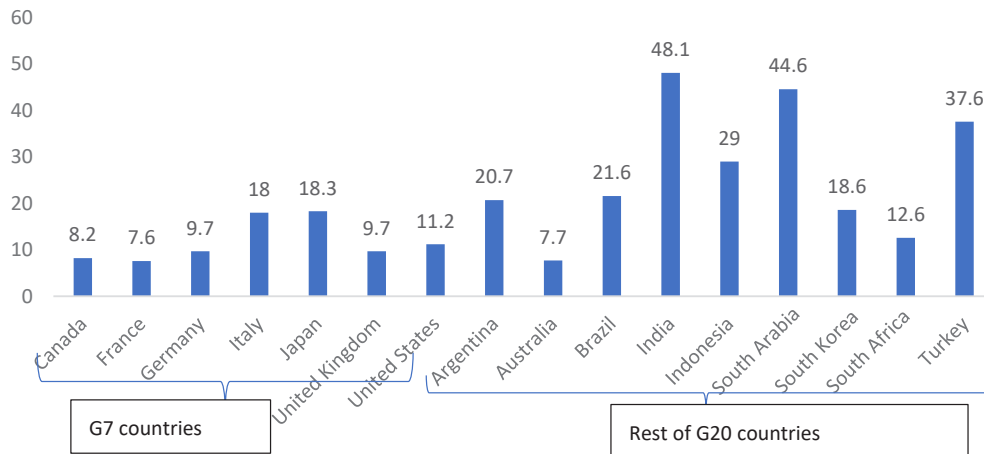
Figure 1: Gender Pay Gap in G20 countries in percentage



Sources: Data sourced from ILOSTAT, ILO modelled estimates, November 2021 (4), and Europa, 2022 (5)

Globally, the labour force participation rate (LFPR) for men and women is 72.3 percent and 47.4 percent, respectively (6). The gender pay in LFPR is significantly higher for the non-G7 countries in the G20 (see Figure 2).

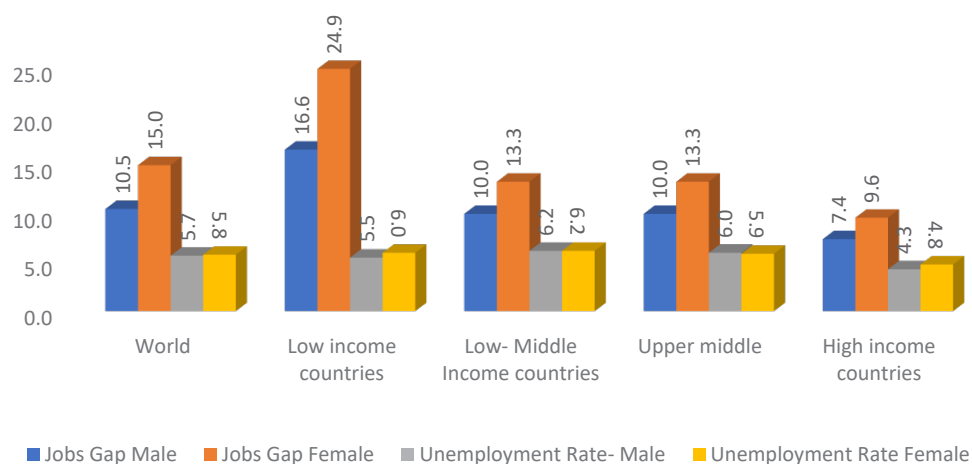
Figure 2: Gender Gap in LFPR (as percentage points)



Source: ILOSTAT, ILO modelled estimates, 2021 (7)

The ILO’s report (8) shows that alongside LFPR and unemployment rate, “jobs gap” (an indicator of the number of individuals who would like to work but cannot find a job and are unable to take up employment at short notice) is a more realistic estimate of gender imbalances in work (see Figure 3).

Figure 3: Jobs Gap and Unemployment Rate for Men and Women (2022)

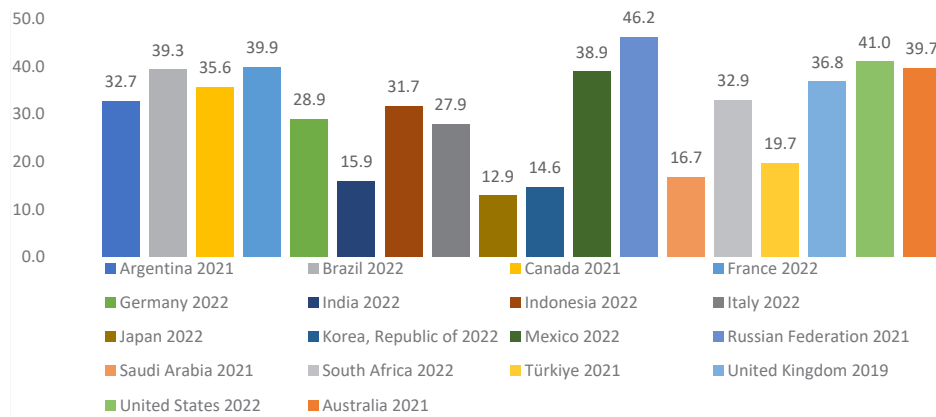


Source: ILOSTAT, 2022 (9)

Countries that provide support in the form of paid maternity leave in addition to “accessible, affordable and good quality” (10) public care services have higher LFPR and maternal employment rates.

Further, the representation of women in managerial positions continues to be low even though most countries have taken initiatives to increase the proportion of women in senior roles (see Figure 4).

Figure 4: Proportion of Women in Managerial Positions in G20 Countries (in %)



Source: Data sourced from ILOSTAT, ILO modelled estimates (11)

Causes of Gender Pay Gap

Several interrelated factors impact the gender wage imbalance and are discussed below:

Differences in Human Capital

Human capital theory is based on the premise that wages are determined by differences in ‘human capital’ stock—defined as skills, experience, qualifications, knowledge, and attainment of formal training (12),(13). Men tend to accumulate skills and experience as they progress up the career ladder, while women take a career break or engage in part-time jobs due to caring commitments, thereby reducing their human capital, leading to a widening of the wage gap (14),(15). The propensity of women to have disrupted careers reduces the incentive of households to invest in their formal education and skill-generating training (16), thereby widening the divide.

However, a growing number of scholars contend that human capital theory does not fully explain GPG as the gap remains despite a weakening of the human capital differential (17).

Motherhood penalty

Research shows that women with children earn less on average over a lifetime than women who do not have children or are single (18). One study estimates that women in the UK across all education levels face a 'child penalty' of around 30 percent by the time their oldest child reaches the age of 18 (19). This result aligns with findings that, in the long run (10 years after the first birth), child penalties on earnings are between 31 percent and 34 percent in the UK and the US, and up to between 51 percent and 61 percent in Austria and Germany (20).

Occupational segregation and undervaluation of work due to stereotypes about gender roles

Social perceptions on the competencies of men and women and gender stereotyping result in women gravitating towards certain occupations/roles (occupational segregation). Employers may also discriminate against women while hiring them for jobs that are male dominated (21). While segregation is somewhat declining in developed countries such as the US (22), a 2020 study found that segregation has risen across several developing countries despite an increase in female labour force participation (23).

Segregation also happens at the level of representation of women in senior positions. The presence of the metaphorical 'glass ceiling' continues to create barriers for women to reach higher positions in organisations. This has been widely studied (24),(25) and is seen to be compounded by the 'motherhood penalty' (26).

GPG has also been explained through the systematic undervaluation of jobs dominated by women (27),(28). The undervaluation of both paid and unpaid jobs was evident during the pandemic (29). Undervaluation is seen even when pay is determined through formal collective bargaining agreements (30).

Discrimination

GPG has been studied using the Blinder–Oaxaca decomposition, which shows that even after controlling for factors such as human capital indicators, productivity differentials,

working hours, occupations, and more (31),(32) a substantial part of the gender wage gap remains unexplained and likely to be due to discrimination.

Taste-based discrimination, or overt prejudice against women (33),(34) by employing organisations, peers, and customers, is said to contribute substantially to GPG. Examples include fewer opportunities for women for training, promotion, and in receiving benefits, including retirement benefits (35). Stereotypical assumptions about what positive employee performance comprises and 'gendered' organisational practices that extol competencies such as 'hard work', '24/7 availability', and 'commitment' perpetuate discrimination. These assumptions often undervalue traits such as care, sensitivity, and the handling of emotions and conflicts (associated with women) while rewarding assertiveness and rational decision-making (associated with men). This bias has contributed to the marginalisation of women at the workplace (36),(37). Notably, there is a gender earning gap even in self-employment, and there is some indication that the discrimination may be coming from customers, suppliers, or capital providers (38).

Personality factors

Scholars argue that women lose out on pay because of certain personality factors, including negotiation skills (39),(40). Women's preference for less competitive work environments often translates into lower-paying jobs and fewer career advancement opportunities. A lack of assertiveness and negotiation skills along with the presence of agreeableness (personality relating to wanting to get along, be helpful, or even put other's interests ahead of their own) associated with women, also impacts women's bargaining power with respect to money (41),(42).

However, when women do negotiate for pay, they might be penalised for doing so, and therefore the returns on negotiations for women tend to be far lower than that for men (43). One study found that men and women consider lower wages being paid to women fair because they are conditioned to believe that men possess superior skills (44).

Pay transparency and its impact on GPG

Nearly half of the OECD countries (including some of the G20 countries) mandate pay transparency (see Table 1) (45). Almost all G20 countries have regulations supporting gender diversity.

Table 1: Distribution of Countries with Pay Reporting/Auditing Regulations for Private Sector Companies

Level of Pay Reporting	Name of countries
Countries that require companies to conduct regular pay audits, including reporting gender-disaggregated pay.	Canada, Finland, France, Iceland, Norway, Portugal, Spain, Switzerland, Sweden
Countries that require companies to report gender-disaggregated pay information without a broader audit	Austria, Australia, Belgium, Chile, Denmark, Israel, Italy, Lithuania, the UK
Countries requiring companies to report non-pay gender disaggregated information	Germany, Japan, South Korea, Luxembourg, the US
Countries where pay audits are conducted to assess gender wage gap ad hoc within selected companies	Costa Rica, Greece, Turkey, Ireland
No reporting requirements in place	All other countries worldwide

Source: Frey 2021 (46)

However, there is considerable variation in implementing such measures in the G20 countries (see Table 2). France requires employers to report on GPG metrics and commit to fixing them within three years (47), while Canada requires companies with 10 or more employees to publish an equity plan and mandatory pay audits (48). The experience of early adopters of pay transparency, such as Canada, Denmark, and the UK, shows that such mandatory regulations work (49),(50). Even after controlling for industry-fixed effects, pay disclosures reduce the gender pay gap (51). However, an experimental design-based study showed that while men wanted gender wage inequity to be resolved, they were less likely to support the policy reforms than women, demonstrating the stereotypes that may continue to exist despite legalisations (52). Given the focus of the G20 on fixing gender imbalances, legislation on pay transparency by member countries can help spearhead change.

Table 2: Regulations on Gender Equity in the G20 Countries

Country	Existence of equal pay law	The existence of pay transparency regulations	Access to occupations across all industries	Maternity leave and employment security during maternity leave	Paid Paternity leave
Argentina	Yes	No	No (some industries and occupations deemed hazardous)	Yes (90 days)	Yes (2 days)
Australia	Yes	Yes (fairly robust)	Yes	Yes	20 weeks (paid shared parental leave)
Brazil	Yes	No	Yes	Yes (120 days)	Yes (5 days)
Canada	Yes	Yes	Yes	Yes	Yes (35 weeks paid parental leave)
China	Yes	No	No. Women are prohibited from working in certain professions.	Yes	No
France	Yes	Yes	Yes	Yes	Yes (18 days)
Germany	Yes	Yes	Yes	Yes	Yes (10 days)
India	Yes	No	Yes	Yes	No
Indonesia	Yes	No	Yes	Yes	Yes (2 days)
Italy	Yes	Yes	Yes	Yes	Yes (5 days)
Japan	Yes	Yes	Yes	Yes	Yes (upto 4 weeks at 80% of their salary)
South Korea	Yes	Yes		Yes	Yes (10 days)
Mexico	Yes	No	Yes	Yes	Yes (5 days)
Russia	Yes	No	No	Yes	No
Saudi Arabia	Yes	No	Yes	Yes	Yes (1 day)
South Africa	Yes	No	Yes	Yes	Yes (10 days)

Country	Existence of equal pay law	The existence of pay transparency regulations	Access to occupations across all industries	Maternity leave and employment security during maternity leave	Paid Paternity leave
Türkiye	Yes	No	No	Yes	Yes (5 days)
UK	Yes	Yes	Yes	Yes	Yes (shared parental leave of up to 50 weeks)
US	Yes	Yes	Partial. Enacted in some states. The federal Paycheck Fairness Act was rejected by the Senate but reintroduced in March 2023.	Up to 12 weeks of unpaid family leave, variation across states in maternity pay laws	No federal paternity leave (up to 12 weeks of family leave); variation in family laws across states
EU	Yes	Yes	Yes	Yes	10 days

Sources: Frey, 2021 (OECD) (53), ILO Report, 2022 (54)

The G20's Role

GPG is an important issue across the G20 countries and has been discussed at several previous summits. Individually, the G20 countries have implemented mechanisms for tackling gender imbalances, albeit at varying degrees. For instance, India has implemented several policies that aim to address gender inequities, such as the 'Beti Bachao, Beti Padhao' scheme (educate the girl child) and the 'Ujjwala' scheme (distributing LPG connections to women from below-the-poverty-line families) (55). While the G7 has introduced measures to reduce GPG, financial constraints on spending on social welfare have meant that the G20 countries vary in their efforts to a significant degree.

Given how the G20 is home to two-thirds of the world's population and 85 percent of global GDP, increasing female LFPR by at least 25 percent by 2025 can contribute to an increase in GDP of about 3.9 percent or US\$5.8 trillion (56). This could raise the purchasing power of entire families and, consequently, overall consumer spending.

India prioritised women-led development during its G20 presidency (57), which can be seen as an acknowledgement that progress on achieving the Sustainable Development Goals (SDGs) of gender equality (SDG-5) and providing decent work and economic growth opportunities to all (SDG-8) can only be achieved through decisive action on tackling GPG.

Recommendations to the G20

This essay offers recommendations that can potentially galvanise governments to bridge gender wage inequity. The G20 is an aggrupation of diverse economies; emerging and developing countries see a pronounced dominance of the informal economy, with wider gender pay gaps. The percentage of informality ranges from 88 percent for India to 47 percent for Brazil (58). The informal sector limits the enforcement of legal measures due to the absence of monitoring. The following recommendations consider the complex nature of the informal sector. Many of the policies recommended below have been implemented, at least partially, in some G20 countries. However, wider implementation continues to be a challenge. This essay, therefore, focuses on how these policies can be implemented so that they are more likely to reach a critical mass of compliance.

Implementation of pay transparency legislation

Governments must engage with the industry and other stakeholders, such as educational institutes, research centres, women's groups, and employee associations, before enforcing pay transparency legislation. Member countries can commit to country-specific targets, but the level of transparency mandated by law must reflect contextual realities. In countries with no existing disclosure regulations, the implementation could be multistaged. First, voluntary reporting can be encouraged, followed by mandatory reporting where listed companies of a certain size (such as those with more than 250 employees) are required to disclose gender pay inequity information in the public domain each year. The regulation can be rolled out to smaller organisations in the next phase. Experience from countries that have implemented pay transparency measures shows that simplifying the process of reporting and making it technology-driven is critical in ensuring compliance.

For countries that have already implemented pay transparency regulations, the next step will be to mandate employer accountability through action plans. Employers in these countries can also be required to provide granular data on the pay gap. Further, employers and industries with persistent GPG can be mandated to conduct pay audits and ensure implementation and monitoring of equal pay law.

In countries with a dominant informal sector, it is likely to be difficult to track data on pay gaps. This can be resolved by digitising data from the informal sector—indeed, this has been on the agenda of the G20 since the Argentine presidency in 2018 (59). In India, for instance, data on informal sector workers is being digitised through the e-Shram portal (60), a self-reporting portal where workers register themselves. This dataset can capture pay and industry details and can be used to ascertain the degree of the pay gap. Data can also be collected by academic agencies, and by industry councils for the different sectors in the economy.

Data-driven gender budgeting

The G20 countries must develop and agree on indicators of gender equality. They can gather gender-related data on an ongoing basis so that gender can be mainstreamed into policymaking. This can enable capturing data at source and leveraging statistical modelling and analytics to compare with benchmark data continuously. Such benchmark data needs to be made publicly available to enable the G20 governments to collaborate with each other. Regular monitoring of databases will enable governments to track progress and monitor actual spending against planned expenditure on gender equality initiatives.

Implementation of parental leave policies and paid/subsidised childcare

Measures can include:

- Encouraging organisations to introduce shared parental leave (including leave to care for sick young children with short-term or chronic illnesses), which will allow parents to take leave in a flexible way and provide women an opportunity to return to work after the birth of a child.
- Financing an evaluation and review of current provisions to identify bottlenecks in their uptake.
- Investing in subsidised or state-funded childcare, in the form of nurseries for preschoolers and wraparound care for primary school children.

These recommendations may be more suitable for the formal sector. For the informal sector, governments can introduce state-funded or subsidised childcare or childcare centres. In India, for example, the *Anganwadi* (61) (rural childcare centre) scheme was introduced to combat malnutrition among children by providing free food at state-designated centres. These centres can be used as government-funded or subsidised

childcare spaces for women in the informal sector. Given how such schemes tend to be resource-intensive, small pilots can be run to assess effectiveness.

Increased efforts on representation of women in STEM

Globally, women are underrepresented in high-paying STEM careers. Though young male and female students may show similar proficiencies in mathematics and science subjects, women's confidence in taking up STEM careers is reduced due to social conditioning. Several G20 countries have implemented measures to encourage more women into STEM. For instance, since 2018, India has added a supernumerary quota of 20 percent for women in government-aided education institutions. The UK and the EU promote greater participation through mentoring and networking events.

To make STEM subjects and occupations more accessible to women, the G20 countries can:

- Offer government-funded, merit-based, women-only scholarships.
- Encourage the industry to offer flexible working hours in STEM occupations, where possible.
- Mandate all schools to provide career counselling to female pupils as part of the education policy.
- Facilitate the industry to organise women-only professional networks.
- Collaborate with schools and universities to run talent-spotting competitions.
- Run exclusive job portals for women in STEM.

Working with industry associations and organisations

Real change will come from working closely with industry associations and local governmental bodies to:

- Introduce exclusive women-only job portals and encourage the industry to hire from these sites. These can be advertised in schools and universities through career counselling and channels such as LinkedIn.

- Encourage employers to report gender-based outcomes. Encourage voluntary reporting on expenses earmarked and incurred on women's development in the form of education, empowerment, health and employment opportunities to increase employer accountability.
- Support women to take on positions of responsibility by introducing targeted leadership coaching and mentoring schemes. Governments can facilitate action by funding industry associations to run such programmes.
- Tackle the unconscious bias by 'de-biasing organisations' (62). This can be done by mandating gender-neutral job advertisements, encouraging blind recruitment to ensure that applicants are shortlisted irrespective of their gender, and introducing salary history bans.

Conclusion

This essay unpacks the state of wage differential between men and women and examines its causes. It also highlighted the need for governments to collaborate to ensure equality in the treatment of women in the labour market. Research establishes that policy reforms have aided in mitigating the pay gaps in some countries. As such, policy reforms in the form of introducing mandatory pay disclosures, creating opportunities for women's participation in high-paying professions, and encouraging women to take up STEM careers can contribute towards meeting SDG-5. The G20 countries must intensify their efforts to ensure women have access to careers across the whole spectrum of occupations, thereby setting an example for all other countries.

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Bridging the SDGs Financing Gap: A 10-Point Action Agenda for the G20

Soumya Bhowmick | Nilanjan Ghosh

Abstract

THIS ESSAY DISCUSSES ONE OF THE MOST CRITICAL CHALLENGES for today's global developmental governance—the wide funding gap for achieving the United Nations Sustainable Development Goals (SDGs). The G20, comprising the world's largest economies, is an important platform to bridge this financing chasm. To do so, this essay proposes a 10-point action agenda for the G20 to facilitate its attempt to strengthen the development financing mechanism so that the SDGs can be achieved over the next six-and-a-half years. The action agenda presented in this essay is a follow-up to the Addis Ababa Action Agenda of 2015, modified to reflect current global events, such as the pandemic and the Ukraine crisis.

Introduction

India's G20 presidency coincided with various global challenges. Uneven post-pandemic economic recovery, supply chain bottlenecks created by the Ukraine crisis, the increasingly deleterious impacts of climate change, increasing inequality, and global stagflation driven by global inflationary pressures have added to the worldwide economic recession. The most appropriate term to describe this backdrop for India's G20 presidency is polycrisis (1). Nevertheless, this also presents New Delhi with an unprecedented opportunity to shape post-COVID-19 development narratives and define and drive a new international discourse on development from the global South. One such concern to be driven with vigour and urgency is that of financing the SDGs.

