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THE WORLD POLICY FORUM

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Dear friends of the Global Solutions Initiative,

Dennis J. Snower
President, Global Solutions Initiative

Markus Engels
Secretary General, Global Solutions Initiative

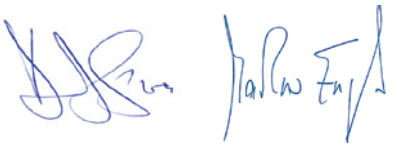
After a long pandemic, we are delighted to once again open our doors and welcome you to the Global Solutions Summit in Berlin. At the heart of the Global Solutions Initiative is our network: spanning the globe, it brings together thought leaders, visionaries, and pioneers – who are all united in their goal of solving global challenges. While digital ties and online events sustain the network throughout the year, our annual in-person gathering is crucial for strengthening the GSI community, equipping it to face today's challenges. Nowadays, acute geopolitical tensions dominate the agenda. Yet it remains just as urgent that we come together to tackle ongoing global problems such climate change, poverty, and hunger.

How can we face these challenges? The articles in the Global Solutions Journal suggest a way forward, serving as inspiration, food for thought, and the intellectual backbone for Summit discussions. The Journal results from a fruitful collaboration between our partners – from think tanks, governments, companies, international organizations, and academic institutions. This is exactly the kind of multistakeholder approach we need now. By fostering an environment where our international network of experts and pragmatists are encouraged to overcome a silo mentality and engage across disciplines, we hope to develop strategies fit for the complex, interdependent demands of the problems we now face. Furthermore, in light of the current and upcoming "Global South" G20 presidencies – India, and later Brazil and South Africa – the Summit can make a real contribution to issues that disproportionately affect these nations.

The articles in this journal span a range of topics – from transforming our notion of economic and social prosperity to promoting food security, the net zero energy transition, and lifelong education, and to achieving sustainable SDG financing. They demonstrate not only the scale and complexity of the issues at hand, but also the potential we have to transform our systems and societies to build a more equal, sustainable, and responsible future. In our work, the path ahead is not always clear. It is clear, however, that we need to act now and, at the same time, develop thoughtful, long-term strategies to cope with these challenges; these articles show that we have the expertise and the will to do both. This way, they provide the ideal launching pad for dynamic and solutions-focused discussions at the Global Solutions Summit.

As always, the entire Global Solutions Initiative team has worked tirelessly to prepare a Summit rich in open and detailed discussion where perspectives from policy, business, academia, and civil society come together. We expect Summit guests to engage in heated debate, challenge and inspire each other as we work hand-in-hand and contribute to the success of the G20 and G7 presidencies. This May we will welcome you to the Summit with open arms – and an open mind.

With hope and confidence,
Dennis and Markus



Global Solutions Journal

Issue 9

FOREWORD

4 Dennis J. Snower and Markus Engels, Global Solutions Initiative

IN FOCUS

14 **2023 to Set the Course for the Second Half of the 2030 Agenda**
Svenja Schulze, Federal Minister, Ministry of Economic Cooperation and Development, Germany

22 **The Voice of G20/T20 India**
The G20 & GDP: The Cost of Uncoupling from Fossil Fuels
Shuva Raha, Tulika Gupta, Council on Energy, Environment and Water (CEEW)

32 **T7 Japan**
Breathing Easier: Examining the Multilateral Effort
Yixin Yao, Shengchi Ma, Davaatseren Narmandakh, Asian Development Bank Institute (ADBI)
Yun Zhou, Shu Tian, Lei Zhang, Asian Development Bank (ADB)

42 **Brazil's G20 2024 Presidency for Climate and Biodiversity**
Beatriz Nofal, Global Solutions Initiative
Ana Cristina Barros, Posaidon Capital

50 **Africa's Moment in Agriculture**
Carla Greenland, Dayalan Govender, Ureshnie Govender, Sheldon Goncalves, PwC South Africa

