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RAISINA FILES 2024

THE CALL OF THIS CENTURY

CREATE AND COOPERATE

Edited by
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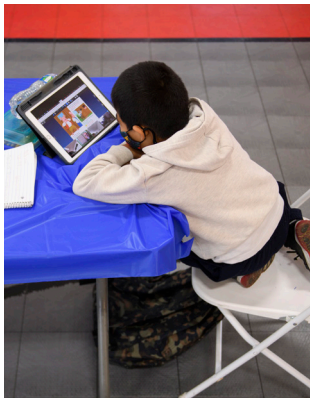

Editors' Note

Armageddon / ˌɑːməˈgɛdn / *noun*

The end of days.

Pralaya / ˈpɹʌləjə / *noun*

The end of days that heralds the rebirth of the world.

MUCH OF CONTEMPORARY DISCOURSE regarding global affairs is clothed in eschatology. We read of a planet on fire, of proliferating war and famine, of a plague enveloping the globe. Perhaps the Abrahamic notion of Armageddon—the end of days—has infected the times in which we live with a certain degree of fatalism. Yet doomsaying is rarely conducive to transformation, and doomsayers seldom build our futures. Take that line segment, with all its linearity and finiteness, and make it a circle: The more productive Indic notion of *Pralaya*—the end of one age and the rebirth of another; the deep notion that destruction is intrinsically linked with creation, that every Armageddon is necessarily followed by a Genesis.

The 2020s are the new 1940s. After being ravaged by the pandemic, and by the conflicts across Europe, Africa, and Asia, we are now faced with a clean slate, a *tabula rasa* that is teeming with possibility and potential. Here is the chance to build the proverbial city upon a hill. We have an opportunity to script a better future—to create and recreate, write and rewrite, with each passing day.

The genesis of a new world is within our reach and we cannot take it for granted. It demands a concerted effort to assemble the right cast of characters, a 21st-century entente. Be it nations that influence, voices that include, or leaders that inspire: the call to action is clear. We must cultivate communities and collectives, united in the shared pursuit of a better tomorrow. This is the moment for individuals, regardless of ethnicity, gender, caste, or creed, to take up the mantle of leadership. This is the time in the sun which, not the first billion people, but the next seven billion have awaited.

This edition of the *Raisina Files* is infused with this conviction. The call of this century is to dispense with cynicism and to embrace what is appearing and emerging. A call to work towards inaugurating an inclusive and sustainable future. Rising up to the task requires us to create and cooperate, to build communities fit for this purpose.

This volume comprises contributions from an ensemble of thinkers who problematise, and attempt to answer, the pressing questions that matter. What are the power dynamics between a State and its citizens in this age of the digital? How do we protect our children in their always-online world, while preserving their agency and rights? If the current Western-led mechanisms of international aid are failing to meet the needs, how do we ensure that assistance truly reaches the grassroots? What transformations do our food systems require so they can be fit for the zero-hunger goal? As we move to the green frontiers, how will women lead the change? And how does the global financial system become just that—global?

The authors of our fourteen essays confront these questions, and more, giving us a glimpse of the possibilities and the promises that are for us to keep.

Stephanie Diepeveen opens the volume with her essay on power: Who wields it, in an era when digital technologies become part of the infrastructure and tools through which political, social and economic life plays out? She says the relationship is dialectical. “Any form of power is not without limitations: digitally-mediated government is no exception, and citizens continue to evade and contest state power.”

Mallory Knodel writes in the same context of the digital age and ponders the question of how we should protect children’s rights as they live it. She argues for a human-rights-centric framework that “emphasises the dignity and well-being of every child, acknowledging their right to privacy, safety, and freedom from exploitation.”

Whether in a digital or analogue age, however, certain issues have hardly changed for the world's women. **Gala Díaz Langou and Sofía Fernández Crespo** call attention to the enduring challenge of gender gaps in economic autonomy: Women are either unemployed, or if they are, they are segregated in the 'economy of the shadows'. And yet, Gala and Sofía argue, "narrowing and closing these gaps will foster women's rights; it is also a strategy for overall development."

Mariam Wardak gives us hope in her essay, that even amidst the seemingly intractable Taliban rule, Afghan women are effecting change in every way they can. We may not be hearing about them from the media—maybe because people like the news to be loud—but quietly, they are reclaiming their space.

Some of the tools that the women of Afghanistan are using have to do with the digital. And it is the promise that **Astha Kapoor** writes about—how we must build our digital public infrastructures based on our contexts and needs. DPI should be inclusive, she says. "If the needs of countries are made the centrepiece of the global discourse on DPI, this approach is likely to achieve immense value for people across the world."

One country that is showing the way here is India. **Erin Watson** celebrates the country's DPI: "As developed countries seek to reform legacy financial systems or developing countries build new ones, India has a world-leading solution that can revolutionise how global economies engage with India and with each other."

Lucy Corkin then gives us her view of another aspect of the financial system, that of currency exchange and the universalism of the US Dollar. She argues that our aim should not be to dethrone the USD, but to disintermediate the role of the USD in financial markets infrastructure and payments rails. "If successful, this will, in a stroke, provide a buffer against the [USD's] use for political means." While overhauling global currency exchange might be premature, disintermediation will reduce global reliance on USD-based norms.

What is a more urgent overhaul, **Aude Darnal** writes, is that of the dominant international assistance model—one that is "stained by colonial-inherited assumptions and attitudes favouring international Western institutions and knowledge systems." She explores the possibilities in the 'incubator' concept, which removes from the equation foreign funding intermediaries and directly supports local actors of change, based on local expertise, knowledge, and tools.

The same creativity is needed in how we would now have to create pathways to reducing carbon emissions. **Mannat Jaspal, Manjusha Mukherjee, Aurora Silitonga and Darcy Jones**, in their article, show us a few ways, all of them framed by the principle of internalising the cost of carbon in goods and services. “Carbon pricing can serve as an effective pre-emptive strategy to rapidly decarbonise and build competitive economies geared for the global market.”

Indeed, the task of rapidly decarbonising has never been more urgent, amid worsening climate change. And to borrow the words of someone wise, global warming may be the same storm for all of us, but we are not in the same boat: for large populations across the world, climate change merely exacerbates the multiple, overlapping shockwaves that have battered their lives for generations. There are some 400 million of them, reminds **Cecile Aptel**, who are in need of direct humanitarian assistance. She outlines the risks to the continued viability of humanitarian aid, primary of which is the perpetually inadequate funding.

Climate change also threatens food systems, combining in a lethal way, notes **Genevieve Donnellon-May**, with “complex geopolitical dynamics, local conflicts, and external factors like economic downturns.” She makes a case for reforms to global food systems amid recurrent crises and threat multipliers.

Transforming food systems would require that women be placed at the frontlines of the battle. And for **Priya Shah**, it essentially means recognising the crucial role that women play in the many aspects of climate action. “As we attempt to develop ground-breaking, climate-positive technologies in laboratories, green organisational supply chains, and educate the next generation in new climate-friendly practices, there is a need to equip more women not only in policymaking roles but in private enterprise as well.”

The green transition, indeed, is both, fraught with obstacles and full of opportunities, if we can see them. **Rachel Rizzo** highlights an area of opportune global cooperation, and that is in the supply of critical minerals. A “cartel-like” approach must be shunned, she says. “Instead, global cooperation should take precedence over stove piping which could shut potential producers out, make prices more volatile, and in turn, slow down the green transition.”

Rounding up our volume is an exposition of the supply chain vulnerabilities in the electronics sector, from the perspective of India. **Jhanvi Tripathi, Srividya Krishnan and Devna Joshi** argue for an “ecosystem approach” to building resilience.

This collection of essays offers a toolkit for responding to the most pressing questions posed by these contemporary times. They benefit from the authenticity of the gaze of the authors, from their passion for their domain of study and practice and their desire to build a future that tends to those who were left behind in the last century.

None of us are mere spectators to our times; we are all life's authors. Our contributors hope that their essays have delivered elements that could undergird a future that is prosperous, empathetic, and embraces all.

Power in a Digital Age

Stephanie Diepeveen

BY LATE 2023, IT HAD seemed clear that the world is shifting towards a digital age, whereby information in the form of digital data underpins social, economic and political activities and decision-making. The public launch of ChatGPT a year earlier, through which artificial intelligence (AI) is shown to generate human-like conversational text, resulted in an explosion of interest in advances in the possibilities for AI to transform human activities—from the nature of work, to fraud, to geopolitical competition. While other technological innovations may still be more distant, such as the promise of quantum computing,[1] their potential future use is nonetheless becoming more imaginable.

Is a digital age ushering in a new age of political power?

A 'digital age' provokes existential concerns that digital technology might surpass human performance and control, or that Big Tech will become a 'new leviathan'[2] that will challenge state sovereignty. Such a focus, however, hides the continued limitations of technological use. For instance, generative AI depends on physical infrastructure and energy for complex technological processing, which remains a barrier for many States.

There are, to begin with, conflicting views on the significance of digital change to politics and society. In 2012, David Karpf, an academic in media and

communications, warned that "the glimmering promise of online data abundance too often proves to be fool's gold."[3] Indeed, amid all the talk of a 'digital age', much of the world's regions and populations remain disconnected or have limited and/or unreliable connectivity. The gap is most visible in Africa where, in 2021, only 50.6 percent of people had access to electricity and 36 percent used the internet.[4] Meanwhile, data is being labelled as the 'new oil', with digital processes argued to bring unprecedented opportunities for the natural and social sciences.[5]

The opposing views are underpinned by the difficulty of predicting the future significance of technologies. After all, inventions have serendipitous life histories.[6] While designed for specific applications and contexts, technologies tend to have meanings and applications in unanticipated contexts.[7]

What makes digital technologies 'political'?

To move beyond the current opposing views, it would be helpful to consider how and why digital technologies have been conceptualised as relevant to political power. Political theorist Langdon Winner (1980) usefully differentiates between two ways that technology might be conceived as political: (i) some technologies are aligned with specific power relations by virtue of their design; and (ii) others are more flexible in how they can be used.[8] The latter become political in their use, but do not necessarily favour one set of power relations.

Digital technologies reflect both ways of being political. By design, data-based technologies embed biases and inequalities. Data is generated through human activity and is marked by the biases and inequalities of past actions. From Safiya Noble's analysis of search algorithms, to Virginia Eubanks' study of algorithmic processing in social welfare provision,[9] there is evidence that developers' societal biases can be built into digital design and process.

Equally, inbuilt inequalities do not delimit how technologies might be used. Telecommunications infrastructure might be used to both, broadcast state power and disseminate alternative ideas of power.[10] Even as social media platforms use algorithmic systems to filter and promote content, they give way to varied uses in political contestations: to spread hate speech and incite violence, confront repressive powers, and target information campaigns.

Therefore, the relationship between digital technologies and power can be viewed as being dialectical. Existing power structures inform decision-making around the production, innovation, and design of technologies. Digital technologies, in turn, become part of the infrastructure and tools through which political, social and economic life plays out. And, digital traces—data records of what people do online—input back into ongoing digital processes.

Vladimir Lenin posed the basic question of politics in his slogan, 'who/whom' (*kto kogo*): who exercises power over whom.[11] Given the dialectics of power and digital technology, answering this question in a digital age requires considering how power relations inform and are shaped through digital technologies. To this end, while acknowledging the sheer diversity and complexity of experiences in our digital age, this essay approaches the question of power in a digital age by focusing on some key tendencies and directions in how digital technologies interweave with the exercise and contestation of State power over citizens and territories. This snapshot then becomes the premise from which to address the question: In a digital age, what is new in who exercises power over whom?

States and Citizens in a Digital Age

The COVID-19 crisis accelerated the use of digital technologies by States, driven by a need to act quickly to manage the spread of the pandemic. Yet, even prior, digital technologies and data were already being integrated into citizen-State relations in critical ways—from how States recognise citizens, to the exercise of State control, to the ways that power is limited and contested.

States' recognition of citizens

The use of digitised IDs is growing globally, with at least 161 countries having embedded biometrics in their national IDs.[12] Digital identification and authentication facilitate citizens' participation in political, economic and social activities.[13]

Databases as systems to identify, classify and target citizens or subjects do not originate with a digital age; the database was already a tool of control and organisation under European colonial rule.[14] With a digital age, the scale of data and complexity of analysis increases exponentially, resulting in "an unprecedented ability to combine both variety and quantity of information to a system productive of new forms of immediate legibility of populations and identification of individuals."[15]

Digital exclusion from civic life

Digital identification alters the premises through which individuals are included or excluded from civic life. By making connectivity a requirement for political recognition, it also becomes a tool to deny participation in public life.[16]

Incidences of internet shutdowns have remained high over the past few years, with 155 documented cases in 2020.[17] Government-initiated internet shutdowns are often linked to situations of potential political instability, such as protests, elections, and even national exams.[a]

a Governments have justified internet shutdowns around national exams to prevent cheating and maintain exam integrity.

Surveillance through digital inclusion

While exclusion from data can equate to exclusion from civic life, the visibility of individuals *as data* enables new forms of surveillance. Rather than the panopticon's symbolic omniscient gaze[b] instilling self-discipline among individuals, an abundance of data and automated processes brings the promise of more complete and constant surveillance, whereby States might pre-empt dissident behaviour.[18]

Governments and security agencies already use surveillance technologies to monitor individuals, underpinned by a lucrative commercial market. NSO Group's Pegasus spyware presents one of the most effective and controversial examples in recent history. Pegasus software enables unrestricted access to data on a mobile phone, undetected by the user. Democratic and authoritarian governments have used it to target not only individuals engaged in suspected terrorist or criminal activity, but also human rights defenders, journalists, and/or political opponents.[19] While far from complete, such operation of digital surveillance over individuals suggests a shift in how power can be exercised, founded in increasingly comprehensive and constant monitoring by often unseen authorities.

The limitations of State's digital power over citizens

Any form of power is not without limitations: digitally mediated government is no exception. As states relate to citizens through digital identities, they face new forms of dependency and vulnerability.

First, there are new dependencies as a result of the infrastructure and capacities required. The capacity to innovate, produce, and operate digital technologies is often located in private firms, outside of state structures.[20] The degree and insecurities of government's dependence on private firms, both foreign and domestic, depends on state size, resources, and capabilities. For example, government-initiated internet shutdowns require enforcement by telecommunications companies. Competition and ownership structures can affect the ease with which shutdowns take place.[21] In another example, WhatsApp, a messaging service, has come to play a crucial role in public life and even government communications in some countries of the Global South. This meant, for instance, that a global outage for six hours in 2021 had wide reaching effects on governments' daily functions.[22]

Second, citizens continue to evade and contest state power. Technologies designed for information access and exchange by nature allow for the circulation of diverse ideas. Even attempts to shut down the internet are often porous, as citizens have

b The panopticon was part of social theorist Jeremy Bentham's prison reforms in the 19th century, and was discussed by philosopher Michel Foucault to illustrate power in modern society. The panopticon model includes a central watch tower that is visible to all prison inmates. The always-visible tower indicates to prisoners that they might be watched, though they cannot see when someone is actually in the tower.

utilised tools such as virtual private networks and mesh networks, which maintain proximate communications.[23]

Social media platforms and messaging services can provide ways for citizens to access and share information from outside of the territorial boundaries of a State, including those potentially critical of that State.[24] A digital public sphere can also provide new possibilities for shared identities outside of national borders. Academic in global digital cultures, Pete Chonka (2017), illustrates how individuals in the Somali diaspora have helped construct a transnational public sphere, without a clear referential territorial state.[25] Therefore, as digital technology reshapes the ways that States exercise power over citizens, it is also creating new opportunities for its contestation: by private firms as they are integrated into the exercise of power, and by citizens, amid a degree of uncertainty in how technologies might be used.

Territorially-based Rule in a Digital Age

From Weber's (1919) conceptualisation of the state in relation to monopoly control of the means of violence within a territory,[26] the idea of political power as tied to territory is core to the international system of states. Digital technologies compel a rethinking of the territorial limits of state power through (i) the introduction of virtual spaces for participating in civic life; (ii) changed demands on physical places; and (iii) opening up of new places to the possibility of human society.

The introduction of virtual spaces

Digital technologies extend the place of politics into virtual spaces. The largest global social media companies—including Meta's Instagram and Facebook, Google's YouTube, and ByteDance's TikTok—operate across national borders. These trans-national spaces are often privately owned. States retain regulatory power, but this varies depending, for example, if a firm is registered in a particular State.

Substantively, digital public spaces display characteristics distinct from physical publics in ways that make it more difficult for citizens to access reliable and open information. While lying in politics is not new,[27] it is becoming increasingly easy and cost-effective to produce and circulate mis/disinformation online, especially with developments in generative AI. Greater prevalence of disinformation, especially in the form of images, video and audio alongside text, makes the task of informed political judgements increasingly difficult. Alongside, digital spaces support data-based informational targeting. The use of personal data acquired from Facebook by Cambridge Analytica in the 2010s for targeted election campaigns highlighted the possibility of such use of behavioural data.[28]

The impact of widespread disinformation and targeted influence campaigns on individuals' political behaviours and perceptions remains a complex question, especially if taking into account how people exist across on- and offline spaces. Still, the ephemeral boundaries and substantive dynamics of digital spaces pose challenges to both states and citizens: with States more vulnerable to informational influences beyond their borders, and citizens challenged in their ability to make informed decisions.

A reassertion of the importance of territorial spaces

The dynamics of a digital public sphere imply an image of politics unconstrained by physical place. Yet, these virtual experiences are premised upon physical infrastructure and the transformation of physical landscapes. The physical realities of digital technologies have resulted in renewed concern for State control over territory and resources.

Demands on raw materials and industries place importance on specific locations of extraction and production in ways that alter international competition and local political and economic realities. The extraction of coltan in the Democratic Republic of the Congo (DRC), for example, has profoundly reshaped the local political landscape. Anthropologist James Smith (2021) shows ethnographically how mineral extraction in the Eastern DRC has given way to dense social and economic networks.[29] In another example, the importance of semiconductors to digital devices has made their production and supply a key point in geopolitical competition and trade, especially between the United States and China.

The physical infrastructure of data processing and digital connectivity have also renewed attention by States to control over their territories. The location of data centres, in particular, which store and deliver data for cloud computing,[30] have become a point of contention between visions of a digital age, with cross-border data flows and intensive data processing, and a State's attempts to retain control over citizens within territorial boundaries.[31] States have had varying successes in pushing for data created within their territories to remain within physical borders; one example is the European Union's (EU) General Data Protection Regulation (GDPR). Still, the distributed nature of cloud computing, which facilitates complex, energy intensive data processing, sits uneasily alongside efforts for data sovereignty. Unevenness in capacity of locations to host data centres, given high energy consumption, provide an added layer to concerns about digital inequalities.[32]

Access to new (physical) places

Third, renewed interest in control over territory has emerged alongside possibilities that a digital age might usher in human society beyond terrestrial limits. Jeff Bezos

and Elon Musk, billionaire founders of two private space companies, have helped shift ideas of space colonisation from science fiction to possible futures.

For some scholars, the possibility of space colonisation as part of a digital age provides an opportune break from the human injustices of colonialism on earth, given the lack of indigenous populations and the influence of contemporary ideologies.[33] Yet, discursively, the logics of space colonisation also reproduce terrestrial colonial logics. Historical colonisation transformed places into territory and claimed ownership of newly conceptualised territory. Corporations had a pivotal role to play in these processes.[34] In an analysis of Musk's and Bezos' discourses about space colonisation, political theorist Alina Utrata (2023) shows how they repeat prior logics of territorially-based rule.[35] While digital technologies challenge the tenability of territorially-based rule, territorially-based conceptions of rule persist, as states continue to negotiate control over digital and physical spaces on earth and beyond.

Conclusion

Our digital age presents a key moment from which to reconsider the nature, stability, and dynamism of political power.

This snapshot into some of the ways in which digital technologies are intersecting with the exercise and contestation of power across States, citizens, and territories reveals profound changes to the exercise and contestation of power in the following domains:

- **What constitutes the State:** Tech firms are interwoven into how States exercise power over citizens. This provokes new questions about dependencies of states on tech firms, and the scope of State infrastructure and operations.

- **How citizens are seen and engaged by States:** Digital data becomes a basis for identifying and authenticating individuals by States, including participation in civic life and maintenance of order. Lack of connection can also be a basis for the *de-facto* removal of citizenship rights.

- **The nature of disciplinary power:** A digital age brings a promise of constant monitoring and processing of data on individual behaviours. This indicates a potential shift to surveillance systems premised on a 'sought-after omniscient gaze'.[36]

- **The organisation of territory:** The physical requirements of digital technologies create new pockets of geopolitical contestation and industrial activity. Digital technologies also open up new spaces and places to claims of territorial rule.

Running through these changes have been familiar political concerns, logics and inequalities. The power of tech firms poses a reminder of previous political time periods. Even today, tech firms do not seem to rival the power afforded to company states during European colonisation whose capacities included raising taxes and waging war.[37] Claims to territorially-based sovereignty, even as they are challenged, persist. And, power inequalities of previous eras remain: from who has access to digital infrastructure, to who can access and process data.

To conclude, this essay has indicated some of the directions and tendencies in how digital technologies are reshaping and reinforcing the exercise and contestation of State power: The identity and boundaries of the State as an agent of power over people and places seem to be under constant negotiation. The way in which States identify citizens and exercise power is increasingly mediated by digital data and premised on a promise of constant surveillance. The contestation of State power by citizens sits between new opportunities to participate in public life, and new forms of control tied to digital invisibility and visibility.

Our digital age has not yet escaped past actors and places of politics. States and citizens continue to exercise and contest power. Territorial rule continues to be reasserted, even as it is challenged. Instead, what is being reworked are the nature and limitations of these actors and places, thereby compelling ongoing attention to the evolution of who exercises power over whom in a digital age.

Endnotes

1 Ed Gent, "Quantum Computing's Hard, Cold Reality Check - IEEE Spectrum," IEEE Spectrum, December 22, 2023, https://spectrum.ieee.org/quantum-computing-skeptics

2 Hongfei Gu, "Data, Big Tech, and the New Concept of Sovereignty," *Journal of Chinese Political Science* (May 2023).

3 David Karpf, "Social Science Research Methods in Internet Time," *Information, Communication & Society* 15, no. 5 (2012): 639–61.

4 World Bank DataBank, https://data.worldbank.org/indicator/IT.NET.USER.ZS?name_desc=false

5 Petter Törnberg and Anton Törnberg, "The Limits of Computation: A Philosophical Critique of Contemporary Big Data Research," *Big Data & Society* 5, no. 2 (July 1, 2018): 2053951718811843; Cornelius Puschmann and Jean Burgess, "Metaphors of Big Data," *International Journal of Communication* 8 (2014): 1690–709.

6 Nathan Rosenberg, *Perspectives on Technology* (Cambridge: Cambridge University Press, 1976).

7 Nathan Rosenberg, "Uncertainty and Technological Change," in *The Economic Impact of Knowledge* (Routledge, 2009), 17–34; Brian Larkin, *Signal and Noise: Media, Infrastructure, and Urban Culture in Nigeria* (Duke University Press, 2020).

8 Langdon Winner, "Do Artifacts Have Politics?" *Daedalus* 109, no. 1 (1980): 121–36.

9 Safiya Umoja Noble, *Algorithms of Oppression* (New York University Press, 2018); Virginia Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor* (St. Martin's Press, 2018).

10 Manuel Castells, *Communication Power* (Oxford University Press, 2013).

11 As discussed in Raymond Guess, *Philosophy and Real Politics* (Princeton University Press, 2008), 15.

12 World Privacy Forum, "National IDs Around the World – Interactive Map," October 26, 2021, https://www.worldprivacyforum.org/2021/10/national-ids-and-biometrics/

13 Bidisha Chaudhuri and Lion König, "The Aadhaar Scheme: A Cornerstone of a New Citizenship Regime in India?" *Contemporary South Asia* 26, no. 2 (2018): 127–42; Rohan Grover, "Contingent Connectivity: Internet Shutdowns and the Infrastructural Precarity of Digital Citizenship," *New Media & Society*, 2023, 14614448231176552.

14 Keith Breckenridge, "The Biometric State: The Promise and Peril of Digital Government in the New South Africa," *Journal of Southern African Studies* 31, no. 2 (2005): 267–82.

15 Josef Teboho Ansorge, "Digital Power in World Politics: Databases, Panopticons and Erwin Cuntz," *Millennium* 40, no. 1 (2011): 66.

16 Grover, "Contingent Connectivity"

17 Steven Feldstein, "Government Internet Shutdowns are Changing. How Should Citizens and Democracies Respond?" Carnegie Endowment for International Peace, March 31, 2022, https://carnegieendowment.org/2022/03/31/government-internet-shutdowns-are-changing.-how-should-citizens-and-democracies-respond-pub-86687

18 Mark Andrejevic, "Automating Surveillance," *Surveillance & Society* 17, no. 1/2 (2019): 7–13.

19 Ron Deibert, "Protecting Society from Surveillance Spyware," *Issues in Science and Technology* 38, no. 2 (2022): 15–17; Council of Europe Parliamentary Assembly, *Pegasus and Similar Spyware and Secret State Surveillance, Doc. 15825*, Committee on Legal Affairs and Human Rights Report, September 20, 2023.

20 Luciano Floridi, "The Fight for Digital Sovereignty: What it is, and Why it Matters, Especially for the EU," *Philosophy & Technology* 33, no. 3 (1 September 2020): 369–78.

21 Tina Freyburg and Lisa Garbe, "Authoritarian Practices in the Digital Age| Blocking the Bottleneck: Internet Shutdowns and Ownership at Election Times in Sub-Saharan Africa," *International Journal of Communication* 12 (2018): 21.

22 Travis Waldron, "Facebook's "Digital Colonialism" Made Monday's Outage A Crisis For The World," *HuffPost UK*, October 6, 2021, https://www.huffpost.com/entry/whatsapp-facebook-outage-brazil-africa_n_615c7bc0e4b0548301014544

23 Feldstein, "Government Internet Shutdowns are Changing"

24 Victoria Bernal, "Eritrea On-Line: Diaspora, Cyberspace, and the Public Sphere," *American Ethnologist* 32, no. 4 (2005): 660–75.

25 Peter Chonka, "Cartoons in Conflict: Amin Arts and Transnational Geopolitical Imagination in the Somali-Language Public Sphere," *Critical African Studies* 9, no. 3 (2017): 350–76.

26 Max Weber, "Politics as a Vocation," in *From Max Weber: Essays in Sociology*, ed. H. H. Gerth and C. W. Mills (Routledge, 1919 [1970]), 82–83.

27 Hannah Arendt, *Crises of the Republic: Lying in Politics, Civil Disobedience on Violence, Thoughts on Politics, and Revolution*, vol. 219 (Houghton Mifflin Harcourt, 1972).

28 Alex Hern, "Cambridge Analytica: How Did it Turn Clicks into Votes?" *The Guardian*, May 6, 2018, https://www.theguardian.com/news/2018/may/06/cambridge-analytica-how-turn-clicks-into-votes-christopher-wylie

29 James H. Smith, *The Eyes of the World: Mining the Digital Age in the Eastern DR Congo* (University of Chicago Press, 2021).

30 Asta Vonderau, "Scaling the Cloud: Making State and Infrastructure in Sweden," *Ethnos* 84, no. 4 (2019): 698–718.

31 Georg Glasze et al., "Contested Spatialities of Digital Sovereignty," *Geopolitics* 28, no. 2 (March 15, 2023): 919–58.

32 Patrick Brodie, "Data Infrastructure Studies on an Unequal Planet," *Big Data & Society* 10, no. 1 (2023): 20539517231182402.

33 Oliver Dunnett et al., "Geographies of Outer Space: Progress and New Opportunities," *Progress in Human Geography* 43, no. 2 (2019): 314–36.

34 Andrew Phillips and J. C. Sharman, *Outsourcing Empire: How Company-States Made the Modern World* (Princeton, NJ: Princeton University Press, 2020).

35 Alina Utrata, "Engineering Territory: Space and Colonies in Silicon Valley," *American Political Science Review*, 2023.

36 Andrejevic, "Automating Surveillance"

37 Phillips and Sharman, *Outsourcing Empire*

Children's Rights at the Centre of Digital Technology Standards by Design

Mallory Knodel

IN TODAY'S NETWORKED society, there is growing anxiety among adults about the potential negative impact on our children of smartphones, social media, and our always-online culture.[1] However, a more nuanced understanding[2] of the risks and benefits of technology should acknowledge both the potential harms, and the resilience and wisdom demonstrated by the younger generation.

Quotidian parenting concerns aside, the spread of Child Sexual Abuse Material (CSAM) and the real harm that it documents, are exacerbated, wildly complicated and tragic crimes[3] unique to the scale and reach of digital-age communications. It is useful to take an extreme issue such as CSAM and child safety and explain how human rights organisations approach policy and technology interventions against child abuse to ensure that there is adequate protection for children's human rights and civil liberties—namely, privacy, security and safety, and free expression and association.

The most effective approaches to enabling children's rights online are human rights-centric, rather than protectionist. A shared policy advocacy approach among all stakeholders working in service of strengthening children's rights has four key aspects: protecting children's rights in the digital age; incentivising technical architecture that helps ensure child safety; examining

the role of agency in rights-protecting ways to moderate content; and deploying encryption for children's safety.

Beyond policy, there are also proactive ways whereby technology standards can be designed with children's rights at the centre. Technology can assist child safety in a variety of ways, but technology alone cannot do the work of protecting children's rights. Technology that protects privacy and confidentiality in online communications ensures and protects the human rights of all—including children and youth in at-risk communities—and allows social workers and other related institutions to help survivors in a secure and private manner. Thus, technical interventions that disrupt the privacy and security features of end-to-end encryption, not only threaten the human rights of all people using that technology, including children; they are counterproductive to the aim of keeping kids safe.

A Human Rights Approach to Child Safety

It is imperative to adopt an unwavering commitment to upholding human rights as a first principle, because children's rights, as with all rights, are most rigorously and broadly defined within the human rights framework. The fight against child abuse, as with all crimes, necessitates a delicate balance between the imperative to protect the most vulnerable members of society and the preservation of individual rights and freedoms. A human rights-centric framework emphasises the dignity and well-being of every child, acknowledging their right to privacy, safety, and freedom from exploitation. This has the benefit of safeguarding the broader digital activities of children, into a larger effort to keep all children safe from online harms while preventing unintentional collateral damage to society as a whole that may result from overreaching or intrusive measures.

Protectionist measures must not leverage violations of anti-CSAM laws and regulations as a pretext for the expansion of surveillance and control mechanisms that could encroach upon the privacy and autonomy of individuals beyond the scope of combating child abuse. Striking the right balance is paramount, ensuring that the fight against criminal content like CSAM does not inadvertently erode the very rights and freedoms it aims to protect. An overly protectionist approach poses significant risks to marginalised groups and vulnerable communities such as women at risk of domestic abuse, LGBTQI individuals, and sex workers. Excessive surveillance and stringent control mechanisms not only undermine the privacy and autonomy of these groups but also perpetuate societal stigmas and discrimination. A nuanced, rights-based approach is essential to ensure that the pursuit of safety does not come at the cost of further marginalising those who are already at the fringes of society.

To address criminal offenses like CSAM in a rights-respecting way, it is important not to criminalise any offence because a technology is used, or because the offence has a particular technical element, or because the offence involves a specific type of content such as hate speech or copyright infringement. Each of those approaches creates potential for human rights abuses because they are so easily expanded in scope and technologically impossible to restrict. Proposals that attempt to address content by introducing systemic weaknesses to the security systems we all rely on, lays fertile ground for increased cybercrime and other human rights abuses conducted via a vast and interconnected global telecommunications network.

Furthermore, as stated to the UN by several civil society organisations, "Any investigative powers should be tied to investigations of specific crimes. Any cross-border investigative framework should not cater to the lowest common denominator in terms of human rights safeguards."[4] Thus, states must be required to adhere to the highest standard, and not default to the lowest, of protection in multi-jurisdictional investigations.

When state proposals to protect children online noticeably violate human rights, they lose legitimacy, become targets for wide criticism from the human rights community, and are weakened in the eyes of the public. All indications point to child safety becoming the defining example from the current decade of a classic dynamic: state abuse of investigatory powers has a weakening effect in the medium term on the global rules-based order as well as the unsustainability of unaccountable power in the long term. By adopting a human rights-centric perspective, we can construct a framework that not only effectively keeps children safe but also fosters a digital environment where children can explore, learn, and communicate without the shadow of unwarranted intrusion or undue restrictions.

Content Moderation, in Moderation

'Content moderation' refers to the set of policies, systems, and tools that intermediaries of user-generated content use to decide what user-generated content or accounts to publish, remove, or otherwise manage. As with any technology, it should serve the needs of its users. Therefore, when considering moderating content in any system, end-to-end encrypted or otherwise, any method should: 1) refrain from violating privacy and confidentiality; and 2) empower users by improving user-agent features of those systems.

An end-to-end encrypted communications system is defined by the probability of an adversary's success in learning information about the communication between "ends" or users. Users today demand systems that are both secure and private;[5] systems that are confidential and that limit account metadata.

In a 2021 report, the Center for Democracy and Technology[a] evaluated five content moderation techniques[6] used in both end-to-end encryption and plaintext systems against the promises of confidentiality and privacy. These techniques include user reporting, traceability, metadata analysis, and two client-side scanning techniques that use artificial intelligence (AI): perceptual hashing and predictive models. Of these five techniques, the analysis showed, metadata analysis and user-reporting provide effective tools in detecting significant amounts and different types of problematic content on end-to-end encrypted services including abusive and harassing messages, spam, misinformation and disinformation, as well as CSAM.

However, not all approaches to content moderation using metadata are suitable. Metadata is data about data (such as sender, recipient, time stamp, and message size). In most jurisdictions the creation of more metadata contravenes data protection regulations. Encrypted systems deliver on promises of privacy and confidentiality by reducing discoverable account information—one form of metadata. Platforms take steps to minimise metadata such as user obfuscating IP addresses, reducing non-routing metadata, and avoiding extraneous message headers can enhance the confidentiality and security features of direct communications systems. Furthermore, limiting metadata analysis to the user's device reduces the risk of exposure.

Because metadata can be correlated with other data and itself constitutes important information, proposals that leverage traceability in end-to-end encryption systems actually produce more metadata in such systems, and thus expose all people to greater risk. For instance, AI machine learning approaches to metadata-driven content moderation risk exposing and re-aggregating identifiable information about people to third-party large language models.

Any measure to introduce computing on the user agent, or "client", or user device (such as client-side scanning) will not only break encryption but becomes a direct threat to civil liberties the moment a person's device becomes their adversary. Moreover, how client-side scanning is envisioned to work is notable: There is a turn to novel computational methods, AI machine learning (AI/ML), in the industry as well as governments in the hopes that hard societal problems can be solved with advances in technology. When Apple announced in 2021 changes to messaging and photo services, human rights advocates said,[7] "Apple is replacing its industry-standard end-to-end encrypted messaging system with an infrastructure for surveillance and censorship, which will be vulnerable to abuse and scope-creep not only in the U.S., but around the world."

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Many such attempts come from an over-glorification of AI/ML techniques for content moderation, all the while risking exposure of their users to "classic" or unsophisticated hacking by bad actors. Client-side scanning (CSS) has been flagged and debunked by academics[8] who argue that "CSS neither guarantees efficacious crime prevention nor prevents surveillance. Indeed, the effect is the opposite. CSS by its nature creates serious security and privacy risks for all society while the assistance it can provide for law enforcement is at best problematic." Public interest technologists,[9] and industry alike,[10] will continue to research and expose the serious risks associated with deployment of such methods, backed by expert analyses, and warn against a blind faith in technological solutionism, no matter how cutting-edge the technology in question seems.

There is a need for transparent and inclusive discussions between policymakers, technology experts, and civil society to navigate the complex landscape of online harms to children as it is a problem that intersects policing, protocols, platforms, and user privacy. A collaborative and informed approach balances the imperative to combat illegal content with the paramount importance of preserving fundamental rights and the security of communications in an always-online world.

Indeed, a recent report on youth's experiences online[11] shows that they themselves would benefit from more control over their tools, supporting the claim that user reporting and other in-app features are more effective and privacy-preserving solutions to content moderation than automated content moderation by the platform.

Tech Can Assist, But Not Control, Children's Safety

Tech-assisted approaches recognise that the problems of the digital age are much larger than that of sharing CSAM on encrypted platforms. Human rights advocates urge policymakers and platforms alike to go beyond "backdoors" to encryption, and rather take a wider view, as the previous discussion on the principles of a human rights approach has suggested.