As such, one of the biggest challenges facing the countries of the Global South is the vast funding gap needed to achieve the SDGs. According to estimates, developing countries face a US\$1.7 trillion annual shortfall in SDG funding (2), while the global SDG gap is estimated to be US\$4 trillion annually (3). The least developed countries face the most significant challenges. Table 1 illustrates that gross domestic product (GDP) growth in these countries must reach insurmountable heights to meet the required financial investments for achieving SDG targets 8.1, 1.1, and 9.2 by 2030.

Table 1: Cost and Required Growth for Achieving SDGs in LDCs (2021–2030)

SDG target to be achieved during 2021–2030 period	Required annual average fixed investments	Required annual GDP growth rate to finance the investment
SDG Target 8.1: 7 percent annual GDP growth rate	US\$462 billion	7 percent
SDG Target 1.1: Eradicate extreme poverty	US\$485 billion	At least 9 percent
SDG Target 9.2: Double the share of manufacturing in GDP	US\$1,051 billion	20 percent

Source: UNCTAD (4)

While the ongoing polycrisis makes it imperative to fund the developmental goals even as the developmental challenges become more acute, it is the polycrisis itself that has created the wider chasm between the demand and supply of money. Two major shocks have weakened the global economy's capacity to meet the SDGs. The first is the impact of the pandemic on the global economy and the subsequent economic uncertainty. The pandemic led to a return to the 'domestic first' approach, where countries focused more on their own problems and outcomes than on the performance of other economies

worldwide. The second is the impact of the Ukraine crisis on global and regional supply chains, which has led to inflationary tensions, reduced foreign exchange reserves of some economies, and raised macroeconomic uncertainty.

Moreover, countries also have had to deal with mounting financial pressures owing to climate change, even as they must simultaneously adjust to its effects and rapidly transition to cleaner forms of energy to reduce further warming. The implementation of the SDGs is becoming increasingly expensive and complex, particularly for the Global South, which is disproportionately affected by climate change. New ways of thinking, institutional structures, cutting-edge financing tools, and new mobilisation processes are needed to shift resources from the global South to the global North.

So, what can the G20 do to bring about these changes? As a potential answer, this essay proposes a 10-point action agenda for the G20. While the G20 has been proactive on the development financing front and has established frameworks in the past, the newer challenges need newer approaches.

Catalysing Global Development: The G20's Role in Advancing the SDGs

The G20 comprises the world's 20 largest economies, accounting for 85 percent of the global GDP and 75 percent of international trade (5). Since its inception, the G20 has recognised the critical role of the economies of the so-called 'global South' in establishing a stable and well-functioning global economic governance system. The G20's place in the context of sustainable development has evolved and broadened over the years, from the emergence of the G20 in 2010 with the establishment of the Seoul Development Consensus to its current importance in the context of the SDGs. Put another way, the G20 set specific objectives to improve global macroeconomic resilience, called for tax transparency, reduced remittance costs, and supported policies to boost female labour force participation (6).

However, achieving the SDGs requires a renewed focus, substantial funding, and a consistent update of the 2015 Addis Ababa Action Agenda (AAAA) (7), which establishes a set of pledges that countries can make to fund sustainable development. Defining specific recommendations to finance the SDGs is one of the gravest challenges facing global development governance today.

In addition, the SDGs play an essential role in building resilient economies in a rapidly evolving world. This is enabled by the SDGs' links with various capitals, such as human capital to improve labour market conditions by promoting human well-being; social capital for an equitable and strong society; natural capital through goals enabling life and the conservation and optimisation of natural resources; and physical capital

focused on markets, innovation, and economic growth, which will be essential for improving the business environment in the G20 economies (8).

A 10-Point Agenda for the G20

Support South-South Cooperation

The problems that lower-income economies face are complex and interrelated, ranging from food insecurity and poverty to rising inequality and corruption. By working in unison, countries in the global South can assist each other in building and sustaining relationships with other countries in a mutually beneficial way, rather than through exploitation. Cooperation in the global South is based on shared experiences, capacity and resource limitations, and respect for one another.

South-South trade has always been promoted as the solution to break free from the vicious cycle of the North-South trade, which is often construed as exploitative and resulting in greater inequalities. Some very interesting South-South development partnership models are popular, and the G20 under the Indian presidency can always showcase the Indian development partnership model as a replicable framework due to its low transaction costs, congenial nature of conditionalities, and focus on capacity building (9).

The United Nations Office for South-South Cooperation (UNOSSC) believes that these partnerships can enable least developed countries (LDCs) and Small Island Developing States (SIDs) to play a more significant role in global governance. Despite geopolitical tensions between countries, the SIDs and LDCs work together in the context of the G20 to facilitate the flow of concessional and untied development finance between countries (10).

Support Equitable and Just South-North Partnerships

To achieve the SDGs, the Global South and the Global North will have to work together as development partners. However, these relationships must be based on reciprocity, equality, and equitable sharing of responsibility (11). With that in mind, the unequal and exploitative character of development relations today must be corrected, and the goals of development efforts redefined to reflect the preferences and requirements of low-income countries.

The controversial nature of South-North partnerships, whether for development or trade, cannot be entirely dismissed, as it can be theoretically shown and empirically

backed that the North usually has the upper hand in negotiations, which has historically led to the exploitation of the smaller countries. The disparity in the definition and degree of stringency of property rights between the North and the South results in the overconsumption of resource-intensive goods by the North (12). On a similar note, there exist ill effects of North-South trade on the environmental quality of the South: free trade results in rising global pollution (13). However, in both cases, the solution calls for South-North cooperation, either via global, well-structured defining of property rights, or through North-to-South transfers that could curtail world pollution, which can be enabled through the G20 platform.

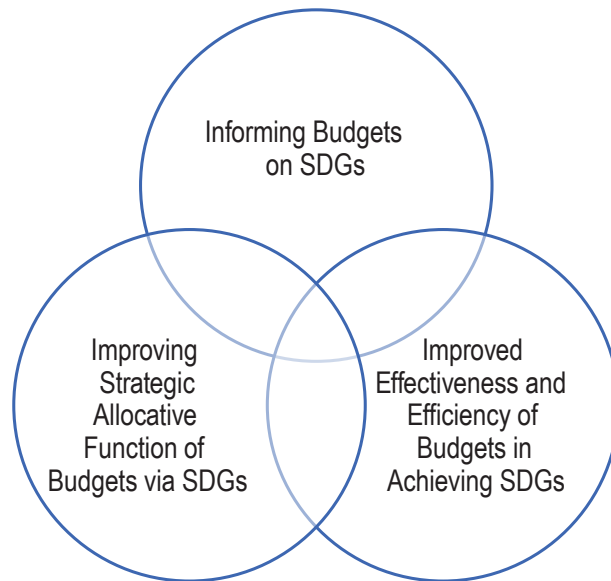
Facilitate Domestic Fiscal Measures for SDG Budgeting

There are two types of domestic fiscal measures that can be used to realise the SDGs: firstly, domestic fiscal measures can be used to mobilise domestic resources, and secondly, measures can be developed to discourage/encourage sectors that are having a negative/positive effect on achieving the SDGs. The first type would focus on fiscal reforms, such as strengthening tax administration and reducing tax evasion alongside spending rationalisation. The second type could be used to subsidise/encourage energy reforms, such as taxing the consumption of fossil fuels (14). Fiscal policy can play an essential role in developing a circular economy by increasing the price of harmful resources at the production level and reducing the price of eco-friendly resources downstream (15).

The coalition of economics and ecology has become essential as the productive factors of a country are now directly associated with the stock of its natural resources, necessitating government intervention to maintain, if not enhance, this input stock. Current subsidy structures require immediate overhauling as they tend to underwrite conventional, non-renewable power sources, resulting in counterproductive policy outcomes (16). Previous research empirically validates the role of fiscal policy as an instrument for sustainable development, in that it can be designed to generate surpluses and manage debt volume to enable the development of instruments that align the real economy's demands with sustainability (17).

Fast-growing (but still emerging) economies, such as India, must plan to fund SDGs from within their domestic economies (18). Integrating the SDGs into the annual budget would be one way to do this (see Figure 1). Each department would have SDG targets to meet, setting the stage for monitoring and evaluating SDG implementation across the G20 (19).

Figure 1: Three Pillars of SDG-integrated Budgeting



Source: UNESCAP data (20)

Incentivising Private Sector Engagement through creating shared value

The G20 must develop processes and institutions to incentivise firms by creating shared value (CSV). Shared value is a set of strategies that enhances a firm's competitive edge while promoting the social good of the communities where it conducts business (see Figure 2) (21). The CSV model is based on the idea that 'doing well' and 'doing good' are not practically incompatible, and that SDGs can be achieved financially and independently, and in a scalable way. Alternatively, the model of corporate social responsibility (CSR) is much sought-after. But CSR has a much shorter range of philanthropy and can raise much less money. The global shift from CSR to CSV models is in motion, with the Global North-based multinational corporations like Nestlé leading the way (22).

The concept of inner knowledge creation (IKC) was introduced to gradually eliminate the divide between economic and social needs, furthering the case of CSVs for businesses. The function of the IKC mechanism in generating shared value for companies through a conceptual model demonstrates how IKC fosters the development of metacognitive skills and the capacity to resolve conflicts and paradoxes, and cultivates openness to other people's viewpoints (23).

Figure 2: Creation of Shared Value



Source: Harvard Business School data (24)

Companies can endorse the CSV framework through several approaches (25). To begin with, they can revamp their product lines and market strategies, crafting novel products that cater to societal demands. Additionally, they can redefine the efficiency of their value chains by making substantial changes to resource consumption, energy sourcing, and the dynamics between employers and employees. Furthermore, fostering the growth of local business clusters is essential, necessitating a departure from guarding technology to embracing its diffusion, promoting skill-centric advancement, and facilitating capacity enhancement. Throughout these endeavours, companies generate value for themselves and contribute to the broader society. To enable this shift from prioritising profit maximisation to emphasising value maximisation, it becomes crucial for the G20 governments to extend both monetary and non-monetary incentives, encouraging businesses to make this transition.

Enable Social Entrepreneurship through Instruments like Tradeable SDG Credits

Social entrepreneurship encompasses businesses with the primary goal of generating social value. Social entrepreneurs frequently adopt a dual-value approach, working alongside beneficiaries to establish social worth (26). Enterprises aligned with the SDGs present substantial market prospects, estimated to exceed US\$12 trillion (27).

Among the G20 nations, governments can encourage social entrepreneurship through incentives. Establishing an SDG Credits framework could empower investment managers to construct a diversified credit portfolio spanning different sectors of social entrepreneurship.

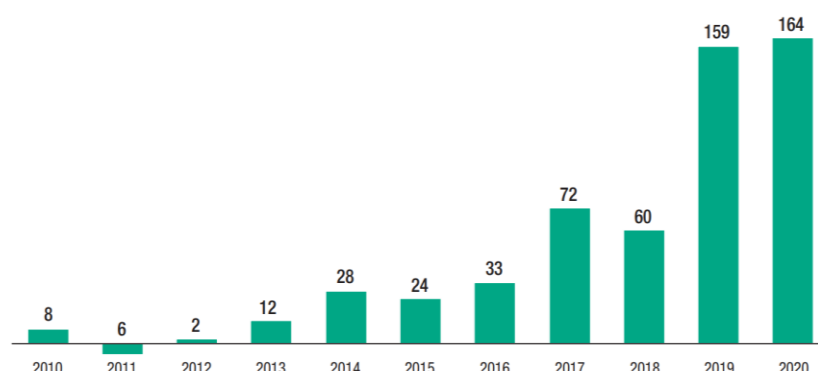
The failure of direct market instruments such as taxes and subsidies and the stringent command-and-control to deal with goods involving externalities has often led to the dismissal of conventional neo-classical theory. Since the 1970s, as greater attention was drawn to the conservation of the environment, economists have prioritised the development of tools to allocate environmental goods efficiently. Tradeable permits are believed to minimise the cost of efficient allocation and reduce the need for intervention in the market for goods whose production or consumption involves the emission of greenhouse gases. The SO₂ allowance trading programme, for instance, was hugely successful, reducing emissions beyond targets. This can be mirrored in the case of the SDGs in the form of SDG Credits, eliminating the need for direct intervention into markets by capturing the developmental effect of all productive activities (28).

These credits linked to the SDGs should function as tradeable instruments within a market framework. While this could redirect investor funding away from companies, causing negative externalities towards those positively impacting SDGs (29), it might also provide an opportunity for companies with a significant societal developmental influence to sell credits to those whose impact is minor or negative. This would generate revenue, a portion of which could be reinvested into developmental projects. Furthermore, this arrangement would enable companies that have not previously engaged in developmental efforts to participate in social progress. Naturally, the viability of this market would hinge on the G20 economies mandating such a credit mechanism within their own borders and subsequently extending it across all G20 nations. This extension should have a requisite regulatory framework in place for all instances.

Develop Innovative Financial Instruments

The United Nations Conference on Trade and Development (UNCTAD) claims that there has been a significant increase in sustainability-related investments over the past ten years (see Figure 3). In 2020, investments specifically aimed at achieving the SDGs amounted to a substantial US\$3.2 trillion (30). This financial commitment includes diverse categories such as sustainable funds (totalling US\$1.7 trillion), green bonds (exceeding US\$1 trillion), social bonds (accounting for US\$212 billion), and mixed-sustainability bonds (valued at US\$218 billion).

Figure 3: Net Inflow to SDG-Themed Funds (2010-2020; in US\$ billion)



Source: UNCTAD data (31)

Sustainable development funds encompass a combination of exchange-traded funds and mutual funds that distribute their assets across various categories, including equity, fixed income, and mixed allocation funds. The predominant catalyst for the surge in sustainability funds can be attributed to the global pandemic. The pandemic resulted in a remarkable increase in SDG funds, which saw a twofold growth from 2019 to 2020, predominantly driven by a significant rise in health-related funds (32). The implementation of securities regulations that necessitate the disclosure of environmental, social, and governance factors, coupled with the mounting disinclination of investors to support businesses carrying substantial environmental, social, and ethical risks, have provided a pathway for the proliferation of SDG-aligned investments. In addition to these factors, various other tools, such as derivative exchanges, impact investment, and blended finance, have the potential to contribute to achieving the SDGs within the economies of the G20 nations.

Furthermore, it is vital to promote the adoption of sustainability bonds within both global and domestic economies. These bonds should be fixed-income financial tools, the proceeds of which are exclusively allocated to fund the SDGs. The challenge lies in the fact that households and the private sector exhibit a stronger preference for engaging in financial products that promise higher returns, while projects aligned with SDGs often yield lower economic gains. In such scenarios, it becomes imperative to utilise fiscal incentives such as tax breaks to attract the private sector towards these instruments. Moreover, exploring alternative and innovative derivative instruments like weather derivatives, water index futures, green infrastructure, or green freight indices becomes crucial for assessing the tangible outcomes of specific SDGs.

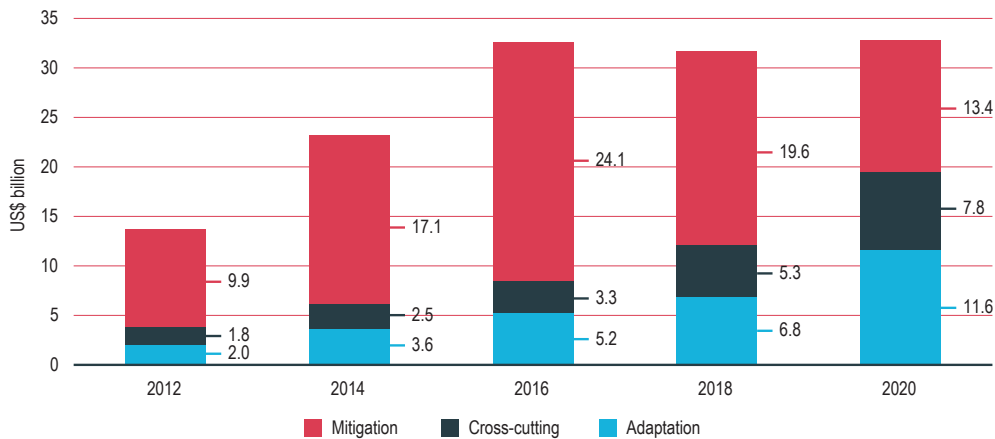
Finance Climate Adaptation

The current levels of climate adaptation funding fall far short of what countries need to mitigate the effects of climate change (33). Annual adaptation needs for 2020–2021 range from US\$160 billion to US\$340 billion; by 2050, this could reach US\$565 billion (34). When it comes to adaptation finance, the main focus is on holding high-income countries to their pledges, with a particular focus on shifting more of the capital to adaptation rather than mitigation.

Adaptation is a significant part of the Global South’s climate financing solutions, where there is an evident lack of adaptation financing (35). The problem is rooted in the ‘economic rate of return’. While the overall ‘social rate of return’ to adaptation projects is very high, this is not the case in terms of its economic rate of return.

That is where G20 governments need to step in with fiscal instruments, either by increasing public spending or by creating incentives to support adaptation projects. This can be in the form of direct transfers, subsidies, or tax rebates. Governments have placed great political and legal emphasis on climate adaptation and financing. Still, a vast financing gap affects not only low- and middle-income countries but also developing countries (36).

Figure 4: Financial Assistance to Developing States from the Developed States (37)



Source: United Nations Environment Programme data (38)

Capacity Building for the SDGs

Capacity building equips countries and communities with the tools and skills needed to manage change and vulnerability. It is a way to link Agenda 2030 with national sustainable development frameworks (39). It can be improved through cooperation and knowledge sharing between the global North and South. Many countries in the Global South do not have the capacity to understand what funding agencies need in project requests. This is particularly true for climate action projects.

Mitigation projects attract funders, while adaptation projects are often ineligible, leading to a clear preference for funding energy transition projects (see Figure 4). This is because the applicant countries cannot develop feasible adaptation projects, even though adaptation is vital for developing and underdeveloped countries. Moreover, it requires capacity building for the applicant countries so that the proposed funding aligns with the needs and expectations of both the funders and the applicants. The G20 should work to promote capacity building to ensure there is a matching of needs.

Leverage Data

Data has been widely acknowledged as the modern equivalent of oil: it plays a pivotal role in identifying requirements and obstacles, tracking advancement, guiding resource distribution, and supporting evidence-based policy decisions. Without data, making progress in crucial domains like education and healthcare becomes exceptionally challenging. Numerous nations within the G20 consortium continue to grapple with collecting comprehensive data.

Unveiling data availability in the Global South regions holds paramount significance, not only for attracting investments led by international donors but also for effectively aligning with the SDGs within domestic economies. The World Bank proposes three fundamental principles for enhancing data availability in developing nations (40). Firstly, there is a need to merge conventional data sources like civil registration, administrative records, and household surveys with contemporary technologies such as satellite imagery, geospatial data, and insights from social media and mobile devices. Secondly, adopting novel and effective data collection methods would necessitate reinforcing data protection regulations to thwart potential misuse and data breaches for political purposes. Lastly, a comprehensive approach to data must encompass every stage of the data value chain, encompassing collection, administration, curation, and analysis.

Conversations beyond relatively small groups of specialists frequently do not address the vital role that data and statistics play in the political–economic landscape of nations, and seldom result in more effective cooperation (41). The problem does not cease to

exist once data has been collected; the analysis method always turns into an area of contention when estimating sustainable development (42). While computational methods have become more efficient, the quantitative methods that correctly capture the degree of sustainable development are still evolving. Resources should be optimally distributed between the collection and estimation of data, employing –a two-pronged approach to data utilisation.

Support a New Global SDG-financing Framework: Developing a G20 DFI

Over the past few decades, developing economies and LDCs have suffered the most from global economic shocks (43). In the twenty-first century, increased connectivity and communication have made economies more interconnected and dependent on each other. With such high levels of integration, the consequences of an economic shock tend to reverberate globally. Smaller economies with less economic resilience and limited resources cannot recover from a global shock and face long-term poverty and unemployment. This is what happened during the Asian currency crisis of 1997, the subprime mortgage crisis of 2007–2008, the European debt crisis of 2009–10, and the pandemic crisis of 2019–2020. This is also what is happening during the current Ukraine–Russia conflict.

To facilitate cooperation and assist economies in developing financing frameworks, a development financial institution (DFI) within the G20 is needed. The lessons of the past two decades highlight the need to protect the SDGs in a global crisis. A DFI will strengthen South-North relationships. While the Global North experience could help design financing mechanisms for the Global South, a single organising body could ensure that geopolitical circumstances do not cloud the process of sending aid to less-developed countries. The DFI's goals will be twofold: First, to address the SDG funding gap by leveraging funds from different sources through innovative instruments, and then channel funds to the Global South and the world's most vulnerable regions; second, to help replenish the growth engines of the world economy whenever a crisis breaks out, which we have repeatedly occur over the past 26 years since the Asian crisis.

Conclusion

Bridging the SDG financing gap is a complex challenge. Such a complex problem cannot be resolved through mono-directional and mono-disciplinary thinking. Rather, it requires concerted effort, ingenuity, and collaboration among various stakeholders—governments, the private sector, international organisations, non-governmental organisations, and civil society. There is no doubt that the G20 is in an ideal position to create the enabling conditions for the finance to flow towards meeting the

developmental goals. It needs no reiteration that the world has changed substantially ever since the 2015 AAAAA. As we stand midway along the path towards achieving the SDGs, the G20 needs to bring in a new vision. This essay has presented the 10-point agenda based on certain normative principles that must be highlighted.