MULTILATERALISM AND GLOBAL PROBLEM-SOLVING

66 **Towards a Functional, Inclusive Multilateralism**
Markus Engels, Global Solutions Initiative
Christian Kastrop, THE NEW INSTITUTE

74 **A New Economic Globalization to Reshape the World Order**
Huiyao Wang, Mabel Lu Miao, Center for China and Globalization (CCG)

82 **Overcoming Negative Spillover Effects: The G20's Role in Support of Global Sustainability**
Axel Berger, Leonie Marie Droste, Linda Lütkes, Tabea Waltenberg, Sustainable Development Solutions Network Germany (SDSN)

90 **True Multilateralism: The Path to Peace and Development**
Pedro Villagra-Delgado, Argentine Council for International Relations

96 **Tapping the Power of International Think Tank Cooperation**
Dennis Görlich, THE NEW INSTITUTE
Markus Engels, Global Solutions Initiative

104 **Together 2030 – A Multilateral and Multidimensional Strategy for the Global Commons**
Christian Kastrop, Global Solutions Initiative

112 **The Future is Now: A New Urgency for Global Action**
Colin Bradford, Global Solutions Initiative, China-West Dialogue, BROOKINGS

ECONOMY AND SOCIAL WELL-BEING

122 **Measuring Prosperity Ethically**
Dennis J. Snower, Global Solutions Initiative

130 **Connecting Value and Values**
Sonja Haut, Novartis

136 **Inequitable Access and Cyber Threats**
Syed Munir Khasru, The Institute for Policy, Advocacy and Governance (IPAG)
Damien Manuel, Australian Information Security Association (AISA)
Ashutosh Chadha, Microsoft
Abhishek Singh, The University of Adelaide

144 **Value Beyond Accounting – from Sustainability Disclosure to Meaningful Business Steering**
Tobias Maximillian Wildner, Florian Klinkhammer, Dimitrij Euler, Value Balancing Alliance

152 **Everyday Meeting Spaces for Democracy**
Rainald Manthe, Center for Liberal Democracy

158 **Bridging the Lifelong Learning Gap**
Romora Sitorus, Denni Purbasari, The Coordinating Ministry for Economic Affairs of the Republic of Indonesia
Elan Satriawan, The National Team for The Acceleration of Poverty Reduction (TNP2K)
Fajar Hirawan, Centre for Strategic and International Studies Indonesia (CSIS)

166 **Digital Technologies in Education**
Estefania Charvet, Daniela Garcia Villamil, Southern Voice

SUSTAINABLE DEVELOPMENT

178 **Digitalization: A Government-Driven, Infrastructure-First Approach**
Daokryong Yoon, Yaewon Hyun, Seonkyeong Kang, Korean Development Institute (KDI)

188 **Vulnerability and SDG Financing Gaps**
Isabella Massa, Leslie Bermont Diaz, UN Sustainable Development Solutions Network (SDSN)

198 **Policy Recommendations for Digitalization of Agriculture and Sustainability**
Stefan Heinke, Felipe Carvalho, Bayer

204 **Redirecting Digital Public Infrastructure**
Venkatachalam Anbumozhi, Economic Research Institute of ASEAN and East Asia (ERIA)

214 **Digital Government and Smart Cities – Developments in Argentina**
Paul Grainger, University College London (UCL), Cyberspace
Silvia Lanza Castelli, Universidad Siglo21, Universidad Tecnologica Nacional (UTN)

222 **Digitalization and the Future of Work: Perspectives of the Global South**
Ramiro Albrieu, South American Network of Applied Economics, RED SUR

ENVIRONMENTAL SOLUTIONS

234 **Valuing the Invaluable to Meet the Paris Agreement**
Vera Songwe, The Liquidity and Sustainability Facility, Finance for Climate Action, BROOKINGS
David Oliver, Suomi Advisory Group, DevvStream, Greenlines Technology

242 **Coastal Women and Net-Zero Energy Transitions**
Adenike Akinsemolu, University of Birmingham