In parallel to the human rights complexities of the problem of CSAM, the challenges surrounding the implementation of technology that attempts to solve CSAM are many,[12] yet all of them are insufficient both in guaranteeing less CSAM and preserving privacy and confidentiality. Systems that involve content detection inherently involve some level of access to content created and shared by users, thus violating the promises of end-to-end encryption.[13] However, a nuanced understanding of encryption technologies provides the opportunity for a balanced approach to the larger problem space that prioritises user privacy and security while addressing the challenges associated with illegal content.

Scholar Laura Draper takes an approach that accepts the ubiquitous existence of strong encryption,[14] and concludes that its security, privacy and confidentiality features are helpful to victims of abuse. Draper builds an informed and evolved set of recommendations for how to combat online child exploitation and abuse, including preserving strong end-to-end encryption.

For a variety of purposes, governments are focused on how to detect illegal content in private communications, and the technical approaches they suggest are often flawed. For instance, a draft European Commission report[15] leaked in September 2020 proposed several detection methods that would each break end-to-end encryption, weaken the security and privacy of all users, and present attractive targets for criminals. Again, experts in both human rights and technology responded by breaking the myths that framed the report,[16] arguing that "breaking end-to-end encryption to curb objectionable content online is like trying to solve one problem by creating 1,000 more. Insecure communications make users more vulnerable to the crimes we collectively are trying to prevent."

Cybersecurity experts are in agreement: There is no way to enable a third party to monitor end-to-end encrypted communications without weakening the security and privacy for all of its users, including those most vulnerable and the victims of crimes for whom digital security is especially critical.

Backdoors to encryption render the whole system vulnerable, weaken the security of all components, and put users at risk. If measures such as mandatory detection, reporting, and removal are intended to apply to end-to-end encrypted communications, then regardless of whether the unlawful content is known, platforms would be forced to undermine end-to-end encryption, and to do so for all content, the vast majority of which is lawful.

By minimising the intense focus on end-to-end encrypted systems that would require content detection, there is an opportunity to build alternative methods to combat illegal content without compromising the privacy and security of people, including children and youth, online. In that search for solutions, a respect for user confidentiality and privacy is a must while addressing the challenges associated with illicit content detection and beyond.

Technical interventions like user reporting and metadata analysis are more likely to be implemented consistently across the industry and better preserve privacy and security guarantees for end users. A narrow focus on these improvements could address the problem of CSAM while avoiding the privacy and security nightmares of broader, technocractic approaches. These tools can detect significant amounts of different types of problematic content on end-to-end encrypted services, including

abusive and harassing messages, spam, misinformation and disinformation, and CSAM. These tools have known imperfections—including that users sometimes make false accusations via provided reporting mechanisms—thereby necessitating more research to improve these tools and better measure their effectiveness.

Child Safety Begins With Privacy

The complexities of online safety for children and youth stem from the novel and pervasive risks at-scale. While research indicates a lack of clear cause-and-effect understanding of the internet's impact on youth, broadly, this article has focused on the most egregious, albeit less understood crimes against child victims of abuse. The controversies and potential drawbacks of policies aimed at devastating but relatively rare crimes, include fears of censorship and restrictions on information access for all people. Meaningful policy enhancements to online safety for all children would require stronger privacy legislation and clearer content guidelines, and market regulation that would force better practices and end user features in social media.[17]

Turns out that encryption protects all human rights including those of children, especially youth in at-risk communities. Encryption has a vital role in safeguarding the privacy and safety of survivors[18] of domestic violence, sexual violence, stalking, and trafficking. It explains that secure communication and storage tools are crucial for survivors and those supporting them, with strong encryption being a critical component of the solution. Encryption mitigates technology-facilitated abuse, such as aiding safety planning and evidence protection. This is critically important to the problem of child abuse where statistically it is the caretaking adults who are most likely to be their victimisers. Encryption prevents unauthorised access to data, both in transit and at rest, which can safeguard survivors' case files from privacy breaches and revictimisation.

Encryption's properties of data integrity can help in maintaining strong evidence when victims or parties to the crime are collaborating with law enforcement and legal professionals. Ultimately, weakening strong encryption practices could compromise the privacy and safety of survivors. Strong encryption can empower survivors with secure communication tools that are crucial for their ability to seek help, safety, and healing.

Moreover, children's safety and those providing services to child victims can sometimes find themselves in an adversarial relation to state power. Repressive regimes, military occupation, and migration are all examples of when children are vulnerable to state power and its abuses or excesses.[19]

Companies have made commitments to user privacy and communications security, including visible changes that make children and teens safer online, including the use of encryption.[20] When companies, either because they are pressured by law enforcement to do more for children, or coerced through legislative restrictions, open the door to privacy threats for all users, regardless of age or jurisdiction, they create new threats for those same young people targeted by the changes. Youth and children in abusive homes are especially vulnerable to injury and reprisals, including from their parents or guardians.

Overall, child safety enhancements must involve families, schools, and young people themselves in creating effective strategies, with states responsible for tailoring those strategies appropriately per jurisdiction and cultural environs. The importance of digital literacy education must also not be forgotten, which aligns child safety with efforts to bolster sustainable development and civil rights.

Conclusion

A principled approach to online child safety uncovers some key takeaways for the debates in parliaments and board rooms, and around dinner tables:

1. There is no silver-bullet solution to the complex problem of child exploitation. Data-driven methods in computer vision and data analysis at scale are largely overstated, processing intensive, and require human oversight. False confidence in these tools does a disservice to youth victims as much as it makes a collateral damage of all youth's privacy.

2. Law enforcement and the intelligence communities in rule-of-law democracies have consistently demonstrated a lack of restraint in the use of pervasive monitoring tools. While policy must continue to hold investigatory powers in check, the ubiquitous deployment of strong encryption is another necessary check on this power.

3. Children's threat models are complex because they lack legal standing, they are dependents, and they need to be cared for. They deserve safety from abusive parents, strangers, and familiar adults who would hurt them, companies that might exploit them, and states who would neglect them. Technical mechanisms that give children and youth more agency over their digital lives give them the tools to address the threats they might be facing.

On the whole, the safety of already marginalised populations, especially children and youth in at-risk communities, could be seriously endangered in the absence of end-to-end encryption environments. A more holistic and child-centric approach is needed both from policy and technology.

Endnotes

1 Arman Khan, "The Validation Spiral: How We Let Others Define Our Self-Worth," *Feminism in India*, June 2021, https://feminisminindia.com/2021/06/18/the-validation-spiral-how-we-let-others-define-our-self-worth/

2 Kelli María Korducki, "What the Teen-Smartphone Panic Says About Adults," *The Atlantic*, June 14, 2023, https://www.theatlantic.com/newsletters/archive/2023/06/teen-smartphone-social-media-adults/674417/.

3 Susan Landau, "Finally Some Clear Thinking on Child Sexual Abuse and Exploitation Investigation and Intervention," Lawfare, January 24, 2023, https://www.lawfaremedia.org/article/finally-some-clear-thinking-on-child-sexual-abuse-and-exploitation-investigation-and-intervention.

4 Joint civil society statement, "Privacy & Human Rights in Cross-Border Law Enforcement," August 2021, https://www.eff.org/files/2021/08/17/20210816-2ndaddprotocol-pace-ver2-final.pdf

5 Mallory Knodel et al., "Definition of End-to-End Encryption," Internet Draft, Internet Engineering Task Force, June 21, 2023, https://datatracker.ietf.org/doc/draft-knodel-e2ee-definition/.

6 Seny Kamara et al., *Outside Looking In: Approaches to Content Moderation in End-to-End Encrypted Systems,* Center for Democracy & Technology, 2021, https://cdt.org/wp-content/uploads/2021/08/CDT-Outside-Looking-In-Approaches-to-Content-Moderation-in-End-to-End-Encrypted-Systems.pdf.

7 Greg Nojeim et al., "Apple's Changes to Messaging and Photo Services Threaten User Security and Privacy," Center for Democracy & Technology, August 2021, https://cdt.org/press/cdt-apples-changes-to-messaging-and-photo-services-threaten-users-security-and-privacy/.

8 Hal Abelson et al., "Bugs in Our Pockets: The Risks of Client-Side Scanning," arXiv, October 14, 2021, https://arxiv.org/abs/2110.07450.

9 Gurshabad Grover et al., "The State of Secure Messaging," *The Centre for Internet and Society*, July 2020, https://cis-india.org/internet-governance/blog/the-state-of-secure-messaging

10 "EDPB-EDPS Joint Opinion 04/2022 on the Proposal for a Regulation of the European Parliament and of the Council Laying Down Rules to Prevent and Combat Child Sexual Abuse," European Data Protection Board, July 28, 2022, https://edpb.europa.eu/our-work-tools/our-documents/edpbedps-joint-opinion/edpb-edps-joint-opinion-042022-proposal_en.

11 Michal Luria, "More Tools, More Control: Lessons from Young Users on Handling Unwanted Messages Online," CDT, November 9, 2023, https://cdt.org/insights/more-tools-more-control-lessons-from-young-users-on-handling-unwanted-messages-online/.

12 Mallory Knodel, "To the UK: An Encrypted System That Detects Content Isn't End-to-End Encrypted," May 25, 2022, https://cdt.org/insights/to-the-uk-an-encrypted-system-that-detects-content-isnt-end-to-end-encrypted/.

13 Anushka Jain et al., "The draft Indian Telecommunication Bill retains its colonial roots," *Internet Freedom Foundation*, September 2022, https://internetfreedom.in/the-draft-indian-telecommunication-bill/

14 Laura Draper, "Protecting Children in the Age of End-to-End Encryption," *Joint PIJIP/TLS Research Paper Series* 80, 2022, https://digitalcommons.wcl.american.edu/research/80.

15 Internet Society and Center for Democracy & Technology, "Breaking Encryption Myths: What the European Commission's Leaked Report Got Wrong About Online Security," Global Encryption Coalition, 2020, https://www.globalencryption.org/wp-content/uploads/2020/11/2020-Breaking-Encryption-Myths.pdf.

16 Internet Society and Center for Democracy & Technology, "Breaking Encryption Myths"

17 Lauren Leffer, "Here's How to Actually Keep Kids and Teens Safe Online," *Scientific American*, September 18, 2023, https://www.scientificamerican.com/article/heres-how-to-actually-keep-kids-and-teens-safe-online/.

18 Internet Society and National Network to End Domestic Violence, "Understanding Encryption: The Connections to Survivor Safety," 2021, https://www.internetsociety.org/wp-content/uploads/2021/05/NNEDV_Survivor_FactSheet-EN.pdf.

19 Dag Tannenberg, "Political Repression," in *The Handbook of Political, Social, and Economic Transformation*, ed. Wolfgang Merkel, Raj Kollmorgen, and Hans-Jürgen Wagener (Oxford, 2019), https://doi.org/10.1093/oso/9780198829911.003.0066.

20 Loredana Crisan, "Launching Default End-to-End Encryption on Messenger," Meta, December 6, 2023, https://about.fb.com/news/2023/12/default-end-to-end-encryption-on-messenger/.

Challenges and Imperatives for Women's Economic Autonomy Beyond the 2030 Agenda

Gala Díaz Langou and Sofía Fernández Crespo

IN 2015, AN AMBITIOUS and holistic agenda was set to guide countries' priorities to achieve a more sustainable and egalitarian world. Different targets were established to ensure economic growth and social well-being while regarding intersectionalities between environmental protection; institutional quality; and territorial, technological, income, and gender gaps. Standing at the midpoint of the 2030 deadline, this agenda is far from being met.

The *Sustainable Development Goals Report 2023* shows meagre results: the world has not made progress, and has even regressed, in over 30 percent of the targets. This is true for the goal of gender equity. On SDG 5, for example—'Achieve gender equality and empower all women and girls'—only 15.4 percent of the indicators of the 2030 targets are on track to being fulfilled.[1]

Over the past decades, the significance of achieving gender equality has firmly established itself on the public agenda due to the work of feminist and LGBTIQA+ movements across the globe. There is still a long way to go, however. This essay underlines the imperative of nurturing women's autonomy in three crucial domains, as conceptualised by the Economic Commission for Latin

America (ECLAC) of the United Nations: physical, economic, and decision-making autonomy.

Addressing gender gaps and increasing women's autonomy would allow women to enjoy a life of independence and freedoms, on equal terms with their male counterparts. Narrowing and closing these gaps will foster women's rights; it is also a strategy for overall development.

This article analyses current global progress in the nurturing of the three autonomies. It explains the persisting barriers to their realisation, focusing on the economic dimension; offers recommendations to increase both women's economic autonomy and sustainable and inclusive development; and outlines the key imperatives and challenges that lie ahead, even beyond the 2030 Agenda.

The Three Autonomies: Progress and Enduring Challenges

Many countries have expanded the rights and the recognition of the need for women to attain physical autonomy and have passed legislation against violence and in favour of voluntary interruption of pregnancy. Moreover, according to the United Nations Population Fund's population dashboard, almost eight out of every 10 girls and women (15 to 49 years old) were users of a modern contraceptive method in 2023.[2] Still, there continue to be barriers in the access to sexual and reproductive healthcare, especially in developing regions where, for instance, the number of users falls by 20 percent; there are also persistent gender gaps in legal protection against gender-based violence and the many forms of discrimination. These gaps need to be addressed as, globally, women are twice as likely as men to say they have experienced discrimination based on their sex[3] and 35 percent of women report having been subjected to physical or sexual violence by either intimate partners or non-partners.[4]

To be sure, progress has been achieved in certain fronts. For example, in the past decade, there has been a global increase in women's representation in parliaments: from 18.7 percent of seats in 2013 to 22.9 percent in 2022, as shown in this year's *Global Gender Gap Report.*[5] One of the policies that some countries have applied to nurture political equity is gender quotas, which according to the UNSTATS,[6] has translated to having up to 10 percent more women in parliament. Women's participation has also increased in local governance since 2017. Available data from 117 countries show that women account for more than 40 percent of the representation at the local level in 18 countries across different regions—examples include Bolivia, India, and France.[7]

Despite such progress, however, women continue to be underrepresented in every dimension of social life: they occupy fewer managerial positions in the private sector; and they have largely negligible roles in labour unions, educational institutions, and

in the executive, legislative, and judicial branches of government. At the current rate, it would take almost half a century to achieve equal representation in national parliaments worldwide.[8]

The situation is even more grim in the area of economic autonomy,[a] where women continue to face a multitude of obstacles and achieve worse outcomes than men.

Gender Gaps in the Labour Market and Women's Economic Autonomy

Women participate less in the labour market compared to men. The female-to-male ratio in labour force participation rates shows that there is no gender parity in any region. According to 2021 estimates from the International Labour Organization (ILO), in the vast majority of countries across the world, the male labour force participation rate is at least 10 percent more than that of females—with the exception of some countries like Laos, Nepal, Mozambique, or Sweden.[9]

Even when the female workforce has increased over the last three decades in countries of all income levels—with some exceptions such as Türkiye and Thailand—[10] women work fewer hours. Furthermore, women tend to have jobs in less dynamic and low-productivity sectors, work under worse working conditions, and receive lower salaries—a phenomenon known as 'occupation or horizontal segregation' that is observed in both developed and developing economies. The highest female Labour Force Participation Rates can be found in three particular sectors: services, industry, and agriculture. In the first two, however, women are employed largely in specific areas associated with education, health, and other care-related services and industries.

Women are also more likely to work in the informal economy than men, especially in low- and middle-income countries. Taking into account non-agricultural employment, informality can account for anywhere from 70 percent to 90 percent of female employment in African and Southeast Asian countries, between 20 percent and 30 percent in Latin America, and below 10 percent in European countries; the exception in the latter is the UK, where the share of informality is at around 20 percent.[11]

Another crucial gap is in pay: Women, on average, earn less than their male counterparts. As Nobel laureate in Economics, Claudia Goldin, has shown, in the third quarter of 2020, for every dollar earned by a man in the US, a woman received 0.8 dollars for the same job.[12] Such gap can also be explained by the aforementioned factors. That women do the lion's share of the most precarious jobs and do not occupy top positions cross-sectorally, render them more likely to have lower incomes.

a 'Women's autonomy' refers to women's ability to possess resources, especially income, and manage them.

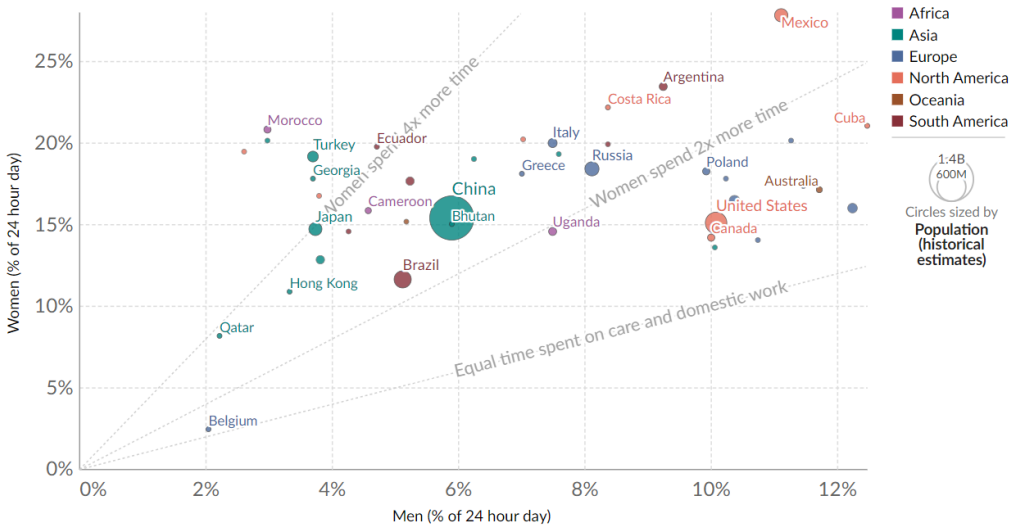
Various factors underlie the obstacles faced by women and girls in participating in the labour market: cultural norms; gender stereotypes; and unpaid care and domestic work.

From the time a person is born, they internalise social norms and gender roles embedded in societal institutions and which guide human interactions. These consist of attitudinal behaviours, emotions and predispositions towards consumptions, desires, career paths, and individual decisions. They affect men's and women's decision-making and access to opportunities throughout their lives.[13]

Historically, these norms and stereotypes have constrained women to the private sphere, with their social role being attached to familiar domestic tasks such as raising, nurturing and caring for family members; the men, meanwhile, are assigned to the administration of the public sphere and associated with production as well as decision-making. This has consolidated a sexual division of labour that has been perpetuated and reinforced in legislation, informal rules, and habits. As a result, women's agency is limited and equality is absent in the opportunities made available to men and women.[14]

Evidence shows that, despite cultural change, the role of women as carers and household managers is still normalised, and indeed, in vigour. Globally, women spend, on average, 3X (three times) more hours than men on unpaid domestic and care work.[15] This figure hides huge differences between regions and countries. For instance, while women in Canada spend about 1.5X more hours to domestic chores than men, in India they dedicate 8X more.[16]

Fig. 1: Time Spent on Unpaid Care and Domestic Work, Women vs. Men, 2022



Source: Our World in Data[17]
Note: Unpaid care and domestic work includes: food preparation, dishwashing, upkeep of a dwelling, laundry, ironing, gardening, caring for pets, shopping, servicing and repair of personal and household goods, childcare, and care of the sick, elderly or disabled household members.

Such an unequal distribution of care and domestic work results in women suffering what is known as 'time poverty': they are left with less time to offer in the labour market, or to dedicate to education, leisure, and other activities.[18] Studies have also shown the impact of becoming a mother on increasing the odds of falling into poverty.[19,20] Women who are mothers tend to earn less than women who are not (10 percent less in Argentina, and 30 percent in China and Türkiye).[21] In contrast, men who are fathers have, on average, higher incomes than men without children. The fatherhood gap, which compares the hourly wages of non-fathers to those of fathers, indicates that the latter experience a wage premium, according to the ILO's *Global Wage Report 2018/19*.[22] Simultaneously, given that women spend more time in the so-called 'economy of the shadows',[23] leading to the feminisation of poverty,[24] they are not only more likely to be poorer than men but their contribution to economic growth and development goes unnoticed and unaccounted for.

Yet, the care economy underpins society, production, and overall well-being. Care work includes services and activities that foster, safeguard, acquire, accumulate and restore human capabilities and social skills necessary for individuals and families to have fulfilling lives and unleash their potential; it is a precondition to thriving societies. Therefore, care work is the enabling force behind all other productive endeavours.[25] Even though its potential in job creation is estimated to be at nearly 300 million jobs by 2035,[26] care and domestic work's social and economic value remains largely invisible.

The primary reason is that domestic and care work is seen as an almost exclusive responsibility of households instead of a shared endeavour to be pursued by the State, the private sector, communities, and families. Moreover, within each household, the greatest share of these tasks is shouldered by girls and women, due to the gender stereotypes and social norms discussed above.

Adding to women's time poverty, this implies that each household has to face their care needs with its own resources and independently of their composition. At this point, education credentials and income distribution play a crucial role. Women with more resources and higher education have fewer children and tend to outsource care responsibilities, usually hiring lower-income female workers and migrants (who account for 17 percent of all care and domestic work globally[27]). Meanwhile, as they tend to have more children and, overall, more dependents, they struggle to bear the burden of their own unpaid care and domestic chores with their jobs as carers, usually poorly paid and in precarious conditions.

In recent years, a demographic transition has emerged at the convergence of decreasing fertility rates and the consolidation of adult cohorts, leading to a beneficial dependency ratio where the economically active population outnumber those in dependency. Such a transition has had implications on the resources available to

families for catering to their needs. Most countries in the world are going through the demographic dividend, where the dependency ratio remains at its lowest.[28] Fertility rates have fallen rapidly worldwide: from the average of five children per woman in 1950 to today's rate of 2.3.[29] This could imply a reduction in women's care responsibilities, and an increase in their reproductive choices. It can also mean fewer school vacancies required and reorienting resources in various educational levels, less cash transfers to families with children, and a different scheme of leaves of absence.

At the same time, however, this might bring some adverse challenges, such as a proportionally higher number of single-parent families, or greater pressures on social security as the top of the population pyramid widens. There are other effects that have specific implications for public policy, strategic decisions, and planning.[30]

Overall, considering the intersectionalities in inequalities in terms of gender, family structures, and class can help formulate more efficient policies. These, in turn, can lead to more beneficial social distribution of care.

In sum, women continue to encounter numerous obstacles that prevent them from fully engaging and benefitting from the economy. They are underrepresented in the labour market, and those who participate face elevated rates of unemployment and lower salaries, experience horizontal segregation, and have limited access to leadership roles. These persistent gender inequities—which act as predictors of poverty and barriers to women's economic autonomy—suggest a massive untapped pool of talent, resulting in the unexplored potential for economic growth.[31] Addressing these inequities through targeted public policymaking could contribute to overcoming poverty and inequality.[32]

Policy Recommendations

Plenty of obstacles remain in achieving women's autonomy, especially in the economic dimension. Even as progress has been made in narrowing gender gaps, the world remains far from meeting the targets set by the Sustainable Development Goals (SDGs); the disparities in certain goals have even widened in the aftermath of the COVID-19 pandemic.[33] Indeed, crises tend to disproportionately affect women, being the first to leave the job market when the economy contracts and the last to return during recovery. They are also more exposed to hard-hit economic sectors[34] and even more so compared to past crises; the outbreak of COVID-19 had a particular impact on sectors of the economy with a large share of women workers.[35]

Additionally, groups of people who question the foundations of gender equality and resist the ongoing material and symbolic transformations are emerging in many

regions, organising themselves in public spaces and disseminating anti-gender-equality discourses on social media. In the South American region, some examples are the Peruvian and Argentinian *'Con mis hijos no te metas'* (Do not mess with my children) or the Ecuadorian *'Vamos por la Vida'* (For Life)—religious and conservative reactions against the implementation of sexual education in schools and abortion legislation.[36] If not restrained, these pushbacks can jeopardise the progress that has been accomplished over the recent years.

The linkage between feminisation of poverty and women's economic participation has been clearly stated. There is evidence that if gender employment gaps were closed, poverty would fall, for instance in Latin America, by 1 to 14 percent,[37] and countries globally could increase their GDP by up to 20 percent.[38] As emphasised by European Central Bank President Christine Lagarde in 2016: "Getting more women into the workforce isn't just about equality, it is smart economics."[39]

The following points outline public policies that are especially relevant to the goal of increasing women's economic participation, thereby enlarging the global workforce, reducing poverty, and boosting development.[40]

1. Develop comprehensive care systems.

The provision of comprehensive care systems would enable access to quality care services and goods, independently of the families' or individuals' incomes. Investing in affordable and accessible care infrastructure and services, especially those targeted to early childhood and adolescence, has proved to be more efficient and bring higher returns than policies implemented later in the life cycle. Such services can help fix long-dated vulnerabilities that could have been addressed in time.[41]

2. Implement policies that promote work-life balance.

Provide maternity and parental leaves in accordance with ILO standards. Parental leave policies should encourage shared responsibility in caregiving. They should consider gender dynamics and family structures to mitigate the reinforcement of stereotypes that traditionally designate the mother as the primary caregiver, and adapt to different household structures (i.e., one-person, biparental without child, single-parent, extensive and composed, or biparental with children).[42]

3. Develop gender-disaggregated data.

Incorporating a transversal and strong gender perspective in national and international statistical systems would contribute to identifying gender gaps and formulating effective solutions to narrow them. Collecting and analysing gender- and age-disaggregated data is a precondition to designing, implementing and evaluating

policies tailored to the specific individuals' and households' needs in different stages of the life cycle.

4. Design specific indicators to measure women's economic contribution.

A step forward is developing synthetic indicators, such as the Center for Implementation of Public Policies for Equity and Growth (CIPPEC)[43] and Southern Voice's Basic Care Basket, which estimates the monetary value of resources needed for families to produce care without compromising women's economic autonomy or children's development potential. This indicator provides critical information about the goods, services, and infrastructure necessary for caregiving, household expenditure on these needs, and variations based on family configurations. Its objective is to reduce the volume of unpaid care work, informing the design of global public policies to enhance care systems.[44]

5. Recognise the centrality of the care economy and value unpaid care work.

International cooperation and multilateral platforms such as the G20 can play a crucial role by advocating for policies that promote investments in care infrastructure and services. These efforts aim to increase women's workforce participation, ensuring access to decent jobs with fair remuneration, and ultimately contributing to narrowing gender gaps in the labour market.

6. Implement policies that target the female labour force.

Identifying underexploited potential and setting policies such as the G20's "25 by 25" target for the female labour force—which aims to reduce the gender gap participation by 25 percent by 2025—can help bridge the gender gaps in participation.

7. Boost the incorporation of women in dynamic sectors and reduce horizontal segregation.

Women are underrepresented in the STEM domains (Science, Technology, Engineering and Mathematics), which generally offer better salaries and working conditions. Few women enter the scientific and technological field, and those who do, face 'glass ceilings' mainly because of social and cultural norms that prevent them from paving their pathways in these disciplines.[45]

8. Narrow the gender digital divide.

Women and girls experience obstacles when accessing and using digital technologies. Closing the gender digital divide and boosting women's participation in the digital economy would result in social and economic gains and increase in livelihoods and GDP. Concrete ways to closing the divide include: implementing policies to make technologies more affordable; increasing literacy and digital skills;

promoting accessibility and online safety; and preventing the perpetuation of gender biases in data and algorithms by digital technology or artificial intelligence (AI).[46]

9. Advance the implementation and operationalisation of policies that contribute to cultural change.

There are proven effective interventions in the cultural dimension such as affirmative action policies like gender quotas that aim to break the glass-ceiling effect. A gender perspective should also be mainstreamed in communication and education, for their potential to challenge stereotypical gender norms.[47]

Key Imperatives Beyond the 2030 Agenda

Closing gender gaps in the labour market is not only a question of equity but also highly beneficial in terms of economic growth and development, and the overall well-being of societies. While gender gaps are intertwined with the social fabric and the economic and cultural traits of the context they emerge from, women's lack of autonomy is a global phenomenon. It thus requires multilateral discussion and coordinated action across the globe.

Only by implementing public policy through the gender lens can the world come closer to achieving the targets embodied in the SDGs and pave the way to successfully facing the challenges beyond the 2030 Agenda. The time is now: seizing the opportunities of the demographic transition will set the basis for more developed, sustainable and inclusive economies across the globe.

Endnotes

1 United Nations Statistics Division, *The Sustainable Development Goals Report 2023*, New York, United Nations, 2023, https://unstats.un.org/sdgs/report/2023/The-Sustainable-Development-Goals-Report-2023.pdf

2 United Nations Population Fund, *World Population Dashboard 2023,* New York, United Nations, 2023, https://www.unfpa.org/data/world-population-dashboard

3 "The Sustainable Development Goals Report 2023"

4 Office of the United Nations High Commissioner for Human Rights, *Sexual and Reproductive Health Information Sheet: Gender-Based Violence*, Geneva, United Nations, 2020, https://www.ohchr.org/sites/default/files/Documents/Issues/Women/WRGS/SexualHealth/INFO_GBV_WEB.pdf

5 World Economic Forum, *Global Gender Gap Report 2023*, Geneva, World Economic Forum, 2023, https://www.weforum.org/publications/global-gender-gap-report-2023/

6 "The Sustainable Development Goals Report 2023"

7 "Global Gender Gap Report 2023"

8 "The Sustainable Development Goals Report 2023"

9 Esteban Ortiz-Ospina et al., "Women's Employment," Our World in Data, 2018, https://ourworldindata.org/female-labor-supply

10 Ortiz-Ospina et al., "Women's Employment"

11 Ortiz-Ospina et al., "Women's Employment"

12 U.S. Bureau of Labor Statistics, *Employed Full Time: Median Usual Weekly Real Earnings: Wage and Salary Workers: 16 Years and Over: Women*, Federal Reserve Bank of St. Louis, 2023, https://fred.stlouisfed.org/series/LES1252882800Q

13 Gala Díaz Langou et al., *A Gendered Perspective on Changing Demographics: Implications for Labour, Financial and Digital Equity*, 2030 Agenda for Sustainable Development Task Force, T20 Japan (2019), https://www.jica.go.jp/Resource/jica-ri/publication/booksandreports/l75nbg000017waxu-att/TF1_web_0603_0013.pdf

14 Gala Díaz Langou et al., *El género del trabajo,* Buenos Aires, CIPPEC, 2019, https://www.cippec.org/wp-content/uploads/2019/11/el_genero_del_trabajo.pdf

15 International Labour Organization, *Care Work and Care Jobs for the Future of Decent Work*, Geneva, ILO, 2018, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_633166.pdf

16 N. van der Gaag et al., *State of the World's Fathers: Unlocking the Power of Men's Care,* Washington, DC, Promundo, 2019, https://s30818.pcdn.co/wp-content/uploads/2019/05/BLS19063_PRO_SOWF_REPORT_015.pdf

17 Our World in Data, "Achieve Gender Equality and Empower All Women and Girls," 2023, https://ourworldindata.org/sdgs/gender-equality

18 Sukriti Anand et al., *Leveraging Care Economy Investments to Unlock Economic Development and Foster Women's Economic Empowerment in G20 Economies,* T20 India, 2023, https://t20ind.org/research/leveraging-care-economy-investments-to-unlock-economic-development/

19 Fabián Repetto et al., *El Futuro es hoy: Primera infancia en la Argentina,* Buenos Aires, Biblos, 2016.

20 UNDP & UN Women, *The Paths to Equal. Twin Indices on Women's Empowerment and Gender Equality, July 2020,* New York, United Nations Development Programme (UNDP), United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), 2020, https://hdr.undp.org/system/files/documents/hdp-document/pathsequal2023pdf.pdf

21 "Leveraging Care Economy Investments to Unlock Economic Development and Foster Women's Economic Empowerment in G20 Economies"

22 International Labour Organization, *Global Wage Report,* Geneva, ILO, 2018, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_650553.pdf

23 Patricia Kelly Fernandez and Jon Shefner, *Out of the Shadows: Political Action and Informal Economy in Latin America,* Philadelphia, The Pennsylvania State University Press, 2010.

24 Gala Díaz Langou, "Stratified Universalistic Regimes in the Twenty-First Century: Widening and Compounding Inequalities in Welfare and Social Structure in Argentina, Uruguay, Chile and Costa Rica" in *Latin American Social Policy Developments in the Twenty-First Century*, eds. Natália Sátyro, Carmen Midaglia, and Eloísa del Pino (Switzerland: Palgrave Macmillan, 2019), 33-59, https://download.springer.com/download/27313ce4-6e97-44b3-a176-ba21aac22852/978-3-030-61270-2.pdf

25 CIPPEC, "The International Day of Care and Support: An Opportunity to Acknowledge and Bolster Care's Power to Foster Inclusive Development," https://www.cippec.org/textual/the-international-day-of-care-and-support-an-opportunity-to-acknowledge-and-bolster-cares-power-to-foster-inclusive-development/

26 Laura Addati, Umberto Cattaneo, and Emanuela Pozzan, *Care at Work: Investing in Care Leave and Services for a More Gender Equal World of Work*, ILO, 2022, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_633166.pdf

27 International Labour Organization, *ILO Global Estimates on Migrant Workers: Results and Methodology. Special Focus on Migrant Domestic Workers*, Geneva, ILO, 2015, https://www.ilo.org/wcmsp5/groups/public/---dgreports/--dcomm/documents/publication/wcms_436343.pdf

28 "A Gendered Perspective on Changing Demographics: Implications for Labour, Financial and Digital Equity"

29 Hannah Ritchie et al., "Five Key Findings From the 2022 UN Population Prospects," Our World in Data, 2022, https://ourworldindata.org/world-population-update-2022

30 CIPPEC, "Censo 2022: Cambios demográficos y su impacto en la planificación de las políticas públicas," https://www.cippec.org/textual/censo-2022-cambios-demograficos-y-su-impacto-en-la-planificacion-de-las-politicas-publicas/

31 Gala Díaz Langou, "Gender, Education and Future of Work: Three Priorities for the Employment Working Group in 2023," *G20 in 2023: Priorities for India's Presidency*, New Delhi, ORF and Global Policy Journal, 2022.

32 Díaz Langou, "Stratified Universalistic Regimes in the Twenty-First Century: Widening and Compounding Inequalities in Welfare and Social Structure in Argentina, Uruguay, Chile and Costa Rica"

33 Vincent Tang et al., *Gender Equality and COVID-19: Policies and Institutions for Mitigating the Crisis, Special Series on COVID-19*, Washington DC, International Monetary Fund Fiscal Affairs, UN Women, UNDP, 2021, https://www. imf.org/-/media/Files/Publications/covid19-special-notes/en-special-series-on-covid-19gender-equality-and-covid-19.ashx

34 UN Women, *From Insight to Action. Gender Equality in the Wake of COVID 19*, New York, United Nations Entity for Gender Equality and the Empowerment of Women, 2020, https://www.unwomen.org/sites/default/files/Headquarters/Attachments/Sections/Library/Publications/2020/Gender-equality-in-the-wake-of-COVID-19-en.pdf

35 "Gender Equality and COVID-19: Policies and Institutions for Mitigating the Crisis, Special Series on COVID-19"

36 Jordi Bonet i Martí, "Antifeminismo. Una forma de violencia digital en América Latina," *Nueva Sociedad,* no. 5 (2022), https://nuso.org/articulo/302-antifeminismo/

37 Díaz Langou, "Stratified Universalistic Regimes in the Twenty-First Century: Widening and Compounding Inequalities in Welfare and Social Structure in Argentina, Uruguay, Chile and Costa Rica"

38 Steven Michael Pennings, *A Gender Employment Gap Index (GEGI): A Simple Measure of the Economic Gains from Closing Gender Employment Gaps, With an Application to the Pacific Islands,* Washington DC, World Bank, 2022, http://hdl.handle.net/10986/37062

39 Gala Díaz Langou, "Gender, Education and Future of Work: Three Priorities for the Employment Working Group in 2023"

40 Some of these recommendations have been discussed and incorporated in the G20 New Delhi Leaders' Declaration. Moreover, one of the twelve commitments made was "Close gender gaps and promote the full, equal, effective and meaningful participation of women in the economy as decision-makers." The declaration is available at https://www.mea.gov.in/Images/CPV/G20-New-Delhi-Leaders-Declaration.pdf

41 Juan Camisassa, Victoria Bruschini, and Emanuel López Méndez, *Sistema de cuidados para la infancia,* Buenos Aires, CIPPEC, 2023, https://www.cippec.org/wp-content/uploads/2023/09/Documento-3.0-Sistema-de-cuidados-para-la-infancia.pdf

42 "Leveraging Care Economy Investments to Unlock Economic Development and Foster Women's Economic Empowerment in G20 Economies"

43 CIPPEC is an independent nonprofit organisation based in Argentina that works on building better public policies. Its mission is to influence public policies for equitable development and the strengthening of democratic institutions through applied research, open dialogues, and by working with public administrations.