First, public investment must be recast. Governments must acknowledge that the long-term benefits of contributing to the SDGs outweigh the short-term costs. Strategic investments in education, healthcare, and renewable energy can create social and public goods, thereby yielding social dividends. Second, the private sector has a pivotal role to play. Beyond CSR, investing in the SDGs can offer businesses tangible benefits, such as accessing new markets and fostering goodwill, as has been postulated under the CSV concept. Innovative financing models, as proposed here, can enable companies to invest in sustainability projects in a way that is ethical, meets social goals, and meets the bottom-line needs of corporations. Third, governments need to incentivise or enable the private sector to invest in social projects that help the cause of the SDGs. Fourth, global partnerships are equally critical. This entails both South-South and North-South partnerships that lead to equal and mutually beneficial positions. Fifth, the importance of institutions and investments has also been highlighted here, including the setting up a G20-level DFI.

However, a few things need to be kept in mind. Firstly, funds alone cannot resolve the problem—their effective deployment is crucial. Financial inclusion and technological transfer can help ensure the funds reach the communities most in need. To facilitate this, digital platforms can help in an integrated and organised approach, ranging from fund allocation to management and flow, thereby helping in the effective utilisation of the available funds. Secondly, there is an urgent need for an accountability framework. Measurement metrics need to be developed to measure and track the impact of investments on specific SDGs that can inform future financing decisions. This will help the cause of regular monitoring and reporting, making the process transparent and accountable.

The primary aim of the G20 is to tackle issues concerning the global economy and ensure effective governance. This objective is evident in its aspirations to implement policies that enhance international financial stability, mitigate the effects of climate change, and promote sustainable development. Consequently, by improving the financing system for the SDGs, the G20 will also contribute to establishing a fairer and more impartial framework for global economic governance. This framework will be responsive to the pressing challenges of our era and the preferences and necessities of countries from the Global South.

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A Framework for Quantifying Climate Co-Benefits of Development Programmes

Tashina Madappa Cheranda | Kanchan Kargwal | Sahil Mathew

Abstract

CLIMATE CHANGE IS CAUSING ENVIRONMENTAL AND SOCIAL CRISES, and exacerbating social inequities within and between countries. The G20 member nations, irrespective of their level of development, are implementing various development programmes and safety-net schemes to respond to the consequences of global warming. Often, these schemes yield unintended but significant benefits, including climate co-benefits, which are not widely monitored, quantified, or reported. The Center for Study of Science, Technology and Policy, a think tank based in India, assessed a rural development programme, Usharmukti, based in West Bengal, for the climate co-benefits of the natural resource management (NRM) activities provisioned through the programme. This study led to the conceptualisation of a framework that can guide the

quantification of the resilience, adaptation, and mitigation co-benefits of NRM-based development programmes. Operationalising this framework can help governments assess and showcase the climate co-benefits of NRM-based development programmes, contributing to achieving climate targets and the Sustainable Development Goals (SDGs).

Introduction

The year 2023 has witnessed catastrophic climate extremes worldwide—from deadly heatwaves and wildfires in the West to floods and cyclones in Asia. It has also broken many grim records in climate events. The United States National Aeronautics and Space Administration (1) confirmed that July was the hottest month on record since 1880. The climate crisis has been amplified by multiple other global crises, such as the COVID-19 pandemic, the war in Ukraine, and rising inflation and energy costs, collectively referred to as the ‘polycrisis’ (2). The culmination of all the crises has borne testimony to the emphasis placed by the Intergovernmental Panel for Climate Change (IPCC) on the differentiated consequences of climate change that disproportionately impact vulnerable populations and ecosystems (3). Developing nations, home to large expanses of these populations and ecosystems, thus face the unique challenge of responding to multiple, simultaneous crises, while also mitigating emissions and adapting to climate change in ways that focus on the needs of the vulnerable and marginalised. Development programmes can be a possible solution for dealing with the polycrisis through their scale, inclusivity, and multiplier effects. However, such programmes need to address multiple goals, such as increased economic growth, livelihood security, and gender equality, all while being climate-sensitive—an approach termed as ‘climate-smart development’ (4).

Several multilateral organisations have proposed frameworks that can guide national policies towards achieving climate-smart development, such as the SDGs by the United Nations (UN). Signatories to the SDGs have implemented such policies at different scales in their respective countries, with varying levels of success (5). The bane of such programmes has been in monitoring and evaluation (6); for example, there are 17 SDGs with 169 targets and 231 indicators, which each signatory is expected to quantify for reporting its progress towards the goals. According to the World Bank, countries have only reported one or more data points on 55 percent of the indicators (7). While there has been significant progress in unifying methodologies, data scarcity remains an issue for most signatories.

Development programmes often deliver multiple climate co-benefits, which are currently not monitored or quantified (8). Such benefits will provide a large data pool that can feed into the reporting on international climate agreements, such as the

Adaptation Communications, Nationally Determined Contributions (NDCs), and SDGs and can help deal with the data scarcity issue to some extent. Further, quantifying such climate co-benefits would prompt the integration of climate action into developmental programmes. The evaluation of the programmes for their climate co-benefits will enable policymakers to understand how the development programme can be amended to provide greater climate gains while meeting the development objectives. Due to the fragmented nature of government operations, there has been a lack of acknowledgement of the existence of climate co-benefits, let alone their quantification. For developing nations which have limited statistical infrastructure, the challenge is even more acute.

This chapter proposes a quantification framework that can be applied to any development programme that has natural resource management (NRM) at its core to assess climate co-benefits. The essay presents a short summary of the research undertaken by the Center for Study of Science, Technology and Policy (CSTEP) that culminated in such a framework, and details the framework, elaborating on its components and sub-components. Finally, the chapter reiterates why the adoption and operationalisation of the framework by the G20 countries is crucial.

Defining climate co-benefits

The IPCC defines co-benefits as “the positive effects that a policy or measure aimed at one objective might have on other objectives, irrespective of the net effect on overall social welfare” (9). Climate co-benefits can operate in two ways: first, policies and measures aimed at tackling climate change can deliver on sustainable development commitments, such as clean air and water, green jobs, public health, and preservation of biodiversity; and second, development programmes, in addition to delivering development goals, can provide climate co-benefits by increasing the resilience of natural systems, helping populations adapt to current and future climate impacts, and mitigating carbon dioxide. There is broad consensus that programmes with co-benefits bolster support from local stakeholders and increase the likelihood of these actions being approved and taken up by decision-makers. While organisations such as the World Bank affirm that their investments for supporting development objectives also enhance climate action (10), development programmes implemented by governments often fail to realise their potential to generate climate co-benefits.

Governments tend to allocate large shares of their budget for development programmes and welfare schemes. Such programmes can improve the resilience of communities and natural systems, help socio-ecological systems adapt to actual or expected climate disasters, and sequester carbon. A prime example is the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), a flagship development

programme in India that has attracted the attention of researchers and policymakers over the past decade for its ability to generate rural employment. Several studies (e.g. Esteves et al. (11); United Nations Development Programme (12); Institute for Economic Growth (13); Negi et al. (14); Ravindranath and Murthy (15); Tiwari et al. (16); Fischer (17); Shah et al. (18); Institute for Rural Management (19); Ranaware et al. (20); Fadina and Barjolle (21)) have shown the potential of MGNREGS to deliver climate co-benefits, prompting the government to acknowledge MGNREGS as one of the '24 key initiatives' that can address climate change in the country (22). However, that is not the case with other development programmes implemented across the country, primarily due to the lack of evidence generation on the potential climate co-benefits of these programmes.

Thus, the need to mainstream quantification, monitoring, and reporting of the climate co-benefits of development programmes has not been realised in India. This is also true for most countries. While such mainstreaming is desirable, it would be extremely challenging for the implementing agencies because they tend to have a single focus. This brings us to the primary challenge in embedding cross-cutting concerns such as climate change in development programmes—the lack of horizontal networking.

Limited horizontal networking

Government departments that implement development programmes and schemes generally work in silos (23). Limited inter- and/or intra-sectoral collaborations or horizontal networking between implementing agencies can result in the duplication of investments and efforts and failure to resolve cross-cutting issues such as climate change. For instance, in India, which has a significant rural population living below the poverty line (24), the Ministry of Rural Development (MoRD) implements several development programmes that focus on rejuvenating the natural resource base that rural economies are dependent on, in addition to improving access to basic amenities. While regenerating natural resource capital and improving the welfare of communities, these programmes result in considerable climate co-benefits. However, it is the Ministry of Environment, Forest and Climate Change that is responsible for planning, facilitating, and reporting on all climate-change-related activities and outcomes. With almost no horizontal networking between the two ministries (25), quantification and reporting on the climate co-benefits of these development programmes by the MoRD is non-existent.

As all countries need to report their progress on the SDGs, NDCs, and Adaptation Communications under the Paris Agreement, establishing a comprehensive framework that can quantify, monitor, and report on the climate co-benefits of development

programmes becomes imperative. Additionally, since climate co-benefits reveal the multidimensionality of many development programmes, their quantification and reporting can equip policymakers with a new lens to view future development challenges.

The rapid assessment by CSTEP

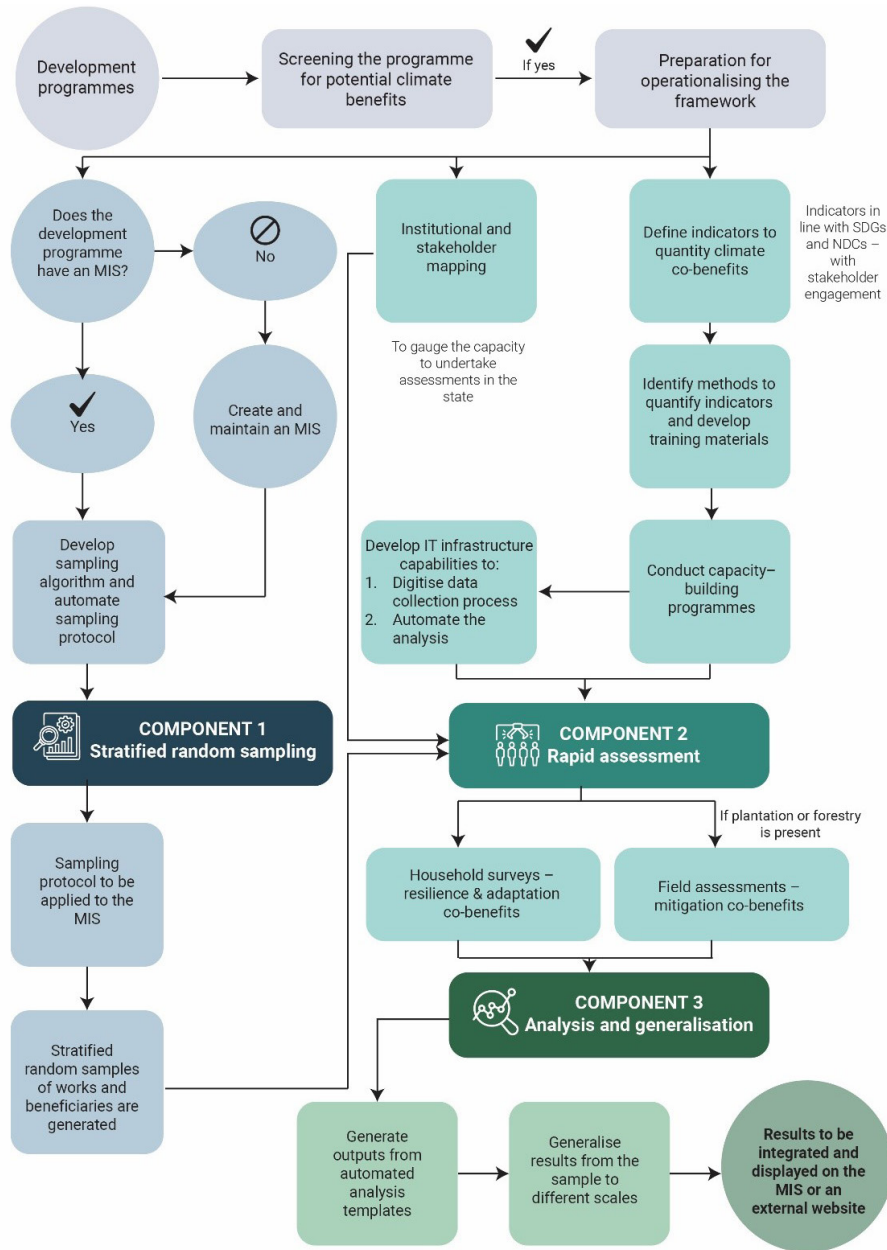
Buoyed by the substantial evidence provided by studies on the potential of MGNREGS to generate climate co-benefits, CSTEP conducted a rapid assessment to quantify the climate co-benefits resulting from the implementation of Usharmukti, a river rejuvenation programme in West Bengal, India, under MGNREGS. The programme is implemented across six districts and includes micro-watershed management works, such as the construction of water harvesting structures, irrigation canals, continuous contour trenches, and rock checks, and horticulture and social forestry plantations.

For the rapid assessment, the implementation area and the total number of works executed were stratified and randomly sampled. A total of 541 works across 13 watersheds were assessed for climate co-benefits using a combination of field- and survey-based methods. The study found that the works implemented not only provided income benefits but also sequestered carbon and helped communities build resilience and improve their adaptive capacity (26). This provided proof of concept and led to the development of a framework for quantifying the climate co-benefits of MGNREGS works (27). The framework has been adapted to suit all NRM-based development programmes that are known to offer direct benefits (28) and have the potential to generate climate co-benefits.

The Framework

The G20 should operationalise a framework to quantify the resilience, adaptation, and mitigation co-benefits arising from NRM-based development programmes (Figure 1).

Figure 1: Framework to Quantify, Monitor, and Report on the Climate Co-Benefits of NRM-Based Development Programmes



Source: T20 Policy Brief 2023 (29)

The framework has three main components—sampling, rapid assessment, and analysis for generalisation or extrapolation. Several preparatory steps are required for operationalising the framework, which have been described in detail under each of the following components. In this article, we have used the MGNREGS as an example to describe how the framework may be operationalised.

Component 1: Stratified random sampling

Development programmes are implemented on a large scale, with beneficiaries spread across vast areas such as a region, a state, or a country. Because of this, a census survey becomes impossible. Therefore, the first step towards implementing the framework is identifying a representative sample to assess the chosen development programme. To provide a sense of scale, Table 1 lists examples of flagship development programmes implemented by the G20 countries that help communities adapt to or mitigate climate change.

Table 1: Flagship Development Programmes in Select G20 Countries

Country	Flagship Development Programme	Objectives of the Programme
Argentina	Sowing Food Sovereignty (30)	<ul style="list-style-type: none"> With an investment of US\$ 1 billion, this programme aims to build institutional capacity; improve food production, access to water, and local distribution; and aid the supply of nutritional food. It promotes good practices in the production, processing, and distribution of food, not only in the management of natural resources, but also in terms of sustainability.
Australia	Strong and Resilient Communities (31)	<ul style="list-style-type: none"> The programme has a budget of US\$ 40 million and aims to implement projects in the metropolitan, regional, and remote areas of Australia. It focuses on building the capacities of vulnerable groups such as the unemployed, socially isolated women, youth who are at risk of being disengaged or marginalised, and people with disabilities and/or mental health issues.
Brazil	Food Acquisition Program (32)	<ul style="list-style-type: none"> It aims to reduce rural poverty by promoting family farms, enhancing their production, and giving them access to markets. The programme is supported by a US\$ 1.75 billion budget. It also donates produce to subsidised restaurants, food banks, and community kitchens, thus promoting food security across the country.

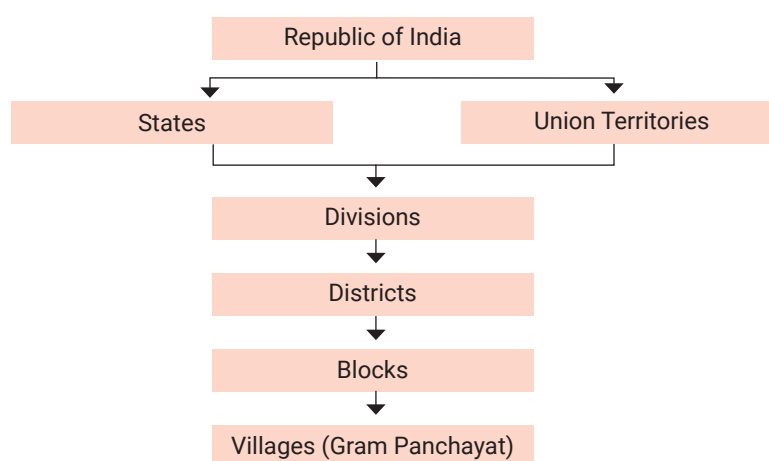
Country	Flagship Development Programme	Objectives of the Programme
China	Minimum Living Standard Guarantee Programme (33)	<ul style="list-style-type: none"> It aims to provide monetary assistance to poor households across China, especially in rural China, to maintain a minimum standard of living. It currently supports around 49 million beneficiaries.
France	Rural Revitalisation Zones (34)	<ul style="list-style-type: none"> The programme provides funds to classified rural zones to promote development and reduce desertification. It has around six million beneficiaries.
India	MGNREGS (35)	<ul style="list-style-type: none"> It aims to alleviate rural poverty by providing 100 days of wage labour per year to unskilled, adult members of rural households who demand employment across India. It engages rural wage seekers in the creation of productive and durable assets across rural India. A majority of these are NRM assets. The annual budget for the financial year 2023–24 was US\$ 7.2 billion.
South Africa	Expanded Public Works Programme (36)	<ul style="list-style-type: none"> It provides employment through labour-intensive community development projects, supported by a US\$ 171 million budget.
The United Kingdom	Rural Development Programme (37)	<ul style="list-style-type: none"> It aims to improve agriculture and the environment in rural areas by providing financial assistance and has already disbursed US\$ 2,916 million to farmers between 2014–2020

In the proposed framework, we recommend the use of a stratified sampling approach, as it can adequately represent a diverse population (38). It is suggested that the population (i.e., beneficiaries of the chosen programme) is segregated into ‘strata’ with similar characteristics (beneficiaries of a specific intervention under the programme) and that a sample is selected from a homogenous stratum. A stratified random sampling protocol that uses data from the management information system (MIS) of a programme will need to be developed and automated to identify the sample. If the programme does not have an MIS but has the potential to deliver climate co-benefits, the first step will involve creating and maintaining an MIS. The MIS should be designed to present data at the level of the smallest administrative unit. The data should include, but not be limited to, beneficiary names and the types of activities they are benefiting

from. The random sample generator will provide a statistically significant random sample of beneficiaries from a large population, thereby informing the assessors where to sample for field-related measurements and whom to sample in the case of surveys.

In MGNREGS, for example, about 69 million works are implemented per year on average. The scheme’s MIS broadly groups 260 different types of interventions or works implemented under MGNREGS into 17 work categories. This is the first level of sampling, where we create the ‘Work Category’ strata. The next step is to identify the scale at which an appropriate sample size may be selected. For MGNREGS, blocks (locally called *tehsils*, *talukas*, or *mandals*) can be selected as the scale for determining the sample size, using the sub-national rural administrative divisions of India (Figure 2).

Figure 2: Structure of Administrative Divisions for Rural India



Source: Prepared by the authors (39)

It would be ideal if the sample generation process is automated. A sampling algorithm for MGNREGS has been presented in a policy brief by CSTEP (40). To undertake a rapid assessment, a minimum sample size of 10 percent of the population in each stratum is considered, as long as this does not exceed 1,000 (41). The automated tool should inform the assessor of the type of work, the unique work code for the asset (as represented in the MGNREGS MIS), the *gram panchayat* (GP) (42) where the work is located, and the direct beneficiary or beneficiaries of the work. Using this information, the assessor can visit the location of the work to conduct the required field measurements or visit the beneficiary’s home to undertake a survey.

Component 2: Rapid assessment

It is crucial to collect data that is relevant to the development programme being assessed. The first step entails identifying and mapping the specific activities of the

programme that are delivering climate co-benefits. Following this, indicators that represent the key performance of the work and attest to its climate co-benefits should be conceived. It is recommended that the process of conceiving indicators is in line with national goals and targets, such as SDGs and NDCs. The greater the overlap of indicators between the development programme and the national objectives, the higher the incentive for the government to evaluate the climate co-benefits from the programme.

Once the indicators are conceived, a method manual needs to be prepared to provide step-by-step instructions on quantifying the indicators. For example, one of the interventions under MGNREGS seeks to help farmers by raising horticulture or social-forestry plantations. While the main benefits include fruits and timber that provide supplementary income to farmers, simultaneously, a climate co-benefit is received through carbon sequestration, in addition to the potential climate resilience and adaptation co-benefits that take the form of soil and water conservation, improved soil quality, and an additional income source that is relatively less affected by droughts. The methods manual in this case needs to provide instructions on quantifying the carbon sequestered from the plantations, with details of the types of measurements required and the allometric equations for quantifying the carbon sequestered in a lucid manner. It should also include instructions for capturing the resilience and adaptation of co-benefits through household surveys.