250 **Closing the Gap of Water Financing**
Teuku Riefky, Riatu Mariatul Qibthiyyah,Institute for Economic and Social Research, University of Indonesia (LPEM FEB UI)
Fauziah Zen, Economic Research Institute of ASEAN and East Asia (ERIA)

260 **Peatland Rewetting as a Nature-Based-Solution**
Hans Joosten, Greifswald University/Greifswald Mire Centre

268 **Climate Change, Resource Degradation and Food Security**
Martin Pineiro, Argentine Council for International Relations (CARI)
Pablo Elverdin, Agustin Tejeda Rodriguez, Group of Producing Countries from the Southern Cone (GPS)

274 **(Un)Paving the Way for Heat Resilience in Cities**
Alejandro Saez Reale, Maria Victoria Boix, Center for Implementation of Public Policies Promoting Equity and Growth (CIPPEC)

282 **The Global Solutions Initiative**

286 **Imprint**

287 **Council for Global Problem-Solving**

In Focus

Page 14

2023 to Set the Course for the Second Half of the 2030 Agenda

Svenja Schulze
Federal Minister, Ministry of Economic Cooperation and Development, Germany

Page 22

The G20 & GDP: The Cost of Uncoupling from Fossil Fuels

Shuva Raha, Tulika Gupta
Council on Energy, Environment and Water (CEEW)

Page 32

Breathing Easier: Examining Multilateral Efforts

Yixin Yao,
Sengchi Ma,
Davaatseren Narmandakh
Asian Development Bank Institute (ADBI)

Lei Zhang,
Shu Tian,
Yun Zhou
Asian Development Bank (ADB)

Page 42

Brazil's G20 Presidency in 2024

Beatriz Nofal
Global Solutions Initiative

Ana Cristina Barros
Posaidon Capital

Page 50

Africa's Moment in Agriculture

Dayalan Govender,
Ureshnie Govender,
Carla Greenland,
Sheldon Goncalves
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2023 to Set the Course for the Second Half of the 2030 Agenda

Policy Brief

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The Federal Ministry for Economic Cooperation and Development (BMZ) is responsible within the federal government for German development policy. The Sustainable Development Goals (SDGs) of the United Nations and the Paris Climate Agreement form the framework for its actions. It commits to fight against poverty and hunger and for healthy people in a healthy environment. The BMZ sees itself as a transformation ministry that promotes the conversion to a sustainable, climate-friendly and nature-friendly economy worldwide and at the same time strengthens peace, freedom and human rights. To this end, it engages in bilateral cooperation with partner countries worldwide and promotes strong multilateralism based on the SDGs.

In 2015 the international community achieved an incredible feat – the member countries of the United Nations (UN) unanimously agreed on a set of 17 Sustainable Development Goals (SDGs). Goals that apply equally for all the nations of the world. A triumph of multilateralism. And a strong signal for global solidarity. Because the 2030 Agenda stands for a fundamental consensus that is unique in the history of the world and that offers – in the words of the UN – a blueprint to achieve a better and more sustainable future for all.

MID-TERM REVIEW OF THE 2030 AGENDA

2023 – half-time for the 2030 Agenda – is a key year, because we will do a mid-term review of the 17 SDGs. There isn't much to celebrate though: there are at least eight SDGs where the international community had made progress on some of the individual targets up to 2019, but that progress has now been reversed[1]. In the period from 2019 to 2021, the number of people in the world suffering from hunger (SDG 2) rose, while life expectancy (SDG 3) fell[2]. Disrupted supply chains are still a burden on the economy (SDG 8) and high energy prices mean that millions of people no longer have access to energy (SDG 7)[3]. Inequality in terms of income, wealth and access to social benefits (SDG 10) has risen and more people live in slums (SDG 11)[4]. The oceans are under threat from overfishing (SDG 14) and peace is threatened by the growing number of conflicts (SDG 16).