44 The commitment to a universal Basic Care Basket has been included as a recommendation to G20 leaders in the W20 Communiqué 2023, available at https://w20india.org/wp-content/uploads/2023/06/W20-Communique-2023.pdf

45 Paula Szenkman and Estefanía Lotitto, *Mujeres en STEM: Cómo romper con el círculo vicioso,* CIPPEC, 2020, https://www.cippec.org/wp-content/uploads/2020/11/224-DPP-PS-Mujeres-en-STEM-Szenkman-y-Lotitto-noviembre-2020-1.pdf

46 W20, "Women-Led Development Transform, Thrive, and Transcend," W20 Communiqué 2023, 2023, https://w20india.org/wp-content/uploads/2023/06/W20-Communique-2023.pdf

47 Díaz Langou et al., *El género del trabajo*

Resilience, Innovation, and Connectivity: Afghanistan's Women Navigate Constricted Spaces Amid Taliban Resurgence

Mariam Wardak

SINCE RETURNING TO power in August 2021, the Taliban's Islamic Emirate has reinstated many restrictions that have an uncomfortable resemblance to the policies they implemented during their earlier rule in the mid-1990s. Back then, they claimed that their restrictions on women working outside the home[a] and women going to school would be temporary. The Taliban cited residual fears from the brutality of the civil war that preceded their rise to power as the reason for the restrictions that were being imposed specifically on women.

The resurgence of the Taliban has bred difficulties for women and girls in Afghanistan, threatening their gains in education and economic participation, and many societal domains. With the Taliban back in power, their imposition of regressive gender norms has created barriers for Afghan women and girls where they have made progress over the last 20 years.

In the 1990s, many women saw little choice but to conform to the Taliban's rule, seeking protection amid the prolonged war. Their fears stemmed from the alleged sexual violence and other abuses being perpetrated by the various armed groups, as reported by human rights organisations keeping a watch on the country. When the then Taliban government ordered all women to wear the *chadari* (the full-body veil, or *burqa* as it is called by

a This restriction did not apply to medical doctors.

Western media), they used the reports of intimidation, abuse and violence to justify that requirement. Those restrictions were kept in place throughout the Taliban rule from 1996 to 2001.

Some years after their ouster in 2001, a 2009 survey by the Asia Foundation[1] found that approximately half of Afghans, particularly Pashtuns and rural residents, sympathised with armed opposition groups, predominantly the Taliban. The support was fueled partly by grievances against public institutions. Ten years later, another survey showed a far lower 13.4 percent of Afghans expressing sympathy for the Taliban. Amid stalled intra-Afghan peace talks in early 2021, the majority of respondents emphasised the importance of protecting women's rights and freedom of speech, and the safeguarding of the Constitution.

The current trajectory of Afghanistan hinges largely on whether the Taliban's supreme leader, Haibatullah Akhundzada, maintains control over the group's decision-making and if they can rise above internal divisions. The "liberal" faction, notably associated with the Doha office, advocates for advancements in Afghan women's rights. The Haqqani faction,[2] which advises the Emir, leans towards stricter regulations.

Mid-level Taliban members in the Doha camp have expressed a desire for female family members to receive education and participate in the workforce. However, a decree from the leader prohibits women above the sixth grade from working and constrains their participation in various fields. Despite the moderate inclinations of some mid-level members, they are bound by the directives of the Emir. The potential for progressive strides in the realm of Afghan women's rights will become more plausible if a scenario unfolds wherein the Emir is removed, paving the way for a candidate from the liberal camp. In such circumstances, a prospect could emerge for the Taliban to undertake measures conducive to the advancement of Afghan women.

Enduring Restrictions on Women and Girls

When the Taliban returned to power in the summer of 2021, with the approval of the international community, mainly guided by the United States, the new Islamic Emirate said they would allow Afghan women to retain every right that is due them under Shari'a and the Islamic faith. This led some analysts to suggest that the Taliban's ideology had mellowed, or that their exposure to the international community had perhaps led to some "sophistication", possibly resulting in the formation of an "inclusive Islamic government".[3] Other observers argued that providing the Taliban with material assistance and officially recognising their legitimacy could encourage them to remain "relatively restrained"[4] and, over time, prompt improvements in conditions for women and girls, and the ethnic and religious minorities.

This, however, has not happened. The Taliban have imposed stringent restrictions on women and girls. This time, they have invoked fears of upsetting Afghan cultural standards and the lack of preparedness by their own forces to interact with women as the reasons for extracting compliance with these norms and rules.

When the Taliban told women working for the government—a significant portion of the workforce—to stay at home and not report to their offices, the Taliban reasoned that they could not ensure that men among their ranks would be able to conduct themselves properly around women in professional environments. Likewise, when they closed the doors of schools, first to girls above the sixth grade and later to women in government universities, they were adamant that the restrictions were not due to any Islamic teachings but fears around Afghan culture and proper dress standards. In subsequent months, they would also cite curriculum changes and transportation issues as other sources of difficulty in reopening secondary schools and universities to girls and women.[5]

These announcements were met with criticism from other Muslim-majority countries, including Qatar, Pakistan, and the United Arab Emirates, all of whom said that women can study and work in their countries, even as Islam remains fundamental to their societies. In March 2002, Lana Nusseibeh, the UAE's ambassador to the United Nations, called on the Taliban in Afghanistan to allow girls into classrooms, emphasising that educating women is "fully compatible" with Islam.[6] The Taliban then quickly returned to their earlier justification of dissonant cultural norms.

For the Taliban, anchoring the restrictions on supposed cultural norms provided them cover for criticisms that would come both from the West and from other Muslim-majority nations. For Afghanistan's women and girls, such statements about "Afghan culture" are nothing new; they have had to deal with these claims about the place of women in society for decades, including during the rule of the Western-backed Islamic Republic.

Yet, apart from the regressive policies of the Taliban, Afghan women are confronted with persistent sociocultural factors that limit their opportunities for education, employment, and essential services like healthcare and justice. According to the *Mix Migration Report 2018*, prior to the Taliban's takeover, many women were leaving the country because they were suffering massive insecurity.[7] Other factors that contributed to women leaving included a lack of rights, personal and family considerations, economic motives, and a shortage of social services, including in situations where they needed refuge from a forced marriage or domestic violence.[8]

Likewise, though today all girls and women are locked out of formal education above the sixth grade, in the past more than two million girls were already kept out of school

due to both, safety concerns during the war between the Western-backed government and the Taliban, as well as cultural constraints. In 2017, Human Rights Watch reported that since the US-led invasion in 2001, the proportion of girls attending school in Afghanistan has never risen higher than 50 percent.[9]

Persistent Activism

In the initial days of the Taliban's return, women faced abuse and potential jail time for engaging in protest actions to demand their rights to work and education. Despite the risks,[10] they mobilised themselves in cities like Kabul, Herat, and Mazar-e Sharif. Over the last two years, those movements have spread to several other areas.

In September 2022, adolescent girls[11] took to the streets of Gardez, the capital of Paktia province, when the government once again closed their schools, which had managed to reopen for about a week. Likewise, in December of the same year, men and women demonstrated against the Taliban ruling that closed all universities to women across the country. The streets and universities of Jalalabad, Kabul, Kandahar, Khost, Herat, Mazar-e Sharif, and Bamiyan once again saw women, joined by men, speaking out in opposition to the decree. The demonstrations, as before, were met with intimidation and violence.

To be sure, in epochs past, Afghanistan's women have engaged in culturally nuanced forms of advocacy, albeit always within the confines of familial approval. Their agency was subject to the permission granted by men. The advent of the civil war marked a dark chapter, witnessing the mistreatment of women and the commission of war crimes. Subsequently, the emergence of the Taliban perpetuated this plight.

Contemporary women, particularly those raised in urban areas, could perhaps be said to have been exposed to Western democratic values. Even in the provinces, there is a discernible shift, with women experiencing a comparatively more liberal upbringing than their forebears. This is evident in the increased visibility of schools, the presence of women on media platforms like the radio, and their emergence in political roles. Consequently, these women have come to possess more autonomy, visibility, and arguably, independence. In the contemporary context, therefore, a specific class of women and girls are experiencing relatively more freedoms compared to their compatriots during the tumultuous period of the civil war and the initial Taliban rule. Urbanisation has played a role as more individuals moved to cities, encountering more diverse experiences. Simultaneously, global changes, including advancements in media and the growth of social media, along with increased mobility, exposed them to different cultures and perspectives.

Despite initial fears when Kabul fell, women who could not leave the country eventually found means to resist. This resistance has been unfolding since the latter part of 2021, marked by subtle, individual actions contributing to a collective effort. Unlike big marches seen in other contexts, these forms of protest focus on simpler, smaller-scale approaches to maintain what can be salvaged.

Following the NGO ban, for example, within a few weeks, they engaged with the Taliban across various provinces. Depending on the NGO they interacted with, they devised workarounds, ensuring that women were not laid off. Strategies included allowing women to work remotely, not requiring them to come to the office, or having a male family member accompany them during specific tasks like conducting surveys. Notably, these negotiations were led by the women themselves, illustrating their agency in navigating these challenges.

Women also persist in engaging in the media, doing interviews, and hosting debates on cultural, religious, and political issues, albeit while keeping their faces covered with a mask. They strategically navigate these opportunities to carve out their share of public spaces. While it may be challenging to showcase, women continue to be visible on the streets, interacting with one another. They are actively employed in various sectors, such as banks, airports, ministries, schools, private companies, and NGOs—a stark contrast to the limitations of the 1990s.

These activities may be receiving limited news coverage, but they underscore the resilience of Afghanistan's women. The activism may even appear trivial to the casual observer: For instance, when beauty salons closed, women adapted by offering freelance services at either the wedding venue or the bride's house. These seemingly small yet significant movements and activities mostly go unnoticed in the media, and therefore are not celebrated by outsiders.

Indeed, while there are positive developments, external expectations often seek dramatic shifts from women and the Taliban. Many noteworthy aspects, however, may not reach the media due to concerns about potential repercussions, particularly in jeopardising exemptions granted by Taliban officials.

For instance, well-known NGOs, despite securing exemptions across significant portions of the country, refrain from public announcements to avoid risking these privileges. Similarly, the existence of homeschools and unofficial schools serves as a subtle yet impactful means of carving out spaces for women and girls.

The Radical in Everyday Life

The women of Afghanistan are striving to focus on practical, everyday actions to enhance livability. Rather than seeking dramatic scenes, they engage in simple, strategic approaches to create small spaces of freedom. This involves dialogue with receptive Taliban members, as well as the courageous act of attempting to live their lives without drawing undue attention to themselves. Each action is a test, a chance to push boundaries, recognising the risks involved but choosing this path due to the dire alternative. Those who cannot step outside to raise their voices—especially as the Taliban continue to jail activists—have had to find other ways to make their presence known and improve their well-being.

Part of these efforts is the work of organisations like Her Afghanistan,[b] which emerge as channels of resistance by employing innovative strategies to empower women and girls across the country. Women from this organisation have established sewing shops, young women have taken on writing projects, college graduates are venturing into online journalism and engaging in online consulting for various organisations. Women join Her Afghanistan for various reasons—i.e., training opportunities, connections through mentorship programmes, or scholarships and job opportunities. It is not confined to a specific training scale; rather, it operates as an organisation that fosters networking and diverse opportunities.

Another example is the NGO, Afghan Institute of Learning (AIL), which continues its operations under the Taliban regime. AIL is dedicated to empowering Afghan women by broadening their educational and health horizons, cultivating self-reliance, and promoting active community participation. The organisation extends its educational services from preschool to post-secondary levels. Recognising that an educated and healthy woman can be equipped for personal success and become economically productive, AIL works to foster self-sustaining family units through education.

Given the extent of the need, however, there are far too few Afghani-led organisations focused on women and girls' empowerment. At the same time, Afghan women, individually, are unveiling the transformative power of everyday resistance at a time when every step outside becomes an act of subversion. Subtle acts of defiance, such as the bold choice of a vibrant attire, are a testament to their agency and an implicit challenge to oppressive norms. Innovation in resistance strategies has become a crucial aspect of Afghan women's struggle, perhaps exemplifying a more sophisticated form of activism that transcends physical boundaries. Women are displaying agency and resilience in navigating the challenging terrain of resistance today.

b The author is Founder of Her Afghanistan.

The Role of Tech

A noteworthy evolution unfolds as contemporary women now exercise autonomous and willful participation in active resistance. The transformative difference lies in their self-driven endeavours, unhindered by the denial of external permission. Aiding their empowerment are digital tools, including the internet.

In the contemporary epoch, the internet has indeed emerged as a superpower that catalyses change. It serves as a potent instrument that enables women to amplify their voices, fostering a new dimension of agency and advocacy. More connected than ever, Afghan women leverage the internet for communication, education, activism, and employment. This interconnectedness enables the dissemination of innovative ideas, nurturing a global network of solidarity. The internet becomes a force multiplier, enabling women to overcome physical constraints and fostering a digital realm of empowerment.[12]

Online activism[13] has allowed Afghan women to defy restrictions and make their voices heard. The dissemination of protest videos, meaningful hand signs, and powerful messages have all been made possible by the use of the internet.

Conclusion

Initiating discussions on advancing women's rights demands a multifaceted approach. It requires a nuanced understanding of cultural sensitivity frameworks deeply embedded in societal progress. Stakeholders can contribute significantly by garnering international support, emphasising educational initiatives, fostering inclusive governance structures, engaging religious leaders in constructive dialogues, and supporting grassroots initiatives that empower women.

Within this context, it becomes crucial to pay attention to seemingly minor details that can pave the way for substantial changes over time. For instance, the presence of moderate Taliban factions, allowing women to work in NGOs or supporting homeschooling, can contribute to the gradual expansion of women's rights.

Moreover, it is vital to recognise the evolution of Afghan women from the '90s to the present. Today's women are not confined to the limitations imposed in the past; they continue to find and create even the smallest spaces that could lead to advances in various spheres of life.

An imperative is to convene Islamic scholars and seek their endorsement for women's education and their integral role in society. Islamic scholars play a pivotal role in advancing women's rights by engaging in the interpretation of Islamic texts in a

manner that supports gender equality. Through education and advocacy, they work to dispel misconceptions and promote a more inclusive understanding of Islam's stance on women's rights. Scholars actively challenge misinterpretations that perpetuate discrimination, emphasising the inherent dignity and rights of women within the Islamic framework. They collaborate with policymakers to support legal reforms aligned with Islamic principles, addressing issues like family law and domestic violence.

Engaging with communities, scholars promote positive changes in cultural practices that may adversely affect women. They encourage education for women and girls, underscoring the historical significance of educated women in Islam. They also advocate for the empowerment of women in leadership roles within religious institutions and community affairs, fostering inclusivity and representation.

Collaborative efforts can serve as a powerful catalyst for positive change in the landscape of women's rights in Afghanistan, aligning cultural and religious values with aspirations for progress and equality. While the challenges are stark, a steadfast commitment to meaningful engagement is crucial for constructing a more inclusive and equitable future for women in Afghanistan.

References

"United States Signs Agreement with the Taliban, but Prospects for Its Full Implementation Remain Uncertain." *American Journal of International Law* 114, no. 3 (July 2020): 529–38. https://doi.org/10.1017/ajil.2020.45

Allen, John R., and Vanda Felbab-Brown. "The Fate of Women's Rights in Afghanistan." Brookings, September 2020. https://www.brookings.edu/articles/the-fate-of-womens-rights-in-afghanistan/#:~:text=During%20the%201990s%2C%20the%20Taliban,care%2C%20education%2C%20and%20jobs.

Amnesty International. "Afghanistan: The Taliban's War on Women: The Crime Against Humanity of Gender Persecution in Afghanistan," March 25, 2023. https://www.amnesty.org/en/documents/asa11/6789/2023/en/

Bezan, Frud. "Taliban's 'Mullahcratic' Government: Militants Fail to Form Inclusive Administration." Radio Free Europe/Radio Liberty, September 8, 2021.

Center for Strategic and International Studies. "New Century, Old Taliban." https://www.csis.org/analysis/new-century-old-taliban

Center for Strategic and International Studies. "Struggling to Survive: Gender, Displacement, and Migration in Taliban-Controlled Afghanistan." https://www.csis.org/analysis/struggling-survive-gender-displacement-and-migration-taliban-controlled-afghanistan

Ganesh, Lena, Massouda Kohistani, and Rahim Azami. "Women's Economic Empowerment in Afghanistan 2002 – 2012: Information Mapping and Situation Analysis." Afghanistan Research and Evaluation Unit, November 2013.

Georgetown Institute for Women, Peace and Security. "Women, Peace, and Security Index." https://giwps.georgetown.edu/the-index/.

Global Fund for Women. "25 Years of Leading the Way for Human Rights." https://www.globalfundforwomen.org/wp-content/uploads/2014/01/globalfundforwomen_xxv.pdf

Her Afghanistan. www.herafghanistan.com

Mohanty, Chandra Talpade. "Under Western Eyes: Feminist Scholarship and Colonial Discourses." *Feminist Review*, no. 30 (1988): 61–88.

World Bank. "Digital Dividends 2016." Accessed May 17, 2016. https://www.worldbank.org/en/publication/wdr2016

Endnotes

1 Amnesty International, "Documenting the Degradation of Women's and Girls' Rights under the Taliban," 2022.

2 Vanda Felbab-Brown, "Afghanistan in 2023: Taliban Internal Power Struggles and Militancy," Brookings, February 3, 2020, https://www.brookings.edu/articles/afghanistan-in-2023-taliban-internal-power-struggles-and-militancy/

3 Frud Behzan, "Taliban's 'Mullahcratic' Government: Militants Fail to Form Inclusive Administration," RFERL, September 8, 2021, https://www.rferl.org/a/taliban-failure-inclusive-government/31450471.html

4 Marti Flacks and Lauren Burke, "New Century, Old Taliban," CSIS, August 18, 2022, https://www.csis.org/analysis/new-century-old-taliban

5 John R. Allen and Vanda Felbab-Brown, "The Fate of Women's Rights in Afghanistan," Brookings, September 2020, https://www.brookings.edu/articles/the-fate-of-womens-rights-in-afghanistan/#:~:text=During%20the%201990s%2C%20the%20Taliban,care%2C%20education%2C%20and%20jobs

6 "Educating Women 'Fully Compatible' with Islam, UAE Envoy Tells Taliban," *The National News*, March 2, 2022, https://www.thenationalnews.com/world/2022/03/02/educating-women-fully-compatible-with-islam-uae-envoy-tells-taliban/

7 "Experiences of Female Refugees & Migrants in Origin, Transit, and Destination Countries: A Comparative Study of Women on the Move from Afghanistan, East and West Africa," Mixed Migration Centre, September 2018, https://mixedmigration.org/wp-content/uploads/2018/09/050_experiences-of-female-refugees.pdf

8 Marie McAuliffe and Mohib Iqbal, "Struggling to Survive: Gender, Displacement, and Migration in Taliban-Controlled Afghanistan," Center for Strategic and International Studies (CSIS), February 23, 2022, https://www.csis.org/analysis/struggling-survive-gender-displacement-and-migration-taliban-controlled-afghanistan.

9 Human Rights Watch, ""I Won't Be a Doctor, and One Day You'll Be Sick": Girls' Access to Education in Afghanistan," October 17, 2017, https://www.hrw.org/report/2017/10/17/i-wont-be-doctor-and-one-day-youll-be-sick/girls-access-education-afghanistan#page

10 Wahida Amiri, "Women Protest and Power: Confronting the Taliban," Amnesty International, March 7, 2023, https://www.amnesty.org/en/latest/campaigns/2023/03/women-protest-and-power-confronting-the-taliban/

11 "Afghan Girls Protest Closure of Secondary Schools," RFERL, September 10, 2022, https://www.rferl.org/a/afghan-girls-protest-closure-secondary-schools/32027826.html

12 World Bank, "World Development Report 2016," https://www.worldbank.org/en/publication/wdr2016

13 Georgetown Institute for Women, Peace and Security, "The Global Women, Peace and Security Index," https://giwps.georgetown.edu/the-index/

A Needs-Based Approach to Digital Public Infrastructure

Astha Kapoor

INDIA'S G20 PRESIDENCY was a watershed moment in the global conversation on digital public infrastructure (DPI). In August 2023, the definition of DPI was collectively understood, and encoded in the outcome document of the G20's Digital Economy Working Group (DEWG) as a set of interoperable digital systems built on open standards to promote access to government and private services for all.[1] Shortly thereafter, in the New Delhi Declaration of September 2023,[2] Prime Minister Narendra Modi announced two India-led initiatives to build on the successes of the DEWG: a Global Digital Public Infrastructure Repository, and a social impact fund called One Future Alliance (OFA).

The repository is a critical resource to make knowledge and lessons on DPI available to the world;[3] the fund is envisioned as a multilateral institution to build capacity, provide funding and offer technical assistance to synergise global efforts on the development of DPI.[4] These initiatives have led to increased enthusiasm to build DPIs as a solution for fostering efficiencies in public service, more competitive markets, and enhanced innovation, especially for low- and middle-income countries (LMICs).

In parallel to India's G20 presidency, various joint statements coming from the governments of India and the United States (US)[5] declared their commitment to

working together to provide global leadership for the implementation of DPI. The subject of DPI was also discussed in statements released by the Quad,[6] the Shanghai Cooperation Organisation (SCO),[7] and in the European Union-India Trade and Technology Council[8] which also focused on promoting secure, privacy-preserving DPI for developing countries. These diplomatic efforts have been supplemented by organisations such as Co-Develop that work to accelerate the adoption of DPI at scale, as well as advocacies such as 'fifty in five'[9] which seeks to push the design, launch and scale components of DPI in 50 countries by 2028.

The development of DPI is critical and needs a robust ecosystem in countries to be able to develop, deploy, implement and govern the infrastructure meaningfully. DPI should be built to be inclusive—i.e., they should reduce the economic, social and technical barriers to last-mile access; be embedded in rights-preserving approaches to planning, design, and operation; and ensure space for participation of community actors, the private sector, and citizens. DPI should also ensure sustainability through multi-stakeholder partnerships, which can offer different types of financing and enhance accountability. To ensure all this, countries should be ready to find willing recipients that engage with the DPI discourse meaningfully, with the appropriate readiness and human, financial, institutional scaffolding that is necessary to make the technology a success.

This global momentum to demystify DPI, and to ensure diplomatic validation and funding mechanisms for any country that might be interested in building digital infrastructure, is starting to come together. One piece of the puzzle, however, is missing from the public discourse: an assessment of specific, contextual needs of the countries that will implement DPIs. The current effort is still structured towards the "supply" of DPI, which while important does appear to be a top-down approach where the LMICs are seen as recipients of new approaches to technologies. While the stress on building in-country markets, innovation, and public sector capacity exists, it is also necessary to synergise DPI agendas with in-country priorities, capacities and trade-offs. There are early indications of thinking through DPI at the country level. There is, for instance, Co-Develop's new research on the "State of DPI''[10] meant to understand the gaps and opportunities for development actors to support DPI adoption and safeguarding. However, a framework to self-assess needs and pursue the DPI approach more strategically is required by countries interested in pivoting their digital infrastructures to this new mould.

Needs Assessments

Countries are adopting multiple pathways to digitalisation as it increasingly becomes inevitable. One pathway can lead countries to a vendor lock-in with proprietary technological solutions that exist *in silos* and encroach on the sovereignty of other states.[11]

In contrast, the implementation of a DPI approach anchored in open and interoperable infrastructure built in a modular manner and is extensible can create immense value and efficiencies across different countries.[12] Such a DPI approach can lead to greater inclusion in the delivery of public services and ensure last-mile access for all.[13] It can result in greater resilience and enable remote assistance in times of crisis,[14] create a competitive market for new innovations and players, and nurture greater digital sovereignty for countries that would enable them to move away from centralised decision-making and the restrictions of legacy softwares.[15]

The UNDP's Digital Compass,[16] among other assessments, helps understand the levels of maturity of countries and their readiness for a digital transformation. In turn, such evaluations can be applied to thinking about a country's contextual DPI journey, which is anchored on the development of technology, ability to govern, and overall maturity of the ecosystem to innovate and empower users with choice.

Most LMICs will find themselves in the early stages of DPI development, with multiple digital assets that do not function as DPI and which are invariably run on privately owned networks. There is a low degree of formal governance of technology and protections in such early-stage DPI, and the marketplace of actors remains weak and incapable of innovating and providing competitive solutions.[17] Identifying the stage of DPI development of a country and whether an approach anchored in an open, interoperable infrastructure is useful, requires a framework of self-assessment and evaluation of needs based on an understanding of the value of the DPI approach in context, the realities of existing digital infrastructure, specific development goals, and institutional capacity and capabilities.

Specifically, countries should consider the following elements when engaging in a self-assessment of their DPI needs:

- **Build development priorities**: What development priorities is the DPI approach helping to solve? These could be linked to agendas outlined domestically within a country (which would include priority sectors and objectives), or else international development priorities as outlined in the United Nations Sustainable Development Goals (SDGs). Such assessment will help countries identify what might make the most appropriate starting point for the DPI approach. Tools such as SDG rankings exist to help countries understand where they are in the context of these global development goals.[18] Certain countries, such as Kenya for example, have also developed their own sectoral strategies including for e-commerce, which are framed in aspirations of developing their digital infrastructure.[19]

- **Assess existing infrastructure.** What is the stage of development of existing infrastructure and expertise in technology? How does this match with the urgency

and scale of the development needs? Are there technologies that can be reused in the context of the DPI approach? This critical look at in-country technologies and capabilities needing to be built will help integrate DPI efforts with existing national efforts to implement technology and help countries hone in on issues where the network effects of DPI might be most realised. Examples are payments infrastructures which then serve to pay out health insurance premiums, as well as access to credit for agriculture. A number of countries have existing digital infrastructures that can be adapted to the DPI approach with small changes that will improve its feasibility.[20]

- **Evaluate robustness of institutions.** Do we have existing institutional heft to legally, and through policy, govern and regulate the use of DPI? Institutions need to strategically set long-term visions to align policy and action, build accountability, and promote regulation and stakeholder collaboration—[21] all of them institutional mechanisms that will provide the right scaffolding to technological implementation. For instance, in the context of India's Unified Payments Interface (UPI), the National Payments Council of India (NPCI) owns and operates the platform, and prescribes roles and responsibilities, guidelines and rules for the participants.[22]

- **Consider openness of markets.** Are the economic conditions present to support the development and scale of DPI approaches in the country? The private sector comprises a key stakeholder in the design and implementation of DPI, as well as ensuring that applications and services built on top of the infrastructure are accessible to different customers. DPI aims to level the playing field and create healthy competition for innovation—tasks for which the private sector is necessary. There are also hurdles erected by regulation for data governance, competition, and rules on intellectual property. These need to be developed to foster private sector participation.[23]

- **Navigate capacity questions.** Is there sufficient technical, governance and operational capacity to develop and deploy DPI? DPIs are instruments that build trust in the functioning of the digital ecosystem and which rely on the capacity of the ecosystem to build, govern and scale DPI. This translates to multiple functions such as monitoring safety/security of systems, policy action, and nurturing a cadre of offline intermediaries who can help implement DPI on the ground.

- **Create meaningful governance mechanisms.** Are there facilitating regulations for data protection, competition, and AI governance that need to be put in place to facilitate the development and deployment of DPI in the country? How can the rights of citizens and businesses be safeguarded to ensure that DPIs are equitable and inclusive? For instance, application of data exchange layers of information

systems in Estonia set out the principles for how to manage and operate X-tee. These are supplemented with a law on personal data protection.

- **Unbundle financing options**. How can DPI be financially sustained in the long term? Both monetary and non-monetary efforts are required to fund DPI, and opportunities like the One Future Alliance are emerging to fill the gap. Countries, however, must understand which type of instruments are suitable such that their own DPI journeys are not only funded but also made accountable.

Some countries, such as Ethiopia, have done well to scope and assess the implementation of their DPI. FarmStack, Ethiopia's data exchange DPI serves to boost agricultural outputs and is embedded in both the SDGs as well as Ethiopia's own Digital Ethiopia Strategy.[24] On the basis of this, the country was able to develop a clear roadmap for the adoption of Farm Stack as DPI.[25]

Elsewhere, in Estonia, the implementation of X-tee has been institutionalised in multiple government and non-government organisations: the Ministry of Economic Affairs advocates for policy changes; there is the data protection inspectorate that supervises the implementation; and private sector companies provide trustworthy services.[26] These examples suggest that countries need to understand their own priorities and contexts, and thereby build supporting validation for the implementation of the DPI approach for it to achieve success.

To further ensure that DPIs are demand- or need-based—and not merely imposed upon the citizens of LMICs by governments—it is imperative to implement more participatory practices especially at the assessment stage to create awareness, air out concerns, and foster accountability. The process itself is important to build buy-in as it creates mechanisms for people to contribute to the development of DPI. Stakeholder engagement can include processes of dialogues,[27] consultation, deliberation, citizen assemblies, as well as co-design where citizens can become equal participants in the design of systems that they use and will be impacted by; these participatory efforts can then be embedded in institutions for them to grow.[28] Along with citizen participation and dialogue, there is also a need for data gathering and validation which ensure not just evidence but also transparency and verifiability of assertions.

The assessment criteria mentioned above are not exhaustive, but illustrative of the types of considerations that countries must undertake to assess their own DPI journeys. While DPIs have immense value, they need to be located within the specific needs of each country and be evaluated on their own merit, both by in-country stakeholders as well as a global community. The aim is to make sure that as the development and

deployment of DPIs occur, it is done in environments where there is support for their success.

Going Forward

The link between DPI and new technologies such as artificial intelligence (AI) is becoming clear, where AI-driven implementation can improve the deployment of DPI in the last mile, and make them more transparent and accessible through tools of voice and text.[29] At the same time, there is a growing realisation that in the context of the worsening climate crisis,[30] the visibility and efficiency of DPI is necessary. There is also global consensus that DPI can help accelerate the achievement of the SDGs, and have been designated as a UN high-impact initiative.[31]

A few key things ought to happen to ensure that the global supply of DPI is met with a clear, articulated, and independent demand that countries would arrive at after an assessment of their own needs and current circumstances.

First, mechanisms of assessment should be formulated that would allow countries to understand their own needs, and negotiate with technologies in a meaningful manner. Assessment frameworks are not new to this discourse. Evaluation tools for issues like readiness, digital transformation, and digital identity, have been created and used. However, the DPI journey is happening at an accelerated pace, and it is necessary to have frameworks of self-assessment for different aspects of DPI. These assessments should straddle the value of DPI for countries, and which sector and stage of growth this approach would be more valuable for, along with critical questions on governance capacity, strength of institutions, and robustness of markets. Principles of inclusive, accountable DPI should also be reflected in the assessment.

Second, an overall coordination with different stakeholders (including governments, implementation agencies, funders) is required to ensure that in-country demands are understood by the ecosystem, and countries would not have to negotiate with multiple actors. The synchronisation of efforts will add efficiencies and empower countries to create clear roadmaps for engagement and implementation. At present, India's One Future Alliance seems well-placed to play the part of a global institution that can help discover demand, mentor governments through the process of self-assessment, and connect with stakeholders responsible for creation of capacities, point to best practices, and help find financing and appropriate governance mechanisms.

Third, and finally, emphasis must be placed on participative mechanisms for needs/demand assessments and accountability for DPI. DPI must not and should not be built through top-down mechanisms, either as countries get swept up in a global moment or as governments push certain technologies on their own people. It is imperative that

broader public involvement is anchored in the DPI journey to constantly evaluate the needs and opportunities in local contexts. There should be internal consensus on the requirements of countries demonstrated through participative action of civil society organisations and businesses, so that the needs and demands of the citizens can be reflected and tabulated.

If the needs of countries are made the centrepiece of the global discourse on DPI, this approach is likely to achieve immense value for people across the world through last-mile connectivity, access to services, and the ability to hold public technologies accountable. Demand-driven DPI that addresses the key needs of people will succeed and be more resilient than those that are awkwardly fit to reflect the tides.

There is a significant opportunity to focus on demand-driven DPI through multilateral forums, especially the G20. The current G20 president, Brazil, devised their own DPI for financial payments, and have embedded DPI into their agenda. The presidency will then be passed on to South Africa, a country that has also demonstrated interest in the matter. This Global South troika, which also finds itself linked through other forums such as IBSA and BRICS, demonstrates a deep understanding of DPI needs, and therefore can play a pivotal role in shaping how the world engages with the challenges of building digital public infrastructures.

Endnotes

1 Ministry of Information & Broadcasting, Government of India, https://static.pib.gov.in/WriteReadData/specificdocs/documents/2023/aug/doc2023824243701.pdf

2 Ministry of Electronics & IT, Government of India, https://pib.gov.in/PressReleseDetailm.aspx?PRID=1979113#:~:text=Prime%20Minister%20Shri%20Narendra%20Modi,during%20the%20Virtual%20G20%20Leaders

3 DPI Global, https://www.dpi.global/

4 "India to Lead the Creation of One Future Alliance at G20 Summit to Promote Digital Public Infrastructure Globally," *Hindustan Times*, September 2023, https://www.hindustantimes.com/india-news/india-to-lead-the-creation-of-one-future-alliance-at-g20-summit-to-promote-digital-public-infrastructure-globally-101694110702609.html

5 "India-USA Joint Statement During the Official State Visit of Prime Minister Shri Narendra Modi to USA," *Ministry of External Affairs, Government of India, June 2023,* https://mea.gov.in/bilateral-documents.htm ?dtl/36711/IndiaUSA+Joint+Statement+during+the+Official+State+visit+of+Prime+Minister+Shri+N arendra+Modi+to+USA

6 "Quad Leaders Joint Statement," *The White House,* May 20, 2023, https://www.whitehouse.gov/briefing-room/statements-releases/2023/05/20/quad-leaders-joint-statement/

7 "SCO Members Vote Unanimously to Adopt India's Proposal on DPI," *The Economic Times*, May 2023, https://economictimes.indiatimes.com/tech/technology/sco-members-vote-unanimously-to-adopt-indias-proposal-on-dpi/articleshow/100213651.cms

8 "India-EU Joint Statement 1st Meeting of the Trade and Technology Council," *Ministry of External Affairs, Government of India, May 2023,* https://mea.gov.in/bilateral-documents.htm?dtl/36553/India__EU_Joint_Statement_1st_Meeting_of_the_Trade_and_Technology_Council

9 50in5, https://50in5.net/

10 "Launching the 'State of DPI' Project," Co-Develop, https://www.codevelop.fund/insights-1/launching-the-state-of-dpi-project.