Further, considering the large scale at which the assessments have to be made, the following measures are recommended:

- Execution of an extensive stakeholder-mapping exercise to identify institutions, organisations, and personnel with the capacity to perform field assessments;
- Identification of simple but robust methods for quantifying the indicators to ensure that these are easily executed by field personnel;
- Development of training material and its integration into existing capacity-building programmes to ensure that the capacities of all stakeholders involved are built; and
- Wherever possible, the adoption of digital recording of data or the use of the optical mark recognition format (recommended to ensure transparency and allow seamless aggregation of data from all locations surveyed, thereby saving time and money, especially in developing nations, where the institutional capacity to carry out assessments is comparatively low).

Once the capacity to undertake the assessment of climate co-benefits has been built, field work can commence. Using the information from the stratified random sample, field work will need to be carried out to assess two types of climate co-benefits—resilience and adaptation; and mitigation.

To assess resilience and adaptation co-benefits, questionnaires may be used at a household level. Questions should be formulated to broadly capture an intervention's potential to build the resilience of the household being surveyed or retrospectively analyse if the intervention lowered the impacts of a climate hazard. The questionnaire should limit the number of questions to three per work. Mitigation co-benefits of interventions will need to be quantified as per the methodology identified for the programme. There are several standardised methodologies available to quantify the reduction in greenhouse gas (GHG) emissions or the sequestration potential of different NRM-based interventions (43). For example, the mitigation co-benefits of tree plantations under MGNREGS may be assessed using the methodology provided by Ravindranath and Murthy (44), which will allow the assessor to determine the quantum of carbon sequestered in the biomass of trees and in the soils of plantation plots.

Component 3: Analysis and generalisation or extrapolation

The data collected through field assessments and surveys should be analysed and generalised or extrapolated from the sample to cover the overall region, the population, or the state. A template can be created to automate data analysis and reporting. This will be especially helpful for indicators that require slightly advanced techniques for quantification, such as carbon sequestration. However, an automated mode of analysis will be possible only if the data is collected digitally. Therefore, digital data collection should be prioritised within Component 2.

The adoption of a framework such as the one presented here will help quantify and report on the multiple climate co-benefits accrued by any NRM-based development programme. For example, if a development programme offers the co-benefit of flood protection, the application of the framework can reveal the total population that has adapted to current or expected flood situations because of the programme. In the case of mitigation, the framework can provide information on the quantum of carbon sequestered.

If the development programme has a well-functioning MIS, the results can be included as part of regular reporting. If this is not possible, a separate portal may be created, such as the MGNREGS-SDG dashboard, to present results. The multiple unintended climate co-benefits of a development programme can be directly fed into a country's reporting requirements on the SDGs, NDCs, and Adaptation Communications.

The G20's Role

The G20 hosts two-thirds of the global population and accounts for 85 percent of the world's GDP. Importantly, these nations together are responsible for 80 percent of global GHG emissions, making the G20 a key forum to collaborate on tackling climate change (45).

Kirton (46) attributes the distinctive role of the G20 to three characteristics: "(1) small group plurilateralism in member countries; (2) direct delivery by leaders through face-to-face summitry; and (3) institutionalisation in an informal and intense forum". These characteristics create a 'club of equals' that is more efficient at realising collective goals and responsibilities. There is confidence that the G20 has significant potential to solve pressing issues pertaining to climate change and sustainable development. The G20 has been instrumental in setting the Copenhagen Accord and the Green Climate Fund to leverage international finance for clean energy transition, steering commitments to phase out inefficient fossil fuel subsidies, and creating a common platform to engage private stakeholders, such as during the Seoul Business Summit (47).

While the G20 nations have recognised the relevance of SDGs and have subsequently defined targets through agreements, commitments, policies, and programmes, there is a lack of reporting on progress achieved across nations. Adopting the framework will help the G20 countries quantify their progress towards achieving various sustainability and climate action goals, which will help in aligning development investments with SDGs and NDCs. The role of the G20 forum is clear: it can act as a platform to foster consensus among member states and promote the adoption and implementation of the framework. The influence of the G20 extends beyond the ambit of its member nations, and the forum has consistently demonstrated a history of shaping global agendas with an emphasis on cooperation, mutual benefit, and multilateralism.

With planetary boundaries now being crossed as a result of human activity (48), the G20 countries will need to do more in the area of climate action. Adopting a universally acceptable measurement framework for the quantification of climate co-benefits will require significant international cooperation. The characteristics of the G20 make it the ideal forum to foster traction and motivation for the adoption of this framework for reporting on the unintended climate co-benefits that arise while pursuing development goals.

Conclusion

As climate change intensifies, temperature and rainfall are projected to increase in the coming years. Moreover, the magnitude and frequency of extreme rainfall and heatwave

events and the second-order impacts of flooding, dry spells or droughts, and landslides are also likely to increase. Climate benefits realised through dedicated climate action are important, but not enough, primarily because climate action is still taken up as small-scale projects as opposed to flagship development programmes that are implemented across an entire country. There is a need to integrate a framework that quantifies the resilience, adaptation, and mitigation of co-benefits into the monitoring and reporting process of large-scale NRM-based development programmes. The framework provides an opportunity to assess the effectiveness of development programmes and incorporate course corrections, where needed, to enhance climate co-benefits.

However, the implementation of the framework may be challenging in some countries. First, statistical systems may need to undergo modifications to accommodate the different components of the framework, especially since the framework requires several digital tools. Second, the framework requires cross-functional collaboration between multiple government departments, which implies the need for a level of leadership that can facilitate such collaboration. Third, fieldwork may be a challenge in countries experiencing political turmoil and war, or with challenging topographies. Finally, varying levels of motivation to solve the climate change problem can pose a problem. It might be wishful thinking to assume that all countries are on board in the fight against climate change (49). While large climate conventions hosted by organisations like the UN are witness to multiple signatories, there has been a steady backsliding on climate commitments (50). Nevertheless, climate co-benefits can be beneficial in involving countries that do not prioritise climate change.

As a premier international forum, the G20 has an important role to play in the endorsement of programmes that can lead the world towards a sustainable future. As the world prepares for the 28th Conference of Parties (COP28), the time is right for the G20 to introduce the framework to relevant country representatives and spur motivation for the large-scale quantification and monitoring of climate co-benefits.

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Maternal, Newborn, Child and Adolescent Health and Wellbeing: A Critical Agenda for the G20

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Abstract

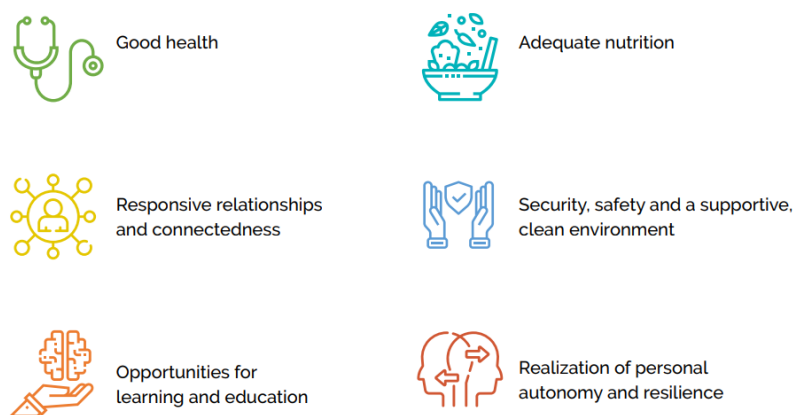
THE G20 IS COMMITTED TO IMPROVED HEALTH and wellbeing and has created Development and Health Working Groups to focus on the task. Within the context of the Decade of Action for Agenda 2030, this chapter reviews the current state of maternal, newborn, child and adolescent health and wellbeing (MNCAH&W) and the compelling reasons for investing in this field. It examines how MNCAH&W outcomes have been affected by the COVID-19 pandemic and makes specific recommendations for how G20 countries can recover lost gains for these cohorts. This chapter builds on a T20 policy brief published earlier in 2023 (1) and provides evidence that the costs of inaction are steep, and that, conversely, the estimated returns from selected investments are also high. Recommendations made in this chapter are aligned with the current health priorities of the G20 and emphasise prevention, preparedness and response to health emergencies, digital transformation and innovation, and solutions to support Universal

Health Coverage (UHC) and to achieve the Sustainable Development Goals (SDGs) and strengthen the global health architecture. It recommends that G20 countries substantially increase their investments to improve MNCAH&W to recover from the COVID-19 pandemic and nurture the sustainable social and economic development of societies for present and future generations.

Key Reasons for Investing in Maternal, Newborn, Child and Adolescent Health and Wellbeing

Maternal, newborn, child and adolescent health and wellbeing (MNCAH&W) (2) is central to the development of a country's human capital and therefore deserve focused attention (Figure 1). Globally, millions of women, children and adolescents are unable to realise their right to health, development and wellbeing because of poverty, food insecurity, lack of access to quality health services, and the absence of education and social protection policies and programmes. In the current era of rapid technological innovation, entire population groups are being left behind by progress, thereby increasing inequities that lead to conflicts, mass migration, and environmental degradation that, in turn, sustain the vicious circles of intergenerational poverty. The COVID-19 pandemic and ever-growing threats associated with climate change have further exacerbated the situation.

Figure 1. Domains of Child and Adolescent Health and Wellbeing



Source: WHO and UNICEF. *Investing in our future: a comprehensive agenda for the health and well-being of children and adolescents*. Geneva: World Health Organization and the United Nations Children's Fund (UNICEF), 2021.

The 2022 report of the Global Strategy for Women's, Children's and Adolescents' Health documents that, across the globe, many countries are off-track in meeting the Sustainable Development Goals (SDGs) that relate to MNCAH&W (3). The report noted how the combination of the pandemic, the climate crisis, and geopolitical conflicts are

causing the reversal of many of the earlier gains recorded across the globe. Although these reversals have been most severe among the poor and in fragile states, they have also occurred among marginalised populations in upper-middle-income and high-income countries (4).

Six compelling reasons for the G20 to invest in MNCAH&W

- **Upholding human rights:** Investing in MNCAH&W is not one policy option among many; it is an end in itself and a human rights imperative and, therefore, a basic duty of states (5). Compared with adults, children and adolescents have less agency to demand their rights, and therefore governments have a duty to help them realise their rights and provide them access to services that promote their health and well-being.
- **Mitigating the substantial burden of disease and injury in these population groups in the light of the demographic and epidemiological transition:** Children and adolescents (<20y) make up one-third of the global population, with women of childbearing age adding another quarter; overall, therefore, women, children and adolescents comprise over half of all people in the world (6). This makes it imperative to commit to goals that would nurture their health and well-being, recognising that, given health and well-being, their contribution will bring benefits across generations.

Global mortality rates among young children have been halved since 1990, but these dramatic declines have not been mirrored in the second or third decade (Table 1) (7). Furthermore, many children who survive fail to thrive (8).

Table 1. Global Mortality Rates (0-24 years) and their Declines and Proportions of Deaths, by Age

Age	Mortality Rate, 2021	Decline in mortality rate (%) 1990-2021 (*)	Proportion of all deaths before age 25 years (%), 2021 (**)
Newborns (0-27 days) (deaths/1000 livebirths)	18	52	33
1-59 months (deaths/1000 population entering the age range)	21	64	38

Age	Mortality Rate, 2021	Decline in mortality rate (%) 1990-2021 (*)	Proportion of all deaths before age 25 years (%), 2021 (**)
5-9 years (deaths/1000 population)	3	70	7
10-14 years (deaths/1000 population)	3	40	5
15-19 years (deaths/1000 population)	5	38	8
20-24 years (deaths/1000 population)	6	33	10

Note: (*) Approximate because of rounding in the data; (**) Percentages do not add up to 100% because of rounding

Source: United Nations, *Levels and trends in child mortality report 2022* (New York, USA; UN IGME, UNICEF, WHO, World Bank, United Nations: 2023)

Previous declines in maternal mortality had already stagnated before the COVID-19 pandemic, further reducing women's access to antenatal, birth and postnatal services. To overcome this setback and to accelerate the rate of decline, efforts to reduce maternal mortality must be redoubled (9). Importantly, the crucial gains in reducing infant, child and adolescent mortality and morbidity over the past decades are plateauing and could also potentially get reversed. Examples include the recurrence of measles outbreaks whenever vaccination coverage fell (10), and substantial increases in mental health disorders among adolescents, during the COVID-19 pandemic (11); rapid increases in young child deaths from diarrhoea and pneumonia during conflicts (12); and increases in vector-borne diseases due to climate change (13). The costs of recouping lost ground can be substantial.

At the same time, there is strong evidence that specific interventions and combinations of interventions to promote MNCAH&W can be effective and there are increasing examples of successful programmes at the national level (14,15). These have been summarised in WHO's compendium of essential interventions for UHC (16) and can be effectively implemented at scale through primary health care systems.

Fostering human capital: The importance of investing in MNCAH&W is not limited to the immediate burdens of mortality and disability described above. Behaviours adopted during childhood and adolescence have profound and often life-long implications for future adult health and well-being, including productivity and life satisfaction (17). Investing in MNCAH&W will reduce the future burden from non-communicable diseases

(NCDs) and mental health disorders and facilitate healthy ageing, as well as reduce the risks from NCDs for the next generations (18,19).

Investing in MNCAH&W strengthens the human capital of a country, and thus the country's wealth, potential for future development and for ending extreme poverty and its ability to create more inclusive and equitable societies (20,21,22).

The changing nature of work, with higher skill requirements, has increased the urgency of ensuring MNCAH&W and equipping these population groups with 21st-century skills.

The lifelong benefits from investing in early child development are well-recognised, including by the G20 (23,24). The G20-supported Nurturing Care Framework (25) has influenced policies and programmes in numerous countries (26).

It is essential that the global community does not neglect the health and well-being of children and adolescents and the 'demographic dividend' that they can bring to the future wealth and welfare of societies if they are healthy, well-educated, and productive.

Addressing the effects of the Covid-19 pandemic, the climate crisis, and geopolitical conflicts: The COVID-19 pandemic has had particularly detrimental effects on children, adolescents, and new mothers. For example, the coverage of immunisation services fell dramatically from 2019 to 2020 and 2021 (27). The closure of schools and higher education institutions resulted in millions of children, adolescents and youth missing out on face-to-face education (28), affecting the poorest students the most (29). The mental health of both children and young people and their caregivers was also impacted (30). Pandemic-related disruptions increased the prevalence of stunting and wasting in children and adolescents and of maternal anaemia due to disruptions in food supplies (31,32). Meanwhile, experts have postulated that the burden of obesity in women, children and adolescents may have been increased due to the reductions in physical activity caused by the pandemic (33). Targeted initiatives and investments will be needed to offset these effects.

The climate crisis is also negatively affecting women, children, and adolescents, with long-term consequences across the life course, and it is today's children and young people who will bear the future impacts of the climate crisis. There will be direct impacts of heat, drought and floods on their health and nutrition, schooling and educational attainment, security, and safety. Indeed, climate change is already leading to displacement and migration, family disruption, and is eroding adolescent resilience due to feelings of anxiety, fear, powerlessness, apathy, and disillusionment (34).

Armed conflict disrupts all aspects of life. While it is mainly young men who are combatants (35), those who often bear the greatest burden from conflict's indirect

effects on food, health, education, and social protection systems are women, children and adolescents. It is estimated that half of global maternal and childhood mortality occurs in settings affected by conflict and humanitarian needs (36).

Navigating the opportunities and risks of digital transformation for women, children, and adolescents: As the digital transformation redefines our world (37), the opportunities and risks it creates are pronounced, particularly for children and adolescents (38). Examples include the risks from harmful marketing, misinformation, and pornography, where digital technology can greatly increase their reach and can provide access to children and young adolescents who were more difficult to reach through analogue channels (39). The digital transformation is also redefining the experiences of women, including their ability to work from home. Anchoring policies in their multidimensional well-being can lead to more equitable future societies.

The costs of inaction are substantial and there are excellent returns on investment in interventions and programmes to promote MNCAH&W: Preliminary estimates are that the costs of inaction (the economic costs due to sub-optimum health and well-being among women, children, and adolescents) are steep (40). Using the example of the health and well-being of adolescents, the costs of inaction are of the order of US\$52 trillion in constant US dollars over the 13 years from now to 2035 (41). For low- and middle-income countries, this translates to US\$3.5 trillion per year (42). On the other hand, the estimated returns from selected, well-planned, and tested programmes of investment to improve adolescent health and well-being are also very high, with benefits more than ten times costs for most of these investments (43,44,45).

Women, children, and adolescents must be at the centre of policies and programmes, and of monitoring progress in MNCAH&W

In designing and implementing policies and programmes to respond effectively to these challenges, the specific and diverse needs of women, children and adolescents must be taken into account. Moreover, a multisectoral, holistic, systems-based approach must be used, considering all the dimensions of their well-being (46,47,48,49). To do this task, policymakers and programme implementers must meaningfully engage with these population groups and actively involve them and their representatives in key decision-making processes that relate to their health and well-being (50).

Although much remains to be done, progress in MNCAH&W is being measured and monitored. However, important data gaps still remain, even within G20 countries. Initiatives such as the Global Action for Measurement of Adolescent health (GAMA) Advisory Group and the World Health Organization/Partnership for Maternal, Newborn and Child Health's Adolescent Well-being Measurement Expert Consultative Group have made recommendations for how these gaps should be filled (51,52).

The G20's Role

As a platform for international economic cooperation, the G20 has a critical role to play in addressing the challenges to MNCAH&W. Accounting for around 80 percent of global GDP and nearly 60 percent of the global population (53), the G20 countries' policies and actions can significantly impact health and well-being outcomes worldwide both through direct improvements in their own countries, but also through national leadership and trailblazing; and through development assistance (54). The G20, therefore, is critical to achieving the 2030 Agenda. Since its establishment in 1999, the G20 has increasingly prioritised health in its agenda but has yet to address the issue of MNCAH&W in a comprehensive manner directly.

G20's leadership in the health and wellbeing agenda

The establishment of the G20 Health Working Group (HWG) in 2017 presented an opportunity to develop a shared international agenda on key health and nutrition-related policy issues. Since then, the HWG has been actively involved in addressing various health issues, including those related to maternal and child health (55). In 2018, the G20 Health Ministers adopted a joint statement that recognised the need to address the social determinants of health and improve health literacy, particularly among women, children, and adolescents (56). In the same year, the Development Working Group of the G20 launched the Initiative for Early Childhood Development. The initiative promotes a life-course approach and advocates for a multisectoral strategy to improve outcomes for children (57,58).

In 2019, the G20 Leaders' Declaration at the Osaka Summit reiterated the G20's commitment to improving global health and called for strengthening health systems, including promoting UHC. The declaration also recognised the need to address the health and well-being of women, children, and adolescents, particularly through improving access to quality health services and promoting gender equality (59).

In 2021, the Health Ministers' Meeting focused on the COVID-19 pandemic and its impacts on global health. The G20 Health Declaration adopted at the meeting emphasised the need for global cooperation, solidarity, and innovation to address the pandemic and build more resilient health systems. The G20 also further committed to promoting the equitable distribution of vaccines and strengthening health systems to address future health emergencies (60,61).

The Government of India identified UHC and improving healthcare service delivery as important issues among the health priorities (62) for their G20 Presidency in 2023. It proposed several initiatives for digital health innovation, and solutions, including the development of a global health data platform, the promotion of digital health

technologies, and the establishment of a G20 health task force (63). India's presidency has provided an opportunity to take a crucial step forward in the G20's commitments to MNCAH&W.

Strengthening policies and investments for MNCAH&W

Despite the G20's recognition of the importance of investing in MNCAH&W, there are many challenges to effectively addressing their needs including the lack of adequate funding for targeted policies and programmes designed to improve their health and well-being. Many countries across the globe have limited budgets for the health, nutrition, education, and social protection programmes that will be essential for improving MNCAH&W. For example, a 2021 UNICEF report found that one in every eight countries spend more on servicing their debts than on education, health and social protection combined (64). As a result, many women, children, and adolescents do not have access to basic healthcare services, including maternal and child health services, adolescent health and/or school health and nutrition services, age-appropriate sexual and reproductive health services, and mental health services. Similarly, many children and adolescents do not have access to quality education or vocational training, and many women do not have opportunities to enter the workforce. Additionally, in many countries, social protection systems, which are of paramount importance for MNCAH&W, are often weak and underfunded.

The six powerful reasons for investing in MNCAH&W detailed in the first section of this chapter clearly and unambiguously demonstrate why the G20 should take urgent action to prioritise MNCAH&W, building on earlier commitments that the G20 has made. The G20 must prioritise increased resources for MNCAH&W. This should include increased investment in health and nutrition within Universal Health Coverage (UHC) and primary health care (PHC) initiatives, but also in education and social protection systems, including the delivery of quality basic education. The G20 leadership has the potential to leverage their collective resources and expertise by working together to increase resources for MNCAH&W programmes, and to ensure that these programmes are prioritised within national budgets across multiple sectors by increasing domestic allocations, mobilising international aid, and promoting private sector investments. Although absolutely critical, increasing access alone will not be sufficient. The G20 must also work to improve the quality of the health, nutrition, education, and social services being provided.