In many ways, however, the prospects for success have improved: the international community has at hand significantly more knowledge and experience of implementation. Many countries have developed SDG strategies. And of course some progress has been made: Despite the COVID-19 pandemic, the world has moved a step closer to gender parity when it comes to education for girls. At all three levels of education the gender gap is now less than one percentage point on average worldwide[5]. More people have access to proper sanitation and hygiene[6].

»I see special potential for developing leveraging effects in three spheres: the reform of the World Bank, a feminist development policy and strong social protection systems worldwide.«

The UN High Seas Treaty that was adopted just recently will help protect around 43 per cent of the Earth's surface. In addition, more and more countries now have national plans for climate adaptation and investments in global research and development have increased[7]. Nevertheless, from a global point of view all the SDGs are off track. Despite some good passing we are still not scoring enough goals. And

because there is no extra time, we need to up our accuracy.

I see special potential for developing leveraging effects in three spheres: the reform of the World Bank, a feminist development policy and strong social protection systems worldwide.

THE REFORM OF THE WORLD BANK: SHARED RESPONSIBILITY IN GLOBAL PARTNERSHIPS

Climate change is continuing apace, fuelling natural disasters worldwide, threatening food security and making people sick. The COVID-19 pandemic has exacerbated extreme poverty and in 2020 alone it cost an estimated 255 million people their jobs[8] and also claimed many lives. Climate action and pandemic preparedness as global public goods are not things that individual countries are able to deliver successfully on their own. This is because they are cross-border issues while frequently a disproportionate share of the costs (such as for protecting natural ecosystems as carbon sinks) is borne by one country alone. But the benefits are enjoyed by many countries and people worldwide. This calls for a multilateral approach and that is why, in my role as a World Bank governor, I am advocating for an ambitious reform.

The World Bank has a key role to play in tackling global challenges, because not only is it the biggest development financier, it also has the goal of promoting shared prosperity. In times of global crises, this requires a reform of the Bank's business model in order to explicitly include the protection of global public goods in the World Bank's mission statement. Incentive structures need to be improved: investing in the protection of global public goods needs to be made more attractive for borrowing countries. In the same way, there must also be incentives for regional and international cooperation. At the analytical level, the overall economic costs – by which I mean both the private costs and the social costs – need to be taken into account when investment projects are evaluated. In the case of investments in mobility infrastructure, for instance, these costs also include aspects like putting a price on CO_2 emissions or the health costs of air pollution.

It is important for me that protecting global public goods does not take precedence over reducing poverty or any of the other SDGs. What we need to do is step up our overall commitment – both in terms of results orientation and in terms of funding. That is why I am advocating that the World Bank reform should entail a broadening of the Bank's funding flexibility. By making better use of its available capital, it can increase its lending capacities – and still maintain its AAA rating. I am confident that, with a reform of the World Bank, we will be able to give more impetus to the entire 2030 Agenda starting this year.

A FEMINIST DEVELOPMENT POLICY: RIGHTS, RESOURCES AND REPRESENTATION

Of course, all 17 SDGs are closely interconnected. Staying on the topic of climate action: a just environmental transformation (SDGs 7, 11 and 12) will stop existing inequalities from becoming worse (SDGs 8 and 10). Integrated approaches not only recognise that, they also actively use those synergies. That is what the German development ministry envisions with its feminist development policy. A feminist development policy has the aim of tackling the structural causes of inequality. We want to achieve gender equality on all levels – through rights, resources and representation. Equal rights are the foundation for gender equality and should be a matter of course. But in fact, women worldwide have on average only three quarters of the legal rights that men enjoy[9]. In some countries, for example, women are not permitted to own land or manage their own property. The inequality in how women are treated under the law then means that women do not have equal access to resources – such as wealth, education or knowledge. And precisely because they have to manage with fewer resources, women are still disproportionately more often affected by poverty, they still do the bigger share of unpaid domestic and care work, and they are more likely to work in precarious employment without social protection[10].