11 Liv Marte Nordhaug and Lucy Harris, "Digital Public Goods: Enablers of Digital Sovereignty," *OECD iLibrary*, https://www.oecd-ilibrary.org/sites/c023cb2e-en/index.html?itemId=/content/component/c023cb2e-en

12 Cristian Alonso et al., "Stacking Up the Benefits: Lessons from India's Digital Journey," *International Monetary Fund, 2023,* https://www.imf.org/en/Publications/WP/Issues/2023/03/31/Stacking-up-the-Benefits-Lessons-from-Indias-Digital-Journey-531692

13 "A Digital Stack for Transforming Service Delivery: ID, Payments, and Data Sharing," *World Bank,* February 22, 2022, https://documents1.worldbank.org/curated/en/099755004072288910/pdf/P1715920edb5990d60b83e037f756213782.pdf

14 *Co-Develop Digital Public Infrastructure for an Equitable Recovery: Full Report*, *Rockefeller Foundation, 2021,* https://www.rockefellerfoundation.org/wp-content/uploads/2021/08/Co-Develop-Digital-Public-Infrastructure-for-an-Equitable-Recovery-Full-Report.pdf

15 Nordhaug and Harris, "Digital Public Goods"

16 *Digital Development Compass*, https://www.digitaldevelopmentcompass.org/

17 "DPI Approach Playbook," *United Nations Development Programme and Aapti Institute, 2023,* https://www.undp.org/publications/dpi-approach-playbook

18 *SDG Index Rankings*, https://dashboards.sdgindex.org/rankings

19 "E-Commerce Strategy 2023," *Kenya ICT Authority*, https://ict.go.ke/wp-content/uploads/2023/12/E-Commerce-Strategy-2023.pdf

20 "DPI Implementation and Execution Guidance," *CDPI Documentation*, https://docs.cdpi.dev/the-dpi-wikipedia/dpi-implementation-and-execution-guidance

21 "DPI Approach Playbook"

22 "Roles and Responsibilities," *National Payments Corporation of India (NPCI)*, https://www.npci.org.in/what-we-do/upi/roles-responsibilities

23 "Towards Market Friendly DPI," *Koan Advisory, 2023,* https://www.koanadvisory.com/storage/2023/11/Koan_DPI-Report.pdf

24 *CIGB Report: Accelerating Innovations in Digital Ethiopia 2025*, *Judge Business School, University of Cambridge*, https://www.jbs.cam.ac.uk/wp-content/uploads/2023/01/cigb-report-accelerating-innovations-digital-ethiopia-2025.pdf

25 "Ethiopian DAEAS Roadmap Overview," *Ethiopian DAEAS*, https://www.ethiopiandaeas.com/wp-content/uploads/2023/03/Ethiopian-DAEAS-Roadmap-Overview.pdf

26 "Estonia Case Study," *Open Digital Ecosystems*, https://opendigitalecosystems.net/pdf/01-Estonia-Case-Study_vF.pdf

27 "Public Dialogue on the Ethics of Location Data," *Ada Lovelace Institute, 2023,* https://www.adalovelaceinstitute.org/project/public-dialogue-on-the-ethics-of-location-data/

28 "Public and Patient Engagement Activities," *Understanding Patient Data*, https://understandingpatientdata.org.uk/public-and-patient-engagement-activities

29 "Digital Public Infrastructure: Digital Public Intelligence," *The Sociable, 2023,* https://sociable.co/government-and-policy/digital-public-infrastructure-digital-public-intelligence/

30 Jordan Sandman and Tim Wood, "Addressing Climate Change with Digital Public Infrastructure," Co-Develop, https://keyboard-wisteria-j78f.squarespace.com/insights-1/blog-post-title-four-tcwbd

31 "Digital Public Infrastructure," *International Telecommunication Union (ITU)*, https://www.itu.int/initiatives/sdgdigital/digital-public-infrastructure/

Beyond ‘Just Looking’: The India Stack, UPI, and Global Economic Transformation

Erin Watson

FROM A SMALL SHOP tucked away somewhere in the western part of Delhi, Jasmeen Kaur skyrocketed to internet stardom with her "Just looking like a wow!" Instagram reels. The endearing videos of Jasmeen showcasing her latest sarees and suits to potential clients even caught the attention of Bollywood stars and their hundreds of millions of followers. As a woman entrepreneur in India, Jasmeen was riding the wave of India's economic growth and using the tools at her disposal to beat the competition. Yet, for women like her, it is not just the power of digital marketing that is reshaping their business potential, but India's revolutionary approach to Digital Public Infrastructure (DPI) known as the 'India Stack'.

The India Stack is a set of digital public infrastructure components that comprise three pillars: digital identification; payments; and data management. India's approach to digitalisation has fundamentally changed lives, giving biometric identification to those previously not identifiable, banking the unbanked, and giving people control and privacy in managing their own data.[1] For women like Jasmeen, the ubiquity of the Stack means she can receive payments from consumers, share legal documents with her bank or lawyer, pay her suppliers,

receive loans or investments, and coordinate delivery payments through the fast, easy, and cheap technology.

Given how Indian society and economy is now structured around DPI, and with its enormous diaspora across the globe, there is significant opportunity to unlock the country's economic potential to international markets.[2] This article argues that as countries pursue economic diversification and grapple with the digitisation of the global economy, they should look to the India Stack for learnings in how to effectively unlock economic potential in their bilateral relationships and for their own digital public infrastructure. As developed countries seek to reform legacy financial systems or developing countries build new ones, India has a world-leading solution that can revolutionise how global economies engage with India and with each other. Integrating India's DPI means international markets can go from "just looking" at the India opportunity, to building deep integration with its economic system.

The first section describes India's approach to DPI and its key components, with a focus on its digital identification and payments systems. The article then outlines the international opportunity as exemplified by the case of Singapore and India's DPI cooperation. The third section includes key lessons that other countries and markets can learn from India's DPI experience. The essay concludes by offering a key takeaway: that India has revolutionised DPI with the India Stack, and global economies can benefit from integration.

India's Approach to Digital Public Infrastructure

Digital Public Infrastructures are the railways of digital technology. For India, its approach to DPI is based on the foundation of open-source, interoperable, and scalable technology along with transparent, accountable, and participatory governance frameworks.[3] A layered 'stack' of open-source Applications Programming Interfaces (APIs) are owned and maintained by different government agencies, and developers can build software using these DPIs to deliver cheap products to the market.[4] This technology has laid the foundation for a robust digital services infrastructure, and it fosters innovation and entrepreneurship leading to the development of a wide range of applications and services across sectors, including finance, healthcare, and education, contributing to economic growth and technological advancement.[5]

By design, India's DPI was built to be universally accessible for adoption, reuse, and replication by countries worldwide. India's example demonstrates that collaborative digital solutions are a way to deliver vital services to the population in a way that is scalable. This type of DPI not only propels innovation, competition, and inclusivity but is also underpinned by regulatory frameworks that facilitate its operation. It is further

supported by a robust technological layer, a well-defined governance framework, and a diverse multistakeholder ecosystem.[6]

As the foundational layer to the India Stack, the *Aadhaar* programme is a biometrically secured digital system that has since brought over 1.3 billion people online.[7] Aadhaar has enabled electronic Know Your Customer (eKYC) with simultaneous identification, which means that citizens can open bank accounts in minutes instead of the two to four weeks it would take previously.[8] This is coupled with the Indian government's financial inclusion programme, *Pradhan Mantri Jan Dhan Yojana (Jan Dhan),* which has brought over 500 million people— the majority of whom are women—into the banking system.[9] In the 10 years between 2011 and 2021, India's bank account ownership doubled to 71 percent of the population, with a gender gap of effectively zero.[10]

The sheer scale of Aadhaar meant it became the base layer that enabled the integration of the Unified Payments Interface (UPI)—a real-time payments system that enables users to link multiple bank accounts into a single mobile application. Today, over 68 percent of transactions in India are conducted using UPI, with 10.6 billion transactions taking place in August 2023 alone.[11] UPI is facilitated by the National Payments Corporation of India (NPCI) and regulated by the Reserve Bank of India (RBI).[12] That UPI is built upon the Aadhaar and other layers of the open-source Stack, overall transaction costs in the economy are significantly reduced. This not only benefits businesses by making transactions more cost-effective for consumers, but also encourages the shift from cash-based transactions, leading to greater transparency and accountability in the financial ecosystem.

In addition to the Aadhaar and UPI, a third layer to the India Stack is the Data Empowerment and Protection Architecture (DEPA)—a regulated framework introduced by the RBI and the NPCI that empowers users to share their data through a Consent Manager.[13] DEPA accords individuals control over their personal data and facilitates the seamless and secure sharing of this data with third-party service providers. DEPA is designed to enable the portability of user data between different service providers while ensuring privacy and security as data cannot be stored, and is instead transferred by 'go-betweens' or 'fiduciaries'.[14] The architecture involves the creation of consent-based data-sharing mechanisms, allowing individuals to selectively share their data with authorised entities. This is a very different model to data governance seen in other countries, where data aggregators tend to offer services in exchange for data which is then sold.[15]

These key layers of the India Stack have brought economic and social impact at an unmatched scale anywhere else in the world.[16] The India Stack has contributed to financial inclusion by providing a secure and accessible platform for digital

transactions. This has enabled millions of Indians, including those in rural areas who make up 64 percent of the population,[17] to participate in the formal economy.

Prior to the India Stack and DPI, there was no central digital identification system in the country. The fragmented, paper-based identification systems that did exist have been described as "systematically tainted"[18] and excluded the most vulnerable who could not afford to pay bribes, among other fraudulent activities.[19] Alongside the lack of digital ID, in 2016 Prime Minister Narendra Modi demonetised 500 and 1,000-rupee notes, taking more than 86 percent of cash out of circulation. At the time, the prime minister was heavily criticised for demonetising an economy where 90 percent of the population, especially women and the poor, relied on cash payments.[20] In an article for the *Harvard Business Review,* Bhaskar Chakravorti described it as "Modi's war on cash" and asked whether the forced digitisation of India would work; fast forward to 2024 and the answer is yes, it did.[21]

The Global Opportunity for the India Stack

The India Stack, and particularly the UPI, have not only transformed India's financial system but also hold immense potential for influencing the global economy. As the landscape of global finance is undergoing a paradigm shift, with technological innovations reshaping traditional systems, the India Stack has enabled the country to leapfrog legacy financial and payments systems of developed countries. Furthermore, the Indian diaspora is the world's largest,[22] and is therefore driving demand for international access to UPI for easier trade, tourism, international entrepreneurship, and cross-border remittances.[23] International markets including Singapore,[24] the United Arab Emirates,[25] Bhutan,[26] Sri Lanka,[27] and France[28] have all either adopted or are looking to adopt UPI technology.

Indeed, the economic and strategic case for greater integration with India makes sense. India is the world's fifth largest economy, with a nominal GDP of US$3.3 trillion.[29] The population of 1.4 billion, which is the largest of any country, are young and have considerable potential. The economy is also growing at a very fast rate of around 6-8 percent annually and will soon be the world's fastest growing large economy. The consumer and aspirational classes are also growing, and they have increased demands for goods, services and education. The macroeconomic story of India is remarkable, and the result of smart policy decisions from economic liberalisation starting in the 1980s. This has lifted tens of millions of people out of poverty, and infant mortality and life expectancy have improved.[30] India's diaspora is spread across the world with significant populations in West Asia, Southeast Asia, North America, Africa, and Australia. They make an enormous contribution to the global economy, whether

they are sending home remittances from the Gulf or running multinational companies in the United States.[31]

This is all against a backdrop of increasing global strategic competition and a push for greater economic diversification and reduced trade reliance on China. It is no wonder, then, that countries around the world are starting to look to greater integration with the India Stack.

The Singapore example is one that developed countries can consider for experience in bringing the UPI into global markets. Singapore is a developed and advanced economy with a large Indian migrant population and Non-Resident Indians (NRIs). Both countries were seeking ways to build digital infrastructure that could deliver faster, cheaper, cross-border payments that could accommodate future volumes of remittance traffic.[32] Doing this required an extensive partnership between the Monetary Authority of Singapore (MAS), the RBI, and both countries' payment system operators, payment scheme owners, and participating banks and non-bank financial institutions.[33]

In February 2023 the MAS and RBI signed a Memorandum of Understanding where, unlike at similar such events typically characterised by political formalities, the prime ministers of the two countries transferred money to each other in real-time from their respective locations. This could be achieved through bilateral cooperation between both private sector and government actors and demonstrates how developed countries can integrate their payment systems with the India Stack. As UPI integration scales in Singapore, there remains enormous potential for non-Indian diaspora to access the Indian financial system through the UPI where there is both political will and innovation.

Recommendations for International Adoption of the India Stack

To unlock the potential of economic integration and trade with India, international markets need to make structural changes in how they approach international payments with the country. International transfers to India, as with other countries, can be slow and bureaucratic; in contrast, domestic payments in India are fast, efficient, and low-cost. The India Stack and UPI has accelerated India's economy and has opened the banking system for over a billion people—it is this scale that can benefit both developed and developing countries the world over. There are a number of lessons that global markets and governments can learn from India's DPI experience:

1. **Integrating the India Stack requires political ambition.** The India Stack required ambitious political leadership to implement, and a coalition of willing participants

to support this vision. While the foundations of DPI started under the previous administration, it was carried through and improved under Prime Minister Modi. There were clear points when the prime minister made consequential—and contentious—decisions such as demonetisation, that brought such a large population online rapidly. Political will to bring together the key stakeholders such as central banks, payments authorities, and the private sector is needed to drive integration into existing payments systems. Cooperation can also lead to strengthened digital payments systems that reduce potential for fraudulent transactions.[34]

2. **A bottom-up approach can help build comprehensive digital public infrastructure ecosystems.** While integration of elements of the India Stack is possible, as seen in the Singapore example, a bottom-up approach can facilitate widespread, comprehensive adoption of DPIs while fostering innovation and competition in financial services. Where digital identification can underpin payments and the future of data privacy and consent, scaling the integration of UPI is possible.

3. **UPI integration is critical for unlocking the India economic opportunity.** Integrating into the payments systems that is used by 1.4 billion Indians and businesses all over the country, will enable better flow of money—and people—across borders as is already seen in Singapore. Whether this is through e-commerce, trade, entrepreneurship, remittances, education, or tourism, adapting to how the Indian economy functions will have positive flow-on effects to international markets. Any country with a significant Indian diaspora should be considering how its central bank can cooperate with India to provide the framework for UPI integration.

4. **Interoperability and standardisation are fundamental to unlocking digital public infrastructure.** Maximising the potential of digital public infrastructure requires interoperability and standardisation. One of the key successes of the India Stack is its public railways of digital approach, where open-source technology means there is an even playing field for innovators to create software that is competitive. Interoperability and standardisation will streamline global trade and cross-border payments with India.

Conclusion

The India Stack may seem like an overnight success story yet was one that took ten years to build. Any observer of or participant in India's economy over the last decade would have witnessed a transformation not seen anywhere else globally. Today, the world's largest country by population is structured around the India Stack, and

particularly its UPI. This has led to widespread financial inclusion across the country, which is an essential element of the India growth story.

While countries look to India for economic diversification and with the huge Indian diaspora across the globe, there is both a demand and a need for integration into the Indian economic payments systems. This is significant, because there is no other similar comprehensive structural transformation in a developing country that developed countries are looking to adopt. India has jumped ahead of traditional payments models in advanced economies through its bottom-up approach to digital public infrastructure. To respond to this transformation, other countries and markets will need to adapt to India—and not the other way around—if they truly want to move beyond "just looking like a wow", when looking at the India economic opportunity.

Endnotes

1 Yan Carrière-Swallow, Vikram Haksar, and Manasa Patnam, "Stacking Up Financial Inclusion Gains in India," IMF, July 2021, https://www.imf.org/external/pubs/ft/fandd/2021/07/india-stack-financial-access-and-digital-inclusion.htm

2 DFAT, "India Economic Strategy: Chapter 18," Australian Government, https://www.dfat.gov.au/publications/trade-and-investment/india-economic-strategy/ies/chapter-18.html#:~:text=India%20has%20the%20largest%20diaspora,origin%20spread%20across%20146%20countries.

3 Astha Kapoor and Erin Watson, "Defining the Digital Public Infrastructure Approach," T20 India, 2023, https://t20ind.org/research/defining-the-digital-public-infrastructure-approach/

4 India Stack, "FAQ," https://indiastack.org/faq.html

5 IE Insights, "India's DPI Success: A Global Blueprint," October 2023, https://www.ie.edu/insights/articles/indias-dpi-success-a-global-blueprint/

6 UNDP, "Inspiring Collective Action: Digital India Sets the Stage for G20," February 2023, https://www.undp.org/news/inspiring-collective-action-digital-india-sets-stage-g20

7 Government of India, "Aadhaar Dashboard," https://uidai.gov.in/aadhaar_dashboard/index.php

8 Shawn Hunter, Adele Webb, and Erin Watson-Lynn, *Policy Guidebook: Harnessing Digital Technology for Financial Inclusion in Asia and the Pacific*, UN ESCAP, March 2022, https://www.unescap.org/kp/2022/policy-guidebook-harnessing-digital-technology-financial-inclusion-asia-and-pacific

9 The Economic Times, "Over 50 Cr Jan Dhan Accounts Opened in Past 9 Years; Total Deposits Cross Rs 2 Lakh Cr," https://economictimes.indiatimes.com/news/economy/finance/over-50-cr-jan-dhan-accounts-opened-in-past-9-years-total-deposits-cross-rs-2-lakh-cr/articleshow/103091780.cms#

10 World Bank, "Findex 2021 India Country Brief," 2021, https://thedocs.worldbank.org/en/doc/4c4fe6db0fd7a7521a70a39ac518d74b-0050062022/original/Findex2021-India-Country-Brief.pdf

11 Government of India, "Monthly Metrics," Government of India, 2023, https://www.npci.org.in/statistics/monthly-metrics

12 National Payments Corporation of India (NPCI), https://www.npci.org.in

13 India Stack, "Data," October 2023, https://indiastack.org/data.html

14 IMF, "India Stack: Financial Access and Digital Inclusion," July 2021, https://www.imf.org/external/pubs/ft/fandd/2021/07/india-stack-financial-access-and-digital-inclusion.htm.

15 IMF, "India Stack: Financial Access and Digital Inclusion"

16 Cristian Alonso et al., *Stacking up the Benefits: Lessons from India's Digital Journey,* International Monetary Fund, March 2023, https://www.imf.org/-/media/Files/Publications/WP/2023/English/wpiea2023078-print-pdf.ashx.

17 World Bank, "Rural Population (% of Total Population) – India," 2023, https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=IN.

18 Tim O'Callahan, "What Happens When Billion Identities are Digitized," March 2020, https://insights.som.yale.edu/insights/what-happens-when-billion-identities-are-digitized

19 O'Callahan, "What Happens When Billion Identities are Digitized"

20 Bhaskar Chakravorti, "India's Botched War on Cash," Harvard Business Review, December 2016, https://hbr.org/2016/12/indias-botched-war-on-cash.

21 Chakravorti, "India's Botched War on Cash"

22 DFAT, "India Economic Strategy: Chapter 18"

23 NPCI, "UPI PayNow - NPCI International," 2023, https://www.npci.org.in/who-we-are/group-companies/npci-international/upi-paynow?TSPD_101_R0=08d1fc67a6ab20003d8994ae2ff4fafbd7758be7b06ff046ee528bd3e04ba113c69f91f7ce618d2008dacc4730143000cd9c3ed1a33e5d6ec0b6848cdf43afa355f048d48c0f86cc71a857749309b33115bc6736ccdad5c62247fb8abc49231b.

24 MAS, "Launch of Real-Time Payments Between Singapore and India," February 2023, https://www.mas.gov.sg/news/media-releases/2023/launch-of-real-time-payments-between-singapore-and-india.

25 Finextra, "UAE to Launch National Domestic Card Scheme," October 2023, https://www.finextra.com/newsarticle/43137/uae-to-launch-national-domestic-card-scheme.

26 The Indian Express, "Bhutan Becomes the First Neighbouring Country to Use BHIM UPI," July 2021, https://indianexpress.com/article/business/bhutan-becomes-the-first-neighbouring-country-to-use-bhim-upi-7403970/

27 The Economic Times, "India and Sri Lanka Working Together to Link UPI and Lanka Pay: PM Modi," October 2023, https://economictimes.indiatimes.com/industry/banking/finance/banking/india-and-sri-lanka-working-together-to-link-upi-and-lanka-pay-pm-modi/articleshow/104417986.cms.

28 Livemint, "UPI in France: UPI to Go Live in France in Three to Four Months, Says NIPL CEO Ritesh Shukla," July 2023, https://www.livemint.com/news/india/upi-in-france-upi-to-go-live-in-france-in-three-to-four-months-says-nipl-ceo-ritesh-shukla-11689741994629.html.

29 World Bank, "GDP – Current USD," 2023, https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?most_recent_value_desc=true

30 DFAT, "India Economic Strategy: Chapter 1," https://www.dfat.gov.au/publications/trade-and-investment/india-economic-strategy/ies/chapter-1.html.

31 DFAT, "India Economic Strategy: Chapter 18"

32 MAS, "Launch of Real-Time Payments Between Singapore and India"

33 MAS, "Launch of Real-Time Payments Between Singapore and India"

34 Divya Bhati, "More Than 95,000 UPI Fraud Cases Reported in 2022, Here is How You Can Stay Safe," *India Today*, May 2023, https://www.indiatoday.in/technology/news/story/more-than-95000-upi-fraud-cases-reported-in-2022-here-is-how-you-can-stay-safe-2386084-2023-05-29

BRICS and De-dollarisation: Global Implications

Lucy Corkin

MUCH HAS BEEN MADE of the assertive political posturings regarding 'de-dollarisation' during the BRICS[a] 15th Summit in August 2023 in South Africa. Analysts have variously described the idea as "an economic inevitability" and "political fantasy", particularly in the case of the mooted BRICS currency.[1] As in most cases where a proposal courts controversy, the reality is likely to settle somewhere in between.

This article seeks to derive clarity amid the sensationalism. It gives a brief overview of dollarisation and the context of the US Dollar as the world's reserve currency, and offers a perspective on monetary system developments as distinct from mere political rhetorical displays. It argues that rather than debating an alternative *reserve currency*, attention must be paid to an alternative *system of international payments rails*. Finally, it offers a perspective on the implications for the Global South, in particular the African economies, whom the BRICS grouping professes to champion.

a The original BRICS comprised Brazil, Russia, India and China, until 2010 when South Africa joined the grouping. The membership has recently been expanded to Argentina, Egypt, Ethiopia, Iran the United Arab Emirates and Saudi Arabia, who will join from 2024.

Dollarisation in Context

'Dollarisation' is a broad term that encompasses a number of different elements as it relates to the functioning of economies. Within the context of a country's domestic activities, dollarisation can refer to either of the following:[2]

Financial dollarisation: Substituting local currency assets or liabilities for their foreign currency equivalent, i.e., making dollar-investments or taking on dollar-denominated debt;

Real dollarisation: The use of foreign currency to denominate prices and wages; and

Transactional dollarisation (currency substitution): The use of a foreign currency as legal tender.

First gaining traction in Latin America in the 1970s, real and transactional dollarisation has been used as a tool to stave off the effects of (hyper-)inflation, during which a local currency may lose its ability to act as a credible store of value.[3] In addition to domestic economic challenges, exogenous factors, such as global risk aversion—which implies less international investor demand for emerging economies' currencies—further encourage financial dollarisation to mitigate domestic vulnerabilities against the impact of cycles.[4] Albeit a response to a weakened local currency, dollarisation on a long-term basis can ironically have the impact of exacerbating the very situation that policymakers intend to solve. In many cases, dollarisation can further erode the use of local currency, which in turn increasingly limits a country's monetary policy autonomy.[5] This vicious cycle is made worse where the country has foreign currency liabilities (dollar-denominated debt) resulting in a debt burden that can be influenced by economic factors over which the local monetary authorities have limited control.[6] In recognition of these risks, a number of dollarised economies have endeavoured to de-dollarise in an attempt to reclaim monetary autonomy, but as Abdelati (2006) notes,[7] de-dollarisation has historically been difficult to achieve.[b]

As a result of the above, emerging economies are wary of the role of the dollar, both domestically and as it relates to the global economy. The dollar's international influence is most usefully described through the prism of money's classical interrelated primary functions:[8]

- medium of exchange (international trade)
- unit of account (commodity price indexation, such as oil and precious metals)
- store of value (central bank reserves)

b In Abdelati's study, of the 85 countries surveyed during the period 1980 to 2001, only four succeeded in de-dollarisation. Of the four, only two—Poland and Israel—had in her assessment achieved lasting reversals with limited economic side-effects.

An alternative global reserve currency—whose time has come, according to some BRICS leaders[9]— would require an erosion of the dominant role the dollar plays in these areas, and the emergence of a credible substitute.

Dollar Disintermediation

Medium of Exchange: According to data from the Bank of International Settlements, the USD is consistently involved in almost half of global foreign exchange transactions.[10] Even where the transaction does not directly involve the USD, it is sometimes used as benchmark for value in an indirect medium of exchange between two non-USD currency pairs. Indeed, according to some estimates, this kind of exchange intermediation drives nearly 40 percent of USD foreign exchange turnover.[11] Simply put, the USD serves as a kind of monetary *lingua franca* that facilitates currency exchange across the world.

Unit of Account: For the same reason, key global commodities such as gold and crude oil are priced in dollars; as is the vast majority of debt issued on the international capital markets.[12] Moreover, 88 percent of USD-denominated debt has neither a US-domiciled issuer nor borrower.[13] Debt, which after all, is bought and sold on the secondary market by investors just like any other international commodity, is being price-indexed to a universally accepted benchmark.

Store of Value: The USD's dominant position as an international currency is reinforced by its ease of exchange, promoting market liquidity, and its perceived ability to hold value. Traditionally, the dollar has therefore comprised the bulk of central banks' foreign currency reserves.

With the United States's Gross Domestic Product (GDP) weighing in at only circa 25 percent of the global total, it is evident that the international role of the USD is disproportionate to its country's economic contribution. As evidenced by the above, the USD is used even where the US is not directly involved. This has led to an expansion of the indirect influence of the US economy on global economic trends—in the 1960s, then French Minister of Finance[c] Giscard D'Estaing termed this the US's "exorbitant privilege".[14] For example, continued global demand for dollars as the world's reserve currency permits the US government to easily finance a growing fiscal deficit.

Pronouncements at the BRICS Summit, particularly from Brazilian President Luiz Inácio Lula da Silva and Russian President Vladimir Putin, left no doubt as to their desire to disintermediate the dollar so that currency utilisation is more appropriately reflective of (and therefore limited to) economic activity and contribution to global output. The beginnings of this trend have already quietly begun.

c This quote is attributed to d'Estaing in the 1960s. He would later be President of France from 1974 to 1981.

According to data from the International Monetary Fund (IMF), USD as a share of foreign exchange reserves has fallen gradually over time, reaching a 20-year low in late 2022 at 58 percent;[15] in the 1970s, this proportion was as high as 85 percent. The majority share in 2022 comprised a basket of currencies such as Australian Dollar, Canadian Dollar, and Swiss Franc, which have traditionally played a limited role as reserve currencies.[16] Strengthening the case for diversification, the World Gold Council notes an increasing demand from central banks, during 2022 and 2023, for gold reserves—traditionally also a safe haven for savings, at the expense of the dollar.[17]

This does indicate that there is a tendency for central banks to adopt a diversification policy vis-à-vis currency reserves away from the dollar, but not necessarily towards a single natural successor. Whereas central banks have increased their Chinese Renminbi holdings, this only accounts for around 25 percent of the shift away from the dollar. Indeed, whereas CNY as a share of central bank reserves rose from negligible in 2015 to 2.6 percent in 2022, and CNY SWIFT[d] transactions doubled to 2.3 percent, this is still a far cry from the scale of internationalisation that would be required to tilt the world's reserve currency.

Moreover, whereas it is clear that the People's Bank of China is taking steps to ensure that the renminbi becomes a more internationalised currency,[18] this does not mean that China is willing to assume responsibility for the world's reserve currency. As Magnus (2023)[19] points out, a number of significant monetary policy reforms would have to be undertaken, such as rendering the renminbi freely and fully convertible, and increasing market transparency. However, the Chinese government and the PBOC have signalled little interest in carrying these out. Furthermore, to support a functioning reserve currency, the Chinese government would need to be able to support the currency's global liquidity with sufficient institutions such as stand-by mechanisms and reserve facilities, while managing the domestic impact.[20] India and Russia have already experienced difficulties where these institutions do not yet exist—talks to settle bilateral trade in Rupees were suspended in May once Russia's rupee surplus accumulation reached levels that were "no longer desirable", due to the currency's lack of full convertibility.[21]

Meanwhile, the proposal for a BRICS currency is far less feasible than it might appear on the surface, given the lack of geographic, economic, or political alignment among the grouping's disparate members. Moving to a single currency would require all members to surrender a measure of their economic, monetary, and political sovereignty—this is currently anathema to most, as China, Russia and India have historically placed a high political premium on the non-interference of other nation states in their domestic affairs.

d The Society for Worldwide Interbank Financial Telecommunications (SWIFT) is a messaging system between financial institutions globally that supports secure international money transfers.

Systems and Payments

The removal of the USD as the world's reserve currency is not only unlikely in the immediate future; it may well even be undesirable by certain BRICS members. A far more interesting proposition, and one with better chances of success in the medium term, is developing alternative channels in financial markets infrastructure.

The fact remains that the USD underpins key international financial market infrastructures. Revocation of access can therefore be politicised, as demonstrated by the freezing of US$640 billion in Russian gold and FX reserves as well as the suspension of Russian banks from the SWIFT network following the launch of the war in Ukraine.[22] Rather than assume the role of reserve currency custodians, China and Russia, as well as BRICS allies, seek to disintermediate the dollar from third-party transactions, limiting its influence in non-bilateral affairs. Underlining this, Russian Finance Minister Anton Siluanov noted at the BRICS ministerial meeting in April 2022: "This pushes us to the need to speed up work in the following areas: the use of national currencies for export-import operations, the integration of payment systems and cards, our own financial messaging system, and the creation of an independent BRICS rating agency."[23]

Most of the original five BRICS member countries have sought to evolve their domestic payments architecture, largely in a bid to increase financial inclusion and interoperability at home. Brazil, Russia, India, and South Africa each boast their own domestic interbank payment systems.[e] China's UnionPay was officially launched in 2002 as an alternative to Visa and Mastercard and overtook both incumbents in 2015 in terms of card payment value.[24] India's universal payments interface (UPI) is following suit, and is expanding from a domestic payments network to ensuring that it is an accepted form of payment outside of India, while also offering other countries technical assistance to develop similar domestic payments networks.[25]

Where these systems have extended to cross-border payments, they represent challenger systems to global norms. China's Cross-border Interbank Payment System (CIPS) is designed to provide payment and clearing services cross-border and for offshore renminbi transactions.[26] However, it utilises the SWIFT network as a messaging service, and thus relies upon, rather than challenges, the existing international monetary system.[27] CIPS already facilitates China-Russia trade and there are reportedly plans to link it to Russia's SPFS, a SWIFT financial messaging service alternative. Whereas SPFS is currently largely limited to domestic usage in Russia,[f]

e These are, respectively, Pix (Brazil), MIR (Russia), UPI (India) and Payshap (South Africa). The Pan-African Payment and Settlement System (PAPSS), spearheaded by the Afrexim Bank works with central banks and financial institutions across the continent to allow African intra-continental cross-border trade.

f SPFS was originally developed in 2014 following the first threat of excluding Russia from the SWIFT messaging system.

international sanctions against Russia provide a renewed imperative to circumvent current international protocols. The enlargement of the BRICS bloc provides a wider collective of potentially allied members to test the viability of an alternative system of payments and messaging.

Commodity Price Indexation

It is a long-standing irritant to certain BRICS members that commodities are priced in dollars and traded on exchanges located in the West. It is therefore no coincidence that of the six new BRICS members—Saudi Arabia, United Arab Emirates, Iran, Egypt, Argentina, and Ethiopia—three are significant oil producers. Indeed, BRICS+ now constitutes 43 percent of global oil production.[28] The expanded membership provides a natural forum for China and India, two significant oil importers, to increase their universe of receipt for sizeable imports in their own currencies on alternative payments systems if they so choose. China has already entered into several swap agreements, notably with Russia and Saudi Arabia, to facilitate trade settlement in renminbi.[29]

During a state visit to Saudi Arabia in December 2022, Chinese President Xi Jinping broached the idea of using the Shanghai Petroleum and Natural Gas exchange as a platform to facilitate renminbi-denominated oil and gas trades.[30] A renminbi-denominated trade between CNOOC and France's Total Energies has already been effected.[31] In seeming confirmation of this movement, immediately following the BRICS Summit, China and Saudi Arabia renewed the existing currency swap agreement and signed a memorandum of understanding to partner on the development of a Central Bank Digital Currency (CBDC).[32] This could well set the scene for exploration into a multi-currency cross-border clearing mechanism.

Impact for African Countries

Cries of dethroning the dollar are wildly premature and perhaps misdirected.[33] Despite the political grandstanding during the 2023 BRICS Summit, rather than seeking to replace the dollar as the world's reserve currency, they are merely looking at disintermediating it as the currency of reference (real dollarisation).

For African economies, political *schadenfreude* in witnessing the dollar's gradual decline in favour of alternatives, should not cloud a strategic approach in the face of the instability of a more multipolar world.

The universalism of the USD and payment systems such as SWIFT cause the concentration of their control in the hands of a few. The opportunity cost of multiple alternative systems is a fragmentation of the payments architecture and a loss of interoperability. This phenomenon is well-known in the African continent, where

there are 32 different instant payment systems.[34] Only further integration will allow the continent to truly develop the rails for meaningful intra-continental trade and economies of scale. Similarly, the development of alternative cross-border payment rails will present a trade-off between optionality and universality, with the potential to render higher transaction costs due to the need for membership of multiple payment systems.

Furthermore, with the precedent having been set of the weaponisation of monetary systems architecture in the case of Russia's exclusion from the SWIFT network in 2022, the politicisation of all such architecture, including alternative channels, is likely to increase. As in the case of Huawei's 5G roll-out,[35] those countries that opt into such systems will be viewed as having nailed their colours to the mast from a political alliance perspective, with the potential to heighten diplomatic sensitivities.

Conclusion

It is clear that whereas the US Dollar may have become the world's reserve currency due to the US's economic rise in the mid-20th century, its continued clout well into the 21st is propped up by, rather than the cause of the continued disproportionate global role of the USD. Put differently, much of the USD's pervading influence (and therefore, by proxy, that of the United States) stems from the indirect role the currency plays within global financial architectures.

While global actors such as China and Russia have been vocal about international monetary system reform, it is unlikely that they wish immediately to see a direct replacement of the USD, either with a monetary union or their own national currencies. Rather, as this essay has argued, it appears that these political actors are seeking to disintermediate the role of the USD in financial markets infrastructure and payments rails. If successful, this will, in a stroke, reduce global reliance on USD-based norms and provide a buffer against the former's use for political means, while also curtailing the reach of the US beyond strictly bilateral transactions.

As South Africa's BRICS ambassador noted, the emphasis was about giving the world more choices rather than replacing the USD per se.[36] However, for an incumbent, any change in the status quo where the dominance of a certain actor is eroded, is often viewed with suspicion. It is also worth considering that other actors will similarly bear the expense of a loss in monetary unipolarity. Removing the financial Pax Americana will increase the transaction costs of countries that must consider and potentially participate in multiple systems while suffering the political implications of their choices. The efforts of BRICS countries to develop alternative payment rails and pricing benchmarks is potentially a far more interesting development that could have wide-ranging implications in the coming years.

Endnotes

1 Dipanjan Roy Chaudhury, "BRICS Working on New Global Reserve Currency and Alternative Mechanism for Int'l Payments: Vladimir Putin," *Economic Times,* June 23, 2023, https://economictimes.indiatimes.com/news/international/world-news/brics-working-on-new-global-reserve-currency-and-alternative-mechanism-for-intl-payments-vladimir-putin/articleshow/92407851.cms; Rachel Savage, "What is a BRICS Currency and is the US Dollar in Trouble," *Reuters*, August 24, 2023, https://www.reuters.com/markets/currencies/what-is-brics-currency-could-one-be-adopted-2023-08-23/; Didier Borowski, "Renminbi's Rise With Not Challenge Dollar Dominance," Official Monetary and Financial Institutions Forum, June 23, 2022, https://www.omfif.org/2022/06/renminbis-rise-will-not-challenge-dollar-dominance/

2 Annamaria Kokenyne, Jeremy Ley, and Romain Veyrune, "Dedollarization," IMF Working Paper WP/10/188 (2010), https://www.imf.org/external/pubs/ft/wp/2010/wp10188.pdf

3 Luis A. V. Catão and Marco E. Terrones, "Financial De-Dollarization: A Global Perspective and the Peruvian Experience," IMF Working Paper WP/16/97 (2016), https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Financial-De-Dollarization-A-Global-Perspective-and-the-Peruvian-Experience-43877

4 Catão and Terrones, "Financial DeDollarization"

5 Marcello Estevão and Greetje Everaert, "Enhancing Monetary Policy Flexibility Through De-Dollarization," IMF Blog, September 21, 2016. https://www.imf.org/en/Blogs/Articles/2016/09/21/enhancing-monetary-policy-flexibility-through-de-dollarization

6 Patricia Alvarez-Plata and Alicia García-Herrero, "To Dollarize or De-Dollarize: Consequences for Monetary Policy," BBVA Economic Research Papers No. 0808 (December 2008): 1-35, https://www.bbvaresearch.com/wp-content/uploads/mult/WP_0808_tcm348-212943.pdf

7 Wafa Fahmi Abdelati, "International Experience of Dedollarization," In *Cambodia: Rebuilding for a Challenging Future* (Washington: IMF, 2006).