Furthermore, the G20 should promote policies and programmes that prioritise the needs and rights of women, children, and adolescents, including promoting gender equality, providing education and vocational training for adolescent girls, and addressing the social determinants of health and well-being across multiple sectoral investments.

Recommendations to the G20

The G20 should provide sustained and enhanced financing for MNCAH&W: The enhanced financing for MNCAH&W should prioritise strengthening health, nutrition, education, and social protection systems, improving access to essential services, and addressing social determinants of health and well-being, such as poverty, discrimination and gender inequality. The G20 should also prioritise investments in research and the development of new and improved health and education technologies.

Putting emphasis on MNCAH&W is entirely consistent with the G20's priorities related to the prevention of, preparedness for, and response to health emergencies; promoting access to, and availability of safe, effective, high quality, affordable vaccines, therapeutics, and diagnostics; and developing digital health innovations and solutions to aid UHC and improve healthcare service delivery. It is also consistent with the G20's other priorities, including macroeconomics and trade, digital transformation, women-led development, lifestyle for the environment, the green transition, global financial order, accelerating progress towards the SDGs and reforming multilateralism. Key opportunities for the G20 leaders to demonstrate their continued commitment to this issue include the SDG Summit in September 2023 (65), the Global Forum for Adolescents in October 2023 (66), and the Summit of the Future in September 2024 (67) which will have a focus on the first two decades of life. The G20 plays a critical role in promoting, shaping and supporting both the Global Forum and the Summit.

The G20 should adopt a multisectoral, holistic, systems-based life-course approach to promoting MNCAH&W: This approach should include investments in digital health innovations to improve access to essential health, nutrition, education, and social services, especially in rural and underserved areas. The G20 should continue to prioritise investments in medicines, including research and development, to ensure universal access to life-saving drugs and vaccines, and investment in universal access to both primary and secondary education and improved access to tertiary education and vocational training.

The G20 should take a life-course approach to all their policy response and programming, recognising that problems at each stage of an individual's life can have negative effects at later stages (e.g., poor (over or under) nutrition and a lack of physical activity; abuse and neglect; mental ill health); and conversely, interventions across the life course can reinforce each other (e.g., nurturing care education, and dietary improvements). In light of the post-COVID-19 recovery efforts aimed at strengthening national health, education and training systems and sustaining development assistance via continued leadership and contributions to multilateral and global initiatives, the G20 countries should prioritise the following actions:

- Promote equitable access to comprehensive services to promote MNCAH&W, including adopting and implementing adequately-funded UHC programmes using a primary health care approach and universal primary and secondary education policies and strategies that prioritise MNCAH&W services. These increased efforts should include investing in the implementation of policies and programmes that address the social determinants of health and well-being, including poverty reduction, education and social protection programmes, and policies that promote gender equality;
- Establish cross-sectoral collaboration, and coordination including inter-Ministerial action across health, education, social protection, finance, and others to ensure budgetary alignment for programmes and services impacting MNCAH&W and to ensure that multiple sectors are held accountable for achieving outcomes related to MNCAH&W by establishing clear performance indicators and reporting mechanisms;
- Develop and implement digital health and education solutions, including telemedicine and e-health platforms and online educational resources, to improve access to essential healthcare and educational services and information;
- Strengthen and build resilient health, education, social protection and food systems that can withstand health, economic or climate-related shocks by investing in preparedness and response to emergencies, and improving surveillance systems and response capacities;
- Improve multilateral coordination and cooperation to promote knowledge-sharing, resource mobilisation, and collective action for strengthening global health, education, training and social protection governance and enhancing collaboration across multiple sectors and industries for improved global health and well-being outcomes.

The G20 should strengthen data systems for monitoring and implementation of MNCAH&W policies and programmes: This should include investment in digital data solutions and data interoperability to improve data collection, analysis and sharing. The G20 should also prioritise investments in capacity building and training to strengthen health, nutrition, education, and social protection information systems and equip workers in these sectors with skills to ensure data quality and accuracy. This includes supporting the development of digital innovations that enable real-time monitoring of outcomes and system performance.

The G20 should include MNCAH&W as a recurring agenda item within both the G20 Sherpa Track and the G20 Finance Track: Systems should also be put in place to ensure

that there is effective coordination between the two tracks related to MNCAH&W to ensure that decisions taken within the G20 Sherpa Track receive the necessary resources to be implemented (68). It will also be important that stakeholders from civil society, academia, United Nations agencies, development partners and the private sector are engaged to ensure that policies and programmes are informed by the latest evidence and good practices. While shaping the future strategies and priorities of the G20 Joint Finance-Health Task Force, the G20 member countries should ensure that MNCAH&W is prioritised and is provided with dedicated resources to implement this ambitious agenda. Furthermore, the G20 should work towards establishing and strengthening partnerships to help leverage resources, promote innovation, and ensure accountability for progress towards achieving MNCAH&W goals.

The G20 should meaningfully engage women, children, and adolescents in policy development and decision-making processes related to their health and well-being:

The G20 should ensure that the voices of women, children and adolescents are heard, and their perspectives are considered through inclusive consultative efforts when making policy decisions. Ideally, as well as setting up systems for consulting them, champions for the interests of women, children and adolescents should be represented on the governance structures of the G20.

Conclusion

Increased investment in the MNCAH&W is essential to building the capacity of G20 nations and others to achieve the SDGs. It is a fundamental human right for these three population groups everywhere, as they bear a disproportionate share of the burden of disease and injury. It is also essential for improving the human capital of nations as well as for their health and well-being as they age, and for future generations. Furthermore, there are concrete economic reasons for increasing this investment, with strong evidence that investing in a package of evidence-based programmes to improve MNCAH&W will yield excellent economic returns on the investment. Conversely, the costs of inaction are enormous.

Fortunately, highly effective interventions exist, along with systems to deliver them (for example, through schools and existing health and social services). The COVID-19 pandemic has had particularly detrimental effects on women, children, and adolescents, and it is these same three population groups who tend to suffer the brunt of the indirect effects of conflict. Meanwhile, the climate crisis is overshadowing all of this, with particularly severe consequences for women, children and adolescents.

The global digital transformation that is redefining our world is both bringing specific opportunities and threats for MNCAH&W, requiring increased investment to reap the potential benefits and avoid the potential harms.

We recommend that the G20 should include MNCAH&W as a recurring agenda item within both the G20 Sherpa Track and the G20 Finance Track. The G20 countries themselves will benefit from increasing their investment in the MNCAH&W, but they also have a critical role as global trailblazers. This will require multi-sectoral thinking, policies, and programmes and these will need to be coordinated at the centre of government, but it will bring excellent returns on that investment – in terms of increased human capital, economic returns, and social benefits.

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TF-7

**TOWARDS REFORMED
MULTILATERALISM:
TRANSFORMING GLOBAL
INSTITUTIONS AND
FRAMEWORKS**

Empowering Subnational Approaches through Multilateralism to Combat Climate Change

Amlan Mishra | Soham Banerjee | Shubhi Goel

Abstract

DIALOGUES ON CLIMATE ISSUES, including the various multilateral agreements, have largely been driven by traditional state-to-state diplomacy. Nevertheless, over the years, new diplomatic players, such as cities, public institutions, and other subnational entities, are gaining significant importance in climate diplomacy, and have brought forward ambitious commitments. Still, the United Nations Framework Convention on Climate Change (UNFCCC) remains the domain of national entities and does not recognise subnational actors as formal parties to the convention.

However, it is critical to acknowledge the role of subnational parties as key actors in the global system to scale up climate action, and include such entities in multilateral dialogue platforms. There is a need to institutionalise an arrangement that generates

a conducive environment for subnational actors to explore knowledge sharing, peer-to-peer interactions, and mutual capacity-building actions that can lead to the creation of progressive and effective climate action. Such an arrangement will also be a unique opportunity for the underrepresented and indigenous groups in developing countries to have a say in intervention and policy design and aid in the process of inclusive and representative processes of multilateral agreements on climate change.

This essay explores the potential for a global multilateral platform to provide a voice for subnational entities to negotiate and collaborate on climate action through the G20. The unique structure of the G20, with the presence of the Sherpa Track and engagement groups, allows for an ecosystem where such a platform can be piloted and scaled up.

Introduction

At the 2022 United Nations (UN) Climate Change Conference, developed and emerging economies agreed on a historic climate solidarity pact. However, it was significant that UN Secretary-General Antonio Guterres had to entreat all member nations to “co-operate or perish” (1). As he reflected upon the need for joint action to combat climate change, he noted that humanity had to choose between a ‘global solidarity pact’ or a ‘global suicide pact’.

Given the transboundary nature of climate change and its challenges, there has been some acceptance since the 1970s that multilateralism is the best approach to combat the issue (2). However, amid the present concerns around global financial commitments, the challenges in meeting the Paris Agreement targets, and the emergence of related and concurrent energy challenges, there have been calls from both developed and developing countries to move towards a reformed multilateralism to mitigate and adapt to the impacts on climate change (3). This warrants a rethink of the current multilateralism model and its limited ability to deliver global solutions to transboundary problems. At the same time, it is important to acknowledge that reforming multilateralism is a daunting task due to its deep entrenchment in global power politics and, as such, any potential reform must be implemented in a phased and organised manner.

In recent decades, cities and city networks have become significant actors in global environmental governance, setting ambitious emissions reduction targets and promoting climate-smart solutions (4). The current Westphalian, nation-state diplomatic model is often engaged and focused on the traditional issues of trade, global security, and shifting alliances (5). While the purview of the nation-state diplomacy model remains the main system through which countries can engage with each other and carry out their responsibilities at the national and international levels, past experiences

have shown that these forums struggle to present a complete and holistic picture of the climatic challenges on the ground. It has been similarly difficult for nation-states to develop and orient strategies to address these challenges on the ground. Such a system also marginalises the agency of subnational actors to contribute and engage in these critical matters, limiting the ability of multilateral agents to practice inclusive diplomacy and enact grassroots-level interventions. As logjams and competing interests further restrict the multilateral UNFCCC, there is a need to consider the merits of integrating subnational actors into the multilateral framework (6). The G20 can play a pivotal role in creating a 'new multilateralism' that recognises, legitimises, and sustains the inclusion of subnational entities. The G20 has already set a precedent in engaging cities in multilateral dialogues through its Urban20 (U20) grouping (established during the 2018 summit). Indeed, the U20's first communique called for more attention to the needs and experiences of urban centres (7).

Multilateralism and the Climate Challenge

Multilateralism is currently facing multiple crises. An uneven world order has led to mistrust between the Global North and South, fuelling a utility crisis where powerful countries appear to have lost faith in the multilateral process (8). The COVID-19 pandemic—a global emergency that went beyond sovereign borders and interests—has highlighted the limitations of the current multilateral system, especially the UN and its related agencies. Although the multilateral system is designed to address the issues that emerged during the pandemic, it could not counter the challenges emerging from geopolitical developments, particularly the US-China competition (9). But this failure is not limited to the pandemic action alone and has been mirrored over several multilateral efforts to address critical transnational and transboundary issues, such as migration, climate change, trade deficits, financial debts, development aid, and socioeconomic inequalities. For instance, many countries pulled out of the UN's Global Compact on Migration even before it was agreed (10), while the UN registered a record 55-percent funding shortfall for humanitarian assistance (of US\$31.4 billion) in 2022 (11), showcasing the growing stagnancy and limitations in the current state-driven multilateral system.

On the climate front, concerns around financial and technological transfers in line with global commitments have led many states to engage more in bilateral or plurilateral engagements, which can also be seen as a catalyst for the further polarisation of global cooperation (12). Moreover, heterogenous social, political, and economic conditions also generate a notion that compliant states that pursue global objectives often place themselves at a disadvantage to those that do not comply (13). For instance, carbon taxes and emissions trading schemes result in 'carbon leakage', as businesses may relocate to regions with weak environmental regulations to take advantage of lower production costs.

Climate action needs to be a bottom-up approach, where the implementing subnational entities (cities, states, and regions) play a crucial role in fulfilling national commitments and addressing the vulnerabilities at the grassroots level (14). The Paris Agreement acknowledges the criticality of subnational action, particularly in emerging and low-income countries. Encouraging subnational action will broaden the engagement with and cooperation of numerous local stakeholders, increasing the legitimacy of interventions and potentially mobilising new and additional climate finance. India's state action plans on climate change are pertinent examples of subnational action—states and union territories have drafted plans and implemented interventions in line with the national climate commitments (15). Additionally, state and city administrations across the globe also successfully cooperated during the pandemic by aggressively leveraging their international relationships and networks to exchange different perspectives and experiences, which enabled them to coordinate local response and recovery plans better and develop a collective urban policy perspective to manage the crisis. For example, after the WHO declared COVID-19 a pandemic, Mayor Eric Garcetti of Los Angeles leveraged his position as the chair of the C40 to convene 45 mayors from across the world to share information and learnings around preventing transmissions, deliver emergency health services, and lead recovery efforts (16). With long-standing relationships from co-ordinating around climate challenges, the participants were transparent and engaging in their collaboration, and launched a recovery task force chaired by the Mayor of Milan, which released an 'Agenda for a Green and Just Recovery' outlining shared principles and measures to shape the recovery (17).

By 2030, there will be 43 megacities worldwide with populations exceeding 10 million (18). More than half of humanity already lives in cities, and city-dwellers will account for two-thirds of the world's population by 2050. Urban centres already produce more than 70 percent of global GDP, consume nearly 70 percent of the world's energy, and produce more than two-thirds of its greenhouse gas (GHG) emissions (19). The cities slated to be the world's largest in the next two decades—with Delhi, Tokyo, Shanghai, Dhaka, Cairo, Mumbai, Beijing, Mexico City, Sao Paulo, and Kinshasa rounding out the top 10 (20)—will also face significant challenges. Apart from the direct energy and GHG emissions challenges, cities also need to tackle the increasingly negative impacts of climate change on their residents. Global warming further contributes to the issues of urban heat islands, which, along with the worsening air quality in cities, is also expected to increase the risk of poor human health and lifestyles. The increasing incidence of extreme events can further damage infrastructure and essential services across populous urban centres, resulting in increasingly detrimental spill-over effects on water supply, electricity, schooling, medical centres, and housing (21). Such issues will have a magnified impact on vulnerable and marginalised urban communities, especially the poor, migrants, and women. Given the current and predicted impacts of climate change on urban centres, it is an opportune time to consider engaging subnational entities in the multilateral model.

City Multilateral Networks and Climate Action

Multilateral city networks have multiplied quickly and have increased in scope and scale over the past two decades. These formalised city networks have evolved into arrangements of governance and cooperation across a variety of issues (22, 23). Multilateral city networks that have a presence in global policy narratives include the United Cities and Local Governments, established in 2004; the 100 Resilient Cities, focused on urban resilience and founded in 2011; and the Global Covenant of Mayors on climate change, created in 2014 (24).

The rationalist perspective might highlight the puzzling nature of city climate commitments, as it is unclear how a single city's efforts can help address climate change at a global level or how its efforts to reduce global climate change will benefit its jurisdiction (25). Through rationalist approaches, particularly in developing countries, cities should behave in a manner that maximises their socioeconomic and power interests, as part of a broader rationalist foreign policy (26). Such an approach implies that cities prioritise localised interventions around both climate change and socioeconomic policies in a siloed space, rather than participate in a multilateral model to combat global challenges with less tangible global impacts. However, despite the dominance of the tragedy of commons paradigm (27), cities have set aggressive emissions reduction targets and ambitious climate action plans for adaptation and mitigation. Many studies have argued that as cities become global centres of production and finance ("global cities") (28), they need to incorporate global aspects of governance along with domestic socioeconomic components (29). The differing levels of cities' cultural, economic, and political ties to the international system across national boundaries can explain the differences in the scale of their voluntary participation in international environmental programmes. For example, higher levels of climate change vulnerability (i.e., coastal cities, changing disease vectors) make cities more likely to participate in international climate change networks (30). Similarly, cities from the developed world that regularly engage in international socialisation through conferences exhibit higher degrees of coordination between policymakers, scientists, and interest groups, and are more likely to join international partnerships and accords. Examples of such global cities include Paris (hosting 229 international conferences in 2001), London (191), Brussels (188), Vienna (140), and Seoul (107) (31). Still, global cities are more complex than financial and economic hubs and reflect places where information sharing, and diffusion occur on global issues like climate change (32).

Global cities and their networks are key actors in the global governance framework (33) as they act as nodes that enable and promote the flow of ideas, research, and information across states, civil societies, and multilateral international organisations (34). Besides their role as the venue for the diffusion of global ideas through networks and the socialisation of civil societies and international actors in conferences, global cities

can also be key financial partners for mainstreaming climate action. As technologies and interventions around climate action become financially attractive, a global city can likely generate jobs and economic progress by investing in these industries. Taken together, this can explain how cities are increasingly becoming significant actors in global environmental governance by engaging in global climate change issues in their local spheres and by forming transnational networks to cooperate on climate action in international arenas. Over the last two decades, at least nine urban climate networks have been established worldwide, including the C40 Cities Climate Leadership Group, or the C40 network (founded in 2005) (35). The C40 focuses on tackling climate change and acts as a multilateral organisation. It has partnered with Bloomberg Philanthropies and many corporations, making it a unique public-private partnership model. The C40 believes that the density of cities and their sheer numbers, with its member cities representing 650 million people, requires cities to take an active role in engaging in climate action and making ambitious commitments to tackle emissions.

The proximity of city governments to the grassroots levels of the implications of climate change and the implementation of climate action make them valuable partners in shaping the response to such global challenges (36). Cities, local leaders, and local institutions also consistently interact with their constituents and are often afforded a higher level of trust due to their approachability and proximity to the citizens they govern. This also feeds into their enhanced local service delivery responsibilities and the long-term consequences of their infrastructure investments. These factors often ensure that cities are nimbler to respond, adapt, and innovate to the changing circumstances and the emerging challenges of climate change, as well as ensure a quick implementation of interventions, with local actors further crucial in driving innovation and solutions. These benefits, along with the drive and motivations of cities to engage in global environmental processes, provide a unique opportunity for the buy-in for global cooperation on climate change to be greatly enhanced by the framing of tangible and specific problems, and supported with local context and understanding. Engagement with cities can further help multilateral institutions access local information, leading to the design of more effective interventions and policies, while providing direct feedback.

While cities have begun to engage in multilateral affairs, these have often been through cooperative models, where cities have come together to share ideas and propose agendas to the national diplomatic bodies. Cities also have very small budgets for international activities. The traditional diplomatic summits, such as the climate summits and the G20, have also largely oriented towards discussions between nation-states, with subnational actors largely marginalised and only engaged through voluntary, cooperative agreements. This highlights the need to develop regular multilateral platforms, funded through multilateral donor bodies or groups like the G20, where cities can come together and engage in peer-based learning of best

practices and experiences. Cities need to move beyond simple economic or cultural exchanges to coordinate through multilateral networks that are designed as global governance organisations and seek greater representation at the global high table. Such an approach will become even more pivotal as the world becomes increasingly interconnected and urbanised.

Subnational Multilateralism and the G20

Despite the rise of subnational and city multilateralism, such networks could also become plagued by the issues of equity and accountability. The rise of such informal networks can imply an increased reliance on exclusive coalitions, with high entry barriers for new members, and power and legitimacy concentrated with established members (37). Furthermore, there are challenges in the access to resources and the capacities and capabilities of subnational entities to fulfil and expand their engagements in a multilateral setting.

A new multilateral system that accommodates cities and includes them in the decision-making process can catalyse new cooperation frameworks within multilateral structures. A major component of these frameworks can be the acknowledgement of the potential of city governments as public institutions that can be incorporated into international policymaking while gaining the opportunity to represent themselves globally (38). Such a system will also enable an environment where cities can be involved as partners in problem-solving, can make recommendations on the resources involved in the design of solutions, and can advance their capacities in the execution. By providing a legitimate multilateral channel and formalising the role of subnational entities, the G20 has the unique opportunity to become both the enabler and the guide of reformed multilateralism.

The G20 can play a key role in ensuring the mainstreaming of city diplomacy, with adequate resources and finances to ensure a new level of cooperative multilateralism. The G20's different engagement groups, with their varied focuses and approaches, also allow for cities to engage with them to share learnings and best practices on varied areas of action.

This will enable wider dissemination of best practices and emerging climate actions to more and more subnational governments. Such an approach will be further strengthened by facilitating the participation of the largest cities and the capitals of the G20 countries in the summit process, enabling the largest cities of the G20 to directly engage in knowledge sharing, networking, and capacity building with others as part of the G20 process. This pool of cities could also be rotated on a biannual basis, ensuring the continued and extensive participation of some of the largest subnational actors

in the multilateral process of the G20. Furthermore, such an arrangement will enable cities of regions near the G20 countries to participate in crucial knowledge-sharing and capacity-building arrangements. The G20 can also provide annual representative city chairs in the leaders' summit, enabling the involvement of cities in inclusive policymaking and ensuring that disparate and representative views within the countries are considered in the decision-making process.