But what can women (and men) do to change this situation? Apart from rights and resources, women also need more representation in order to be able to take part in decision-making processes. The aim of our feminist development policy is to change power structures – because power is empowering. It empowers change to make equal participation possible at all levels. And that moves societies forward as a whole. Because a feminist development policy not only promotes gender equality (SDG 5) and reduces inequalities (SDG 10), it also combats poverty (SDG 1) and hunger (SDG 2), contributes to more inclusive economic growth (SDG 8) and has enormous potential for promoting more peaceful societies (SDG 16).

In German development policy our aim therefore is that, by 2025, we will be using 93 percent of our new project funds for gender equality. Eight per cent is to be channelled into projects that have gender equality as their main objective. These are projects, for example, which are about equal access to vocational training, or to sexual and reproductive rights and to health. The remaining 85 percent will be used for projects that have gender equality as a secondary objective – which means projects that contribute to gender equality. In Bangladesh, for example, Germany is working with project partners from the private sector, the workforce, civil society and the government in the project "Promotion of Social and Environmental Standards in Industry." In collaboration with the International Labour Organization (ILO), government inspectors are being trained to carry out factory inspections. The female workforce is being reached via women's cafés, where they learn about their rights and are encouraged to demand those rights. Overall, the project is about realising elementary economic and social human rights. And since the workforce in the textiles and garment sector is overwhelmingly female,

»The aim of our feminist development policy is to change power structures – because power is empowering.«

this means that we are simultaneously promoting the equality of women.

SOCIAL PROTECTION LEAVES NO ONE BEHIND

The goal of the German development policy is to leave no one behind. And this principle has been put to a hard test by the outbreak of the COVID-19 pandemic and by Russia's war of aggression against Ukraine. Because the poorest people are the ones who suffer the most from the impacts of crises and wars. They have the least possibility of protecting themselves from the consequences of such events. Social protection strengthens people's resilience to crises and is able to cushion both the economic and the social impacts in the long-term.

This is due to the fact that social protection not only provides quick support in an emergency – for instance with money or in-kind support – but also has an impact that is above all long term. Social protection is one of the most successful ways to tackle poverty and hunger – because it reaches even the poorest people. And people who are protected against poverty and hunger generally live healthier and more productive lives. Long-term studies show that social protection is a good investment in economic terms. Children from families who receive conditional cash transfers, for example, go to school for longer and are better nourished[11]. In rural South Africa, families who had access to the Child Support Grant are still investing more money in farming and in raising poultry years later[12]. This means that social protection contributes towards helping people escape poverty traps.

»It is important for me that protecting global public goods does not take precedence over reducing poverty or any of the other SDGs. What we need to do is step up our overall commitment.«

Stable social protection systems are also one of the most effective instruments for reducing inequalities. And societies with less inequality are not just less prone to crises. They also enable disadvantaged people to have better access to education and health, and to participate more in political and economic life. Surveys carried out in Latin America and Africa show that people in societies with lower inequality trust one another and public institutions more, and they are more inclined to support redistributive policies[13].

GLOBAL PARTNERSHIPS FOR SOCIAL PROTECTION

And yet, although all these positive impacts are empirically proven and are more than plausible, over half of the global population currently has no access to social protection. Four billion people are on their own when it comes to individual life risks such as illness and unemployment, motherhood, disability or work accidents. They are unable to claim child benefit, compensation for loss of earnings or old-age pensions. In the case of Africa, as many as 83% of people living there have no social protection.

The German Development Ministry is therefore promoting the establishment and expansion of social protection systems both with its partner countries and at the multilateral level. Following an initiative started by the German government, the G7 has set itself the goal of enabling access to social protection for one billion more people worldwide by 2025. Together with the World Bank, the International Labour Organization (ILO) and other partners, Germany is therefore supporting the UN Global Accelerator on Jobs and Social Protection for Just Transitions. With a group of pathfinder countries, the Accelerator is piloting new approaches with a view to create decent work and enhance access to social protection for all. Within the framework of the German development cooperation with partner countries in the Global South, we are also supporting structural reforms aimed at firmly establishing social protection systems – including the funding for them – as part of the institutional landscape. Technical aspects such as household targeting or setting up inter-agency social registers are just as important here as the political negotiating process for issues like financing. And safeguarding against collective risks – natural disasters and pandemics – is also becoming more and more important.