8 ING, "BRICS Expansion and the Dollar: Would a Larger Bloc Mean Faster De-Dollarisation," August 2023, https://think.ing.com/reports/brics-expansion-and-the-dollar-would-a-larger-bloc-mean-faster-dedollarisation/

9 Kgothatso Madisa, "No Consensus on De-Dollarisation During BRICS Talks but Putin Says Process is 'Irreversible and Gaining Pace'," *Times Live*, August 23, 2023, https://www.timeslive.co.za/politics/2023-08-23-no-consensus-on-de-dollarisation-during-brics-talks-but-putin-says-process-is-irreversible-and-gaining-pace/

10 Maronoti Bafundi, "Revisiting the International Role of the US Dollar," *BIS Quarterly Review*, December 2022; ING, "BRICS Expansion and the Dollar: Would a Larger Bloc Mean Faster De-Dollarisation," August 2023, https://think.ing.com/reports/brics-expansion-and-the-dollar-would-a-larger-bloc-mean-faster-dedollarisation

11 Maronoti, "Revisiting the International Role of the Dollar"

12 ING, "BRICS Expansion and the Dollar"

13 Maronoti, "Revisiting the International Role of the Dollar"

14 Ben Bernanke, "The Dollar's International Role: An "Exorbitant Privilege"?" Brookings, January 2016, https://www.brookings.edu/articles/the-dollars-international-role-an-exorbitant-privilege-2/

15 Naomi and Libby George, "The End of King Dollar? The Forces at Play in De-Dollarisation," *Reuters*, May 25, 2023, https://www.reuters.com/markets/currencies/end-king-dollar-forces-play-de-dollarisation-2023-05-25/

16 Serkan Arslanalp, Barry Eichengreen, and Chima Simpson-Bell. "The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies," IMF Working Paper WP/22/58 (2022), https://www.imf.org/en/Publications/WP/Issues/2022/03/24/The-Stealth-Erosion-of-Dollar-Dominance-Active-Diversifiers-and-the-Rise-of-Nontraditional-515150

17 Michael Roach, "Dedollarisation: Shifting Power Between the US and BRICS," *The Interpreter*, Lowy Institute, August 3, 2023, https://www.lowyinstitute.org/the-interpreter/de-dollarisation-shifting-power-between-us-brics

18 People's Bank of China, "Milestone of RMB Internalization: RMB Cross-border Inter-Bank Payment System Starts Operation," October 14, 2015, http://www.pbc.gov.cn/english/130721/2963649/index.html

19 George Magnus, "De-Dollarisation Would Upend the Global Economy," *Council on Geostrategy*, no. GPE18, July 2023, https://georgemagnus.com/de-dollarisation-would-upend-the-global-economy/

20 Herbert Poenisch, "Brics Common Currency Would Be No Threat to the Dollar," Official Monetary and Financial Institutions Forum, June 13, 2023, https://www.omfif.org/2023/06/brics-common-currency-would-be-no-threat-to-the-dollar/

21 Aftab Ahmed Swati Bhat, "Exclusive: India, Russia Suspend Negotiations to Settle Trade in Rupees," *Reuters*, May 4, 2023, https://www.reuters.com/markets/currencies/india-russia-suspend-negotiations-settle-trade-rupees-sources-2023-05-04/

22 ING, "BRICS Expansion and the Dollar"

23 Al Jazeera, "Russia Urges BRICS Nations to Integrate Payment Systems and Cards," April 22, 2002, https://www.aljazeera.com/news/2022/4/9/russia-urges-brics-nations-to-integrate-payment-systems-and-cards

24 Finextra, "UnionPay Takes Top Spot from Visa in $22 Trillion Global Cards Market – RBR," July 22, 2016, https://www.finextra.com/pressarticle/65412/unionpay-takes-top-spot-from-visa-in-22-trillion-global-cards-market---rbr

25 Samar Srivasta and Salil Panchal, "How India is Taking UPI Global," *Forbes India*, August 14, 2023, https://www.forbesindia.com/article/take-one-big-story-of-the-day/how-india-is-taking-upi-global/87477/1

26 People's Bank of China, "Milestone of RMB Internationalization"

27 Emily Jin, "Why China's CIPS Matters (and Not for the Reasons You Think)," *CNAS*, April 5, 2022, https://www.cnas.org/publications/commentary/why-chinas-cips-matters-and-not-for-the-reasons-you-think

28 Marcus Lu and Bhabna Banerjee, "Visualizing the BRICS Expansion in 4 Charts," Visual Capitalist, August 24, 2023, https://www.visualcapitalist.com/visualizing-the-brics-expansion-in-4-charts/

29 Herbert Poenisch, "Brics Members Face Obstacles on Road to De-Dollarisation," Official Monetary and Financial Institutions Forum, August 25, 2023, https://www.omfif.org/2023/08/brics-members-face-obstacles-on-road-to-de-dollarisation/

30 Reuters, "China to Use Shanghai Exchange for Yuan Energy Deals with Gulf Nations – Xi," December 9, 2023, https://www.reuters.com/business/energy/chinas-xi-tells-gulf-nations-use-shanghai-exchange-yuan-energy-deals-2022-12-09/

31 Economic Times, "China Completes First Yuan-Settled LNG Trade," March 29, 2023, https://energy.economictimes.indiatimes.com/news/oil-and-gas/china-completes-first-yuan-settled-lng-trade/99079623

32 Joshua Ramos, "BRICS: UAE and China Sign Currency Swap, CBDC Partnership," Watcher.Guru, November 29, 2023, https://watcher.guru/news/brics-uae-china-sign-currency-swap-cbdc-partnership

33 William Gumede, "BRICS: Rising De-dollarisation of the World," Inclusive Society Institute, August 2023, https://www.inclusivesociety.org.za/post/brics-rising-de-dollarisation-of-the-world; Joseph Moss, "De-Dollarisation Continues Unabated in 2023," The International Banker, October 5, 2023, https://internationalbanker.com/finance/de-dollarisation-continues-unabated-in-2023/; Jakkie Cilliers, "BRICS+ and the Future of the US Dollar," Institute for Security Studies, August 25, 2023, https://futures.issafrica.org/blog/2023/BRICS-and-the-future-of-the-US-dollar; Ramu Thiagarajan et al., "Dedollarisation: Is US Dollar-Dominance Dented?" State Street, June 2023, https://www.statestreet.com/web/insights/articles/documents/de-dollarization-paper.pdf

34 AfricaNenda, *The State of Inclusive Instant Payment Systems in Africa*, 2023, https://www.africanenda.org/en/siips2023

35 Iryna Bogdanova, "Politicization of the 5G Rollout: Litigation Way for Huawei?" WTI Working Paper no 01/2023, January 2023, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4345025

36 Sumayya Ismail, "Can BRICS Dethrone the US Dollar? It'll Be an Uphill Climb, Experts Say," *Al Jazeera*, August 24, 2023, https://www.aljazeera.com/features/2023/8/24/can-brics-dethrone-the-us-dollar-itll-be-an-uphill-climb-experts-say

Aid Localisation: Between Stagnation and Hope

Aude Darnal

IN DECEMBER 2023, THE United Nations Climate Change Conference convened in Dubai to discuss global strategies and actions to ensure a sustainable future for all in the face of worsening climate change. As policymakers attempt to finance and implement the global green transition, international assistance actors, such as international NGOs and private development companies, are striving to integrate environmental components into their programmes aimed at addressing security, development, and other humanitarian crises in the Global South.

However, there is little focus at the strategic level on how international assistance continues to be dominated by Western stakeholders such as government agencies, multilateral organisations, international NGOs, and private international development companies, who tend to marginalise local actors of change. These are the NGOs, informal civic associations, and social entrepreneurs working towards the same objectives in the Global South. To be sure, international donors have invested, over the past 60 years, trillions of US dollars in aid in various domains—from development to peacebuilding and humanitarian action. Yet, the overall amounts of international aid continue to be insignificant compared to the financing needs for the green transition—estimated

at a minimum of US$5 trillion per year, compared to the current US$2 trillion global annual investment—or to achieve the United Nations Sustainable Development Goals. Nonetheless, despite the investment made through aid, the sector has continuously failed to spur sustainable and locally rooted positive change in target countries, despite encouraging rhetoric about localisation which, in practice, struggles to elevate bottom-up approaches.[1] More than ever, it has now become critical to overhaul the dominant international assistance model to encourage sustainable development by putting power and decision-making in the hands of those in need of funding.

Though understudied in the nonprofit sector, the 'incubator' concept appears to be a solution that could support such a reform and empower local actors, especially those in the informal economy. The latter, which accounts for a substantial part of local economies in Africa, Asia, Latin America and the Caribbean, and the Middle East, are largely neglected in international funding. According to Seydina Ndiaye, a social entrepreneur in Senegal and co-founder of *Collectif des Volontaires du Sénégal*, an organisation that regroups, organises, and supports informal associations in his country, in the rare instances when financing reaches local actors, it usually targets well-established formal NGOs. This leaves a broad swath of informal actors—such as civic associations or social entrepreneurs not legally registered and recognised by the state—out of the equation.[2]

To be sure, South-South assistance models have developed in recent years, offering local actors of change an alternative to the traditional Western model. For instance, as Paul Nantulya notes, "Most Indian aid is channelled through the African Development Bank. India's total investments in Africa amount to $70 billion, a figure the powerful Confederation of Indian Industry aims to increase to $150 billion by 2030."[3] Moreover, as Observer Research Foundation's Malancha Chakrabarty states, India's development cooperation programme is based on "the principle of mutual benefit and demand-driven development."[4] Lessons learned and capacity sharing from Southern to Western aid stakeholders should be promoted.

This essay focuses on the failure of the dominant Western international assistance model and encourages more research into the potential ways by which Western funding, comprising the majority of aid, can be channelled more directly to local actors.

The Case for Alternatives to International Aid Organisations

Over the recent decades, movements that seek to decolonise aid—putting "decision-making [in the hands] of the people directly impacted by aid and development programs"—have made strides in the international aid sector.[5] So have localisation campaigns, or "initiatives owned and led by people in their own context," although experts have criticised the concept, arguing that it lacks a clear definition and

ultimately undermines local actors.[6] These frameworks, however, alongside the 2016 Grand Bargain agreement,[a] are often used by Western international aid stakeholders as the backdrop of their strategy to empower local actors.[7] That is notably the case of the United States, the world's largest Official Development Assistance donor and a signatory to the Grand Bargain, and whose aid agency has produced a number of localisation strategies over the past years.[8]

Despite commitments by multilateral organisations, international donors, and NGOs, however, the provision of funding to local actors remains extremely poor. In the humanitarian sector, Development Initiative reports, "combined direct and indirect funding to local and national actors fell from 2.7% of overall assistance in 2021 to 2.1% in 2022"—its lowest level since 2017, when the Grand Bargain was first implemented.[9] Direct funding accounted for only 1.2 percent of total humanitarian assistance during the same period.

In 2015, when that figure was 0.2-percent lower, Dhananjayan Sriskandarajah, then the secretary-general of CIVICUS and now CEO of Oxfam Great Britain, outlined the primary justifications made by international donors for not directly funding local civil society organisations (CSOs). These include their aversion to risk and low capacity to provide smaller grants, and the perceived lack of capacities of local organisations.[10]

Indeed, although many local CSOs across the Global South demonstrate great administrative capacity and mastery in donors' complex funding processes, skill levels vary between and within countries and regions. Moreover, donors' heavy bureaucracy, cumbersome eligibility conditions and procurement processes, lack of human and technical resources, and aversion to change are significant challenges to the empowerment of local actors.[11] Finally, experts have underlined how certain attitudes of international NGOs can impede direct funding for local actors. A 2020 Save the Children report on localisation underlined how competition and poor partnerships between international and local NGOs could be a barrier to the empowerment of the latter, noting, "[The] criticism of local actors being treated as sub-contractors instead of meaningful partners or leaders by international actors is well-reflected in the literature."[12]

There are many prescriptions for international donors and NGOs alike to reform international aid—from increasing direct funding to local CSOs, to augmenting diversity in international stakeholders' leadership positions, to increasing transparency in international aid financing flows and strengthening local actors' capacities when necessary.[13] Beyond these recommendations—which are often broad and lacking in practicality—there also needs to be more innovative thinking to imagine a radically different international aid system that can be implemented in pragmatic ways. This should aim not only to support local CSOs, but also to move away from dependency dynamics, and other "colonial-era and neo-colonial ideologies of the superiority and privilege of Western thought and approaches," as noted by Peace Direct.[14] Such an

approach would notably remove foreign intermediaries and truly enable bottom-up approaches and programme sustainability and impact.

That being said, there is no single way to solve the international aid conundrum. Any attempt to do so should be realistic and provide solutions that will support diverse funding for local actors while accounting for international donors' current high aversion to risk—at least until donors' systems undergo reform to reduce such aversion.

The Promise of Local Non-profit Incubation Models

Donors rely primarily on international NGOs to receive funding and implement international aid as these are perceived to be better capable of handling donors' processes; they are also viewed as having greater commitment to ethics, for instance, as compared to local CSOs. While a small number of well-established local NGOs succeed in capturing international aid financing, the amounts are largely negligible, and the plethora of informal actors of change[b] are left out of the international aid sector.[15] According to Ndiaye, some local NGOs have "mastered" the financing system of international donors.[c] As a result, it is often the same ones that receive international funding, while smaller organisations that are not as established or are informal but yet have a substantial impact within communities, struggle to obtain financing.[16]

Ndiaye and other social entrepreneurs have designed the Collectif des Volontaires du Sénégal as a "social hub"—a place where informal and formal actors of change can have access to peer networking, coaching, and training. The Collectif's primary objective for 2024 is to increase its financing to provide small grants to its member associations, enabling them to implement their activities.[17]

This concept resembles that of a non-profit incubator, and it can uplift marginalised actors of change while addressing donors' concerns about risks and administrative burden.[d]

The concept

Based on the business/for-profit incubator concept, non-profit incubation can be summarised as a system "to help nonprofits become effective, efficient, and impactful organizations."[18] In India, Atal Innovation Mission (AIM), the government's initiative to spur innovation and entrepreneurship, states that non-profit incubators' support "includes providing incubation or co-working spaces, lab spaces, new technological facilities, utilities, growth funds, mentoring and advisory support, and network and

b 'Informal' would mean they are not registered with any government agency and therefore are not accorded any legal status.

c In Senegal, NGOs are associations with two years or more of existence.

d Ndiaye avoids using the term "incubator" due to its negative connotation in Senegal, as many business/for-profit incubators are perceived as inefficient by communities.

linkages."[19] Although AIM's handbook for incubators mentions that these services are provided for a fee or equity, that is not the case for all non-profit incubators.[e]

There is a need for more scrutiny of the advantages and inconveniences of the two models. However, providing such services for free—just like traditional aid—or for a negligible membership fee, for instance, would ensure more inclusivity by providing access to these resources to marginalised actors of change, which typically struggle to finance their activities. These services should be financed by diverse sources of funding to ensure sustainability.

There are limited academic studies about this fairly recent framework, and systems, rules, and terminology vary across cases. Nonetheless, the overarching idea—i.e., a local non-profit platform that supports local non-profit organisations developing and scaling up, through funding, providing access to potential donors, peers, and expert coaching or training—can be found across regions. It is associated with the non-profit and social entrepreneurship sectors.[20]

More research could enable mapping existing initiatives based on this model and getting a better understanding of administrative and financial structures that have met with success. Because of its scope, the non-profit incubator would ideally be a civilian-led initiative, to enable the structure to be well-integrated into the civil society networks it leverages to achieve its objectives, similarly to NGOs. It would utilise partnerships with academic institutions, the government, and the philanthropic and private sectors to channel technical capacities and financing opportunities, thus integrating different development stakeholders and ensuring sustainability.

For instance, in 2015, businessman Atul Satija founded The/Nudge Institute in India, an incubator that provides grants and mentoring, and facilitates peer networking for non-profit actors working to alleviate poverty in the country. Based on the level of maturity of the initiative, grantee candidates can apply to the incubator or accelerator programmes—incubation targets nascent initiatives, while acceleration is for existing organisations.[21] The/Nudge Institute is funded by a variety of donors from the private, public and philanthropy sectors, and relies on a network of actors of change to provide mentoring to grantees, leveraging private-nonprofit partnerships to ensure the sustainability of the initiatives it supports.[22]

How it could make a difference

The concept of local non-profit incubation differs from classic international assistance as it removes from the equation foreign funding intermediaries such as international

e The handbook also points out that incubators can take minority stakes in incubated businesses, in return for free or low-rent periods. Similarly, accelerators can sometimes provide businesses with free or discounted service providers. Thus, some services are and can be offered for free in India.

NGOs, thus directly supporting local actors of change, based on local expertise, knowledge, and tools. Such concept enables bottom-up approaches, designed, owned, and led by local actors, based on their priorities, integrated within communities, and in line with government strategies. For instance, The/Nudge Institute leverages the Indian government's policy to support social entrepreneurship in the country, and is supported by AIM.

By channelling funding through a centralised platform that is formally recognised by the state and that relies on well-established administrative, financial, and legal protocols, that system also offers guarantees to donors.

First, incubation may contribute to efforts to address the lack of sustainability of programmes funded by international donors. Whether they are implemented by international or local NGOs, the unsustainability of programmes—for instance, due to top-down approaches, a lack of integration within communities, or limited funding after a grant has concluded—and donor dependency is a crucial issue in the international assistance sector.[23] One way that the incubator can overcome this challenge is by diversifying its funding—seeking support from the public, private, and philanthropy sectors—thus reducing their dependency on traditional international assistance donors. Moreover, the incubator, just like the actors of change it supports, can seek auto-financing solutions to become, if only partly, self-sufficient. In Senegal, the Collectif des Volontaires du Sénégal has been auto-financed by its members for three years, without public, private, or international funding. The informal associations the hub supports also primarily rely on auto financing—for instance, one of them implements income-generating activities—as they are ineligible for most forms of traditional financing. However, although the social hub has demonstrated its resilience over the past years, it is actively seeking to diversify its funding to ensure the durability of the initiative, and to be able to provide grants to the member associations.

Second, it addresses the common criticism of donors and international NGOs that local actors lack the capacity to manage international funding and meet donors' requirements. As Ndiaye explained in an interview with this author, while smaller organisations may indeed face such a challenge, bigger ones have spent time learning international donors' processes and seeking legal and administrative counselling to scale their processes. Ndiaye underlined how the same NGOs often benefit from international funding, as they become experts in donors' procurement and other administrative systems.

Third, and relatedly, by gathering in one platform local organisations in need of support, the incubator alleviates administrative burdens for both donors and local initiatives. Donors primarily interact with only one partner—thus addressing donors' limited capacity to provide large amounts of smaller grants—while organisations

operate with one local platform whose language, processes, and tools, are informed by and integrated into the local context. For instance, to allocate grants, the social hub Collectif des Volontaires du Sénégal created operating standards and levels of funding based on donors' requirements and local actors' specifications. This system notably encourages smaller initiatives to professionalise and develop their capacities to become eligible for bigger grants, thus supporting their formalisation and sustainability and increasing their impact.

At the same time, it is also critical that international donors reform their often-heavy bureaucratic models and increase their technical, financial, and human resources capacities to be able to efficiently handle bottom-up approaches. However, in light of donors' recalcitrance to reforming their administrative system, it is imperative to remain pragmatic and explore creative solutions that will promote more rapid change—until these root issues are addressed. Illustratively, the United States' embassies, which are the primary link between the United States—the world's largest international aid donor—and the recipients of aid, face chronic short-staffing across the African continent, which is the primary regional recipient of US aid.[24]

Fourth, as mentioned earlier, the incubation model can leverage private-nonprofit and other cross-sectoral partnerships, thus elevating local and regional expertise and the sharing of lessons by relying on experts based in-country or in-region. Such partnerships feed virtuous circles that also support the economic sector, thus contributing to several facets of development and crisis resolution.

Lastly, the incubation model can also support marginalised structures—such as informally organised civil society organisations, associations, or groupings working towards social change—thus integrating the informal economic sector, which has historically been left out in the traditional modes of international assistance. By supporting informal actors of change, the incubator can also contribute to their integration in the formal sector, while deconstructing traditional Western definitions of who comprise actors of change. Ndiaye stresses how important the informal civil society is to communities—particularly in remote or rural areas, where international assistance often does not operate—and yet, struggles to receive funding. At the same time, he underlines how international donors' requirements such as complex procedure manuals often make little sense for such organisations, which often only require small funding geared towards practical activities.

Conclusion

The model discussed in this article is not without challenges, and there is a need for more studies on existing models across the Global South working for social change—from development to peacebuilding, to the humanitarian sectors—to analyse their

structures, objectives, impact, and resilience. Similarly, as business/for-profit incubators are more common, there are likely good practices and lessons learned that can be leveraged for the non-profit sector.

Among the biggest challenges foreseen with this model is the reluctance of traditional international aid donors and NGOs to move away from the system they have known for 60 years, which would require them to give up part of their power and control in favour of local actors' and communities' agency and priorities. This would require raising more awareness about this concept and existing similar initiatives in the Global South, and intensifying efforts to deconstruct sweeping assumptions about the lack of capacities of local actors, which is too often applied indiscriminately to civil society, across regions and countries.

Currently, international NGOs that are considering exiting Global South countries in order to leave space for local actors of change often focus on strengthening the capacity of the latter and thus being an intermediary for international funding. However, years of cooperation with local, regional, and international donors, auto financing, and practical work within communities, have given many organisations across sectors the tools to be that intermediary platform, instead of international NGOs.

The incubation model is only one small contribution to the radical transformation of international assistance. We must explore how to move away from dependency practices and aid as a model that is stained by colonial-inherited assumptions and attitudes favouring international Western institutions and knowledge systems. There also needs to be more scrutiny about the role of private development companies, which are often left out of conversations about reforming international aid. Finally, while this essay focused on the role of the informal non-profit sector, there is also a need for more discussions on how even local formal organisations like NGOs can be counterproductive forces in the efforts for positive change. For instance, local organisations receiving international funding may be more accountable to foreign actors, while CSOs' actions may also reduce the state's incentive to be accountable to its populations, as CSOs take on its role.

Nonetheless, it is unsustainable to continue marginalising local actors—including formal NGOs, informally-organised social enterprises, and champions of change—from decision-making and the implementation of solutions to address crises, support peace, and spur sustainable development. Local innovative solutions exist, and with adequate attention and support, they will thrive and be more effective.

Endnotes

1 Admiral Ncube, "Localization of Humanitarian Action: From Grand Bargain to Grand Betrayal," *The Global*, September 9, 2020, https://theglobal.blog/2020/09/09/localization-of-humanitarian-action-from-grand-bargain-to-grand-betrayal/

2 Interview with Seydina Ndiaye, Co-Founder of Collectif des Volontaires du Sénégal, December 14 and 18, 2023

3 Paul Nantulya, "Africa-India Cooperation Sets Benchmark for Partnership," Africa Center for Strategic Studies, https://africacenter.org/spotlight/africa-india-cooperation-benchmark-partnership/

4 Malancha Chakrabarty, "Gauging the Impact of India's Development Partnerships Abroad," Observer Research Foundation, October 12, 2023, https://www.orfonline.org/research/gauging-the-impact-of-indias-development-partnerships-abroad

5 Amruta Byatnal, "Deep Dive: Decolonizing Aid – From Rhetoric to Action," Devex, August 24, 2021, https://www.devex.com/news/deep-dive-decolonizing-aid-from-rhetoric-to-action-100646

6 Peace Direct, *Localisation and Decolonisation: The Difference That Makes the Difference*, London, Peace Direct, 2022, https://www.peacedirect.org/wp-content/uploads/2023/09/PD-Localisation-and-Decolonisation-Report-v3.pdf; Ncube, "Localization of Humanitarian Action"

7 Oheneba A. Boateng, "Building Africa's Homegrown Humanitarian Systems: Restoration as an Alternative to Localization," *Frontiers in Political Science* 3 (2021), https://www.frontiersin.org/articles/10.3389/fpos.2021.711090/full; Inter-Agency Standing Committee, "About the Grand Bargain," https://interagencystandingcommittee.org/node/40190

8 United States Agency for International Development, "Localization," https://www.usaid.gov/localization

9 Development Initiatives, *Global Humanitarian Assistance Report 2023*, Bristol UK, Development Initiatives, 2023, https://devinit.org/resources/global-humanitarian-assistance-report-2023/a-better-humanitarian-system-locally-led-action/; Sophie Edwards, "Dispute Over 'Grand Bargain' Localization Commitments Boils Over," Devex, July 3, 2017, https://www.devex.com/news/dispute-over-grand-bargain-localization-commitments-boils-over-90603

10 Dhananjayan Sriskandarajah, "Five Reasons Donors Give for Not Funding Local NGOs Directly," *The Guardian*, November 9, 2015, https://www.theguardian.com/global-development-professionals-network/2015/nov/09/five-reasons-donors-give-for-not-funding-local-ngos-directly

11 Michele Sumilas, "USAID Localization: Challenges, Opportunities, and Next Steps to Further Development Initiatives on the Local Level," USAID, March 9, 2023, https://www.usaid.gov/news-information/congressional-testimony/mar-09-2023-usaid-localization-challenges-opportunities-and-next-steps-further-development-initiatives-local-level

12 Sabina Robillard, Kimberly Howe, and Katja Rosenstock, *Localization Across Contexts: Lessons Learned from Four Case Studies*, Boston, Feinstein International Center, 2020, https://resourcecentre.savethechildren.net/pdf/brief-localizationacrosscontexts2020-7_0.pdf/

13 Simon Parish, Marc J. Cohen, and Tigist Mekuria, *Follow the Money: Using International Aid Transparency Initiative Data to Trace Development Aid Flows to Their End Use*, Oxford, Oxfam International, 2018, https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620416/gt-follow-the-money-traceability-methodology-230218-en.pdf;jsessionid=6661D9B0744C50A9ECF7B012D3986D54?sequence=1; Lisa Cornish, "What's Stopping Localization in the Humanitarian Sector?" Devex, April 30, 2021, https://www.devex.com/news/what-s-stopping-localization-in-the-humanitarian-sector-99794

14 Peace Direct, "Localisation and Decolonisation"

15 Corinne Deléchat and Leandro Medina, *What is the Informal Economy?* Washington DC, International Monetary Fund, 2020, https://www.imf.org/en/Publications/fandd/issues/2020/12/what-is-the-informal-economy-basics.

16 Interview with Seydina Ndiaye

17 Collectif des Volontaires du Sénégal, https://codevsn.org/

18 infoDev, *Business Incubation Definitions and Principles: Trainee Manual*, Washington DC, World Bank Group, https://documents1.worldbank.org/curated/pt/717091562157862660/pdf/BIM-Module-1-Business-Incubation-Definitions-and-Principles.pdf; Nonprofit Organization for Philanthropic Initiatives, "What is Incubation?" https://www.thenopi.org/incubation

19 Susmita Ghosh and Ashwin Joshi, *Handbook for Non-Profit Incubator Managers*, New Delhi, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, https://aim.gov.in/images/NPI_Handbook.pdf

20 China Development Brief, "Non-Profit Incubator (NPI)," China Development Brief, https://chinadevelopmentbrief.org/ngos/non-profit-incubator-npi-2/; Jesus N. Valero, Marina Saitgalina, and Rachel A. Black, "Understanding the Nature of Non-Profit Incubators with Other Sector Incubators in the Founding of Social Change Organisations by Social Entrepreneurs," *Journal of Social Entrepreneurship* (2021), https://www.tandfonline.com/doi/abs/10.1080/19420676.2021.1977975; Karim Messeghem et al., "Measuring Nonprofit Incubator Performance: Toward an Adapted Balanced Scorecard Approach," *Journal of Small Business Management* 56, no. 4 (2018), https://www.tandfonline.com/doi/abs/10.1111/jsbm.12317; J. Gregory Dees, "Learning Laboratory: Social Entrepreneurship Offers Innovative Cost-Effective Development Solutions," *Finance & Development* 49, no. 4 (2012), https://www.imf.org/external/pubs/ft/fandd/2012/12/dees.htm; Organisation for Economic Co-operation and Development, "Social Entrepreneurship & Social Enterprises," https://www.oecd.org/cfe/leed/social-economy/social-entrepreneurship.htm

21 The/Nudge Institute, https://csi.thenudge.org/

22 Sonal Khetarpal, "How Nudge Foundation is Enabling Not-Profits to Thrive," *Business Today*, January 7, 2021, https://www.businesstoday.in/latest/economy-politics/story/how-nudge-foundation-is-enabling-not-profits-to-thrive-283624-2021-01-06

23 Mark Makomborero Matsa et al., "Sustainability of Donor-Funded Projects in Developing Remote Minority Tonga Communities of Zimbabwe," *Discover Sustainability* 4, no. 34 (2023), https://link.springer.com/article/10.1007/s43621-023-00152-8

24 Foreign Assistance.gov, "US Foreign Assistance Trends," https://foreignassistance.gov/; Robbie Mackinnon and Amy Gramer, "U.S. Embassies in Africa are Chronically Short-Staffed," Foreign Policy, January 22, 2024, https://foreignpolicy.com/2022/07/22/africa-embassies-short-staffed-us-sahel-china-russia/

Navigating Carbon Pricing: the G20 Experience and Global South Prospects

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AS COUNTRIES INCREASINGLY shift towards net-zero economies to mitigate the risks posed by climate change, carbon pricing mechanisms are emerging as a promising instrument in the fiscal policy toolkit as a highly cost effective means to reduce carbon emissions. Of the 195 Parties to the Paris Agreement, 122 have indicated in their updated Nationally Determined Contributions (NDCs) that they are planning or considering the use of carbon pricing to meet their pledges.[1]

Carbon pricing[a] is one of the well-established economic instruments that internalise the cost of carbon in goods and services. Mechanisms to apply carbon pricing can play a vital role in driving emission reductions, stimulating investments in low-carbon technologies, generating government revenues, and promoting sustainable growth, thus paving the way for a lower-carbon future.[2] In an evident shift globally towards more inward-looking industrial policies, carbon pricing can serve as an effective pre-emptive strategy to rapidly decarbonise and build competitive economies geared for the global market. Moreover, strategic fiscal policies leveraging the revenue from carbon pricing can mitigate the initial economic burdens linked to implementing such schemes and enhance its political appeal.

a A carbon price is a cost imposed on units of carbon emitted, or a proxy for such emissions, which serves as an incentive for polluters to decrease the volume of greenhouse gasses they release into the atmosphere.

Tailored carbon pricing policies can assist, for example, the G20 countries comprising both highly industrialised and emerging economies. These countries account for a massive 80 percent of the world's greenhouse gas emissions.[3] The most common approaches to pricing carbon are carbon taxes and emission trading systems (ETS), and the majority of G20 members have established at least one of them. A carbon tax sets a price on GHG emissions, likely using existing taxation systems, but does not directly limit emissions. An ETS, or cap-and-trade, allows emitters to trade emission units to meet targets set by the government and lets the market decide the price of carbon. The latter may require more infrastructure and legislative support.[4]

Within the evolving landscape of international cooperation in carbon markets, each carbon price instrument comes with different considerations that depend on the economy's circumstances. Boosting its relevance within the G20 and facilitating international collaboration through carbon markets will enable nations to collectively pursue emission reduction goals, fostering global cooperation in this endeavour.

It is not an easy task, especially in emerging economies, because of two primary concerns: insufficient capacity for devising and executing the necessary instruments; and the social ramifications of their adoption, which is the focus of this essay. Much of current literature indicates that the social impacts of existing carbon pricing regimes have been overstated, and that where such impacts do occur, there are design elements that can mitigate and reverse any negative social and income effects of carbon pricing. The article will also assess the landscape of capacity building initiatives on carbon pricing and advocate for enhanced knowledge sharing across the Global South.[b]

b There is a wealth of experience, for example, in regions such as Latin America, Africa, and Asia concerning carbon taxes, emissions trading, and crediting systems.

Table 1. Select Carbon Pricing Instruments

Carbon Tax: A carbon tax directly puts a set price on GHG emissions. Carbon taxes are fairly straightforward to administer, using taxation infrastructure that likely already exists, and the tax rate can be tailored for different industries based on competitiveness and policy priorities. However, a carbon tax does not directly limit emissions, and its impact on emissions relies on external factors.	**Emission Trading System (ETS):** Under an ETS (also called a "cap-and-trade" system), a government decides the level of emissions reduced and lets the market decide the price of carbon. An ETS allows emitters to trade emission units to meet targets, offering flexibility to meet emissions targets cost-effectively. However, an ETS may require more advanced infrastructure to administer, including a well-defined legislative framework, dedicated administrative bodies, and accurate monitoring methods.
Carbon Crediting Mechanisms: Crediting mechanisms issue carbon credits for activities that reduce or remove GHG emissions, and these credits can be sold either domestically or internationally. As such, carbon credits do not generate their own demand, and must therefore be used in conjunction with other carbon pricing policies to incentivise emissions reduction projects. Because carbon credits carry additional concerns around their integrity and use, there must be reliable and robust standards, protocols, and verification processes.	**Internal Carbon Pricing (ICP):** Companies voluntarily adopt an internal carbon price in their investment or operational decision-making, providing information in relation to the financial costs, risks, and opportunities associated with GHG emissions. ICP helps organisations identify and manage climate-related challenges, internalise carbon reduction into their strategies, support climate commitments, and make low-carbon investments. ICP adoption has seen an increase globally, with over 5,900 companies currently adopting or planning to adopt an ICP—nearly a quarter of which are based in G20 countries.

Other Forms of Carbon Pricing:

Article 6 of the Paris Agreement allows countries to cooperate around carbon markets, enabling more flexible and cost-effective climate action, through two pathways: agreements between two or more countries; or a centralised UN trading mechanism yet to be established. Recently pioneered by the European Union through its Carbon Border Adjustment Mechanism (CBAM), a carbon border tariff imposes an additional tariff based on the carbon content of imported goods to prevent carbon leakage between countries.

Source: World Bank[5]

Understanding and Mitigating the Social Challenges of Carbon Pricing

Distributional implications for the public and the affected economic sectors are important considerations in evaluating carbon pricing policies.

Social Challenges and Inequality Impacts

1. **Impacts on households**

One of the main and politically crucial stakeholder groups who will bear the impact of carbon pricing's distributional dimension are households. In theory, households at the high- and middle-income range tend to have larger carbon footprints and will therefore pay more under carbon pricing schemes in absolute terms. However, relative to their household income and expenditures, upper-income consumers generally pay less than lower-income households. In this way, carbon pricing policies may be regressive—i.e., they could place a greater burden on lower-income individuals and communities. Lower-income households can be particularly affected through increased expenditures and loss of employment, thus exacerbating energy poverty.[6]

2. **Impacts across sectors**

The political acceptance of carbon pricing policies is often influenced by the sectors covered. Certain industries that are particularly affected due to their heavy reliance on carbon-intensive processes and products, limited capacity to reduce emissions, or competition from low-emission industries may experience economic disruption as a result of carbon pricing policies, resulting in political mobilisation and advocacy from sector stakeholders.[7] Public perception, understanding, acceptance and trust are crucial for the success of carbon pricing policies. [8]

3. **Impacts across different geographies**

The social repercussions of carbon pricing can vary across countries and regions. While increased costs for energy, transportation, and goods and services will be consistent across economies and geographies,[9] they will create more impediments in emerging economies or less affluent regions. Overall, carbon pricing can impact rural and urban areas differently, with regions characterised by diverse energy mixes potentially experiencing varying degrees of electricity price hikes. Additionally, the economic makeup of regions may influence whether the effects are regressive or progressive: resource-rich regions could potentially benefit, while those heavily reliant on carbon-intensive industries like coal mining or oil extraction may face economic disruptions.[10]

4. Social factors and environmental justice

Environmental justice concerns related to carbon pricing policies revolve around the equitable distribution of the costs and benefits of these policies, especially for vulnerable and marginalised communities. These concerns highlight the potential for carbon pricing to disproportionately affect disadvantaged communities and exacerbate existing environmental and social inequalities. Any transition to a low-carbon economy must prioritise these communities.[11]

5. Carbon leakage

In a globalised economy, unilateral implementation of carbon pricing tools in one jurisdiction can lead to the risk of carbon leakage, where, to avoid costs, businesses move their operations to regions with less stringent or no carbon pricing policies. This can result in emissions being shifted to other jurisdictions rather than getting reduced, provoking concerns of carbon leakage.[12]

Tools to Address Distributional Issues in Carbon Pricing Development

The following paragraphs explore policy measures that can be employed to mitigate distributional concerns associated with carbon pricing.

1. Revenue recycling

Recycling of revenue from carbon pricing is directly associated with the ‘double dividend’ hypothesis. It refers to the dual benefits that can be achieved through redistributing the revenue generated from a carbon pricing mechanism to reduce pre-existing direct taxes, like payroll or sales taxes, or otherwise accommodate the costs of the necessary industrial or social change arising from the imposition of a

carbon tax (e.g. promoting re-skilling of the workforce in vulnerable industries). Thus, not only reducing emissions but also gaining positive economic impacts.[13] Direct cash rebates or lump-sum transfers to support low- and middle-income households and other subsidies and transfers are other effective policy measures to offset the increased cost of carbon pricing.

2. Infrastructure investments including public transportation

Investment in affordable and accessible public transportation systems, cycling lanes, and pedestrian-friendly infrastructure to reduce the transportation costs for individuals with limited mobility options, or even subsidies in public transportation that increase the availability of low-carbon options, can also preserve the carbon price signal.