Many cities, especially medium and smaller ones, do not have the requisite financial resources and the capacity to engage effectively in the multilateral system. There is the risk of city diplomacy fragmenting and becoming the purview of 'global cities' that can mobilise the resources and staff to engage in global networks. Several cities do not have budgets to engage in international travel or to host delegations from foreign countries. The G20 can facilitate the initial generation of a fund that can serve these cities to engage in global diplomacy on a rotational and capacity-building basis. It can similarly leverage its financial expertise and networks to enable cities to create such funds themselves, as well as facilitate visits between similar mid-size cities in international exchanges to ensure that perspectives beyond major metropolitan areas are also considered. Furthermore, the G20 member countries can also provide their expertise and knowledge, through policy practitioners and diplomats, to better support local government leaders on international visits. National ministries and state departments should provide advisory support to these foreign delegations, through policy briefings, meeting advice, experience sharing, and recommendations. These departments can also work with city leaders to create branches of city diplomacy institutions, which can provide early advice to city leaders planning international visits or hosting foreign delegations. In the future, the G20 can support the involvement of cities in the deliberations of multilateral agreements and bodies, such as securing a seat for cities at climate summits and at the UNFCCC, among others. Additionally, there is the potential to localise the Sustainable Development Goals to city contexts.

Over 90 percent of cities are partnering or interested in partnering with other local governments to pursue transportation, renewable electricity, and energy efficiency solutions (39). Often, city networks have overlapping focuses within parallel tracks that do not intersect. This has led to the siloing and fragmenting of city networks, with multiple networks of cities pursuing similar objectives separately. The G20 can provide a unifying, supportive, and powerful multilateral platform, where city-to-city collaboration, knowledge management, and innovation sharing can be strengthened. Such a platform can also provide the impetus to foster relationships and networks between cities, leading to a more unifying and coordinated approach to tackling climate change. This platform can also encourage and drive its member cities to enhance their intra-city and suburban communication and governance networks to present a more inclusive and holistic picture of their issues and commitments on the multilateral stage. This can further enable the suburban and hinterland communities in these cities to have a voice at a multilateral platform, ensuring their unique challenges are considered.

The G20 can also aid in exploring financial and technological solutions to reduce the costs and inequities in the communications of multilateral city arrangements, and to further strengthen the involvement of grassroots organisations in such deliberations. The G20 can provide the means for technical support, along with the finances, to drive capacity-building during the designing, advising, implementing, financing, and assessing of policy measures. Such a platform can also promote a drive towards increasing data availability and transparency, emanating from the multilateral level, and filtering down to the implementing bodies at the grassroots level. The collection of such data, the corresponding policy discussions, and the associated capacity building programmes can lead to the establishment of knowledge hubs and information banks, which can aid in the dissemination and democratisation of information. This system can also enable city and state officials to become easily aware of the activities of their counterparts, as well as refine their agendas accordingly. Such an information bank can also aid in the tracking of ongoing engagements of cities through trade delegations, linkages, and networks, and can enhance coordination, exploration of additional avenues of cooperation, and the setting up of permanent cooperation models based on past learnings and experiences. Beyond the remit of multilateral bodies, such mainstreaming of cities and other subnational actors can also be undertaken at a national level as models of inclusive policymaking that are bottom-up and upwardly convergent. Such a model will deepen democratic ownership at all levels of governance in the pursuit of common goals and ensure the development of a model of knowledge-intensive policy design, with the utilisation of consultative processes, stakeholder participation, cooperation, and joint learning. At the national level, an agency more interlinked in governance and policymaking with local governments can leverage these experiences and networks to ensure that subnational expertise can be utilised in critical national and international dialogues. Such coordination of nation-states and cities can improve their engagements with their growing linkages overseas, warding off the danger of mixed policy and commitment messages. It will also enable national ministries to further advance the international priorities of their subnational compatriots in the multilateral platforms and discussions.

Conclusion

As the G20 endeavours to renew multilateralism to tackle global challenges, it is key to recognise the crucial role of cities and their governments in resolving global issues. There cannot be success on the climate front without the mobilisation, support, and involvement of subnational entities, especially the cities. Cities need to act as the local implementors of climate action while increasing their roles on the global stage as drivers and facilitators of more inclusive and ambitious climate action. Cities can bring about a new and holistic dimension to the challenge of tackling climate change, while also introducing new horizons on exploring trade and investment, exchanging notes

on resilience and disaster risk reduction, or even building partnerships on technical exchange and best practices on public health, infrastructure, and development.

The G20's reputation as a cooperative and successful multilateral body will be of enormous support in facilitating and developing this new multilateralism, with city diplomacy empowered and encouraged by this association. Through its influence and resources, the G20 can ensure adequate financing to sponsor experience-sharing visits between the participating cities and enable cities to engage with other multilateral bodies, such as multilateral development banks. The G20 platform can also provide the resources for the building of datasets sourced from local data of the participating cities for wider dissemination between multilateral networks. With a new set of cities being invited to join the U20 every year, the experience of this participation can be instrumental in building the nationwide capacities of the cities of the G20 member countries. Additionally, with a complement of diplomats to ensure capacity-building, the G20 can ensure that the revolving set of participating cities can also build their ability to engage in city diplomacy after the G20 summit and carry forward an action-oriented agenda.

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A Framework for a Reformed WTO Appellate Body

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Abstract

STRENGTHENING THE DISPUTE SETTLEMENT MECHANISM of the World Trade Organization (WTO) by re-establishing a more effective Appellate Body (AB) is a priority for many WTO member countries (including members of the G20). Although the AB was established in 1995 to hear appeals on trade disputes between member countries, it was effectively disbanded following the end of the final member's term in 2020, and the US has blocked all new appointments since. The inability of a multilaterally accepted AB to hear appeals, however, severely undermines the goal of providing a predictable, multilateral, non-discriminatory, and transparent international trading system. Several G20 member countries have submitted proposals to restructure the AB but none have resulted in sufficient consensus for reform. This essay draws from existing proposals to outline a framework for procedural and substantive reforms to

the AB, suited to changing institutional needs and allowing for regulatory flexibilities to address emerging climate and developmental concerns for the G20 to consider.

Introduction

Today, the Appellate Body (AB) of the World Trade Organization (WTO) is facing an existential crisis. Though touted as the central element of the WTO's dispute settlement mechanism and praised for providing security, fairness and predictability to the multilateral trading system, the AB has been without members since December 2020, undermining its ability to conduct appellate reviews. Although many WTO members have voiced concerns about the decision-making of the AB over the years, the current crisis is directly linked to the US's decision to block appointments to the body since 2017. Its position is that certain procedural and substantive issues need complete resolution before the AB can function again. As of August 2023, the US has blocked AB appointments 67 times (1).

The US has rejected various solutions proposed by other members and, in some communications, has suggested that it wishes to do away with the AB system of appeals altogether, either replacing it with a new body with a new mandate and under new rules or returning to a single-tier dispute settlement system (2).

In its absence, some fear that enforcing trade rules may become a matter of power-based unilateral trade retaliation, which is not in any country's national interests in the long run. With a defunct AB, any WTO member could block the enforcement of a panel report simply by filing an appeal. Indeed, the US has explicitly stated that it is doing just that with its appeal in the steel tariffs case—not hoping for an appellate review of the panel report (3), but for a new mechanism that will dismiss or overturn the original panel decision (4). India has also taken the same route in its dispute over tariffs in the ICT sector (5).

Table 1 illustrates the declining reliance of WTO members on the dispute settlement system since 2017, when the terms of the AB members began to expire. Of note is that even the number of requests for consultations declined suddenly in 2020 (6).

Table 1: Dispute Settlement Process Engagement (2017-2023)

Phase of the dispute settlement process	2017	2018	2019	2020	2021	2022	2023	Total
Requests for consultation	17	38	20	5	9	8	1	98
Panels composed	8	11	29	10	5	6	2	71

Phase of the dispute settlement process	2017	2018	2019	2020	2021	2022	2023	Total
Panel Reports circulated	9	11	11	5	7	9	0	52
Appellate Body Reports circulated	5	4	5	3	0	0	0	17

Source: *World Trade Organization: Dispute Settlement* (7)

Although WTO members have sought to reform the AB and, more generally, the WTO's dispute settlement understanding (DSU), differences of opinion over the AB's appropriate role and interpretive decisions continue to impede solutions. Meanwhile, WTO members have taken alternative approaches to dealing with trade disputes. The European Union-led Multi-Party Interim Appeal Arrangement (MPIA), pursuant to Article 25 of the DSU, allows for ad-hoc arbitration upon agreement by the parties to a dispute (8). The MPIA has begun hearing appeals, with two completed cases—one against Colombia and the other against Indonesia (see Table 2). Although its membership is limited to 53 countries, some have pointed out that the compliance of the defendant states provides a positive precedent for the future of the interim institution (9).

Table 2: A Summary of MPIA Activity

Status of dispute in the MPIA	Number of disputes
Finalised	2
Ongoing	8
Finalized without appeal, Withdrawn or Settled	3

Source: *Geneva Trade Platform, "MPIA"* (10)

Another approach is to resolve disputes bilaterally and notify the settlements to the Dispute Settlement Body. The US and India recently reached mutually agreed solutions in six disputes between them in such a manner, the specifics of which are not public (11). Despite these options, most WTO members wish to revive the AB to restore a rules-based dispute settlement system that is predictable and applies to all WTO members.

Recently, a few of the concrete US demands for the functioning of the AB have been made public. The US wishes to limit the review of any issues in a final panel report only to those issues laid out in an agreement by the parties, while also allowing them to agree together on the adjudicator(s) who will review their case (12). The US also wants to require that the appealing party demonstrate that the panel was either guilty of "gross misconduct", "seriously departed from a fundamental rule of procedure," or "manifestly exceeded its authority" in the panel decision (13). Finally, the US is requesting a "sunset clause" for any new adjudication procedures and a new mechanism to review and monitor the dispute settlement system regularly (14).

Meanwhile, the African group, representing more than 50 countries, is calling for increased accessibility to these informal negotiations and backroom discussions for all WTO members (15). The US, however, continues to resist, pointing to progress that has been made in the bilateral and small-group negotiations (16). Currently, negotiators estimate that 80 percent of the decisions have been reached, while 20 percent remain “sensitive” to WTO members. There is no compromise in sight (17).

Some researchers have suggested that a complete agreement at the WTO may not be necessary. Indeed, one scholar indicated that the US may agree to an arrangement where they grant their consent to dispute resolution on a case-by-case basis, or even file an official reservation, removing consent to dispute settlement for certain types of cases (18). The US has publicly stated that it is not bound to comply with any AB rules that run against its interests (19). Other proposals involve working around the US intransigence by putting AB judicial appointments up to a majority vote, rather than waiting for consensus (20).

These proposals pose risks to the WTO’s legitimacy, however, either by bending too much to the specific desires of the US or side-stepping them entirely. Despite these seemingly intractable negotiations, the G20 countries, also members of the WTO, should strive to resolve this deadlock. This requires carefully examining the US’s concerns, with clear reform proposals highlighting actionable ways to resolve or accommodate them. The recommendations in this essay focus on proposed procedural modifications to the DSU and related Working Procedures for Appellate Review (21). The authors acknowledge that the procedural modifications have substantive implications and should occur within a larger set of reform proposals addressing many WTO agreements. Any “permanent solution will require both the procedural and substantive concerns of the U.S. [and other WTO members] to be addressed” (22). Although the latter is beyond the scope of this essay, the authors argue that a reformed AB with a clearer mandate and procedural guardrails will be more suited to the changing nature of trade disputes amidst climate change, geopolitical disruptions and other challenges that make up the polycrisis that the world is currently facing.

The G20’s Role

The reform and revival of the WTO’s AB have long been a concern for the G20. The G20, as the ‘economic steering committee for the world’, has repeatedly called for and supported WTO reform, including a review of the AB mechanism (23).

While the G20 accounts for a small percentage of WTO membership, its members are 20 of the world’s largest economies that together account for more than 80 percent of global GDP and 75 percent of global trade, and are home to 60 percent of the world’s

population (24). The WTO is a permanent invitee to the G20, and the two bodies have worked together to create and maintain a rules-based, non-discriminatory, free, fair, open, inclusive, equitable, sustainable, and transparent multilateral trading system.

Although the G20 does not directly affect WTO reform, it can provide recommendations to the WTO members that will facilitate discussions among them to set benchmarks and guidelines for reform. Once the G20 countries are in agreement, they can use their negotiating prowess and influence to approach non-G20 countries through diplomatic channels, building coalitions of like-minded countries and presenting the proposed guidelines at other international economic forums (such as the G15, G33 and the G77). These guidelines can also be tabled for discussion at the WTO Ministerial Conference (MC13) in February 2024.

Three Fundamental Purposes of Appellate Review

Any proposal for a reformed AB should be crafted in accordance with the original objectives and purpose of the dispute settlement mechanism of the WTO.

The first objective is to maintain a rules-based system for dispute resolution, rather than a power-based one. Reform efforts must be inclusive and fair, allowing for regulatory flexibility and considering emerging geopolitical and climate crises. To preserve the DSU (25) as a central feature of the rules-based trading system, WTO members must exercise their rights to amend the rules governing the AB, as well as its working procedures (26). However, garnering the consensus required to amend these rules will take time, and a final decision will not be able to be concluded until MC13 at the earliest. This indicates that more steps are needed before comprehensive reform amendments.

The second objective is to promote the prompt and positive resolution of disputes while balancing the interests of the international trading system with those of individual member countries. Reforms should make it easier for AB members to keep from going beyond what is needed to resolve the dispute at hand and, as much as possible, avoid obiter dicta and “advisory opinions”.

The third objective of appellate review is to protect against errors of law in panel decisions and incoherence between panel reports, increasing consistency, stability, and transparency. Preserving trust in that system requires that the AB remain independent and impartial. This will require new, clearer procedural (and, in some cases, substantive) guardrails for appellate review, as well as more human and financial resources dedicated to the AB.

With these priorities in mind, a series of reforms to the AB's functioning are needed to enhance its legitimacy and improve its effectiveness. The US and others have engaged in closed-door, interest-based discussions to attempt to resolve the AB stalemate (27). These dialogues have facilitated a greater understanding of the differing perspectives. The G20 countries should continue to engage in these discussions, with the aim that the US submits a comprehensive reform proposal in the near term. Successful reform also requires a careful examination of outstanding issues raised by other countries, so that the series of proposed solutions can be actionable recommendations for the G20 leaders to consider. Submissions like the one made by the African Group (28) and the MPIA have attempted to address some of the concerns but have not garnered consensus among all WTO members.

Possible Solutions and Proposed Textual Changes to WTO Documents

Drawing from the above objectives and outstanding issues, several textual reforms could be introduced, both to the DSU and to the working procedures for appellate review (29).

Disregarding the deadline for issuing a decision

The first proposal addresses WTO members' concerns about the excessive length of AB decisions. Although the language of the DSU limits the length of time that the AB can spend in appellate review to 90 days, the deadline is rarely observed (30). This results in delayed resolution of disputes and a growing backlog of unresolved appeals. The failure to meet deadlines may be due to a lack of human and financial resources available to the Body, or it may, as some WTO members suspect, result from the AB exceeding their mandate in several ways (31).

While, the possible sources of delay will be addressed below, as a first step, the DSU text could include clearer and tighter timeline constraints for AB members as they decide on disputes. The G20 countries could introduce a new timeline rule that defers to the parties' decisions rather than allowing them to extend deadlines unilaterally. New text in DSU Article 17.5 could indicate that the parties must agree "at the initiation of the appeal agreement" to extend the length of the proceedings, that the negotiated extension must be for a fixed period of time, and that an incomplete appellate review at the end of any deadline will be "automatically submitted for adoption to the dispute settlement body".

Allowing former members to decide cases

The second proposal addresses concerns that former AB members have continued to serve on their assigned cases long after they finished their term. Although the DSU provides clear term limits, and the working procedures outline mechanisms for extending that term to help complete an appellate review, long timelines and a flexible mechanism have resulted in AB members staying long past their tenure. To resolve this, the working procedures should be modified to narrow the instances of extending a member's tenure, clarify the scope of that narrower extension, and provide an oversight mechanism by the DSB.

Under Rule 15 of the working procedures, guidelines are laid out for how and when an AB member may extend their term. New text could specify that the member must "request the extension of their term for the limited purpose of completing an appeal," which is then subject to the authorisation of the DSB on a case-by-case basis. Further limitations would also support this goal, such as (i) not allowing the extension to exceed 90 days beyond the end of the AB member's term, (ii) prohibiting that member from being placed on additional cases during that extension, and (iii) creating mechanisms by which a member may pass off cases to other AB adjudicators in case the extension is not approved.

Lack of independence, professionalism and capacity of the AB

Although the AB has suffered in recent years from a lack of members who could decide cases on a tight timeline, it had difficulty meeting deadlines in its caseload, even when it was fully staffed. Moreover, by requiring them to be reappointed subject to a unanimous vote by the DSB, the appointment process exposed AB members to implicit political pressure in their decision-making and undermined their supposed political autonomy. The G20 should address these constraints, by expanding the number of members of the AB, extending the terms of those members, not allowing reappointments, and making the appointment a full-time position (rather than part-time).

DSU Article 17.2 could be amended to extend the terms removing the reappointment process, indicating that AB members will serve "for one eight-year term, which is not subject to reappointment." Expanding the number of AB members and making those appointments full-time, the latter of which has been suggested by others (32), will inevitably increase the budgetary expenditures of the AB secretariat. This will require the G20 countries with more fiscal space to be willing to invest in the institution by supporting this budget increase and by providing the required funds.

Reviewing panel findings of fact

A fourth concern arises when the appellate review process is excessively delayed—the AB has exceeded the narrow mandate for which it was created, i.e., to review issues of law and legal interpretations analysed and developed by the panel (DSU Article 17.6) (33). The US has argued that the AB has treated interpretations of domestic laws of the WTO member countries as an “issue of law” (thus reviewable when under review), rather than an “issue of fact” (and thus not reviewable). To keep the appellate review narrow and given that their expertise does not lie in domestic legal interpretations, the G20 should support the drafting of new rules that clarify the narrow scope and give due deference to WTO members in the understanding of their own laws.

DSU Article 17.6 could include a new sentence stating that, although the appeal is limited to issues of law in the panel report and the panel’s legal interpretations, does not include “the meaning of municipal measures in the case.” A footnote or additional article could be added that states that “the Appellate Body must rely primarily on the respondent state’s submission in the interpretation of their own laws, rules and regulations” and that they may ask for clarity, if necessary, but may not contravene the intention of the regulating state.

Beyond dispute resolution: Issuing advisory opinions and advising WTO bodies

In addition to interpreting issues of national law, the US has complained that AB reports often wade into issues not immediately necessary for the resolution of the dispute, either by making interpretive statements outside of what relates to the active dispute, or by giving direction to other WTO bodies on the actions they should take immediately after the dispute. DSU Article 3.2 should indicate that neither WTO panels nor the AB may “clarify the provisions of any agreement not directly relevant to the dispute at hand.”

Also, clarifying in DSU Article 17.12 that only legal interpretation “necessary for the resolution to the dispute” is permitted in AB reports, will further strengthen the structural reliability of the AB. In case an individual WTO member desires an authoritative interpretation, they can request it from the relevant council (34). A sentence could be added to DSU Article 19.1, which indicates that the AB can recommend to WTO members but “in no instance” may it “opine on or make recommendations to other WTO bodies”.

To increase accountability further, the G20 countries could propose a new mechanism that provides space for the DSB to give feedback to the AB’s work on an annual basis.

The members will have to consider the type of feedback that can be provided, the interpretive authority that the feedback will hold for future AB decisions, and any procedures for submitting, adopting, accepting, and utilising the given feedback.

Treating prior decisions as binding precedent

Some WTO members have felt that certain AB interpretations are inconsistent with the members' intentions and thus exceed what the member has consented to under international law (35). Still, those decisions have, in certain circumstances, been treated as binding precedents, thus arguably "adding to or diminishing the rights and obligations" of the parties (36). While in certain instances, prior cases may be instructive in determining the outcome, it is important that the role of interpretation of WTO agreements ultimately lies with the members themselves.

To address these concerns, new DSU Article 17.15 can be adopted that acknowledges that prior reports may be instructive for future cases but "in no case should they be treated as binding precedent." Certain criteria for comparable cases may be considered in determining whether the prior case is "instructive", such as the (1) time difference between cases, (2) sectors and treaty provisions involved, (3) economic and political characteristics of the countries, and (4) the nature of the dispute given the larger geopolitical context.

Lack of institutional support for countries to access the WTO mechanisms

The G20 countries should also work toward creating increased institutional support domestically, and, where possible, for neighbouring least-developed countries and countries considering WTO membership to receive equitable access to the WTO dispute settlement mechanism. This will require public investments in human resources to understand and interpret WTO rules, as well as understand the implications of trade agreements on domestic policymaking.

Proposals to clear out the resultant backlog of cases pending AB review may include: (1) introducing a temporary waiver on appellate review by submitting existing pending cases to the DSB for adoption; and (2) appointing a larger AB temporarily to decide backlogged cases more quickly. In the meantime, countries should make the best use of the MPIA to clear the backlog of cases and move existing disputes through the system before AB reform negotiations conclude.