For example, for over ten years my Ministry has been supporting the efforts of the government in Cambodia to set up a nationwide social protection system. A core component of this is IDPoor, which is an inter-agency poverty register; it is used to determine which social benefits families can claim and thus also facilitates a rapid response in the event of a crisis. In May 2020, after the COVID-19 pandemic hit, this meant that 50,000 people at risk of impoverishment could be identified and saved from sliding into poverty. Meanwhile, in Cambodia millions of people at risk of impoverishment now have access to basic social protection, health services and other social benefits. This means that they are less often forced to get into debt, are able to eat more regularly and can let their children go to school for longer. Similar successes have been achieved in countries such as Malawi, Nepal or India, with which Germany is working together in the field of social protection. These impacts make it clear that social protection

»Societies with less inequality are not just less prone to crises. They also enable disadvantaged people to have better access to education and health, and to participate more in political and economic life.«

does not just protect people from poverty (SDG 1) and hunger (SDG 2). It effectively reduces inequalities (SDG 10), promotes education (SDG 4) and health (SDG 3) – particularly for girls and women (SDG 5) – and ultimately contributes to more productive economies (SDG 8).

2023 TO SET COURSE FOR THE SECOND HALF OF 2030 AGENDA

These positive interactions bring me back to my starting point. Although as a global community we are a long way off from achieving the 17 Sustainable Development Goals, in 2023 we are standing at a crossroad, and we need to set a course that will allow us to hit our targets more accurately in the second half. I am certain we can do that with the right priorities. We therefore need an ambitious reform of the World Bank aimed at protecting global public goods. I am advocating for a feminist development policy to strengthen the rights, resources and representation of women. And I support resilient social protection. With these tactics the German development policy is lining up for the second half of the 2030 Agenda. Unlike a football game, we are not playing against our opponents, we are playing with our partners around the world. And that is why a good assistance means a better chance of scoring goals for all.

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The G20 & GDP: The Cost of Uncoupling from Fossil Fuels

Research Paper

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The world needs to consciously uncouple from fossil fuels to move toward a low-carbon future. But global oil and gas industry revenues touched a record high of USD 4 trillion in 2022 (Reuters, 2023), as major economies started recovering from the shock of the COVID-19 pandemic. Much of the intended transition away from fossil fuels depends on G20 countries (the G20), which account for 80% of global GDP, and collectively consume 85% of the world's coal, oil and natural gas annually (BP, 2022). Many of these countries also trade fossil fuels for revenue and balance of payments.

At the first meeting of the Energy Transition Working Group (ETWG) of India's G20 presidency in February 2023, the G20 agreed on the need to prioritize energy security and diversify supply chains, underscoring that transition pathways should depend on each country's "energy base and potential." The G20 concurred that fossil fuels would "continue to be used more or less in most of the countries in the coming 15 to 20 years," until cleaner energy sources like renewables reliably and affordably replace them (PIB, 2023).

This pragmatic view has merit. Fossil fuels are ubiquitous because they are easily accessible, cheap and versatile. Abruptly ceasing fossil fuel consumption and production would disrupt industrial output, transportation, fossil fuel tax-funded social programs, and millions of livelihoods dependent on these sectors in most countries. It would devastate painstaking gains in modern energy access in many developing and least developed countries, depriving billions of people of basic developmental needs.

Beyond providing energy, fossil fuels are integral to a plethora of non-combustion derivatives, including petroleum products, lubricants and solvents, construction materials, chemicals, and fertilizers. A barrel of oil shipped worldwide can be used to fuel a medium-sized car for 450 kilometers, or generate 70 kWh of electricity, or pave tar roads, or make sundry items like skin care products, birthday candles, plastic bags, and synthetic clothing (Desjardines, 2016) – at predictable prices.