3. Cleaning electricity sector

Carbon pricing does not hit the electricity expenditures if the electricity supply is relatively clean—meaning that a higher share of clean energy will have an indifferent distributional incidence towards either progressivity or regressivity. Investing in decarbonisation of the electricity sector can thus be an effective tool in reducing impact on both households and power-intensive industries.[14]

4. Sector-specific support

Provide targeted assistance to industries or sectors that are particularly vulnerable to carbon pricing, including those with high energy intensity and trade-exposed sectors.[15]

5. Subsidy reform

Subsidy reform measures are policies aimed at phasing down or redirecting government subsidies that support fossil fuels or other carbon-intensive activities. When designed as a distributional tool alongside carbon pricing policies, subsidy reforms can help address environmental justice concerns and ensure that the burdens and benefits of carbon pricing are distributed fairly.[16]

6. Spending on policy considerations

Revenues can also be recycled in support of ancillary policies. These can include renewable energy or low-carbon initiatives, through risk-proofing of financing in low-carbon production and climate-tech innovations, and in just transition policies that support workers and communities affected by the transition.

The Imperative for Capacity-Building Support on Carbon Pricing

Opportunities to employ carbon pricing tools to meet sustainable development and climate goals should be matched with the means to design, implement, and review carbon pricing policies. Effective capacity building for carbon pricing can help in both, accelerating the pace and broadening the scale of carbon pricing's contributions to climate action. The success of carbon pricing policies will rely in part on participating countries' capacities to embed carbon pricing approaches within existing domestic policy, legal, regulatory, and finance frameworks.

While certain infrastructure capacity requirements may be similar among countries implementing a specific policy,[c] their capacity building needs will differ. These needs may encompass various issues within each country, including economic analysis and emissions modelling, public and stakeholder engagement, market-based policy design, carbon finance, legal frameworks, and institutional arrangements.

Some work has already been undertaken to understand carbon pricing capacity building needs, and it is therefore important to have a comprehensive understanding of the landscape of current capacity building efforts. Few, if any, comprehensive assessments exist of the efficacy of carbon pricing capacity building efforts. A collective review and assessment of capacity building efforts across various initiatives and systems would assist in identifying lessons learned and in tailoring efforts to local circumstances.[d]

A holistic package of targeted, continuous support aligned with a country's individualised needs, is more likely to generate results than ad-hoc efforts on isolated topics. An IMF/OECD report outlined various potential factors for G20 Finance Ministers to consider concerning carbon taxation policies.[17] These include enhancing the assessment of countries' primary greenhouse gas mitigation policy measures, exchanging metrics and indicators for evaluating countries' carbon footprints, examining the effects of energy price fluctuations on households, industries, and employment in susceptible sectors and regions, as well as assessing measures aimed at mitigating any adverse effects.[18] The report also suggests analysing the potential repercussions of increasing disparities in carbon prices on carbon leakage, as well as on countries' imports, exports, output, and employment.[19]

c An example would be establishing registries for emissions trading systems (ETS).

d Landscape assessments can help optimise across initiatives by catalysing efforts to coordinate resources, identify gaps, and avoid duplication. Effective coordination and the sharing of experience among initiatives could assist in achieving efficacy, pace, and scale in the delivery of capacity building support, helping to maximise the impact of current and planned efforts.

Numerous capacity-building initiatives have been launched to aid developing nations in navigating carbon markets. As the efforts started growing in size, it became clear that many countries were not receiving the expected level of technical assistance fit for their local context. Second, there is often a lack of sustainability in capacity-building efforts, particularly within governmental entities. While capacity may be developed initially, there is no guarantee of its retention or continuity over time. The challenge is exacerbated by the limited size of teams dedicated to carbon market development matters within government structures. Third, there is weak coordination at the institutional level between different stakeholders which impedes the implementation of carbon pricing initiatives and policies. Moreover, it is frequently observed that training sessions conducted for high-level officials fail to disseminate essential knowledge and skills to the local stakeholders who bear the responsibility for actual implementation. This lack of cascading information hampers the execution of strategies and initiatives at the grassroots level, highlighting the need for targeted efforts to bridge this gap in knowledge transfer.

Fourth, there is inadequate engagement with the private sector to enhance their capabilities in conjunction with the public sector. The private sector holds a pivotal position in furnishing financial backing for project execution and galvanising support for pioneering research and development initiatives related to carbon pricing. Lastly, capacity-building initiatives in carbon markets often suffer from a lack of coordination among various programmes and organisations, resulting in duplication of efforts, inconsistent quality standards, and inefficient resource allocation. Without proper coordination, these initiatives may struggle to achieve their intended impact, leading to a fragmented approach with limited outcomes.[20]

The Next Wave of Carbon Markets

At the forefront of the evolving landscape of international carbon markets, the Paris Agreement has prompted a resurgence of carbon pricing instruments in the climate policy toolkit. The history of carbon markets in the Global North offers important lessons around the challenges and opportunities associated with carbon pricing policies that can inform their expansion into emerging economies and developing countries.

Governments in the Global South face unique challenges in implementing carbon pricing instruments. Limited resources may pose hurdles, with environmental agencies sometimes operating with smaller staff compared to their counterparts in developed countries. These regions also face data poverty and may lack the data management systems required to establish effective carbon pricing mechanisms. Furthermore, the transition to carbon pricing is complicated in contexts with incipient liberalisation in the electricity and overall energy market, requiring careful

navigation of regulatory frameworks. Compounding the challenge is the lack of access to affordable capital for low-carbon solutions, underscoring the need for complementary policies to de-risk investments and facilitate climate finance. Most importantly, there is a strong focus on addressing energy access and energy poverty in many of these regions, which often takes precedence over emissions reductions, potentially derailing the adoption of carbon pricing measures.

Despite the obstacles, emerging economies in the Global South also possess advantages. For instance, there is an emerging generation of young leaders, equipped with training in climate policies and carbon pricing, who can offer fresh perspectives and innovative solutions to address the challenges. Additionally, these economies have the opportunity to avoid the lock-in of new infrastructure, enabling them to align with decarbonisation imperatives from the outset and avoid costly retrofits in the future. There is also a growing focus on the development and adoption of new "leapfrogging" technologies. These advantages position emerging economies to transition directly to cleaner, more efficient energy systems, fostering sustainable development and resilience in the face of global challenges.

Opportunities for South-South Cooperation in Carbon Markets

Amid the challenges and opportunities, there is potential for South-South cooperation in carbon market development:

- Capacity-building across geographies that share a common language, breaking down barriers to information.

- Development of common market architecture across regions, including data exchange standards, registries, and approaches to offsets (such as through mutual recognition or adoption of common standards).

- Establishing common thinking on issues such as the legal context of carbon markets and credits.

- Exploration of linking between markets as a longer-term goal, with the possibility of regional connections within the Global South.

By building on the lessons learned by countries in the Global North over the last two decades, and through mutual understanding of national circumstances, sharing experiences, and co-designing systems, South-South cooperation can unlock collaboration and joint efforts to address climate change.

As the world's largest economies, G20 members have influence over global carbon emissions and economic policies. Discussions on carbon pricing must gain greater prominence within the grouping as countries seek effective strategies to reduce greenhouse gas emissions while promoting sustainable economic growth. Moreover, the G20 recognises the importance of international cooperation in addressing climate change, and carbon pricing provides a platform for collaborative action. Coordinated approaches to carbon pricing can help prevent carbon leakage and ensure a level playing field for industries across different regions.

The Carbon Border Adjustment Mechanism (CBAM) introduced by the European Union (EU) is a case in point: It raises concerns for emerging economies and the broader landscape of international trade, and threatens to exacerbate existing inequalities in the global economy. Compliance with the CBAM requires accurate measurement and verification of carbon emissions throughout the production process, posing logistical and administrative burdens for countries, particularly in emerging markets that are already incapacitated. By promoting dialogue, cooperation and capacity building support on carbon pricing, the G20 can drive momentum towards a low-carbon transition while fostering sustainable and inclusive economic development. As such, discussions on carbon pricing within the G20 are crucial for advancing climate goals and shaping the future of global environmental governance.

This article serves as an overview of a comprehensive report of the same title, slated for release in March 2024. The report will be jointly published by the Observer Research Foundation (ORF) and the Environmental Defense Fund (EDF). The full report features additional contributors, including Pedro Barata, Holly Pearen, and Alex Hanafi.

Endnotes

1 Climate Watch, "Explore Nationally Determined Contributions (NDCs)," https://www.climatewatchdata.org/ndcs-explore?category=mitigation&document=all&indicator=method_imm

2 "About Carbon Pricing," United Nations Framework Convention on Climate Change, https://unfccc.int/about-us/regional-collaboration-centres/the-ciaca/about-carbon-pricing#:~:text=Carbon%20pricing%20curbs%20greenhouse%20gas,development%20compatible%20with%20climate%20protection

3 "G20 Economies are Pricing More Carbon Emissions but Stronger Globally More Coherent Policy Action is Needed to Meet Climate Goals, Says OECD," Organisation for Economic Co-operation and Development, October 27, 2021, https://web-archive.oecd.org/2021-10-27/614338-g20-economies-are-pricing-more-carbon-emissions-but-stronger-globally-more-coherent-policy-action-is-needed-to-meet-climate-goals-says-oecd.htm

4 "What is Carbon Pricing?" Carbon Pricing Dashboard, World Bank, https://carbonpricingdashboard.worldbank.org/what-carbon-pricing; Ian W.H. Parry, Simon Black, and Karlygash Zhunussova, "Carbon Taxes or Emissions Trading Systems?: Instrument Choice and Design," International Monetary Fund, 2022, https://www.imf.org/en/Publications/staff-climate-notes/Issues/2022/07/14/Carbon-Taxes-or-Emissions-Trading-Systems-Instrument-Choice-and-Design-519101

5 "What is Carbon Pricing?"

6 Constanze Haug, Alexander Eden, and Mariza Montes de Oca, Addressing the Distributional Impacts of Carbon Pricing Policies, Berlin, Adelphi, 2018, https://adelphi.de/system/files/mediathek/bilder/Addressing%20distributional%20impacts%20of%20carbon%20pricing%20policies%20-%20adelphi.pdf

7 Johanna Arlinghaus, "Impacts of Carbon Prices on Indicators of Competitiveness: A Review of Empirical Findings," OECD, 2015, www.oecd-ilibrary.org/impacts-of-carbon-prices-on-indicators-of-competitiveness_5js37p21grzq.pdf

8 Dabla-Norris et al., "Public Perceptions of Climate Mitigation Policies: Evidence from Cross-Country Surveys," Staff Discussion Note SDN2023/002, International Monetary Fund, 2023.

9 Haug, Eden, and Montes de Oca, "Addressing the Distributional Impacts of Carbon Pricing Policies"

10 Haug, Eden, and Montes de Oca, "Addressing the Distributional Impacts of Carbon Pricing Policies"

11 Haug, Eden, and Montes de Oca, "Addressing the Distributional Impacts of Carbon Pricing Policies"; M. Li et al., "Co-Benefits of China's Climate Policy for Air Quality and Human Health in China and Transboundary Regions in 2030," *Environmental Research Letters* 14, no. 8 (2019), doi:10.1088/1748-9326/ab26ca; Carbon Pricing Leadership Coalition, "Carbon Pricing, Climate Change, and Air Quality," 2019, https://climatestrategies.org/wp-content/uploads/2020/05/Carbon-Pricing-Climate-Change-and-Air-Quality.pdf; Alex Bowen, "Carbon Pricing: How Best to Use the Revenue?" Grantham Research Institute on Climate Change and the Environment & Global Green Growth Institute, 2015, https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/11/Bowen-policy-brief-2015.pdf; International Monetary Fund, "How Much Carbon Pricing is in Countries' Own Interests?

The Critical Role of Co-Benefits," 2014, www.imf.org/external/pubs/ft/wp/2014/wp14174.pdf.

12 Bowen, "Carbon Pricing: How Best to Use the Revenue?"

13 Danuse Nerudova and Marian Dobranschi, "Double Dividend Hypothesis: Can it Occur when Tackling Carbon Emissions?" *Procedia Economics and Finance* (2014): 472–79, DOI: 10.1016/S2212-5671(14)00369-4

14 Jan C. Steckel et al., "Distributional Impacts of Carbon Pricing in Developing Asia," *Nature Sustainability* (2021): 1005–14, https://doi.org/10.1038/s41893-021-00758-8

15 Virender Kumar Duggal, "Carbon Pricing Development and Dynamics: Implications for Developing Asia," Asian Development Bank, 2023, https://www.adb.org/sites/default/files/institutional-document/874256/adotr2023bp-carbon-pricing-developing-asia.pdf

16 Nils Ohlendorf et al., "Distributional Impacts of Carbon Pricing: A Meta-Analysis," *Environmental and Resource Economics* 78 (2020): 1–42, https://link.springer.com/article/10.1007/s10640-020-00521-1

17 *Tax Policy and Climate Change*, Italy, IMF and OECD, September 2021, https://www.oecd.org/tax/tax-policy/tax-policy-and-climate-change-imf-oecd-g20-report-september-2021.pdf

18 "Tax Policy and Climate Change"

19 "Tax Policy and Climate Change"

20 Hanna-Mari Ahonen et al., "Capacity Building for Article 6 Cooperation: The Way Forward," April 2022, https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/CMM-WG_discussion_paper_CB_for_Art6_cooperation_042022.pdf

Cascading Humanitarian Crises: The Global Challenges to Effective Response

Cecile Aptel

EMERGENCY HUMANITARIAN AID, which aims to save lives and reduce people's suffering in times of crises, has grown considerably over the last century to become a central feature of international relations and of the multilateral system. It is estimated that over 400 million people depend on such aid today.[1] The future of these people and of the humanitarian aid they depend on are fraught with risks, in light of five palpable trends: exponentially growing humanitarian needs; shrinking and reshaped funding; the implications of technological advances; the localisation of aid; and the worrying questioning of a principled approach to humanitarian aid based on respect for international humanitarian law.

Exponentially Growing Humanitarian Needs

The number of people in need of humanitarian assistance has more than doubled over the last five years, and in 2022 alone, it grew by a third to an estimated 406.6 million people.[2] All the indicators point to exponentially growing humanitarian needs in the coming years.

They are driven globally by a cascade of new, continuing, recurring and often overlapping crises and shockwaves. Humanitarian emergencies are usually classified in two broad categories: those resulting from armed conflicts and other situations of political, terrorist or criminal

violence, and those caused by disasters, encompassing events related to extreme weather, food or health crises.

Concerning the first category, while it is difficult to judge whether there will be an increase or decrease in the number of conflicts in the coming decades, there are serious risks of both inter-state conflicts, in several regions of the world, as well as of internal armed conflicts, involving for instance terrorists, separatists, rebellions or organised criminal groups (notably in Latin and Central America). The years 2022 and 2023 have been identified as the most conflictual years in the world since the end of the Cold War, according to 'The Uppsala Conflict Data Program', which has been tracking conflicts globally since 1945.[3]

The impact of conflicts on civilian populations is multifaceted, with children often paying a particularly heavy price. A recent UNICEF report noted: "Globally, children account for two thirds of all of the civilians killed and maimed by explosive remnants of war—with the lasting consequences including physical disabilities and mental health issues. Urban conflict also destroys the infrastructure necessary for children's well-being and, often, their survival. Homes, schools and play spaces are destroyed or damaged, as are water and energy supplies, markets, health care facilities and other vital infrastructure. Indeed, far more children are victims of indirect harm caused by conflict than of conflict itself."[4]

Compounding the current challenges is the massive investment in, and rapid development of, new weapons and forms of warfare—for instance the intensification of the use of drones and complex automated weapons, cyber warfare, combined with the likely proliferation of small arms and light weapons due to the increased use of 3D printing and craft manufacturing. Once geographically contained battlefields are increasingly giving way to a limitless 'battlespace', as demonstrated by the broad impact of cyberattacks across multiple countries, and the increasing likelihood of conflicts being also waged, directly and indirectly, in outer space.[5] The humanitarian impact of future conflicts could cause even more harm to more civilians. Yet, not all is doom and gloom: Some of these technological developments, if properly controlled, and regulated, could possibly lead to greater adherence with international humanitarian law, which sets limits to protect, in particular, civilians by facilitating more precise identification of military targets and lessen collateral casualties. One can also hope that international law may be swiftly developed to regulate the use of new types of weapons, as well as the extension of conflicts in new domains.[6]

Other humanitarian emergencies encompass disasters, including health emergencies, food crises, and, increasingly, climate change-induced events, as well as other environment-related disasters. All of these, including droughts, floods, and wildfires, are projected to occur more frequently in the coming years and threatening to cause

graver consequences. The growing concerns stem notably from the climate crisis and stresses resulting from a degraded environment, for instance in terms of water scarcity and undermined biodiversity, negatively impacting food systems, in turn causing soaring rates of malnutrition particularly for infants and children. As extreme weather events are becoming more frequent and intense, they are also multiplying the humanitarian needs of an increasingly large number of people and communities, some newly affected and others who have had prior humanitarian needs—for example, those who live in a conflict zone.

The costs of so-called 'natural disasters' are rising at a frightening speed, causing US$313 billion in economic losses globally in 2022 alone.[7] The year 2023 was labelled the hottest year on record, with people experiencing overlapping environmental disasters and protracted crises around the world.

Scholars and practitioners have been arguing for almost 30 years that lifesaving emergency humanitarian assistance can, and should, complement and support longer-term development efforts, and vice-versa. The term 'double humanitarian-development nexus' has been coined to qualify this interaction between emergency humanitarian, and development aid. It was promptly supplemented by the so-called 'triple nexus', characterising an approach that combines the expertise of the sustainable development, peacebuilding and conflict mitigation, and humanitarian aid sectors in overcoming collective challenges and ensuring the protection and well-being of affected populations. The humanitarian-development-peace nexus, meanwhile, is about providing immediate life-saving assistance while also strengthening infrastructure, such as water and sanitation, and social security systems, including healthcare and education, to ultimately support longer-term development and consolidate peace.

All these point to the overlapping and interrelated layers of needs which are mutually reinforcing. These demand more complex, nuanced, multifaceted and intersectoral humanitarian responses. Multiple challenges are sometimes deemed to form a 'polycrisis', when disparate crises occur simultaneously and interact, with their overall impact exceeding the sum of their parts; or a 'permacrisis', referring to a prolonged relentless period marked by several overlapping crises. In such complex contexts, emphasis has been placed on building resilience to equip individuals, communities, peoples and countries to cope with crises, especially when they recur frequently or overlap, for example because a flood occurs in an area where there is a conflict.

Indeed, as the expectation is that increasingly frequent and grave climate and environment-related disasters will occur, there will be little time and opportunity for people and communities to recover between one shock and the next. This poses the fundamental question of how to ensure that the humanitarian response to one crisis

does not only respond to that particular crisis but also provides durable solutions and builds necessary resilience to cope with the next or overlapping crisis. Faster and more effective responses lessen the recovery time and can help build resilience for future events. Delivering such responses which build resilience and durable solutions will remain a key challenge for the foreseeable future.

Is it realistic, however, to expect humanitarians to do more, while political and geostrategic challenges are already frustrating their efforts to effectively respond to the most immediate needs of people facing death, starvation or disease? *The New Humanitarian* has questioned the assumption that humanitarians should and indeed could pivot to do more to build resilience and support frontline communities to adapt: "Maybe, but to do climate adaptation well would mean a complete transformation of humanitarian organisations—different skills, different staff, different partnerships. And if that transformation were to take place in time to avert the worst climate disasters, it would need to be under way already, and it isn't. In a world on fire, with humanitarian responders focused on delivering on core mandate mega-crises in places like Gaza, Sudan, and Ukraine, is it really realistic to expect them to also be developing advanced resilience-building capacities?"[8]

The United Nations (UN) and other humanitarian actors have for years been underscoring that the international humanitarian system faces an exponential rise in humanitarian needs, with the countries and people with limited coping capacities suffering the most, especially children, women, marginalised groups and communities and those affected by humanitarian emergencies such as armed conflicts. The World Bank has estimated that by 2030, two-thirds of the extremely poor people in the world will live in countries affected by fragility, conflicts, and violence.[9] We can expect humanitarian needs to continue growing at an alarming rate in the coming decade, while the governance and operational systems currently in place will probably be increasingly questioned.

Shrinking or Reshaped Funding?

Will there be sufficient funding to match these growing humanitarian needs?

Even now, the humanitarian funding gap is dramatic. The UN Office for the Coordination of Humanitarian Affairs estimated in November 2023 that the gap between the financial requirements for its 'Global Humanitarian Overview' and resources stood at US$41 billion.[10]

Moreover, current resources for some of the key areas highlighted at the SDG Summit for transitioning towards transformative results also remain too limited. It is critical to shore up investments in the six areas highlighted during the SDG Summit

as transformative entry points for creating systematic impact across the SDGs and generate renewed momentum on the 2030 Agenda. These include food systems, energy access and affordability, digital connectivity, education, jobs and social protection, and climate change, biodiversity loss and pollution.

Traditional institutional donors, including the largest ones, have been reconsidering their budgetary priorities and allocations. The States and international or regional organisations which have traditionally funded emergency humanitarian aid do not seem prepared to dramatically increase international aid budgets, especially as they are also asked to allocate more funds for other crucial global initiatives, for instance related to climate change. The 'Loss and Damage Fund' established by the COP28, lauded as a significant advance, led to pledges of some US$700 million.[11] While this is impressive, it was estimated to cover less than 0.2 percent of the needs, with an estimated US$400 billion in losses in developing countries each year.[12] While some States that were not among the traditional humanitarian donors, for instance the UAE and Saudi Arabia, have in recent years boosted their contributions to humanitarian aid, it is unclear whether they will expand such funding. In any case, it is unlikely that they would do so to the point where resources are able to fill the needs.

Apart from institutional donors, other sources of funding for humanitarian aid have always included rich individual benefactors, companies, and foundations. Some of these are becoming increasingly influential in the humanitarian sector, considering their funding capacity. For instance, the Gates Foundation alone spent over US$7 billion in 2022.[13] This trend could accentuate in the coming years, although it is difficult to foresee in a more exact manner.

The sustainable funding of the humanitarian sector in the coming decade seems uncertain and, with increased demand, it is likely to be affected by major upheavals. Unless a seismic shift happens: "Needs are on track to outpace resources, leaving an inundated humanitarian system struggling to meet a fraction of needs," according to the UN Office for the Coordination of Humanitarian Affairs.[14] Could technological developments trigger such seismic shift?

Tech-improved Humanitarian Aid

Restrained funding is already driving efforts to reduce humanitarian costs by improving its efficiency and maximising its reach. Technological developments are undoubtedly playing an important part in these efforts and can be expected to do so in the foreseeable future.

Like any other sectors, the humanitarian one is being reshaped by relevant technologies. There are many current examples, for instance involving the use

of drones to deliver critical food or medical supplies to remote areas that would otherwise be impossible or far more costly to reach.[15] A technology already largely adopted by most humanitarian actors is the distribution of cash, notably through mobile phones, allowing people in need to receive aid swiftly and in a dignified way, without having to queue for hours to receive a package that may not be suited to their individual needs. These two examples illustrate cases where the humanitarian sector adopted and adjusted technologies that have been developed for other uses.

In other cases, efforts are made to invent new technological solutions to distinctive humanitarian problems, for instance as a way of tracking real-time monitoring of evacuation status in cases of catastrophes. In Japan, for example, humanitarian actors have developed an app to monitor the flow of people evacuated in cases such as tsunamis, through anonymised data on their successive locations, collected from the use of their smartphones, with their consent obtained through a specific application.[16]

Likewise, the possibilities related to AI are promising for the humanitarian sector. While AI is expected to disrupt 40 percent of all jobs, according to the International Monetary Fund (IMF), the opportunities will also impact the humanitarian sector. But while AI has much lifesaving potential, it is not a silver bullet and also contains risks. Indeed, even if it could facilitate the prompt and effective delivery of aid, this must be done in a responsible manner, guaranteeing at all times the rights and interests of those receiving this aid. Critical potential opportunities lie in harnessing faster and improved data quality and analyses to enhance predictive capacities and also the quality and rapidity of the delivery of humanitarian aid.

Promising opportunities include real-time damage assessment. When a disaster occurs, planning and delivering an effective humanitarian operation requires knowing as soon as possible how many people are affected, where they are and where they are going, how they are affected, and what their needs are. Automating such assessments improve them dramatically. Efforts are being made to develop automated damage assessment tools as deep-learning models which identify, for instance, damaged buildings in satellite images after a disaster has happened. Decreasing the time needed to assess the needs, from a few days to hours, allows for a quick delivery of the information on the ground, and may make a huge difference in terms of the speed of response, thereby saving many more lives.

There are glimmers of hope that tech developments, including AI, may improve our collective capacity to better forecast, including extreme weather events, and therefore drastically improve early warning. In an idealised future, everyone will be forewarned of floods, droughts, or tsunamis. However, technological solutions have limits and will need to be accompanied by other humanitarian and political solutions, to ensure that people can effectively use that knowledge to protect themselves, because they will effectively have the means to reach a safe place.

Improved forecasting may also generate alternative funding for humanitarian efforts, notably through so-called 'forecast-based financing': enabling funding for humanitarian aid for early action based on in-depth forecast information and risk analysis. The Red Cross Movement, which has been exploring such opportunities, reveals: "A key element of forecast-based financing is that the allocation of financial resources is agreed in advance, together with the specific forecast threshold that triggers the release of those resources for the implementation of early actions. The roles and responsibilities of everyone involved in implementing these actions are defined in the Early Action Protocol (EAP). This ensures the full commitment of implementation among the involved stakeholders."[17] Ultimately, the promises of this new form of humanitarian funding would be to anticipate disasters, prevent their impact as much as possible, and reduce human suffering and losses.

In all these areas, innovation and developments are largely driven by companies and individuals, again underlining the role that the private sector can play, and is increasingly playing, in supporting the humanitarian sector.

To be sure, however, these potential improvements are not a given. The threats are many, as the trends described above of increasing frequency and gravity of catastrophes, compounded by other risks such as those of wars, which could themselves be fueled by and conducted with support of AI systems.

Aid Localisation

In such increasingly demanding humanitarian context, a trend likely to continue and even further increase is the so-called 'localisation' of aid. Localisation could contribute to transforming humanitarian aid, making it possibly more efficient and less costly, and as such help transform it to confront increased demands.

Humanitarian aid is too often conflated with foreign or international assistance when, clearly, in response to any crisis, the first responders are usually local actors and organisations, already present on the field and helping their own people and neighbours. Not only are local humanitarians able to respond faster, especially in the initial hours that are always crucial in emergency operations—they are also able to communicate in the local languages and have greater sensitivity to cultural contexts. They are intimately familiar with the situation on the ground and the genuine needs of the population. These all make them particularly effective, and eliminate numerous costs like international travel and translation services, thus allowing more resources to be allocated to providing assistance and saving lives.

The Istanbul World Humanitarian Summit of 2016 helped highlight the importance of local humanitarian actors and of the localisation of aid, as underlined by the UN

Secretary-General who declared that aid is to be "as local as possible, as international as necessary."[18]

This trend can be expected to continue, as the often-lower financial cost of local humanitarian organisations, compared to their 'international' counterparts, gives them a comparative advantage that is likely to persist. Moreover, it matches the general push towards asserting national sovereignty and the recognition that States have the primary responsibility in protecting their people and providing them with at least basic services at all times, including and especially in crises.

Ultimately, given the increasingly fragile and fragmented international systems, both global and regional, humanitarian and other actors will have to become more willing to contemplate not only reforms but also collaborations. Suggestions for improvements or transformations should not be perceived as threats, though this is challenging in an environment where there is fear of opening a Pandora's box, undermining status quo, or questioning established practices.

The aim should be to not allow the humanitarian space to become a zero-sum game, especially when assessed in light of its ultimate objectives: to save lives and restore people's dignity. As observed by a commentary from the S. Rajaratnam School of International Studies in Singapore: "Rather than seeing the humanitarian space as a by-product of another time, it should be viewed as an avenue for cooperation and change. It is in the area of disaster response that countries and sectors come together to provide humanitarian assistance to those most in need. It is therefore an avenue where bold changes should be made to meet the challenges of today and to demonstrate possibilities of cooperation in action."[19]

A Principled Humanitarian Approach and Respect for International Humanitarian Law?

Perhaps the most crucial global humanitarian challenge expected to persist beyond 2030 is to secure access to all those in need in conflict situations. The capacity of humanitarian actors to reach all is underpinned by their neutrality, impartiality, and independence.[20] These principles must be recognised and accepted by all, especially by all parties in contexts of conflicts. Yet, whether in Ukraine or Gaza, Sudan or Yemen, they are fundamentally challenged. This is related to the risks of further erosion of international humanitarian law—the body of laws that limit the conduct of warfare and require that civilians and objects such as hospitals, schools and services crucial for people's lives be protected at all times in conflicts.

This bedrock of humanitarian aid has been shaken to the core by what the world is witnessing in recent conflicts. The targeting of civilians and their properties,

displacement of civilians, even attacks on schools, healthcare personnel and facilities, have become all too common. Endless images of human suffering risk numbing public opinion to their own humanitarian needs and the rules that protect all of us. While the world is rapidly changing, some deep concerns and ethical considerations have to remain the same. International humanitarian law encapsulates key concepts common to most, if not all cultures and religions, and ultimately to the whole of humanity. We must promptly return to full respect for international humanitarian law.

WHILE PREDICTIONS are methodologically fraught, it can be safely assumed that global humanitarian challenges will become increasingly complex in the coming years and decades and thereby necessitate critical adjustments on the part of all humanitarian actors, whether international or regional organisations, governments, or civil society actors.

As the humanitarian sector adjusts to an environment that requires more nimble solutions, it will increasingly be able to rely on digital and other emerging technical tools, while confronting the massive challenge of delivering far more to meet growing demands with far less predictable financial resources. Yet, saving lives and restoring people's dignity in times of crises remains a basic legal and moral obligation, and is arguably the very purpose of political governance, nationally, regionally and internationally.

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Endnotes

1 Development Initiatives, *Global Humanitarian Assistance Report 2023*, 2023, https://devinit-prod-static.ams3.cdn.digitaloceanspaces.com/media/documents/GHA2023_Digital_v9.pdf

2 Development Initiatives, "Global H umanitarian Assistance Report 2023"

3 Uppsala Conflict Data Program, https://ucdp.uu.se/

4 UNICEF Innocenti – Global Office of Research and Foresight, *Global Outlook 2024: Prospects for Children Cooperation in a Fragmented World*, UNICEF Innocenti, Florence, January 2024, https://www.unicef.org/globalinsight/media/3406/file/UNICEF-Innocenti-Prospects-for-Children-Global-Outlook-2024.pdf

5 Cécile Aptel and Sarah Erickson, "Outer Space Security: Past and Ongoing Multilateral Efforts and Challenges," *The Journal of East Asian Affairs* 35, no. 2 (Autumn / Winter 2022), https://www.jstor.org/stable/i40237648

6 On the autonomisation of weapons, see Trisha Ray, "Beyond the 'Lethal' in Lethal Autonomous Weapons: Applications of LAWS in Theatres of Conflict for Middle Powers," *Occasional Paper No. 180,* December 2018, Observer Research Foundation, https://www.orfonline.org/research/beyond-the-lethal-in-lethal-autonomous-weapons-applications-of-laws-in-theatres-of-conflict-for-middle-powers; UNIDIR, "Technological Advances of Uncrewed Systems in the Air, Land and Maritime Domains," April 19, 2023, https://unidir.org/event/technological-advances-of-uncrewed-systems-in-the-air-land-and-maritime-domains/. On outer space, see Aptel and Erickson, "Outer Space Security".

7 Jennifer Rudden, "Cost of Natural Disaster Losses Worldwide from 2000 to 2022, by Type of Loss," Statista, August 22, 2023, https://www.statista.com/statistics/612561/natural-disaster-losses-cost-worldwide-by-type-of-loss/#:~:text=In%202022%2C%20the%20estimated%20economic%20loss%20of%20natural,global%20protection%20gap%20of%20181%20billion%20U.S.%20dollars. On costs, see UNDRR, "Uncounted Costs," https://www.undrr.org/explainer/uncounted-costs-of-disasters-2023.

8 Sophie Tholstrup and Paul Knox Clarke, "Could Less be More? The Paradox Facing Humanitarians at COP28," The New Humanitarian, November 27, 2023, https://www.thenewhumanitarian.org/opinion/2023/11/27/humanitarians-face-paradox-cop28

9 "Fragility and Conflict: On the Front Lines of the Fight Against Poverty," World Bank, February 27, 2020, https://www.worldbank.org/en/topic/poverty/publication/fragility-conflict-on-the-front-lines-fight-against-poverty

10 UNOCHA, "Global Humanitarian Overview 2023, October Update (Snapshot as of 31 October 2023)," October 31, 2023, https://www.unocha.org/publications/report/world/global-humanitarian-overview-2023-october-update-snapshot-31-october-2023#:~:text=The%20gap%20between%20financial%20requirements%20and%20resources%20currently,GHO%2C%20bringing%20total%20humanitarian%20funding%20to%20%2425%20billion.

11 Cristin Hemingway Haynes, "COP28 Agrees to Establish Loss and Damage Fund for Vulnerable Countries," World Economic Forum, December 1, 2023, https://www.weforum.org/agenda/2023/12/cop28-loss-and-damage-fund-climate-change/.

12 Nina Lakhani, "$700m Pledged to Loss and Damage Fund at Cop28 Covers Less than 0.2% Needed," *The Guardian*, December 6, 2023, https://www.theguardian.com/environment/2023/dec/06/700m-pledged-to-loss-and-damage-fund-cop28-covers-less-than-02-percent-needed.

13 Bill & Melinda Gates Foundation, *Annual Report 2022,* https://docs.gatesfoundation.org/documents/2022_annual_report.pdf.

14 UNOCHA, "High-Level Panel: Drowning While Running: Addressing the Exponential Rise in Humanitarian Needs," ReliefWeb, December 8, 2022, https://reliefweb.int/report/world/high-level-panel-drowning-while-running-addressing-exponential-rise-humanitarian-needs

15 Abderahman Rejeb et al., "Humanitarian Drones: A Review and Research Agenda," *Internet of Things* 16 (December 2021), https://doi.org/10.1016/j.iot.2021.100434.

16 "Automated Damage Assessment," 510, https://510.global/product/ada/

17 "What is Forecast-based Financing?" Forecast-based Financing, https://www.forecast-based-financing.org/about/

18 United Nations, https://press.un.org/en/2016/sgsm17778.doc.htm.

19 Alistair D.B. Cook, "IP24004 | Time for Change: Climate Considerations and Humanitarian Civil-Military Coordination," IDSS Paper, No. 004/2024, RSIS, January 17, 2024, https://www.rsis.edu.sg/rsis-publication/idss/ip24004-time-for-change-climate-considerations-and-humanitarian-civil-military-coordination/?doing_wp_cron=1705563133.9932539463043212890625.

20 The humanitarian principles are derived from the fundamental principles recognized when the Red Cross was established. They were proclaimed in Vienna in 1965 by the 20th International Conference of the Red Cross and Red Crescent Movement.

Transforming Food Systems for the Zero-Hunger Goal

Genevieve Donnellon-May

FOOD SECURITY—THE ABILITY to obtain and use sufficient amounts of safe and nutritious food—is a fundamental human need. Achieving this goal of 'zero hunger', for all people everywhere, is a widely agreed upon aim codified in Goal 2 of the United Nations Sustainable Development Goals (UN SDGs) for 2030: "End hunger, achieve food security and improved nutrition and promote sustainable agriculture."[1]

As of June 2022, around 828 million people experienced nightly hunger, while 50 million people across 45 countries are on the edge of famine.[2] Domestic food price inflation remains high globally,[3] pushing millions into extreme poverty and making hunger and malnutrition more severe. Acute food insecurity affected 345 million people in 82 countries in 2022, rising from 135 million in 2019.[4]

Efforts to achieve zero hunger have faced hurdles as witnessed in the current global food crisis, in turn fuelled by multiple emergencies including COVID-19 pandemic-related supply chain disruptions and consequent recessions, climate shocks in global bread baskets, armed conflicts, labour shortages, food price inflation,[a,5] and government-imposed trade-distorting policies.[6] Notably, the ongoing Ukraine-Russia War—a war between two agricultural powerhouses and major

a In October 2023, the Food and Agricultural Organisation of the United Nations food price index reported nearly 25 percent lower global agricultural food commodity prices, attributed to strong harvests, reduced shipping costs, and lower energy and fertiliser prices. Cereals, vegetable oils, meat, and dairy products drove this decrease in most markets. Sugar and rice prices were the two notable exceptions due in part to climate change impacts on production, trade restrictions, and producer country stockpiling over fears of an impending shortage.

exporters of cereals and oilseeds[7]—has had profound impacts on global food security by worsening existing food crises in some countries and exposing import dependency vulnerabilities in many others.[8]

To be sure, the vulnerabilities of food systems that employ 2 billion people and sustain and nourish all of the world's 8 billion people, were already evident in the early 2010s; the subsequent years intensified these challenges.[9] In 2023 alone, the world faced multiple crises that affected food and fertiliser production and distribution, and led to increased prices,[10] further emphasising the vulnerability of food systems and global food security. With the world's population projected to substantially increase by 2050, a 60 to 70-percent rise in global agricultural production along with increases in inputs like fertilisers are necessary to meet the growing demand.[11]

There are multiple obstacles, however, amid the persistent and interconnected challenges of conflicts and supply chain disruptions, further compounded by factors including climate change, land degradation and soil erosion, food wastage and loss, yield gaps, and competing water uses (domestically and regionally). These challenges affect food availability,[b] access,[c] utilisation,[d] and stability.[e] In turn, these lead to limited local availability of food, increased prices, reduced food safety standards, and declining incomes, particularly in vulnerable areas. They could also worsen political instability, conflict, and forced migration patterns. Potential damage to agricultural production, trade, and food security may have domestic and global repercussions too, and therefore, addressing these challenges to achieve zero hunger by 2030 is truly a formidable task.