A Note on Substantive Reform Proposals

Although many WTO members do not support the US blockage of AB appointments and wish to facilitate the appeal process as soon as possible, almost all members agree that some measure of legal reform to the DSU will be needed sooner or later (37). Real progress on the above procedural issues will require aggressive negotiations and compromises on all sides before the DSU could be amended. Nevertheless, these changes remain within reach compared to the broader substantive and geopolitical questions that face the WTO, such as the scope and review of national security measures, the expansive reach of non-discrimination rules, and interpretations of provisions in key agreements such as the Anti-Dumping Agreement and the Agreement on Subsidies and Countervailing Measures. The misalignment between countries (including major G20 countries) about the importance of ‘special and differential treatment,’ and which countries qualify to receive such treatment (‘developing countries’) is perhaps the most important obstacle to AB reform, and to overall WTO reform. This has large geopolitical implications as China, historically categorised as ‘developing’, has made huge leaps in industrial development and high-tech production and exports since joining the WTO.

Concerns that the WTO agreements as they currently stand do not provide sufficient flexibility for policymaking, especially factoring in the changing needs of the world, its institutions and the climate and development goals of individual members, have been expressed. To address these, WTO members will need to carefully consider interpretive statements on the points most important to them. Some experts argue that “resolving the current AB crisis will likely only be possible in the context of wider WTO reform negotiations” (38). The authors, however, argue that achieving consensus on procedural issues may make countries more open to negotiating difficult substantive reform proposals.

Conclusion

The WTO dispute settlement mechanism’s role in providing security, fairness, and predictability to the multilateral trading system is in jeopardy due to the US decision to block all appointments to the AB since 2017. The full set of causal factors is far more complex, involving fundamentally different interpretations of key provisions in the DSU and new substantive priorities for WTO members and challenging geopolitical realities. This has given rise to concerns that WTO dispute settlement will devolve into a power-based model, wherein countries with the most power can force their will on others. Currently, countries can simply block any effort to enforce panel decisions that they do not support by appealing effectively ‘into the void’ of a non-existent AB.

Meanwhile, there is a declining interest in the dispute settlement mechanism, compared with the peak in 2018. An alternative, the MPIA, has been introduced for countries that want to opt in. However, it is still new, and it is not yet clear if it will support renewed interest in resolving disputes under the WTO or undermine its use entirely. Some countries, like the US and India, have resolved their disputes bilaterally.

To provide some way forward, the proposals in this essay are rooted in a reformed AB that is crafted according to the original objective and purpose of the DSU of the WTO. Any proposal must be rules-based, aimed at the prompt and positive resolution of disputes and, as much as possible, protect against errors of law in panel decisions. Textual revisions must include modifications to the procedural rules, guardrails like clarifications to the timeline, the scope of decisions, and the role of prior case decisions for a forward-looking AB. Once these procedural hurdles are overcome, substantive reform may be more possible through negotiations among parties done in good faith. Focused discussions on the issue of AB reform should be a priority under the upcoming G20 presidencies of Brazil and South Africa.

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Benefits and Challenges of Expanding the G7 Climate Club to a G20 Climate Club

Charlotte Unger | Sonja Thielges

Abstract

TOWARDS THE END OF 2022, THE G7 COUNTRIES LAUNCHED a climate club driven by the idea that, on certain climate topics, a club comprising ambitious countries might make quicker progress than the United Nations Framework Convention on Climate Change (UNFCCC) in helping to implement the Paris Agreement. However, one of the biggest challenges is the membership of this club. The term 'club' usually refers to a special, exclusive group. Yet, climate change requires a global solution, and thus, different world regions, and not just the G7 countries, need to be part of it. Moreover, if a (G7) club would come up with rules for industrial decarbonisation or policy instruments favoured by some regions, such as carbon taxes, many more economies would be affected. This chapter discusses the broadening of the G7 climate club to the G20 and how a G20 climate club could be designed.

Introduction

Towards the end of 2022, the G7 launched a climate club under Germany's presidency. The climate club seeks to support the Paris Agreement's objective of limiting global warming to 1.5°C. The club has three pillars: The first focuses on increasing the ambition and transparency of climate mitigation policies as well as the comparability of members' efforts to avoid carbon leakage; the second seeks to accelerate industrial decarbonisation, with a particular focus on the steel sector; and the third centres on strengthening international mitigation efforts through cooperation, e.g., the Just Energy Transition Partnerships (JETPs) (1).

The International Energy Agency (IEA) and the Organisation for Economic Co-operation and Development (OECD) are the interim hosts of the club's secretariat. The German government is in the process of negotiating membership with countries beyond the current G7 membership (e.g., India). Several countries (e.g., Indonesia, Colombia, Argentina, and Australia) have already agreed to join. Chile is the co-lead, together with Germany, in the club-building task force (2). One of the countries with the potential of taking a leading role in the club is India, which, holding the G20 presidency in 2023, could bridge the G7 countries and the emerging G20 economies.

Eight years after the adoption of the Paris Agreement, countries' promises (Nationally Determined Contributions (NDCs) and Net Zero Pledges) (3) remain insufficient to achieve the treaty's targets. With the growing frustration over this stagnated process, sectoral climate policy initiatives and climate clubs have received increasing attention. As a minilateral approach opposed to the multilateral UN, clubs bear the hope that, through making quicker progress on specific (climate) topics, they might complement the UNFCCC process (4). Research has led to extensive debate on the merits and challenges of clubs and club characteristics such as size and produced benefits, as well as their role in global climate governance (5). This rich conceptual knowledge helps scrutinise the proposed G7 climate club approach and provides some ideas for how it could be improved. The G7 climate club, though welcomed with enthusiasm by several countries, was also met with considerable scepticism (6). One of the critical questions that emerged was how the club can be designed to include the most relevant members to cope with climate change (especially in the above-envisioned themes). This chapter discusses how the G20 members can be incentivised to join while delivering the desired climate policy progress.

The Challenge of Establishing an Adequate and Effective Membership

A climate club can be defined as a small or select group of actors who cooperate to accelerate progress on a particular climate matter, seeking to go beyond the negotiation

process carried out under the UNFCCC. Two types of clubs have been distinguished in literature: ambition-oriented initiatives, also called transformational or Nordhaus clubs (named after Nordhaus, 2015) (7); and pseudo-clubs (a term suggested by Green, 2015) (8), which have also been more positively described as normative clubs by Falkner (2022). The former are exclusive, small groups with fewer members that focus on economic and political benefits, setting (binding) rules, and raising climate policy ambition and enforcing them with sanctions. The latter are voluntary, comparatively loose, inclusive, and often large alliances that commit to a normative (climate) objective and mainly focus on technical collaboration as well as knowledge development and sharing (9).

In the context of these extremes, a club's size and openness to new members remains an ongoing debate. Some analysts recommend small numbers due to the assumption that smaller, more homogenous groups can be "narrow-but-deep" and perform better (10). Others argue that a diverse and potentially transnational membership also comes with a larger problem-solving capacity and greater legitimacy (11). Independent of its actual size, a club must include a 'critical mass' of actors that are relevant for solving the problem of climate change. Relevance can be defined as the amount of greenhouse gas emissions (GHG) (current or historic) (12), existing knowledge capacity, economic and political power (13), vulnerability to climate change, legitimacy, or willingness to act (14). Considering that a climate club launched under the G7 has a limited coverage of the (climate) problems that need to be solved, what could G20 members bring to the table to strengthen the club's potential?

The Benefits of Broadening the G7 Climate Club to Include G20 Members

Including G20 greenhouse gas emitters would give the G7 climate club more leverage, such as when deciding on common climate policy measures. G20 countries would be relevant club members because with them, the overall greenhouse gas coverage of the club would be much larger. However, the G20 countries provide a mixed picture which merits a focus on individual member countries rather than on the G20 as a whole; with China, India, and Russia, the forum includes the biggest global non-G7 emitters (Table 1). Additionally, many G20 member countries (e.g., China, India, and Indonesia) are experiencing growing GHG emissions. While the industrial sector is not the biggest source of emissions in itself in any of the G20 countries, some of the countries have very high industry emissions, even if their overall emissions are not among the highest when compared to other G20 countries (e.g., Saudi Arabia and South Korea). China, India, and Mexico, for instance, also host major emission-intensive industries, including cement and steel. These countries could be particularly interested in participating in discussions on the decarbonisation of the industrial sector, future industrial markets, and supply chains.

Table 1: Emissions Profiles of G20 countries (Excluding the EU)

<i>G20 ranking: CO2/country level (2021)</i>	<i>Sector with biggest share of GHG (2019)</i>	<i>Total emissions of industrial sector / G20 ranking (2019)</i>	<i>Overall global share of CO2 (2021)</i>
1. China	Electricity, heat	1.22 Bt**/ 1st	30.9%
2. United States*	Electricity, heat	238.67 Mt*** / 2nd	13.5%
3. India	Electricity, heat	186.55 Mt / 3rd	7.3%
4. Russia	Electricity, heat	53.91 Mt / 7th	4.7%
5. Japan*	Electricity, heat	65.3 Mt / 6th	2.9%
6. Germany*	Electricity, heat	24.45 Mt / 13th	1.8%
7. Saudi Arabia	Electricity, heat	105.76 Mt / 4th	1.8%
8. Indonesia	Land-use, change, forestry	38.94 Mt / 10th	1.7%
9. South Korea	Electricity, heat	80.78 Mt / 5th	1.7%
10. Canada*	Electricity, heat	22.18 Mt / 16th	1.5%
11. Brazil	Agriculture	31.51 Mt / 11th	1.3%
12. Türkiye	Electricity, heat	40.12 Mt / 9th	1.2%
13. South Africa	Electricity, heat	24.21 Mt / 14th	1.2%
14. Mexico	Electricity, heat	42.81 Mt / 8th	1.1%
15. Australia	Electricity, heat	17.03 Mt / 19th	1.1%
16. UK*	Transport	18.07 Mt / 18th	0.9%
17. Italy*	Electricity, heat	20.62 Mt / 17th	0.9%
18. France*	Transport	23.13 Mt / 15th	0.8%
19. Argentina	Agriculture	28.19 Mt / 12th	0.5%

* = also a G7 member

** = billion tonnes

*** = million tonnes

Source: Table compiled by the authors, based on: *Our World in Data* (15)

G20 members are important trade partners with (often) large markets. Their considerable economic and political heft would make them important allies in a climate club. Many of these countries are geopolitically relevant. As political and economic hubs, they have a strong influence on their regions (e. g., Brazil in South America) and will therefore play a key role in global decarbonisation. For example, several G20 members such as Saudi Arabia and China are significant fossil-fuel exporters. Many of them are important industrial partners (e. g., Brazil has a large steel

sector and South Africa holds rare-earth minerals that are required for wind turbines, solar panels, and electric vehicle batteries). Among the G20 members, China takes up a special role as it dominates many resources, markets, and supply chains for decarbonisation technologies. Failing to hear these countries' voices could weaken the impact of the climate club. However, the G20 countries have very different visions for climate and energy policy. For example, some members have limited commitment to the Paris Agreement (Russia or Türkiye). With these countries lacking the willingness to act, their club membership would have little benefit.

Including G20 countries from the Global South (Mexico, India, Brazil, China, Indonesia, South Africa, Argentina) will improve representation and enhance the effectiveness of the club, providing more vulnerable countries with a voice. Even though industrialised countries are mainly responsible for global warming and continue to emit large quantities of GHG, many countries of the Global South countries are suffering the consequences. To mitigate this fundamental injustice, brought about by the disproportionate impacts on developing countries, the economies of the Global South should be included in an expanded climate club for more effective solutions. Several existing climate initiatives have the G20 and Global South countries as founding members. For instance, Mexico was a founding member of the Climate and Clean Air Coalition (CCAC) and has since actively shaped the alliance. The support of the CCAC has also enabled Mexico to create an additional reduction target for black carbon as part of its commitment under the Paris Agreement.

Including the G20 countries is important to deal with challenges such as carbon leakage and prevent counteractive domestic climate policy approaches in the future. Future endeavours for cooperation would benefit from G20 members being able to contribute to shaping the club's rules. For example, potential club measures such as carbon intensity standards for steel would benefit from being developed in a manner that also satisfies needs and conditions of the G20 countries, especially because the Global South G20 members have different baseline conditions, and their priorities are often connected to a functioning energy system, addressing crime and corruption, and providing universal healthcare, while the mitigation of greenhouse gas emissions remains a secondary goal. Often, the technological conditions in these countries are not comparable to those of industrialised countries, and the state lacks the capacity to support industry in the same way as, for example, the United States or the EU countries. They would thus require more flexible club rules. A club approach that accommodates all these concerns would enable an enhanced playing field for investments by companies or financial instruments. Additionally, countries that are currently in the design stages of their climate policies could build club provisions and standards directly into their domestic approaches, which might avoid future conflicts.

The decisions taken within the club will have implications for the G20 and other. The G20 climate club members could influence and potentially lessen the potential negative impacts of the club. The climate club is currently taking the shape of a large voluntary forum that sets no binding obligations on its members and will discuss multiple policy options. Some of the initially proposed measures could have a significant impact on countries of the Global South. For example, a common carbon border adjustment mechanism (CBAM) or carbon pricing mechanism was met with interest in some countries. Studies on the proposed EU CBAM posit strong repercussions for countries in the Global South (16). However, even a loose forum focused on technical exchange has implications for the G20 countries. If members agree to implement carbon content standards for products or agree on sustainability taxonomies and definitions for green technologies (e.g., green hydrogen or green steel), these could account for imports from other G20 countries.

The Build-Up of the Climate Club

The crucial characteristic that could motivate G20 countries to join the climate club is its design. In this regard, the club can benefit from lessons learnt from the diverse existing voluntary climate alliances.

Focusing on a particular (sectoral) topic or group of actors has been successful and helped define the niche in existing club-like alliances. For example, the success of the CCAC, which focuses exclusively on short-lived climate pollutants, shows that working closely on a specific topic helps create trust, a rich expert network, and ultimately add a formerly neglected topic to the political agenda. Industrial decarbonisation, which has long been a neglected topic on the international climate agenda, is now gaining traction. Creating an opportunity for G20 members to be a part of this pillar of the club, or even dividing this pillar further—such as into different working groups that tackle different industries, as is a practice in the Clean Energy Ministerial—could add value to the contributions of the G20 countries.

Foster technical dialogue first, then agree on the implementation of measures. Members of large groups such as the CCAC and the Under2 Coalition regard the voluntary nature of the initiatives to be a low entry barrier for countries. The value of these alliances lies in technical exchange, and building trust, capacity, methodologies, and policy planning—activities which help prepare the playing field for more binding regulations and enabling implementation (17).

A club that is expanded to the G20 members could also start as a technical dialogue forum with an ‘exchange phase’. It could tackle the following issues:

- Definitions or taxonomies for concepts such as ‘green’, ‘clean’, ‘sustainable’, and ‘decarbonised’ as they relate to products, procedures, and supply chains.
- Coordination of standards proposed by other existing alliances (for example, approximately 20 different standards exist in the steel sector).
- Further comparison and coordination of measurement, reporting, and verification (MRV) practices in existing policy instruments.
- Point of entry and attribution of avoided emissions, for example, green hydrogen.
- Benchmarks for green products and milestones in transition plans.
- Exchange on incentive policies for innovative and green products and procedures from tax credits to public procurement.

The club’s objective of strengthening the ambition of climate policies would likely require stronger rules. Therefore, the second, ‘harmonisation phase’ could entail agreeing on and implementing the above-mentioned points, such as coordinating green product incentives in a way that they facilitate a common lead market in the club countries.

A financial support mechanism could motivate emerging countries to join the club.

One of the crucial questions that need to be addressed as part of setting up the club is its financial basis. Existing clubs operate with divergent funding models. Some alliances like the CCAC or the Clean Energy Ministerial (CEM) have established a trust or action fund that finances the club’s infrastructure and makes funding available for projects, methodology development, and capacity building, often for the Global South members. Other initiatives, such as the G20, have no institutionalised funds. G20 presidencies are responsible for the meeting infrastructure, and each country covers its activities and travel costs.

The climate club needs funding for the structure and functioning, but more importantly, a decision needs to be made on whether the club should fund further activities, and if so, which and where. This is of fundamental importance, as some countries might have a greater motivation to join the club if it offers, for instance, capacity-building support or funds for climate projects. The Global South countries argue for the creation of a strong financial mechanism that enables them to fund their climate mitigation and adaptation activities. Yet, experiences with club-like alliances have shown that they are seldom successful in gathering necessary funding to finance activities at scale, and their activities are not comparable with the large funding mechanisms of the UNFCCC, such as the Green Climate Fund.

The institutional set-up in existing clubs, such as the club secretariat, steering committee, and specialised subgroups, play a critical role. In addition to the secretariat, a rotating steering committee or board that consists of a subgroup of members that represent the geographic and economic diversity of the club has proven to be a good practice in other clubs, such as the CCAC. Club members should have regular meetings, which could deal with strategic matters such as topics and new members. Furthermore, different subgroups would be suitable to address the manifold topics that were already proposed through the club (ranging from carbon pricing to steel decarbonisation) and would allow for a more focused working exchange.

Use the G20's strengths and give India a leading role in the climate club. The informal character of the G20 bears weakness and strength at the same time. Yet, this informality also makes it similar to a club structure, and the experiences of the G20 countries with cooperative procedures, meeting coordination, and dealing with conflicts and tensions could enrich the climate club. Thus, the G20 countries could smoothen relations within the climate club.

Many of the above-mentioned aspects are particularly relevant for India, which is a large emitter with significant industrial greenhouse gas emissions and is also invested in decarbonisation and sustainable development. Despite a technological speed up, significant portions of the country's population continue to face severe poverty, and the whole country is highly vulnerable to climate change. These conditions, paired with India's political position between the industrialised G7 and the Global South countries, lends it credibility and trust from both sides. India's G20 presidency has played a crucial role in bridging demands from the Global South and Global North, particularly as it has already entered negotiations to join the club as a member. In pushing for a club membership and club design that incentivises other relevant G20 members to join, it can ensure that the club is attractive for other Global South members and achieves its goal of not only creating another forum for dialogue but of driving ambitions higher.

Recommendations to the G20

What stands out as a challenge for the climate club is the notable tension between inclusiveness, a large club size, and the objective of raising ambition. With more members and more interests, it will be more difficult to agree on measures, and ultimately, the club will face problems similar to those experienced in the UNFCCC. As such tension is almost impossible to solve, sometimes 'a club forms within the club' in existing forums. In other words, a group of 'more ambitious or like-minded' members become more active than the rest and builds more ambitious policies. This situation could be pre-empted. For instance, the club could arrange for a 'light' or observer membership for members who do not want to contribute actively. This would keep

them involved and informed but prevent them from interfering in club decisions, thus facilitating decision-making among active members.

Moreover, the tensions within the G20 could dampen the climate ambition of the club. In the past, climate and energy topics have led to conflict among G20 members. An extreme case was the US's G20 presidency under Donald Trump, who withdrew the country from the Paris Agreement. In 2023, the G20 countries continue to disagree on the phasing out of fossil fuels. The outcomes of the G20 Environment and Climate Ministers' Meeting in summer 2023 remained weak and countries failed to adopt a joint communiqué. No affirmation of the reduction targets suggested by the IPCC (-43 percent by 2030 and 60 percent by 2035 compared to 2019) or an emissions peak by 2025 was achieved (18). Russia's war in Ukraine has also exacerbated frictions among G20 members. Such conflicts would also hamper progress within a G20-based climate club.

Closely related to this is a more normative question of who launching countries (i.e., Germany and the G7) want to include in the club. Here, especially, Russia and China present special cases. Diplomatic relations, energy imports, and trade with Russia are highly inflected and halted on many levels. Tensions between the US and China have been growing during 2022–23. The geopolitical situation requires the founding countries to be careful and diplomatic. Therefore, including the entire G20 in the climate club is unlikely.

At this point, traditional lines of conflict have already appeared. The Global South suspects that the Global North will force them to make stronger commitments. In some countries, there are concerns that the club intends to sanction outsiders (19). Countries might hesitate to join an alliance that they are unsure they can comply with or where their own interests might be overpowered by stronger countries.

While the focus on a specific topic might aid the progress of the club, it might also deter prospective candidates. For example, if the club focuses on decarbonising the steel sector, countries without significant steel production and international trade might not be interested in joining. It will ultimately depend on how far-reaching the club's activities are: Will they, for instance, also include supply chains for energy? Will the club remain focused on technical dialogue or, as suggested above, have a phase where countries agree on common rules? In such cases, the impacts will be more drastic, and more countries will want to be involved.

Conclusion

Many of the points raised in this essay can be synthesised through the question of whether the climate club will be able to make a difference and address the fundamental issues discussed here, such as creating an attractive membership, establishing a smart institutional design, and finding its niche. The club will need to manage relations and navigate potential competition with already existing (or proposed) initiatives and regulations, such as the Global Arrangement on Sustainable Steel and Aluminium, which is currently being developed by the US and the EU (20); the EU's CBAM; and the above-mentioned voluntary climate alliances. When observing political and media debates, it is clear that many divergent visions exist around the G7 climate club as well as its objectives and activities (in spite of the published terms of reference). For the club not to become toothless and ineffectual, it is important that it starts its focused work immediately while maintaining clarity about its limits and recognising that it cannot solve all the multilateral problems related to climate change.