A disorderly decoupling from fossil fuels could, therefore, deflate even developed economies that depend on their use and trade, and impact nuanced geopolitical equations.

However, the imperative to lower emissions by reducing fossil fuel use is also urgent. The March 2023 update of the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report reiterates the need to stop burning fossil fuels to limit global warming to 1.5°C (IPCC, 2023). One pathway calls for reductions in the global use of coal by 95%, oil by 60%, and gas by 45%, by 2050 – relying heavily on abatement technologies like carbon capture and storage (CCS), which are yet to demonstrate commercial viability at scale, to keep the reduction trajectory somewhat gentle.

The International Energy Agency (IEA) echoes this urgency. It projects that for the world to theoretically achieve net zero emissions (NZE) by 2050, the share of fossil fuels must drop to two-thirds of the global energy mix, and new low emission energy sources[1] equivalent to the entire energy supply added worldwide in the last 15 years be added, by 2030 (IEA, 2022).

The G20, with the exception of Mexico, have announced net zero goals, spread around the mid-century mark. These countries have options to reduce their fossil fuel footprints: retire existing plants and infrastructure or retrofit them with technologies to reduce emissions, avoid new projects, and scale up renewables like solar and wind. These measures, however, are limited to energy source replacement, and not removing fossil fuels from the economic structures of these countries.

It is therefore important to track how the G20 are managing their economic transformations towards a low-carbon future.

A SECURE ECONOMY, OR NET ZERO? IT'S COMPLICATED.

A global transition to net zero could cost up to USD 9.2 trillion annually in just physical asset creation, adding up to USD 275 trillion by 2050 (McKinsey & Co., 2022). This entails an annual reorientation of 8% of global GDP (USD 97 trillion even in the pandemic-impacted year 2021 (World Bank, 2021)) toward decarbonization efforts – more than the 2022 US federal budget (US Treasury, 2022).

While most of the G20 have defined their net zero years, little light has been shed on how these mega-economies intend to manage the total effort and cost of the transition, including associated financing, infrastructure creation, technology development and deployment, and socioeconomic transformations.

Even if we only take the energy transition component of net zero pathways, the scale, complexity and cost of the task appears Herculean for most G20 economies, which are defined by and bound to abundant oil, gas, and coal supplies, and meet over 80% (and in cases like Saudi Arabia and South Africa, over 90%) of their energy needs from fossil fuels (Figure 1).

Many G20 countries also depend heavily on fossil fuel revenues to finance their economies, balance trade deficits, and manage currency and inflation rates. This includes countries without substantial reserves, such as Australia and India, which usually import, refine, and export fossil fuels for profit.

For instance, oil rents contribute only 1.1% to Canada's GDP but comprise over a quarter of its exports. Even if Canada absorbs the cost of ceasing oil production, estimated at USD 53 billion in decommissioning and environmental compliance costs (Mawji, 2022), it would need to heavily invest in securing new commodities or products to make up for the export shortfall.

Stranded and decommissioned fossil fuel assets are also a major socioeconomic challenge. Australia could incur USD 39 billion in abandonment expenses by decommissioning about 65 offshore platforms and aged infrastructure and ceasing production at seven floating facilities by 2026 (Thomas & Milner, 2022). India needs USD 32–48 billion to decommission 130 coal plants (Singh & Shar-

»It is important to track the G20's economic transformations – beyond energy transitions – towards a low-carbon future.«

Figure 1: Total primary energy consumption of the G20 in 2021 (TWh).
Source: CEEW analysis; (BP, 2022)