A Framework for Addressing the Challenges

Attempts to reach the UN SDG Goal of Zero Hunger by 2030 will face the lethal combination of complex geopolitical dynamics, extreme climatic events, local conflicts, and external factors like economic downturns, further contributing to disruptions in domestic and global food security and system resilience. Future demographics and the rising middle-classes, alongside concomitant growing food demands (including for more expensive and diverse food like meat, dairy, sugar, and edible oils), climate change, and geopolitical drivers underscore the interconnected impacts on countries worldwide, jeopardising the goal. Reforms to global food systems are needed amid an environment of recurrent crises and threat multipliers.

b The existence of food in a particular place at a particular time.

c The ability of a person or group to obtain food.

d The ability to use and obtain nourishment from food. This includes a food's nutritional value and how the body assimilates its nutrients.

e The absence of significant fluctuation in availability, access, and utilisation.

One of these reforms must address the crucial issue of multiple global breadbasket failure[12] which could intensify pressures on global food markets and food security efforts due to increased demand and limited availability, threatening the lives of hundreds of millions of people. Adding to reform concerns is the concentration of food surpluses in a handful of countries like the United States and Russia. In contrast, many more (such as Singapore and the United Arab Emirates) rely heavily on food imports,[f,13] exposing them to market fluctuations, trade bans, and food price volatility.

Compounding the challenges to zero-hunger is the continued disruptions to supply chains and key trade routes, particularly in the Indo-Pacific and the Middle East,[14] which could affect global food supply trade. Fears of countries weaponising food and fertiliser supplies against each other further add complexity,[15] amplifying global and domestic food insecurity concerns.

These challenges strain the resilience of the global food system. The impact on food and fertiliser prices, availability, and access could affect populations in both producing and importing nations. Rising food costs and global shortages also heighten difficulties for already poor and vulnerable populations, increasing malnutrition risks.

For governments, policymakers, farmers, and other stakeholders, improved preparation, monitoring, and resilience building can help address concerns and predict potential outcomes. Doing so can help improve nutrition and lead to greater food security.[16] Efforts should include more effective early-warning systems that leverage innovative predictive algorithms using real-time data and artificial intelligence.[17] This could help governments, policymakers, farmers, and communities by tailoring crisis responses to different contexts, such as predictions of the consequences of climatic events on agricultural production and zoonotic disease outbreaks.[18] Collaborative efforts between governments at all levels, both in and across regions and based on the sharing of information, research, and reserves can help mitigate climate impacts and enhance global food system resilience.[19]

Climate change adaptation and mitigation are imperative in addressing climate change impacts on agricultural production. Farmers could switch to and increase the growing of less-thirsty crops and also adopt new varieties of flood- and drought-resistant ones, including within the context of strengthening seed security, new technologies, water-efficient irrigation systems (such as drip irrigation),[20] and information dissemination.[21] Mid- to longer-term measures include improving soil health to increase soil resilience to drought, while reducing the need for chemical fertiliser—a major source of emissions[22]—to ensure food security.

f According to the Singapore Government Agency, Singapore imports more than 90 percent of its food from around 170 countries and regions.

In the face of globalised food systems, global food security is increasingly dependent on the movement of food from a few breadbasket regions to food-deficit areas across the world, often through 'food chokepoints'. In this light, maintaining open trade is crucial for the continuous flow of food and fertiliser supplies. The establishment of safe trade corridors to maintain trade may be encouraged, if needed, while inter-country and inter-regional agreements could be negotiated at a global level to help ensure more stable food prices.

Coordinated strategies between governments and farmers for food production and greater inter-regional and intra-regional trade can enhance domestic agricultural output and reduce import dependency. Engaging in regional and global dialogues, bilateral cooperation, and joint initiatives (such as research projects) can assist in the larger efforts.[23]

Furthermore, countries may continue to increase local agricultural production and resilience,[24] while considering fertiliser production to address domestic food security and also add to national stockpiles. Aside from addressing land degradation, soil erosion, food wastage concerns (such as through storage infrastructure investments) as well as supply chain inefficiencies, crop diversification, agricultural diversity, and using various biotechnologies, agricultural technologies (such as drones and soil moisture monitoring) should also be used. Innovative approaches, including 'disruptive technologies' and controlled-environment agricultural practices (e.g., fish farms) can contribute to self-sufficiency.[25] The scaling-up of regenerative agriculture and other alternative farming methods such as permaculture could be considered. Addressing yield gaps is also vital,[g,26] as this can reduce the amount of land used in agriculture, as is strengthening of national agricultural policies and governance.

Emphasis should also be placed on the interlinkages between consumer consumption habits and agri-businesses. Much of the world, particularly countries with large populations, is reliant on water-intensive grains like wheat and corn (maize) that account for 60 percent of all calories consumed globally. Consumption of these staples is expected to swell alongside global population increases, changes in dietary preferences, and rising incomes.

To help reduce dependence on these grains while ensuring that the nutritional needs of an expanding world population can be met through diverse food sources, local millets (such as sorghum and pearl), which have been grown and traded for millennia by farmers and indigenous peoples globally and which are highly resilient

g Countries may have a lower yield than others for different crops or livestock. For instance, it was recently reported that the average wheat yield in Pakistan for the past 5 years – 2.9 tons per hectare – is 17% lower than India, 49% lower than China, and 47% lower than the EU.

crops, should be mainstreamed.[27] To further support this, large food businesses may need to be incentivised or even regulated, to some extent by governments, to offer sustainable food and promote sustainable agricultural practices.

Reinforcing these efforts would require that smallholder farmers,[h,28] who account for the majority of farmers[i,29] and upon whom around 2 billion people rely on for food and income,[30] should receive greater financing support. A November 2023 report found that in 2021, smallholder farmers received a mere 0.3 percent of international climate finance.[31] Smallholder farmers could be supported through various measures, including better access to credit market and insurance to improve productivity, and be given a greater voice in the formulation and implementation of food security-related strategies. Attention should also be paid to the inclusion of vulnerable communities, particularly women and children who are disproportionately affected by food insecurity. The Food and Agricultural Organization of the United Nations suggests that ensuring women smallholder farmers have the same access to productive resources as men could help boost food production by 30 percent and reduce world hunger by 15 percent.[32]

Equally pressing is the need for expanded and more efficiently used financing, particularly when considering the long-term impacts of climate change on agri-food systems. Estimates from the 2021 United Nations Food Systems Summit stated that transforming food systems could cost anywhere from US$300 billion to US$400 billion annually through to 2030 to transform food systems and make them fit for the zero-hunger goal. In this backdrop, domestic public, international development banks, and the private sector can all play a role in food systems transformation and resilience.[33] These would include small-scale agrifood systems that receive under 1 percent of total climate finance and 19 percent of total climate finance for agrifood systems.[j,34]

For instance, global financial hubs and importing countries like Singapore, Japan, South Korea, and Rwanda could play bigger roles in identifying new financial mechanisms for climate insurance, adaptation and mitigation.[35]

Looking Ahead

Global food price increases interact with local conditions, emphasising the complex interplay between global markets and localised impacts on achieving zero hunger. The

h Defined as farmers who manage areas varying from less than one hectare to 10 hectares.

i In Africa, smallholder farmers account for 80 percent of farmers. In Asia, the proportion is at 87 percent.

j For reference, the market value of the global food industry is believed to be around US$10 trillion, according to Daniela Chiriac, Harsha Vishnumolakala, and Paul Rosane, "The Climate Finance Gap for Small-Scale Agrifood Systems," Climate Policy Initiative, November 22, 2023, https://www.climatepolicyinitiative.org/publication/the-climate-finance-gap-for-small-scale-agrifood-systems/

war in Europe highlights the interconnectedness of conflicts in one region affecting global food supplies, stressing the importance of resilient and diverse supply chain systems to achieve food security.

Climate shocks, conflicts, and competition for natural resources will continue to exacerbate food inflation and damage agricultural production. Decreases in production could see less produce available for export and limited supplies on the global market for importers, causing fluctuations in food availability, access, and price, and exacerbating market volatility. There are also concerns of hoarding and food shortages, likely to produce competing demands from importing countries and inflate food prices. As food security is part of national security, such situations may worsen competition for food supplies, heightening existing socio-economic and political tensions across countries and regions.

Yet amid an increasingly fractured geopolitical environment, opportunities to prioritise cooperation over conflict remain, as collaborative efforts by governments, policymakers, farmers, local communities, and other stakeholders are becoming more necessary than ever. There is no 'one size fits all' approach to achieving food security and improving interconnected food supply system resilience, but plausible measures can be taken at all levels, as outlined in this essay, to bring the world closer to zero hunger.

Endnotes

1 United Nations Department of Economic and Social Affairs Sustainable Development, "Goal 2: End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture," https://sdgs.un.org/goals/goal2#overview

2 World Food Programme, "A Global Food Crisis," 2022, https://www.wfp. org/global-hunger-crisis

3 Rob Vos et al., comment on "Despite Improved Global Market Conditions, High Food Price Inflation Persists," International Food Policy Research Institute, comment posted on December 4, 2023, https://www.ifpri.org/blog/despite-improved-global-market-conditions-high-food-price-inflation-persists#:~:text=Despite%20improved%20global%20market%20conditions%2C%20high%20food%20price%20inflation%20persists,-December%204%2C%202023&text=Since%20peaking%20in%20April%202022,price%20index%20(Figure%201)((accessed December 5, 2023); see also John Baffes and Dawit Mekonnen, comment on "Falling Food Prices, Yet Much High Than Pre-Covid," World Bank Blog, comment posted on August 16, 2023, https://blogs.worldbank.org/opendata/falling-food-prices-yet-much-higher-pre-covid; see also Jeff Kearns, comment on "Global Food Crisis May Persist, With Prices Still Elevated After Year of War," the International Monetary Fund blog, comment posted on March 9, 2023, https://www.imf.org/en/Blogs/Articles/2023/03/09/global-food-crisis-may-persist-with-prices-still-elevated-after-year-of-war (accessed November 5, 2023).

4 World Food Programme, "A Global Food Crisis"

5 World Bank, "Food Security Update," December 18, 2023, https://www.worldbank.org/en/topic/agriculture/brief/food-security-update#:~:text=The%20global%20food%20crisis%20has,implemented%2017%20export%2Dlimiting%20measures.

6 Jospeh Glauber et al., comment on "No End in Sight for the Global Food Price Crisis," the International Food Policy Research Institute Blog, comment posted on September 27, 2022.

7 See also Organisation for Economic Cooperation and Development, "The Impacts and Policy Implications of Russia's Aggression Against Ukraine on Agricultural Markets," August 5, 2022, https://www.oecd.org/ukraine-hub/policy-responses/the-impacts-and-policy-implications-of-russia-s-aggression-against-ukraine-on-agricultural-markets-0030a4cd/

8 See also Kristalina Georgieva, Sebastian Sosa, and Bjorn Rother, comment on "Global Food Crisis Demands Support for People, Open Trade, Bigger Local Harvests," International Monetary Fund Blog, comment posted on September 30, 2022, https://www.imf.org/en/Blogs/Articles/2022/09/30/global-food-crisis-demands-support-for-people-open-trade-bigger-local-harvests

9 World Bank, "What You Need to Know About Food Security and Climate Change," October 17, 2022, https://www.worldbank.org/en/news/feature/2022/10/17/what-you-need-to-know-about-food-security-and-climate-change; see also Glauber et al., "No End in Sight for the Global Food Price Crisis"; see also Food and Agriculture Organisation of the United Nations, World Trade Organisation, and World Bank Group, *Rising Global Food Insecurity: Assessing Policy Responses*, April 2023, https://www.fao.org/3/cc5392en/cc5392en.pdf

10 World Bank, "What You Need to Know About Food Security and Climate Change"; C.

Mbow et al., "2019: Food Security," In Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems, ed. P.R. Shukla et al., https://doi.org/10.1017/9781009157988.007; see also Farmers for Climate Action, *Fork in the Road: Impacts of Climate Change on Our Food Supply*, March 2022, https://farmersforclimateaction.org.au/wp-content/uploads/2022/03/Fork-in-the-Road_V5.pdf

11 IAEA, "Food Security and Climate Change," https://www.iaea.org/topics/food-security-and-climate-change; see also Shoba Suri, "Climate Smart Agriculture for Sustainability and Food Security," November 24, 2022, https://www.orfonline.org/expert-speak/climate-smart-agriculture-for-sustainability-and-food-security

12 Kai Kornhuber et al., "Risks of Synchronized Low Yields are Underestimated in Climate and Crop Model Projections," *Nature Communications* 14, no. 1 (2023): 3528, https://www.nature.com/articles/s41467-023-38906-7; see also J. Singh et al., "Enhanced Risk of Concurrent Regional Droughts with Increased ENSO Variability and Warming," *Nature Climate Change* 12, no. 2 (2022): 163–70.

13 Singapore Government Agency, "Food for Thought: Levelling up Singapore's Food Supply Resilience," April 14, 2020, https://www.sfa.gov.sg/food-for-thought/article/detail/levelling-up-singapore-s-food-supply-resilience

14 Velina Tchakarova, "Shifting Sands: Navigating the New Geopolitical Landscape in 2024," December 26, 2023, Observer Research Foundation, https://www.orfonline.org/expert-speak/shifting-sands-navigating-the-new-geopolitical-landscape-in-2024

15 See also Eddy Wax, "The Starvation of a Nation: Putin Uses Hunger as a Weapon in Ukraine," Politico, April 1, 2022, https://www.politico.eu/article/the-starvation-of-a-nation-how-putin-is-using-hunger-as-a-weapon-in-ukraine/; Jennifer Hansler, Alex Marquardt, and Kayla Tausche, "Concerns Mount Over Potential for Food Crisis Amid Russian Moves to Cripple Ukrainian Grain Exports," July 27, 2023, https://edition.cnn.com/2023/07/26/politics/russia-grain-deal-ukraine-food-crisis/index.html; Tim Benton, *Food Security, Trade, and its Impacts*, London, Chatham House, 2017, https://resourcetrade.earth/publications/food-security-trade-and-its-impacts; United States of America National Intelligence Council, *Global Trends 2040*, Washington DC, Office of the Director of National Intelligence, March 2021, https://www.dni.gov/files/ODNI/documents/assessments/GlobalTrends_2040.pdf; "Russia's Weaponization of Food and Energy Impacts All Countries, Zelenskyy Tells UN Assembly," United Nations, September 19, 2023, https://news.un.org/en/story/2023/09/1141002

16 Mely Caballero-Anthony, Paul Teng, and Jose Ma Luis Montesclaros, "COVID-19 and Food Security in Asia: How Prepared are We?" 2020, https://www.jstor.org/stable/pdf/resrep26876.pdf

17 Zaid Hamzah and Paul Teng, "How AI Can Strengthen Food Resilience," *The Straits Times*, March 17, 2021 https://www.straitstimes.com/opinion/how-ai-can-strengthen-food-resilience

18 Paul Teng et al., "Impact of Climate Change on Food Production: Options for Importing Countries," 2015, https://www.rsis.edu.sg/wp-content/uploads/2015/05/PB150529_Impact-of-Climate-Change-on-Food-Production.pdf

19 Teng et al., "Impact of Climate Change on Food Production"; see also Magnus Benzie, Oskar Wallgren, and Marion Davis, "Adaptation Without Borders? How Understanding Indirect Impacts Could Change Countries' Approach to Climate Risks," Stockholm

Environment Institute, 2013, http://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-DB-2013-Adaptation-Without-Borders.pdf

20 See also Kei Kajisa, "Contemporary Irrigation Issues in Asia," Asian Development Bank, 2021, https://www.adb.org/sites/default/files/institutional-document/731791/adou2021bp-irrigation-issues-asia.pdf; see also Nilanjan Ghosh and Soumya Bhowmick, "Water Valuation and Pricing in India: Imperatives for Sustainable Water Governance," Observer Research Foundation, 2023, https://www.orfonline.org/research/water-valuation-and-pricing-in-india-imperatives-for-sustainable-water-governance

21 See also Georgieva, Sosa, and Rother, comment on "Global Food Crisis Demands Support for People, Open Trade, Bigger Local Harvests"

22 World Bank, "What You Need to Know About Food Security and Climate Change," October 17, 2022, https://www.worldbank.org/en/news/feature/2022/10/17/what-you-need-to-know-about-food-security-and-climate-change

23 See also Council on Foreign Relations, "The SDGs are Not on Track: Here is What the World Should Do," October 10, 2023, https://www.cfr.org/councilofcouncils/global-memos/sdgs-are-not-track-here-what-world-should-do

24 See also Priya Rampal, "A Roadmap for Sustainable Food Security," Observer Research Foundation, April 26, 2021, https://www.orfonline.org/expert-speak/roadmap-sustainable-food-security

25 Paul Teng, "Industry Note: New Disruptive Technologies and Mindsets for Asian Agriculture in the 21st Century," 2021.

26 J. I. Rattalino Edreira et al., "Spatial Frameworks for Robust Estimation of Yield Gaps," *Nat Food* 2 (2021): 773–79, https://doi.org/10.1038/s43016-021-00365-y. See also Shen Yuan et al., "Southeast Asia Must Narrow Down the Yield Gap to Continue to be a Major Rice Bowl," *Nature Food* 3, no. 3 (2022): 217–26, https://pubmed.ncbi.nlm.nih.gov/37117641/#:~:text=We%20find%20that%20the%20average,smaller%20in%20Indonesia%20and%20Vietnam.

27 United Nations Food and Agricultural Organisation, *Unleashing the Potential of Millets – International Year of Millets*, Rome, Italy, 2023, https://doi.org/10.4060/cc7484en

28 Food and Agricultural Organisation of the United Nations, "Smallholders and Family Farms," 2013, https://www.fao.org/family-farming/detail/en/c/273864/#:~:text=Smallholders%20are%20small%2Dscale%20farmers,one%20hectare%20to%2010%20hectares

29 Manda Foo and Paul Teng, "Less is More: Untapped Role of Small Farmers in Asia," 2016, https://www.rsis.edu.sg/rsis-publication/rsis/co16120-less-is-more-untapped-role-of-small-farmers-in-asia/

30 Annie Wakanyi, comment on "Smallholders on the Frontline: A Call for Action at COP 28," SDG Knowledge Hub, comment posted on November 29, 2023, https://sdg.iisd.org/commentary/guest-articles/smallholders-on-the-frontline-a-call-for-action-at-cop-28/

31 Wakanyi, comment on "Smallholders on the Frontline: A Call for Action at COP 28"

32 Food and Agricultural Organisation of the United Nations, "The State of Food and Agriculture 2010-2011: Women in Agriculture Closing the Gender Gap for Development," 2011, https://www.fao.org/3/i2050e/i2050e00.htm

33 United Nations Food Systems Coordination Hub, "Financing Food Systems Transformations," https://www.unfoodsystemshub.org/fs-stocktaking-moment/programme/financing-food-systems-transformations/en; World Bank, *Food Finance Architecture: Financing a Healthy, Equitable, and Sustainable Food System*, Washington, 2021.

34 See also Navdeep Suri, "From India's G20 to UAE's COP28 – A New Pathway for Climate Action," Observer Research Foundation, December 1, 2023, https://www.orfonline.org/research/from-indias-g20-to-uaes-cop28

35 Teng et al., "Impact of Climate Change on Food Production: Options for Importing Countries," RSIS, 2015, https://www.rsis.edu.sg/wp-content/uploads/2015/05/PB150529_Impact-of-Climate-Change-on-Food-Production.pdf

Finding the Untapped Mine of Women's Leadership in Climate Action

Priya Shah

CLIMATE CHANGE IS AN inevitable consequence of the historical global dependence on fossil fuel infrastructure—an integral part of economic growth since the Industrial Revolution. This infrastructure has been characterised by coal-fired power plants, oil wells, factories, and heavy-duty transport powered by internal combustion engines for mobility—which now already produce enough carbon dioxide to warm the planet by an additional 2 degrees Celsius in this century. Today, the world is witnessing record-shattering storms, wildfires, and catastrophic episodes of drought across various regions. By the 2030s, as temperatures rise further, climate hazards are expected to increase as different countries face more crippling heat waves, worsening coastal flooding, and crop failures. At current levels of warming, for instance, food production is starting to come under strain. While the world is still producing more food each year, owing to improvements in farming and crop technology, climate change has slowed the rate of growth as the world's population soars past eight billion.

Yet, climate change poses more severe risks on countries in the Global South, particularly on poor and marginalised women whose vulnerabilities are exacerbated by pre-existing societal inequalities. Across the globe, women are more likely to rely on climate-sensitive sectors for

their livelihoods (such as agriculture), and they also often have the least capacity to respond to climate extremes, such as droughts, floods and storms. As a result, women, and the children they care for, are 14 times more likely to die in disasters than men.[1] By 2030, climate change could push 158 million more women and girls into poverty and cause hunger for 236 million more women across the globe.[2] Climate-related displacement also makes women and girls more vulnerable to gender-based violence, human trafficking, and underemployment.

One of the ways by which women can be equipped with the tools to tackle the effects of climate change, is to build their entrepreneurial capacity. This essay explores the various elements of climate action that would greatly benefit from the leadership of women, particularly from marginalised communities in the developing world: climate finance, climate-smart agriculture, and climate education. With the right training and ecosystem support, innovation can be facilitated and cutting-edge business models developed to both, disrupt traditional energy systems and drive the adoption of clean technology towards a net-zero future.

Women in Climate Finance

'Climate finance' comprises "financial flows mobilised by developed nations' governments and private funds channelled towards climate change mitigation and adaptation in developing countries."[3] The path to 'net zero' by 2050 requires that low-carbon investments grow from US$900 billion in 2020 to US$5 trillion annually by 2030; countries in the Global South will need US$2 trillion annually, a fivefold increase from 2020.[4] If at least 50 percent of this climate finance requirement can be channelled towards gender inclusion, it would help with the much-needed transition to zero-carbon and climate-resilient development while also fostering equitable social policy.

However, even today, the vast majority of women in emerging economies do not have easy, adequate access to funds to cover climate-related losses such as those incurred because of floods, droughts, heatwaves, and soil erosion.[5] They also face challenges in securing access to climate adaptation technologies (which tend to be expensive) such as flood safeguards, weather forecasting mechanisms, insurance tools, sensors, efficient irrigation systems, and water purification, among others. Women's limited access to resources, particularly climate funding, makes it difficult for them to adopt climate-resilient practices.

The reasons for these challenges include cultural and social barriers in education, poor political participation, and lack of voice in decision-making processes. In particular, gender disparities in ownership and access to resources (such as land, credit and technology), compounded by sociocultural barriers, lead to the impoverishment of women, lower their adaptive capacity, and increase their exposure

to climatic risk. Because women's livelihoods tend to be climate-sensitive, climate change endangers their lives more than it does for men. Conversely, women's unique knowledge of community dynamics and skills in the use and management of natural resources can add tremendous value to the climate effort by enhancing the efficiency and resilience of climate change response efforts.[6]

One way in which climate finance can bridge gender inequalities is by prioritising adaptation and mitigation projects that yield maximum benefits to women as a target group. For example, access to clean energy technologies would reduce their dependency on fossil fuels such as kerosene, the use of which contributes to global carbon emissions. Globally, 3 billion people rely on inefficient, fossil fuelled-powered cookstoves and could benefit from access to their cleaner counterparts. According to the Global Alliance for Clean Cookstoves, women and girls use 90 percent of their incomes in ways that benefit their families and communities.[7] Start-ups that provide women access and financing to clean cookstoves, as well as employed by cookstove-related businesses, such as restaurants, catering, and cookstove production and distribution, can reduce the health and safety issues caused by household air pollution and decrease the time women spend collecting cooking fuel. Women can then reallocate this time to education and income-generating activities.

Another large stakeholder in this sector is the Green Climate Fund, a multilateral fund that incorporates gender into its governing instrument and which has a Gender Policy and Action Plan. The Fund maintains a portfolio size of US$13.5 billion, used to deliver transformative climate action in more than 120 countries across the globe. Similarly, the Clean Investment Funds (CIF), a set of financing instruments to support the transition towards climate-smart development in developing countries, has a Gender Action Plan that was approved in 2014.

In addition, in November 2022, the Climate Gender Equity Fund (CGEF) was launched by USAID, Amazon, Reckitt, Visa Foundation, and The UPS Foundation who have committed a combined US$20 million to the fund, with USAID announcing an additional US$5 million during the COP28 climate change conference in December 2023.[8] The funding will be used over the next several years to make additional grants to businesses, investment vehicles, accelerators, incubators, and grassroots organisations that support climate solutions which are led by, and benefit women. While the multilateral funds are only a small subset of private and public climate finance streams, their gender considerations set an example for other funds to tackle deeply rooted structural inequities and maximise the impact of climate finance.

Moreover, at COP28, a number of new gender initiatives were launched, including the Gender-Responsive Just Transitions & Climate Action Partnership in which 68 countries pledged to implement a partnership aimed at driving gender-sensitive

energy transitions and strengthening the leadership and participation of women and girls in their climate actions.[9] The Partnership is built on three pillars: better quality data to support decision-making in transition planning; more effective finance flows to regions that bear the worst impacts of climate change; and education, skills and capacity building to support individual engagement in transitions.

The US Government also pledged US$1.4 billion in investments to the Women in the Sustainable Economy (WISE) Initiative, which aims to improve women's access to employment, training, leadership roles, and financing in green (agriculture) and blue (ocean) industries.[10]

Women in Climate-Smart Agriculture

Significant proportions of populations in the Global South are dependent on the agrarian economy, and driving women's access to innovative climate-smart tools in agriculture will be a key in closing the climate mitigation gap. It is estimated that women make up 48 percent of the global agricultural workforce—with the proportion reaching as high as 69 percent in South Asia—and dominate the global fish processing sector at 85 percent, although their contributions are often insecure and poorly remunerated.[11] As the ramifications of climate change worsen, the productive potential of these sectors will decline, putting pressure on women workers and leading to lower incomes. Livelihood opportunities will also decline, along with the natural resources upon which local communities depend; this, in turn, threatens global food security.

Closing gender gaps in the agriculture sector to provide access to productive resources could increase farming yields by 20–30 percent.[12] A number of initiatives are currently in place in different parts of the world that could provide best-practice examples of how innovative technologies can be leveraged to integrate climate action in efforts towards gender inclusivity. In India, S4S Technologies[a] works to tackle the problem of food wastage[b] by providing women farmers in the rural regions, through loan financing, a solar-powered dehydration system, with a solar conduction dryer that can process more than 45 food categories.[c,13] The dehydration system can store produce for a longer period of time as the shelf life is increased to a year, without the need for cold storage. S4S purchases the processed food output from the women farmers, and this output is further refined into ingredients sold to the food and beverage industry.

a S4S is based in Mumbai, Maharashtra and has been operating since 2019.

b Food wastage happens as traders in farmer's markets buy only Grade A produce; the rest of the harvest is discarded.

c The categories include fruits and vegetables, pulses and grains, nuts, spices, tea, coffee, milk, and alternate proteins.

Meanwhile, in Tanzania, the social enterprise, Alaska Tanzania[d] works to support local women farmers in improving their productivity.[e] Alaska Tanzania sources rice from a pool of more than 60 small-scale farmers, of whom 65 percent are women, and trains them on good agricultural practices that will equip them in coping with climate change impacts; these include water conservation, the effective use of high-quality inputs, and sourcing finance.[14]

Similarly, in Kenya, Aquarech[f] is striving to reduce the vulnerabilities of women fish farmers by enhancing their economic empowerment through capacity building and financial training. This is a notable effort, as women in Kenya play a substantial role in the fisheries sector yet have historically been denied full participation in economic opportunities and decision-making in the sector.

These three are only some of the current initiatives that illustrate the role of start-ups in developing economies across the agriculture sector to mainstream gender practices, particularly through access to credit for women, capacity building and upskilling of women farmers, and allowing them to earn additional incomes. By framing agriculture-related climate change activities and policymaking around the aim of gender equity, start-ups can enable rural women to become important agents of change. These efforts allow them to access information and technologies, contribute to low-carbon outcomes, and cultivate entrepreneurial and marketing skills.

Other stakeholders that also play a significant role in inclusivity for gender within agriculture are governments, public policymakers, and philanthropy. For example, with the help of local non-profit Conservation Action Trust (CAT), a group of fisherwomen in the western regions of Maharashtra launched an operation dubbed Mandavi Eco Tourism five years ago—an enterprise that protects the local mangroves while offering eco-friendly boat rides for visitors to the mangrove region. The boats do not run on engines and therefore do not affect the region's biodiversity. The group has also set up an organic farm and is selling homemade pickles and local spices to supplement its members' incomes. It has managed to raise funds from the United Nations Development Programme (UNDP) as well as the Maharashtra State Government.[15]

Climate Action and Education

Inextricably linked to both climate finance and climate-smart agriculture is the subject of bringing a gender perspective into climate education and skill-building, particularly around enhancing communities' adaptive capacity to climate change,

d Alaska Tanzania is based in Dar-es-Salaam, Tanzania, and began its operations in 2013.

e Tanzania is the leading producer of rice in East Africa and the fourth largest in terms of area in hectares.

f Aquarech is based in Kisumu, Kenya and has been operating since 2019.

behavioural transformation, and expansion of coping strategies.[g] Historically, women have developed knowledge and skills related to water harvesting and storage, food preservation and rationing, and natural resources management. In Africa, for example, older women represent wisdom pools with their inherited knowledge and expertise related to early-warning actions and mitigating the impacts of climate disasters.[16]

It begins with early education—investing in green skills for girls in the Global South, which allows them to increase climate resilience such as consequential thinking and communication skills to understand and explain risks to others; systems thinking skills, such as understanding how human activities like deforestation may contribute to landslides and flooding; and leadership skills for organising collective action and systems change toward sustainability. There is a strong need for knowledge on climate change—the science, ideas for mitigation and adaptation, what might happen in the future; skills for critical thinking, problem-solving, team collaboration, communication, dialogue; as well as habits and behaviours to live more sustainably, reduce carbon emissions, ensure a just transition, and instil respect for nature. These practices, when ingrained in girls at an early age, also pave a role in helping them address the onset of healthcare challenges in the face of climate change, such as worsening air quality, changes in the spread of infectious diseases, and threats to food and water quality.

There is an opportunity for start-ups to bridge the gap on climate education and channel more young professionals, particularly women, into climate-specific jobs. Start-ups can leverage software platforms and the marketplace approach to connect talented individuals to jobs across climate finance, non-profits, government and large corporations. For example, Terra.do, a start-up founded in 2020, is a global platform for climate learning and careers, which hosts green skills-based courses featuring expert speakers, for students who want to learn about climate action. The start-up has also launched a 'jobs board' that allows candidates to explore open roles and engage directly with hiring managers from climate organisations, thus creating a community of dedicated climate enthusiasts.

With respect to labour force participation, an example of Global South programmes that are implementing this inclusivity is IFC's Powered by Women initiative, which works with hydropower companies in Nepal to identify women's employment gaps, reduce gender-based violence, and advance women's position as employees and leaders. The World Bank's RENEW MENA programme, for its part, works to increase women's economic participation in clean energy jobs, create better workplace conditions, and combat discrimination and biases that impede women's entry to, and growth in the STEM domains.

g These coping strategies require changing behavioural practices amid climate obstructions: e.g. finding access to water in alternate locations to mitigate the impact of a drought; or recalibrating food output for feeding one's family to cope with the effects of soil erosion.

In the United Kingdom, it is forecast that the green skills shortage gap will be resolved largely by women who have historically taken on more people-oriented roles within companies.[17] As the need for climate skills grows and new green jobs emerge, women are best placed to step up into leadership positions across companies. Women's participation and leadership in climate action is associated with better resource governance, conservation outcomes, and disaster readiness. In the private sector, more gender-diverse corporate boardrooms have been shown to lead their organisations to more sustainable policies.[18] Similarly, a study by the European Investment Fund, quoted in Balke and Thomas Östros (2023), shows that women-led firms have higher environmental, social, and governance scores than other companies, and that businesses with greater representation of women in leadership positions have better track records of adopting environment-friendly practices.[19] Similarly, women leaders are more likely to invest in renewable energy, leading to reduced greenhouse gas emissions and improved environmental outcomes, and women-owned businesses are more likely to pursue greater energy efficiency and practices such as recycling.

Conclusion

The importance of gender inclusion in climate action has never been more pronounced than it is today, when the world sits at a crucial juncture along the path to accelerate the global transition to net-zero. As we attempt to develop ground-breaking, climate-positive technologies in laboratories, green organisational supply chains, and educate the next generation in new climate-friendly practices, there is a need to equip more women not only in policymaking roles but in private enterprise as well—in corporations, as scientists, technicians, and investors, and particularly as start-up entrepreneurs to move the needle in the transition away from fossil fuels. In terms of best practice, start-ups can help leverage the right mix of talent and technology to develop agile ways in which a market solution can be effectively harnessed to address a large problem statement such as decarbonisation along the gender axis.

Many initiatives across the areas of climate finance, climate-smart agriculture, and climate education are taking centrestage in global forums and are showing promise. However, there is so much more that can be implemented at scale, particularly in countries of the Global South, to increase women's participation in the green transition. Governments can also do their part by offering affordable, high-quality childcare to parents; increasing support for women-owned enterprises; expanding the financial and networking opportunities available to businesses managed and owned by women; and pursuing measures to eliminate the gender gap across multiple industries.