Theoretical club conceptualisations help direct the discussions and provide some general ideas for the (G7) club's design and general orientation. Research suggests that an ambition-oriented, transformational club would be better off with fewer members. However, club leadership moving towards an inclusive and open club model as well as its growing membership show that this alliance will likely start as technical forum of the normative or pseudo-club type. Research also indicates that the role of normative clubs is to foster exchange, capacity building, prepare policies, and lay the ground for future ambition. This might help with expectation management for the climate club. Its potential likely lies in supporting the technical aspects of industrial decarbonisation, knowledge exchange on MRV, and other tools. While these elements may not turn the G7 climate club into an ambition-oriented club with binding commitments, they can improve its chances of making valuable contributions to global climate governance.

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Strengthening Multilateral Development Banks: Towards a Triple Agenda

NK Singh

Introduction

THE STRENGTHENING OF MULTILATERAL DEVELOPMENT BANKS (MDBs) has been a core agenda even before India assumed the presidency of the G20. In 2022, at a special address at the World Economic Forum in Davos, Prime Minister Narendra Modi had said, “It is imperative that every democratic nation should push for reforms of the multilateral bodies so that they can come up to the task dealing with the challenges of the present and the future” (1).

During India’s G20 presidency, it was decided to constitute an Independent Expert Group (IEG) on strengthening MDBs at the second meeting of the Finance Ministers and Central Bank Governors (FMCBG). The IEG report entitled ‘Strengthening MDBs: The Triple Agenda’ was released in two volumes. The first report was submitted in Gandhinagar at the third meeting of the FMCBG, and the second report in Marrakech at the fourth FMCBG meeting.

The New Delhi Leaders’ Declaration, released at the conclusion of the G20 Leaders’ Summit held in Delhi, acknowledged and appreciated the recommendations outlined in the first report, and suggested MDBs “discuss these recommendations as relevant and appropriate, within their governance frameworks, with a view to enhancing the effectiveness of MDBs” (2). This sentiment was echoed in the Marrakech Communique, where it was noted that “transformative changes are required in MDBs’ vision, operating models and financing capacities” (3).

The global pandemic and other multiple ongoing crises like climate change, food, and energy security, rising living costs and mounting debt are significantly impacting the long-standing consensus on development (4).

Emerging markets and developing economies (EMDEs) are vulnerable to the adverse effects of climate change, owing to their geographies and limited adaptive capacities. Of the ten countries most afflicted by extreme weather events in 2019, eight were low- and lower-middle-income, and half were least developed countries (LDCs). Despite their minimal contributions to the issue, EMDEs find themselves on the frontlines of the climate crisis. They require international support to adapt to climate changes and mitigate the most severe impacts (5). To realign their development agenda in a changing climate regime, a comprehensive debt and financing strategy must be devised, leading to a significant revamp of the international financial architecture (6).

Recent deliberations within prominent global forums such as the G20, COP27, and COP15 have underscored the deficiencies of the existing international framework of development financing, particularly within the context of interrelated crises of climate change, rising living costs, and debt challenges faced by developing nations. These

discussions have appealed for a thorough reevaluation of the adequacy of the current multilateral finance and its governance.

The MDBs are facing significant strain due to the cumulative impact of successive crises. Although multilateral development entities played a pivotal role in directing a substantial portion of the global response to the COVID-19 pandemic, their capacity to sustain these extraordinary levels of financial support is constrained by their existing financial and operational structures. Furthermore, they contend with the escalating intricacy and fragmentation within the multilateral framework. Their disbursements in 2019 amounted to less than 0.3 percent of the GDP of countries receiving funding, which is merely half of the 0.55 percent recorded in 1990. With the current backdrop of increasing interest rates, it is possible that the net transfers from MDBs could become negative (7).

Therefore, there is an emerging consensus for the need for transformational, rather than incremental changes to reform the mandates, operational paradigms, and the size and composition of financial assistance that MDBs must offer. This adjustment is essential for enabling MDBs to effectively address contemporary global and developmental imperatives, most notably the pervasive issue of climate change. The G20 nations hold the view that enhancing the effectiveness and agility of MDBs can accelerate the progress of developing countries toward achieving the SDGs and the goals of the Paris Climate Agreement. This not only promotes national development but also mitigates global economic risks by addressing the provision of global public goods.

Spearheading Climate and Development Investments in EMDEs: The Pivotal Role of MDBs

Global financing architecture is at a critical turning point. Having dealt with reconstruction, development, and crisis recovery over the past several decades, global institutions are now grappling with the dual challenge of advancing ongoing development goals while addressing new global priorities. This has led to issues arising from a changing climate regime and persistent development challenges that MDBs and our fragmented global finance architecture were not originally equipped to address. Enhancing the climate and development initiatives of MDBs necessitates a substantial amplification of their undertakings and a significant boost in the magnitude of their financial contributions.

MDBs are an asset for the global economy, bringing decades of development experience, unique human capital and knowledge, long financial track records, an unparalleled capacity to leverage public money into long-term development financing,

presence on the ground, and an impressive financial and non-financial toolkit. They are also equipped to mobilise private capital, particularly for sustainable infrastructure. Given the magnitude of global challenges in the 21st century and the urgency with which global public goods (GPGs) must be delivered, these previous assessments, implemented using sustainable lending limits while limiting access for upper middle-income countries, no longer appear adequate. To overcome cascading development and environmental challenges, MDBs must redefine their purpose, elevate their aspirations and financial commitment, and transform their operational approaches.

There has been a notable increase in initiatives for the reformation of MDBs. The reform discussions have focused on significant initiatives such as the Bridgetown Agenda, the World Bank Group's Evolution Roadmap, and the recommendations put forth by the G20 expert panel in their assessment of MDB capital adequacy frameworks. While the Bridgetown Agenda focuses on lowering the cost of borrowings for the MDBs, the review of MDBs' capital adequacy frameworks primarily explored ways to optimise the financial capabilities of non-concessional programmes while simultaneously boosting the total MDB financing using their current capital. However, there is still a long road ahead for MDBs to accelerate climate action in the EMDEs. The combined impact of the global pandemic, the war in Ukraine, debt crises, food and energy insecurity, and severe extreme weather events have introduced multiple shocks into the realm of development. MDBs are inadequately equipped for this evolving landscape. Their mandates were only designed to tackle one moderate global shock per decade. In retrospect, this perspective appears to be outdated. Additionally, the discussions in recent international fora regarding GPGs, encompassing climate action, pandemic monitoring, and biodiversity preservation, now require substantial financial commitments from developing nations generating new requirements for MDBs. It is in this context that the Indian G20 presidency, in consultation with G20 member countries, established an IEG with comprehensive 'terms of reference'. It was a call for a bold rethinking of the extant MDB model. Following the recommendations made by the IEG in the two volumes of their report, *The Triple Agenda*, the G20 leaders committed, in the New Delhi Leaders' Declaration, to "pursue reforms for better, bigger and more effective Multilateral Development Banks (MDBs) to address global challenges to maximise developmental impact".

The Triple Agenda

Before delving into the recommendations, it is important to understand the elements of this triple agenda. These include:

- adopting a triple mandate of eliminating extreme poverty, boosting shared prosperity, and contributing to global public goods;

- tripling sustainable lending levels by 2030; and
- creating a third funding mechanism that would permit flexible and innovative arrangements for purposefully engaging with investors willing to support elements of the MDB agenda.

Mandate

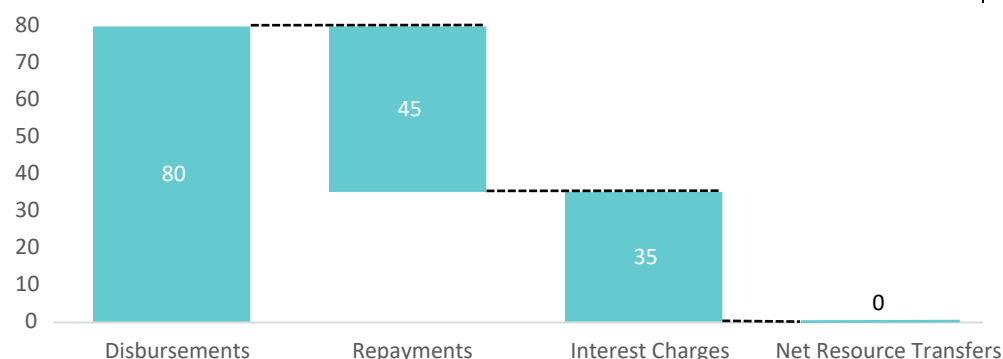
Starting with mandate, it is observed that while individual mission statements differ from one MDB to another, as it stands today, the development agendas of all MDBs agree on a dual mandate—spurring national economic growth and shared prosperity, and ending extreme poverty. These core mandates, at the heart of MDBs’ purpose, remain perennially important. However, since these mandates were conceived and codified in the 20th century, they are not designed—and thus inadequate—to address the unprecedented global challenges of the 21st century. The world is nowhere near achieving the SDGs by 2030, with more than 650 million global citizens living in extreme poverty today. To make matters worse, even in an optimistic scenario, it is still likely that the Paris Agreement 1.5°C limit will be breached by 2035. In light of these pressing problems, right now is a critical time for reform.

To transform themselves and rise to the immense global task, MDBs need to formally adopt a triple mandate⁶. The core dual mandate is sacrosanct. However, GPGs related to climate mitigation and adaptation, biodiversity preservation, water security, and pandemic preparedness need to become the third pillar. There is little debate regarding the relevance of GPGs for developing countries. While the core MDB agenda of investing in health, education, and sustainable infrastructure must continue and even accelerate, the intertwined issue of GPGs must be foregrounded.

Finance

Given the broadened mandate, an additional spending commitment of about US\$3 trillion annually by 2030 is required. It is worth mentioning that MDBs no longer provide significant net resource transfers to middle-income countries. The decline in MDB financing relevance is even more pronounced when viewed in terms of net transfers, the amount by which disbursements to EMDEs exceed repayments from them in amortisation and interest charges. In 2023, MDBs as a system may collect as much money from middle-income countries as they disburse in new loans (see Figure 1).

Figure 1: MDBs may not provide a significant net resource transfer to middle-income countries in 2023 (in US\$ billions approx.)



Source: IEG Report, Volume 2.

Thus, a tripling of sustainable lending levels of the MDBs is essential. By 2030, the world, on average, will need US\$3 trillion each year. Out of this, US\$2 trillion can come from domestic resource mobilisation by the concerned countries through better policies, fostering growth, and undertaking macroeconomic and structural reforms, resulting in improved tax buoyancy. Of the US\$1 trillion balance, US\$500 billion could come from the private sector with appropriate incentives, while US\$500 billion could come through official development financing, including concessional and non-concessional finance.

The importance of concessional financing cannot be emphasised enough. Non-revenue generating projects, such as expenditures funding climate adaptation, resilience, mitigation, and biodiversity conservation, cannot be readily financing by low-income countries while taking on debt. Additionally, though middle-income countries can muster up domestic resources to shoulder such expenditures, the immense size of the sums involved necessitates some degree of external concessional support to protect against sudden shocks like natural disasters, conflict, and pandemics.

While 2022 witnessed a record high level of Official Development Assistance (ODA), to the tune of US\$204 billion, much of the increase has gone to unanticipated humanitarian needs. Concessional funding earmarked for long-term investments in low-income countries regarding SDGs and climate action must be protected and expanded. An MDB-developed financing instrument that provides rapid concessional finance to countries affected by natural disasters is needed. The International Development Association (IDA) represents the largest source of affordable finance for low-income countries; in its current state, however, it is much too small to address the emerging global climate challenges (8). The size of the IDA must be tripled by 2030, and it must continue to prioritise countries without the creditworthiness to

access non-concessional borrowing. This will require IDA donors to increase their contributions sharply in real terms.

Mechanisms

The extended financial requirement calls for multiple interventions through the full implementation of the Capital Adequacy Framework (CAF), including by optimising the balance sheet and innovative capital. Even with full implementation of CAF, some gap in the lending capacity may remain. The most efficient and fair solution to bridge much of this gap is a general capital increase. However, and importantly, a Global Challenges Funding mechanism should be constituted. This would crowd-in a 'coalition of the willing' among sovereign donors and non-sovereign investors.

It is equally important to radically reimagine the relationship between MDBs and the private sector. The challenges facing the globe today cannot be addressed without a substantial amount of private financing. An estimated US\$740 billion per year in private capital is required to reach climate- and SDG-related goals; this would represent a US\$500 billion increase from the amount of money governments borrowed and private investors put into infrastructure projects in 2019. Historically, MDBs have had private capital mobilisation (PCM) ratios of about 0.6 per dollar of their own commitments, but they have pledged to do more. MDBs should mobilise an incremental US\$240 billion each year by 2030. They should be able to mobilise and catalyse an average of US\$1.5 to US\$2.4 in private capital for each US\$1 they lend. For this:

MDBs must improve investment climates and work to reduce macroeconomic risk for private investors: The risk that arises from investing in sustainable infrastructure primarily originates from macroeconomic issues that private investors can do little to control. MDBs, along with the IMF, through their capabilities for policy and institutional diagnostics and policy recommendations, are optimally placed to mitigate this risk to tolerable levels. A particularly painful point for the private sector is its exposure to currency risk, an issue that MDBs must be more proactive in recognising and addressing.

- *Early-stage co-creation of investments:* In situations where private capital is ready to be deployed, there is frequently a lack of solid and bankable projects. To tackle this issue, MDB and private funding is required in institutions that support the design, preparation, and structuring of infrastructure projects. The Global Infrastructure Facility, the Climate Investor One model, and the IFC 3.0 model are existing options that could be scaled up. More MDBs must also operate in the risky "valley of death" phase that many projects face between proof of concept and reaching break-even.

- *Mobilisation opportunities from the portfolio:* Recently, MDBs have begun to partner with institutional and other investors at the portfolio level; this must be accelerated. The use of blended finance, mobilised in a bespoke fashion, has not been conducive to scaling up. A significant redesign is required for blended finance to significantly contribute to PCM (9). One promising area is its deployment in structured financial vehicles, where MDBs can take junior positions and thus help de-risk more senior, private sources of finance. PCM could also be scaled up through a greater use of sovereign instruments. However, the prevailing culture in MDBs is to favour direct lending over guarantee instruments (10); this culture needs to change from the top-down.

Making MDBs Better, Bigger, and Bolder for a Strengthened MDB Ecosystem

An expanded mandate, finance, and mechanisms lay the foundation for a strengthened MDB ecosystem. This must be complemented by changes in the MDB system, which make them better, bigger, and bolder.

To make MDBs better, it is essential to convert MDB models to co-create multi-year programmes that can focus support on priority SDGs and GPG sectors or themes. This will allow MDBs to shift away from individual projects towards programmes where national governments take a strong lead in identifying multi-year transformations with sectoral focus, achieved through scaled-up investments. An example of an institutional coordination mechanism that offers a promising way forward is a “country platform” approach. Country platforms are a natural entry point for MDBs to work together better as a system, but their collaboration should be deepened in several areas, particularly around global and regional priorities.

Bolder MDBs entail bringing engagement with the private sector to the centre of MDB operations. While the preceding paragraphs talk about channels, this has to be complemented by a whole-of-MDB approach to co-create investment opportunities with the private sector, develop project pipelines, including through a revamped and expanded role of the Global Infrastructure Facility (GIF), and, crucially, mobilise and catalyse much higher volumes of private finance. To this end, MDBs need to shift their own culture from one of risk avoidance to informed risk-taking and significantly reduce the time for decision-making. They also need to diversify their instruments, particularly by expanding the use of guarantees and foreign exchange risk management tools. The MDBs also have a significant database of their own activities that can be made available to private investors to permit them to analyse risk in a granular fashion.

Finally, MDBs need to become bigger to make a material difference at scale. As highlighted earlier, to triple their lending, MDBs should make use of all their funding avenues. This would also entail broadening funding support beyond shareholders. A potential breakthrough in MDB funding could emerge by opening up opportunities to non-government investors—sovereign wealth funds, foundations, impact investors, and businesses contributing funds as part of their corporate social responsibility programmes, as also highlighted in the preceding section. What is important to note is that these reforms will only work with a change of mindset and attitudes on risk appetite, working with each other, working with the private sector, and with accompanying changes in incentives and accountability indicators. Applying these changes at all levels, starting with the shareholders and their representatives on the boards, will foster a needed change in culture.

A Timeline for Action

Outlined in the previous section were four steps necessary for MDB transformation. However, it is also imperative to place a timeline for action for the MDBs and associated organisations, such as the G20, to follow. The following timeline is proposed to ensure the timely scaling up and reorientation of MDB activities.

Actions	Timeline	Stakeholders
The Triple Mandate		
Formally adding the pillar of investing in GPGs to the existing dual mandate of ending extreme poverty and spurring national economic by explicitly including it in MDB mission statements	Q4 2023	MDB Board
Scaling up Annual MDB Financing and The Importance of Concessional Financing		
An increase of US\$260 billion in annual MDB finance, divided into US\$60 billion in incremental concessional finance and US\$200 billion in incremental non-concessional lending	2030	MDB Board
G20 members restoring their contributions (in real terms) to the IDA	Q3 2023	G20
A tripling of the size of the IDA, facilitated by sharp increases in G20 member contributions	2030	G20
Partnering with the Private Sector		
Establishing a target of at least US\$1.2 (ideally between US\$1.5 to US\$2) of private capital mobilised for every US\$1 of public finance	Q2 2024	MDB Board

Actions	Timeline	Stakeholders
Improving investment climates through institutional diagnostics and policy recommendations; reducing macroeconomic risk faced by private investors to tolerable levels; and managing private sector exposure to currency risk	Q2 2024	MDB Board
Early-stage co-creation of investments to create solid, bankable projects	Q2 2024	MDB Board
Partnering with institutional investors at the portfolio level; deployment of blended finance in structured financial vehicles where MDBs take junior positions	Q2 2024	MDB Board
Changing the prevailing culture in MDBs from favoring direct lending and shifting to sovereign guarantee instruments	Q2 2024	MDB Management
Implementing transparent and deliberated guiding principles for PCM	Q2 2024	MDB Board
Transforming the MDB Operating Model and MDBs Working Together as a System		
Rethinking the prevailing project-by-project and institution-by-institution culture which runs counter to the standardisation needed for adequate PCM	Q4 2024	MDB Board
Setting in place benchmarks to ensure speed of delivery and flexibility of support	Q4 2024	MDB Board
Changing the culture to become more country-oriented and less risk-averse	Q4 2024	MDB Management
Rethinking the fly-in fly-out model of technical support	Q4 2024	MDB Board
Prioritizing working together as a system through a concerted leadership effort	Q4 2024	MDB Management
Instituting incentives for MDB collaboration	Q4 2024	G20
Coordinating efforts to strengthen and engage in country platforms; harmonizing standards across the board to reduce transaction costs; pooling assets, tools, and instruments; creating cross-MDB mobilization platforms; performing balance sheet optimization as a group; and setting collective KPIs for GPG provision	Q4 2024	MDB Board

Furthermore, the second volume of the report delves deeper into recommendations for a revitalised MDB ecosystem and enhanced resource mobilization (see Box below).

Box ES1: Key Policy Recommendations for MDBs

- I. Convert operating models to co-create multi-year programs for transformative change.
- II. Streamline and simplify business processes to halve processing time.
- III. Work together better as a system with individual and collective KPIs, shared diagnostic tools and pool risks.
- IV. Bring a whole-of-institution approach to mobilize \$240 billion in private capital and catalyze private finance by shifting culture from risk avoidance to informed risk taking.
- V. Triple financing levels to \$390 billion per year to achieve the transformational change required to meet national and global priorities.

In addition, the G20 Finance Ministers should establish a mechanism to advise and independently assess the first-year implementation of the proposed roadmap.

Source: IEG Report, Volume 2

The magnitude of changes is enormous, but not insurmountable. Based on the 30 recommendations outlined in the second volume:

- Preliminary estimates show that the World Bank Group is channeling only 8 percent of its lending through global and regional programmes. This number has to rise to at least 20 percent by 2030.
- It takes 25 months to move from concept note to first disbursement for a World Bank project. This needs to come down to 12 months.
- Annual private capital mobilisation by MDBs stands at US\$60 billion. This needs to quadruple to US\$240 billion by 2030.
- The share of guarantees in MDB portfolio is only 4.3 percent today. This must rise to 25 percent by 2030.
- The annual guarantees issued by the Multilateral Investment Guarantee Agency stands at US\$5.5 billion, which must be increased to US\$16.5 billion by 2030.
- Currently, less than one-third of respondents from borrowing countries think that MDB projects and programmes are well aligned with key national priorities. MDBs should strive to increase this number by 75 percent by 2030.

Conclusion

Given the immense global challenges of the 21st century, the case for MDB reform is clear and undisputed. Drastic, speedy, collaborative action is the need of the hour. This essay has outlined a triple mandate and four categories of measures that MDBs must adopt. To ensure accountability, it has also provided a timeline for implementing these different interventions. However, this is just the first step in initiating broader MDB reform; implementing these measures will require conviction and commitment from MDBs and the institutions that support MDB decision-making. This represents the start of a multi-year process of making MDBs relevant again for the 21st-century world.

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