Endnotes

1 Asako Osai, "Women are Hit Hardest in Disasters, So Why are Responses Too Often Gender-Blind?" United Nations Development Programme, March 2022, https://shorturl.at/efuMO

2 Evelyn Smail, "Gender Equality at COP28: Advancing Climate Justice for Women and Girls," Climate Impacts Tracker Asia, December 2023, https://www.climateimpactstracker.com/cop28-gender-equality/

3 Simon Black, Florence Jaumotte, and Prasad Ananthakrishnan, "World Needs More Policy Ambition, Private Funds, and Innovation to Meet Climate Goals," IMF Blog, November 2023, https://shorturl.at/hFNR9

4 Black, Jaumotte, and Ananthakrishnan, "World Needs More Policy Ambition"

5 "Youth Are Key to Accelerate Innovative Climate Technologies," United Nations Climate Change News, January 2022, https://unfccc.int/news/youth-are-key-to-accelerate-innovative-climate-technologies

6 United Nations Development Programme, *Gender and Climate Finance*, UNDP, 2016, https://shorturl.at/prBP1

7 "Improving Women's Empowerment with Clean Cookstoves," Global Impact Investing Network, https://navigatingimpact.thegiin.org/strategy/gli/improving-womens-empowerment-with-clean-cookstoves/

8 "Highlights from USAID's Contributions to COP28," USAID, December 2023, https://www.usaid.gov/news-information/press-releases/dec-11-2023-highlights-usaids-contributions-cop28

9 "COP28 Launches Partnership to Support Women's Economic Empowerment and Ensure a Gender-Responsive Just Transition at COP28 Gender Equality Day," *COP28 News*, December 2023, https://www.cop28.com/en/news/2023/12/COP28-launches-partnership-to-support-women-economic-empowerment

10 "At COP28, A WISE Investment: Advancing Women's Participation in Climate Efforts," *COP28 News*, December 2023, https://www.state.gov/at-cop28-a-wise-investment-advancing-womens-participation-in-climate-efforts/

11 Franziska Deiningerana and Ana Gren, "Green Jobs for Women Can Combat the Climate Crisis and Boost Equality," World Bank, November 2022, https://blogs.worldbank.org/climatechange/green-jobs-women-can-combat-climate-crisis-and-boost-equality

12 Food and Agriculture Organization, *The State of Food and Agriculture (SOFA): Women in Agriculture: Closing the Gender Gap for Development*, 2011, https://shorturl.at/knos8

13 Rekha Balakrishnan, "This Startup's Foodtech Solution is Helping Women Farmers Become Micro-Entrepreneurs," *YourStory*, February 2023, https://yourstory.com/herstory/2023/02/startup-agritech-women-microentrepreneurs

14 Stella Kimani et al., "The Role of Climate-Smart Agriculture Enterprises in Women's Empowerment," Climate Knowledge and Development Network, March 2023, https://cdkn.org/story/role-climate-smart-agriculture-enterprises-womens-empowerment

15 Naila Khan, "The Unlikely Guardians of an Indian Mangrove Forest," Fair Planet, November 2022, https://www.fairplanet.org/story/the-unlikely-guardians-of-an-indian-mangrove-forest/

16 Balgis Osman-Elasha, "Women... In The Shadow of Climate Change," United Nations UN Chronicle, 2009, https://www.un.org/en/chronicle/article/womenin-shadow-climate-change

17 Maya Derrick, "Climate Action to Propel Energy Sector Globally in 2024," Energy Digital, December 2023, https://energydigital.com/articles/climate-action-to-propel-energy-sector-globally-in-2024

18 Hana Brix and Jennifer J. Saramary Porter Peschka, "People and Planet Together: Why Women and Girls are at the Heart of Climate Action," World Bank Blogs, November 13, 2022, https://blogs.worldbank.org/climatechange/people-and-planet-together-why-women-and-girls-are-heart-climate-action

19 Barbara Balke and Thomas Östros, "The Business Case for Women's Climate Leadership," Project Syndicate, March 2023, https://www.project-syndicate.org/commentary/women-corporate-leadership-correlates-with-stronger-climate-plans-by-barbara-balke-and-thomas-ostros-2023-03?barrier=accesspaylog

References

Sarah Yerkes, "COP28's Inclusion Efforts Were a Positive Step for Climate," Carnegie Endowment for International Peace, December 2023, https://carnegieendowment.org/2023/12/14/cop28-s-inclusion-efforts-were-positive-step-for-climate-pub-91252

Poonam Muttreja, "The Disproportionate Impact of Climate Change on Women: A Closer Look Ahead of COP28," *Down to Earth*, October 2023, https://www.downtoearth.org.in/blog/climate-change/the-disproportionate-impact-of-climate-change-on-women-a-closer-look-ahead-of-cop28-92523

Gender and Climate Finance, *United Nations Development Programme*, 2016, https://www.undp.org/sites/g/files/zskgke326/files/publications/UNDP%20Gender%20and%20Climate%20Finance%20Policy%20Brief%205-WEB.pdf

Climate Change and Girls' Education, *British Council & Foreign, Commonwealth & Development Office*, June 2021, https://www.britishcouncil.org/school-resources/find/classroom/climate-change-and-girls-education

Elitsa Pavlova and Salome Gvetadze, "Female Access to Finance: A Survey of Literature," European Investment Fund (EIF), February 2023, https://www.eif.org/news_centre/publications/eif_working_paper_2023_87.pdf

Securing Global Supply Chains for Critical Minerals

Rachel Rizzo

THE GLOBAL ORDER, IT seems, was in constant turmoil in the last decade, barely held together by a web of complicated partnerships and alliances and weakening multilateral institutions. Major powers like the United States (US) and China are competing with one another for global economic dominance; Russia has upended the United Nations Charter and sent shockwaves throughout the global community by annexing Crimea in 2014 and conducting a full-scale invasion of Ukraine in February 2022; and Hamas's attack on Israel on 7 October (and Israel's prolonged military response) shows that the Middle East is anything but stable.

Amid the unease, danger, and destruction, it is easy to forget that the world is also in the middle of another crucial shift: a new industrial revolution. This time, the colour is green, and the aim is a cleaner, more livable world for future generations. This industrial revolution looks different from those that came before and will require unprecedented access to global critical minerals "essential to the functioning and integrity of a wide range of industrial ecosystems", such as solar and wind farms, energy-efficient lighting, and electric vehicle battery production.[1]

These minerals include, but are not limited to graphite, cobalt, lithium, and copper used for some of the most advanced technologies of our time. The uses go beyond

just clean energy, and include national defence technology as well—fighter jets, precision-guided missiles, aircraft engines, and control rods in nuclear reactors, all require access to such critical raw materials.[2] Current statistics around these minerals are nothing short of astounding: "Global demand for lithium and graphite, two of the most important materials for electric vehicle (EV) batteries, is estimated to grow by more than 4000 percent by 2040 in a scenario where the world achieves its climate goals."[3] Demand for cobalt is expected to more than double by 2030, driven by the upside swing of the EV market.[4]

Many of these minerals are scattered throughout the globe. Chile holds the world's largest lithium reserves, followed by Australia, Argentina, and China.[5] Türkiye and China are home to the world's largest graphite reserves. The Democratic Republic of the Congo—where mines are the subject of attention from human rights groups for their use of child labour—possesses the world's largest cobalt reserves and the seventh-largest copper reserves.[6] And finally, South Africa has unchallenged dominance in the production of manganese, a mineral used in both wind and solar farms and for EV batteries.[7]

Of these countries, those that can successfully harness the production of raw materials (and the supply chain logistics for those raw materials) could lead the world in both technology and clean energy into the next century.[8] For their part, states that do not have comparable natural reserves of these materials must build new industrial partnerships with those that do. In some cases, these partnerships must be between states that may otherwise view one another as competitors or even threats. In other cases, western countries must determine how to engage fairly and equally with states—mainly those in Africa—who have been on the end of extractive relationships with wealthier nations for decades. Unprecedented levels of cooperation between the Global North and the Global South will be key.

Taking all this together, the task may appear daunting. As the global race for critical minerals and leadership in the green energy transition heats up, there are a few issues that must be kept in mind to ensure that chaos and competition do not stymie growth, progress, and achievement.

U.S.-China Competition: A Bump in the Road to Securing Critical Minerals

In January 2021, United States President Joe Biden issued Executive Order 14017 as one of his first orders of business upon assuming office, directing "each department in the administration to assess potential supply-chain risks within their jurisdiction and come up with strategies to mitigate or overcome these."[9] The aim was to "minimise supply chain disruptions domestically and internationally."[10] The results of the directive

were concerning: China was estimated to control 55 percent of global rare-earths mining capacity in 2020 and 85 percent of rare-earths refining.[11] More specifically, as professor of environmental studies, James Morton Turner, highlights: "China control[s] 58 percent of the global production of lithium compounds in 2022, 69 percent of nickel sulfate, 69 percent of synthetic graphite, 75 percent of cobalt, 95 percent of manganese and 100 percent of spherical graphite. China plays a similarly outsize role in the supply of materials used in solar panels and wind turbines."[12]

From China's vantage point, there is no better place to be. Not only does it give the country ample control over the role it plays in the global green transition, but it also means it can use that position to gain concessions from other countries that may challenge its dominance. Indeed, on 1 December 2023, China began "government approval for exports of graphite…in an apparent counter to US-led curbs targeting China's tech sector."[13] This came only two months after China restricted the export of germanium and gallium, both critical to semiconductor manufacturing.

The United States is also trying to secure its spot at the top of the global critical minerals supply chain. In 2022, Congress passed a landmark legislation known as the Inflation Reduction Act (IRA), described by the White House as "the most significant action Congress has taken on clean energy and climate change in the nation's history" which "sets forth a new era of American innovation and ingenuity to lower consumer costs and drive the global clean energy economy forward."[14] The IRA also commits to increasing the US supply of critical raw materials to vastly expand EV production, batteries, and infrastructure for renewable power production. While the law does not say so specifically, it is clearly designed to counter China in this space.

Unfortunately, as the US and China continue to try to out-invest, out-subsidise, and challenge one another's global economic dominance, their push-and-pull risks becoming zero-sum—if it is not already so. According to Zongyuan Zoe Liu of the Council on Foreign Relations: "US-led critical mineral supply chains initiatives that aim to counter China's dominance inevitably clash with the Chinese government's interests in securing mineral resources for China's industrial development."[15] The same goes for Chinese efforts aimed at curbing US dominance. Going forward, as difficult as it may be, it is imperative that the US and China try to find ways to cooperate in this domain. Everyone loses in a scenario where the two are locked in a classic geopolitical game of the Prisoner's Dilemma, where each side is waiting to see if the other makes a move, and the rest of the global community gets caught in the crossfire.

The November 2023 meeting in San Francisco between presidents Joe Biden and Xi Jinping was a first step towards opening lines of communication. According to the White House, "The two leaders underscored the importance of working together to accelerate efforts to tackle the climate crisis in this critical decade;" they agreed to

continue cooperation through "high-level diplomacy and interactions, including visits in both directions and ongoing working-level consultations in key areas."[16] The US and China must include discussions on global critical raw materials supply chains as part of these high-level diplomatic efforts.

The More the Merrier: Global Partnerships are Key

The race for access to critical raw materials goes beyond just the United States and China; it is global. In a visit to the United States in May, for example, Australian Prime Minister Anthony Albanese announced a landmark plan to both mine and process critical raw materials on the continent. The two sides also announced a significant step in bilateral cooperation: "a Climate, Critical Minerals and Clean Energy Transformation Compact…establishing climate and clean energy as a central pillar of the Australia-United States Alliance."[17] This is in addition to a high-level bilateral taskforce between the two countries focused on deepening cooperation on critical raw materials and working "with industry leaders to develop and expand reliable, responsible and secure global access."[18] Similarly, the US and Japan signed a critical minerals agreement in March 2023, which builds on the 2019 US-Japan trade agreement and highlights the "shared commitment of the United States and Japan with respect to the critical minerals sector to facilitate trade, promote fair competition and market-oriented conditions for trade in critical minerals."[19]

The European Union (EU) is also implementing its own critical minerals policies. In March 2023, the EU proposed the Critical Raw Materials Act, which will ensure EU access to a secure and sustainable supply of critical raw materials, enabling Europe to meet its 2030 climate and digital objectives.[20] Like the US, Europe relies heavily on imports, mostly from single third countries. The Act sets out ways for the EU to create secure and resilient supply chains, lays out ways to prepare and mitigate supply chain risk, improves the sustainability of critical raw materials on the EU market, and diversifies the EU's imports of critical raw materials.

There is no doubt that access to critical raw minerals is a top-of-mind agenda for countries around the world. What is less clear, however, is where global cooperation goes from here, and whether these bilateral and EU frameworks will be able to launch the type of partnerships that are truly needed. This is where multilateral partnerships become key. In response to European panic over the IRA's effects on countries in the continent, European Council President Charles Michel and US President Joe Biden in March 2023 announced plans to create an EU-US Critical Minerals Agreement. The objective, of course, is to secure supply chains needed in the production of EV batteries. In addition, the aim is to give the EU "a status equivalent to US free trade agreement partners pursuant to the US Inflation Reduction Act."[21]

The European Council has also proposed a "Brussels Buyer's Club"—a centralised purchasing mechanism for critical minerals open to the United States and other like-minded countries. As Cullen Hendrix of the Peterson Institute for International Economics points out, though, there are flaws in the "buyer's club" approach. He states: "Supply chains for critical minerals desperately need widening to meet projected global demand and tackle climate change mitigation. A purchasers club would not be a step in the right direction."[22] Further, it could potentially set up distributive conflicts within the EU, and have adverse effects for just transitions in developing and middle-income economies.

What would then be a better approach? As nations like the US, Australia, and Japan, as well as multilateral organisations like the EU pursue partnerships to secure global critical minerals supply, they must ensure that the net is cast as wide as possible. States and institutions must do everything they can to avoid a "cartel-like" approach to critical minerals. Instead, global cooperation should take precedence over stove piping which could shut potential producers out, make prices more volatile, and in turn, slow down the green transition. The Minerals Security Partnership—a group of 13 countries working together to catalyse public and private investment in responsible critical minerals supply chains globally—is a good example of where to start, and potentially where to expand.[23]

Strengthening Transatlantic Partnerships with Africa

For years, countries in Africa have been on the receiving end of extractive relationships with the US and Europe. Given the urgency and speed of the global green transition, both are at the top of the customer list in terms of securing access to critical raw minerals and building partnerships with mineral-rich Africa—a feat that China has clearly succeeded in. China is not exactly "geologically lucky"; quite the opposite is true, in fact, as it is not home to that many critical raw materials. Instead, it has "systematically invested in overseas and domestic mines that feed into Chinese-owned refineries, where raw materials from around the world are processed into the high-grade materials needed for advanced manufacturing."[24] China has steadily built its presence in the African continent through infrastructure projects and no-strings-attached investments that are attractive to leaders who want to build their own economies.

If countries want to truly prioritise the green transition, it means not only increasing policy dialogue with Africa, but also coming to the table with worthwhile partnerships. This is particularly true for the US and EU. Both must fundamentally change their relationships with African countries and put an end to what is often a hypocritical approach. As this author, along with Théo Pouget Abadie wrote in early 2023, "As

Europe weans itself off Russian gas, for example, it has ramped up oil and gas investments in Africa to meet its ongoing needs. Regardless of these investments, Europe continues to press Africans to stick to renewable energy targets, despite them being unable to provide electricity, clean or otherwise, to their own populations."[25] It is clear that Western countries tend to hold African countries to standards that are impossible to meet.

Moving forward seems simple enough: If the West wants to build better relationships with Africa, it must offer something of value in exchange. This means building genuine industrial partnerships that enable states to move up the global value chain, from purely extractive activities to refining of critical raw materials or even manufacturing panels and batteries. The Biden Administration is now pursuing this path by investing in projects in Africa that help shore up supply chains in the US and assist various countries in moving up the global economic ladder, which is mutually beneficial for both sides. One such investment is a cross-continent railroad system in Africa. The US has also signaled political support for a nickel processing plant in Tanzania. However, these industrial partnerships will need more private sector investment. The bilateral and multilateral global critical minerals partnerships already mentioned must also include ways to reduce risk and provide incentives for private capital to flow to the Global South.

There must be increased policy dialogues between the West and Africa. Currently, for instance, no permanent dialogue platform exists between the EU and the African Union (AU). Most discussions are taking place in ad-hoc channels, which does not allow for the kind of long-term planning required to build genuine partnerships. Expanding the Minerals Security Partnership to include the AU would be a step in the right direction. Including the AU as a permanent member of the G20 is also a welcome achievement.

Western partners should find ways to provide financing or debt relief support to help African nations achieve their own energy transition: not one of transitioning to renewable energy, but one of transitioning from *no energy* to *energy.* As debt levels rise across the continent, for example, African nations are increasingly at risk of debt distress and default. A massive 600 million of the continent's 1.2 billion people still lack access to electricity, a problem that will require trillions of dollars to solve. More investments are also desperately needed to adapt to the impacts of climate change, which are already disproportionately affecting Africa. Western countries should expand the support for public infrastructure in the form of grants and broaden country-specific support to lower income economies across the African continent which can "couple decarbonization with the expansion of energy for industrialization, manufacturing, and other economic activities."[26]

Conclusion

Green industry is revolutionising the world in the same way that oil did in the 20th century. As Morgan Bazillian and Gregory Brew has observed: Where the 20th century featured battles over access to oil, the 21st century is starting to be defined by a struggle over critical minerals.[27] While competition is inevitable, cooperation must win the day. As the climate heats up, as the Earth experiences more and more unpredictable weather patterns due to climate change, the race is on to build a more sustainable and green world.

Endnotes

1 European Council, "Infographic - An EU Critical Raw Materials Act for the Future of EU Supply Chains," Council of the European Union, https://www.consilium.europa.eu/en/infographics/critical-raw-materials/#:~:text=Metals%2C%20minerals%20and%20natural%20materials,wide%20range%20of%20industrial%20ecosystems.

2 MAJ Tyson E. Erdmann, "Diversifying the US Rare Element Resource Base is Vital to National Security," U.S. Naval War College, March 3, 2023. https://apps.dtic.mil/sti/trecms/pdf/AD1209298.pdf

3 International Energy Agency, "The Role of Critical Minerals in Clean Energy Transitions," May 2021, https://iea.blob.core.windows.net/assets/24d5dfbb-a77a-4647-abcc667867207f74/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf

4 Henry Lazenby, "Indonesia Emerges as a Cobalt Powerhouse Amid Surge in Demand," Mining.com, May 11, 2023, https://www.mining.com/indonesia-emerges-as-a-cobalt-powerhouse-amid-surge-in-demand/

5 Statista, "Reserves of Lithium Worldwide as of 2022, by Country," January 2023, https://www.statista.com/statistics/268790/countries-with-the-largest-lithium-reserves-worldwide/#:~:text=Lithium%20reserves%20by%20country&text=Chile%20has%20the%20largest%20lithium,million%20metric%20tons%20in%202022

6 Terry Gross, "How 'Modern-Day Slavery" in the Congo Powers the Rechargeable Battery Economy," *NPR*, February 1, 2023, https://www.npr.org/sections/goatsandsoda/2023/02/01/1152893248/red-cobalt-congo-drc-mining-siddharth-kara

7 US Geological Survey, "Manganese," Department of the Interior, https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-manganese.pdf

8 Erdmann, "Diversifying the US Rare Element Resource Base is Vital to National Security"

9 International Energy Agency, "Executive Order 14017 of America's Supply Chains," November 3, 2022, https://www.iea.org/policies/15272-executive-order-14017-of-americas-supply-chains

10 International Energy Agency, "Executive Order 14017 of America's Supply Chains"

11 Carl A. Williams, "China Continues Dominance of Rare Earths Markets to 2030, Says Roskill," Mining.com, February 26, 2021, https://www.mining.com/china-continues-dominance-of-rare-earths-markets-to-2030-says-roskill

12 James Morton Turner, "The US Can Counter China's Control of Mineral's for the Energy Transition," *New York Times*, November 6, 2023. https://www.nytimes.com/2023/11/06/opinion/electric-battery-energy-china.html#:~:text=In%20the%20case%20of%20materials,sulfate%2C%2069%20percent%20of%20synthetic

13 Shunsuke Tabeta and Iori Kawate, "China's Graphite Export Curbs Take Effect with Uncertainty for EVs," Nikkei Asia, December 2, 2023, https://asia.nikkei.com/Spotlight/Supply-Chain/China-s-graphite-export-curbs-take-effect-with-uncertainty-for-EVs#:~:text=BEIJING%20%2D%2D%20China%20on%20Friday,export%20controls%20on%20strategic%20materials

14 The White House, "Inflation Reduction Act Guidebook," November 2023, https://www.whitehouse.gov/cleanenergy/inflation-reduction-act-guidebook/

15 Zongyuan Zoe Liu, "How to Secure Critical Minerals for Clean Energy without Alienating China," Council on Foreign Relations, May 25, 2023, https://www.cfr.org/blog/how-secure-critical-minerals-clean-energy-without-alienating-china

16 The White House, "Readout of President Joe Biden's Meeting with President Xi Jinping of the People's Republic of China," November 15, 2023, https://www.whitehouse.gov/briefing-room/statements-releases/2023/11/15/readout-of-president-joe-bidens-meeting-with-president-xi-jinping-of-the-peoples-republic-of-china-2/

17 Office of the Prime Minister of Australia, "Australia-United States Climate, Critical Minerals and Clean Energy Transformation Compact," May 20, 2023, https://www.pm.gov.au/media/australia-united-states-climate-critical-minerals-and-clean-energy-transformation-compact#:~:text=Australia%20and%20the%20United%20States,the%20Australia%2DUnited%20States%20Alliance

18 Office of the Prime Minister of Australia, "Australia-United States Climate, Critical Minerals and Clean Energy Transformation Compact"

19 Office of the United States Trade Representative, "United States and Japan Sign Critical Minerals Agreement," March 28, 2023, https://ustr.gov/about-us/policy-offices/press-office/press-releases/2023/march/united-states-and-japan-sign-critical-minerals-agreement

20 European Commission, "Critical Raw Materials Act," https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en

21 European Commission, "EU Moves Forward with Critical Minerals Agreement Negotiations with the US," June 14, 2023, https://ec.europa.eu/commission/presscorner/detail/en/IP_23_3214

22 Cullen Hendrix, "Why the Proposed Brussels Buyers Club to Procure Critical Minerals is a Bad Idea," Peterson Institute for International Economics, May 2023, https://www.piie.com/sites/default/files/2023-05/pb23-6.pdf

23 US Department of State, "Minerals Security Partnership," https://www.state.gov/minerals-security-partnership/#:%7E:text=The%20MSP%20is%20a%20collaboration,powering%20the%20clean%20energy%20transition

24 James Morton Turner, "The US Can Counter China's Control of Mineral's for the Energy Transition"

25 Rachel Rizzo and Théophile Pouget-Abadie, "Beijing and Washington are Battling Over Africa's Green Future," *Foreign Policy Magazine*, May 23, 2023, https://foreignpolicy.com/2023/05/23/africa-china-united-states-energy-transition-environment/

26 Katie Auth, "How the US Can Better Support Africa's Energy Transition," Carnegie Endowment for International Peace, January 21, 2023, https://carnegieendowment.org/2023/01/31/how-u.s.-can-better-support-africa-s-energy-transition-pub-88899

27 Morgan Bazilian and Gregory Brew, "The Inflation Reduction Act is the Start of Reclaiming Critical Mineral Chains," *Foreign Policy Magazine*, September 16, 2022, https://foreignpolicy.com/2022/09/16/inflation-reduction-act-critical-mineral-chains-congress-biden/

The India Opportunity in Building Resilient Electronics Supply Chains

Jhanvi Tripathi, Srividya Krishnan and Devna Joshi

THE GLOBAL GEOPOLITICAL AND geo-economic landscape has been under severe stress in recent years. Individual economies, and their relationships with others including through trade, have faced challenges brought about by multiple factors such as rising production costs, a high degree of dependence on concentrated sourcing markets, their own policies, and other considerations beyond their control. The trade rivalry between the United States (US) and China has been the background of much of this uncertainty, punctuated by the prolonged fallout of the COVID-19 pandemic and security failures in Europe and West Asia, and compounded by the worsening climate crisis.

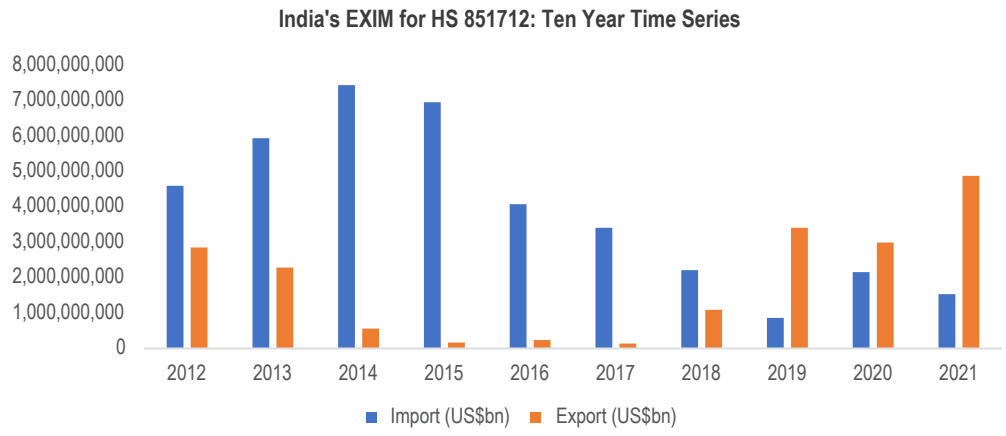
An important domain where geoeconomic rivalries are most visible is the politics of high-technology trade value chains. From raw materials to overall manufacturing, the Electronics System Design and Manufacturing (ESDM) sector has emerged as a strategic sector for development besides having the highest growth potential. Consequently, supply chain vulnerabilities in the ESDM sector can be seen as a threat to economic security.

India in the ESDM Value Chain

Achieving stability in the ESDM supply chain is a difficult task owing to strong regional concentration—i.e., the design ecosystem is concentrated in the west while production systems are dense in the east. This has resulted in niche expertise being created such that key technologies and production processes have become concentrated in specific geographies, not only for finished consumer goods but also for their sub-components. For instance, a semiconductor chip used in a Bluetooth or the Wi-Fi component of a smartphone could cross international borders nothing less than 70 times before reaching the consumer. The entire process takes up to 100 days, of which at least 12 are spent in transfer.[1]

According to India's Ministry of Electronics and Information Technology's (MeitY's) Annual Report of 2022-23, the country's share in the global production for the ESDM market is concentrated in consumer electronics, mobile phones, IT hardware, and electronic components.[2] These four categories of commodities account for about 70 percent of India's domestic manufacturing. Over the years, the sector has gone through a transformation from being import-dependent to becoming a key focus area and element of India's 'Make in India' vision and export-led growth strategy. The MeitY report also shows that mobile phone production, for one, has increased significantly, from 60 million units in 2014-15 to 290 million in 2020-21. Exports have grown 35 times between FY2017 and FY2021, according to UNCOMTRADE data.[3]

Fig. 1. India's Imports and Exports of Smartphones (2012 – 2021)



Source: Authors' own, using data from UNCOMTRADE

Such growth in the manufacture and exports of smartphones has come with a concomitant increase in the import of components. The value of India's imports of electronic components went up from US$54 billion in 2020-21 to US$67.9 billion

in 2021-2022, or a year-on-year increase of 27 percent.[4] India thus continues to be dependent on other partners for technology and components, before the manufacture of the final products can take place locally. This situation exposes the country to the risk of supply chain disruptions from partners for a segment of the economy that has been a crucial driver of economic growth.

India can manage this risk in two ways: The first is through the pursuit of strategic partnerships with friendly countries by disseminating knowledge of India's local supplier networks of Micro, Small and Medium Enterprises (MSMEs); the second is by leveraging its factor cost advantages. Competitive wages and skilled human resources will be key to attracting lead firms in global value chains (GVCs) to set shop in India. Mechanisms such as the Production Led Incentives (PLI) scheme, implemented along with policies to build high-quality industrial infrastructure, are also working in the country's favour, besides its demographic dividend.

At present, India faces three major challenges to domestic components manufacturing: high logistics cost; lack of local supporting industries; and the lack of a skilled workforce. Relocating component manufacturing to India is not an easy task. This is the reason that regional connectivity, industrial infrastructure, and ease of doing business must be addressed in tandem. There is also a need to bridge gaps in access to basic production materials which may not always be locally available. Indeed, access to critical raw materials can be a disabler in securing the ESDM supply chain because the vulnerability comes from two sensitive fronts—a natural endowment disadvantage and a lack of reliable partners with the requisite reserves.

Given the role of the electronics sector in India's economic as well as strategic security, it has taken it upon itself, along with like-minded partners, to make efforts to address the severe vulnerabilities in the supply of critical raw materials that impact the sector. Securing critical minerals is necessary to ensuring India's advancement not only in the ESDM supply chain, but also in defence manufacturing and domains related to green technologies.

Securing the Future

The semiconductors or logic chips used in all consumer electronics and efficient batteries for Electronic Vehicles (EVs) are mainstays of the digital and green transitions, both of which are dependent on the supply of certain critical minerals. The competition to create more efficient semiconductors has become a matter of both economic and national security due to the growing use of these chips in the defence manufacturing sector as well. Critical minerals also have pride of place when calculating the costs of overdependence on specific markets.

The severity of the vulnerability is best explained by projecting the demand for semiconducting transistors. A basic underpinning law of 'smart manufacturing', known as Moore's Law, predicts that the number of semiconductors used per silicon chip will double every two years.[5] The implication of the exponentially increasing demand for transistors is that the requirement for minerals or elements that go into the creation of integrated circuits alone will also be exponentially high. For example, the global demand for magnet rare-earths is expected to reach 466 kilotons by 2035, rising from 170 kilotons in 2022.[6]

In 2023, India identified 30 critical minerals[7] based on their level of economic relevance or supply risk, or a combination of the two.

Table 1: The Most Critical Minerals for India

Mineral/Element	Import Dependence	Use in ESDM Sector***
Antimony		Solar panels, semiconductor production for diodes and infrared detectors.
Beryllium	*	Aerospace and defence materials, nuclear reactors and X-ray windows.
Bismuth		Semiconductors, particularly in lead-free solder alloys.
Cobalt		Lithium-ion battery cathodes for portable electronics.
Copper		Printed circuit boards (PCBs) and wiring for electronics.
Gallium		Semiconductors for high-frequency and microwave applications.
Germanium		Infrared optics and fibre optics.
Graphite	**	Conductive material in lithium-ion battery anodes.
Hafnium		Nuclear reactor control rods, microprocessors and high-temperature ceramics in electronics.
Indium		Indium tin oxide (ITO) coatings for touchscreens and displays.
Lithium		Rechargeable lithium-ion batteries for electronics.
Molybdenum		High-strength alloys for turbines, solar cells, semiconductor manufacturing and as thin-film transistors.

Mineral/Element	Import Dependence	Use in ESDM Sector***
Niobium		High-strength alloys and capacitors for electronic circuits and superconductors.
Nickel		Rechargeable batteries, including nickel-cadmium cells.
PGE		Superconductors, electrical contacts and catalytic converters.
Phosphorous		Phosphors in fluorescent lighting, doping agent in semiconductor materials.
Potash		
REE		EVs, high-strength magnets and lasers
Rhenium		High-temperature alloys, jet engines and electrical contacts.
Silicon		Photovoltaic cells and in integrated circuits (chips) and as a semiconductor material.
Strontium		Power generation for space vehicles, cathode ray tube (CRT) display glass.
Tantalum		Aerospace components, capacitors and high-power resistors in electronics.
Tellurium		Thermoelectric materials for power generation in electronics.
Tin		Soldering and solder alloys for electronic components.
Titanium		Electronic circuit hardware and as a structural material for electronic products.
Tungsten		Electrical contacts and as a filament in light bulbs.
Vanadium		Aerospace communication systems and batteries such as vanadium redox flow batteries.
Zirconium		Nuclear fuel rods and corrosion-resistant alloys.
Selenium		Photovoltaic solar cells and glass manufacturing.
Cadmium		Cadmium telluride photovoltaic solar cells.

Source: Authors' own, using data from the Ministry of Mines, Government of India.[8]

**Red implies 100% import dependence.*

***Yellow implies >50% import dependence.*

****Use in the sector is based on various sources. The list is non-exhaustive.*

We can analyse India's critical mineral dependence from an industry supply chain perspective or the value chain of critical minerals themselves (from extraction to processing for industrial use). Either way, there are a number of layers of complexity to be accounted for.

First is the natural endowment deterrent that is inherent in the supply of critical minerals. There are some minerals which inevitably would require strong regional relations to be built to secure their supply. For example, India has limited reserves of cobalt, while the Democratic Republic of the Congo has the largest reserves of this critical material. Second is the technology deterrent. Having the right and most efficient extraction and processing technology is necessary to ensure effective use of these minerals whose supply is limited and requires years of planning and mining before it can be viably replaced. Inherent in both is a third sensitivity—the extraction and refining process itself may be dependent on methods that are not green and negatively impact the environment. Countries wanting to secure these raw materials must seriously confront the task of limiting the environmental consequences of critical minerals extraction.

Securing the supply of critical minerals is an important step in India's journey of becoming a stable electronics manufacturer. The supply of these minerals, when there is heavy external dependence, may often be unreliable and is a serious long-term vulnerability for the ESDM sector. The risk must be addressed through the pursuit of diverse and reliable partners for the supply of minerals not locally available, and to invest in Research and Development (R&D) to either find close substitutes, or to develop domestic refining technologies for minerals such as gallium and germanium which are by-products of locally available materials.

An Ecosystem Approach to Value Chain Resilience

On-shoring, near-shoring, and friend-shoring have become central to policy discussions around the quest for value chains security. India has been moving towards on-shoring and friend-shoring ESDM supply chains not only due to the sector's criticality for economic growth, but also the potential it presents for employment. In the ESDM ecosystem, crucial challenges in four areas need to be addressed to make the sector more stable.

1. Design. The ESDM and mining sectors both allow 100-percent Foreign Direct Investment (FDI) via the automatic route. However, an important element that is often missed is the access to, and ownership of the technologies that enable efficient production. Intellectual Property (IP) regimes and non-tariff methods to block competition and innovation are part of the larger oligopolistic nature of the sector. Closing the IP gap through partnerships and more R&D spending is a strategic necessity.

2. Skilled Labour. The demographic dividend in India can easily become a demographic burden if not enough attention is given to skilling and re-skilling. Most new production facilities require niche skills and IT knowledge which may not be domestically available. However, the factor cost of labour in India is advantageous for the country when compared to others in the region. Skills training targeted at ESDM and components manufacturing, as well as regular industry assessments on the gaps that need to be filled, must be fundamental to policy.

3. Incentivising Production. India has made great strides in addressing the challenge of incentivising production. The Modified Special Inventive Package Scheme (M-SIPS) and the Electronics Manufacturing Clusters (EMC) scheme, supplemented by the Phased Manufacturing Programme (PMP) and Electronics Development Fund (EDF) have all contributed to making India an attractive investment destination for ESDM manufacturing. The PLI scheme has buoyed these incentives.

4. State-level interventions. Central government policies are being complemented by those initiated in industrial states like Maharashtra, Gujarat, Tamil Nadu, and Karnataka. For instance, Karnataka's Special Incentive Scheme for the ESDM sector, launched in 2020 and in effect up to 2025, provides a top-up to the central PLI. Similar strategies can be regarded as lighthouse policies that could be implemented in other states as well. The imperatives would include conducting extensive gap analyses of the other elements of the ESDM ecosystem and identifying which state could be tasked with specific parts of the value chain.

Policy Action Towards Resilience

This study undertaken by ORF and PwC points to several recommendations in the near and long term that address issues with the components segment, critical minerals, and therefore the full ecosystem of ESDM manufacturing in India.

In the near term, a first step would be to determine what would follow the PLI scheme. To ensure that lead firms shift manufacturing to India and eventually scale up, a mere five-year guarantee is not enough. Encouraging IP partnerships between owners and manufactures in India would be a critical element for long-term planning and building a sustainable manufacturing ecosystem. Addressing non-tariff barriers such as complex customs and licensing rules is also essential. Pursuing Free Trade Agreements (FTAs) with reliable partners for mutual benefit should be actively considered. For instance, there are a number of countries in Africa with whom India can partner to secure raw materials in exchange for technology transfer.

Even as India takes steps to strengthen partnerships with friendly states who are equally interested in securing critical minerals supply chains, in the short term, a part of imports from Chinese manufacturers would have to be allowed as part of a China+1 strategy. The aim should be to find solutions that make the same component sourced from a different partner more cost competitive so that dependence can reduce over time.

In the long term, skill development is an important policy area that demands attention for three reasons. First, the creation of new jobs for a growing population and closing the pay gap in manufacturing will also create demand-side stability for the economy, in general, and the ESDM sector in particular. Second, it is necessary to invest in jobs for the future. Even as redundancies in technology emerge, policy decisions should ensure that current and future workers in the sector are constantly trained and their skills upgraded. Third, skilled human resources are a competitive factor cost for India and will continue to be so for the foreseeable future. Investing in the country's demographic dividend also has socioeconomic benefits as it expands the consumer base.

India would also need to invest in its partners. Geopolitical risks and external shocks will continue to play a role in trade policy regardless of internal efforts. India must carefully choose its partners, at least for the next ten years. These should be partners that are dependable and will grow together, thereby building better bonds in the region for a cohesive development journey.

This essay is a condensed version of a larger collaborative report from ORF and PwC, "The India Opportunity: Developing Resilient Electronics Supply Chains".

Endnotes

1 The White House, "Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth 100-Day Reviews Under Executive Order 14017," 2021, https://www.whitehouse.gov/wp-content/uploads/2021/06/100-day-supply-chain-review-report.pdf

2 *Annual Report 2022-23*, Ministry of Electronics and Information Technology, Government of India, www.meity.gov.in. https://www.meity.gov.in/content/annual-report

3 UN Comtrade, "Trade Data," 2024, https://comtradeplus.un.org/TradeFlow?Frequency=A&Flow s=X&CommodityCodes=851712&Partners=0&Reporters=699&period=all&AggregateBy=none&BreakdownMode=plus

4 "Annual Report 2022-23"

5 Chris Miller, *Chip Wars: The Fight for the World's Most Critical Technology* (Simon and Schuster, 2022).

6 "Five Steps for Solving the Rare-Earth Metals Shortage," BCG, June 27, 2023, https://www.bcg.com/publications/2023/five-steps-for-solving-the-rare-earth-metals-shortage

7 Committee on Identification of Critical Minerals*, Critical Minerals for India,* Ministry of Mines, June 2023, https://mines.gov.in/admin/storage/app/uploads/649d4212cceb01688027666.pdf

8 Committee on Identification of Critical Minerals*,* "Critical Minerals for India"

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