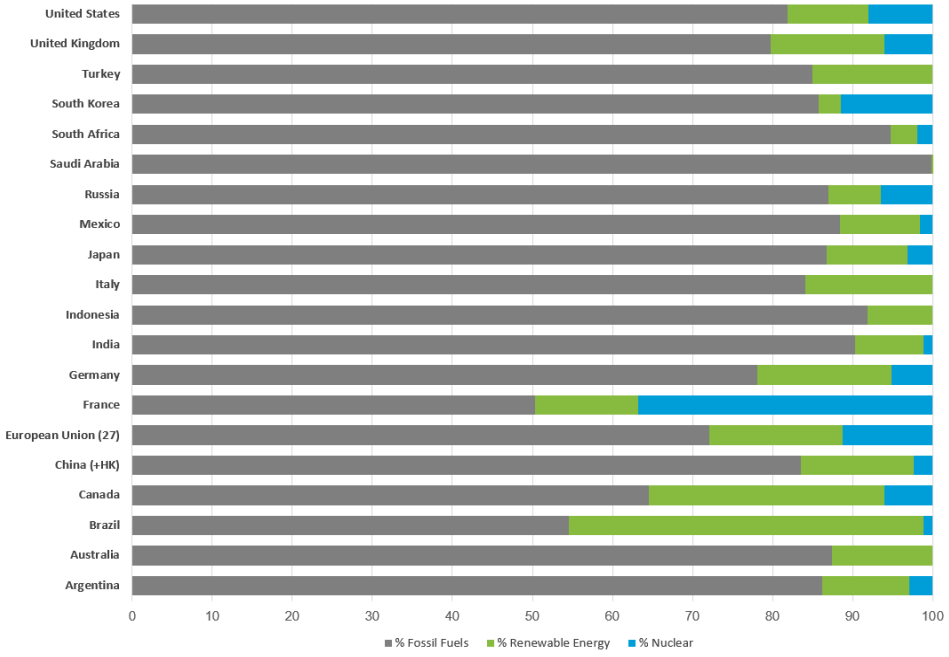

Figure 2: Fossil fuel economics in 19 G20 countries, excluding the EU.
Source: (World Bank, 2021)

Country	Oil rents as % GDP 2021	Fuel export share % 2020
Argentina	1.1	3.0
Australia	**0.3**	**28.0**
Brazil	**1.8**	**14.0**
Canada	**1.1**	**26.0**
China (+HK)	0.3	1.0
France	0.0	3.0
Germany	0.0	3.0
India	**0.0**	**14.0**
Indonesia	**0.2**	**19.0**
Italy	0.1	3.0
Japan	0.0	1.0
Mexico	1.4	6.0
Russia	**6.1**	**43.0**
Saudi Arabia	**17.7**	**77.0**
South Africa	0.0	9.0
South Korea	0.0	6.0
Türkiye	0.1	4.0
UK	0.3	8.0
USA	**0.2**	**16.0**

»The current G20 presidency being led by a troika of major developing economies presents a unique opportunity.«

ma, 2021), while Indonesia will need USD 37 billion to retire 118 coal units by 2040 (Garg, 2022).

A panicked transition to a low-carbon world by attempting to phase out fossil fuels without establishing alternate sources of incomes could also cost upstream oil and gas investors profits of USD 1.4 trillion. OECD-based investors could be hit with 57% of this loss, with their financial markets and governments, including pension funds, owning USD 385 billion and USD 484 billion, respectively, of these profits (Semieniuk, et al., 2022).

This sheer volume of investment is likely to leave governments, companies and individuals, including highly vulnerable retirees, locked into a fossil fuel-based future for now. While some studies peg returns on investment in renewables as higher compared to fossil fuels, long-term data is not yet available to prove a one-to-one replacement equivalence, especially of the various value chains.

ARE TAXES INCENTIVES? THE FISCAL CONUNDRUM OF FOSSIL FUELS

An initial thought was to reduce – and where possible, eliminate – inefficient fossil fuel subsidies since they interfere with real energy prices by artificially lowering fossil fuel costs and making clean energy comparably more expensive. During the 2009 Pittsburgh Summit, the G20 agreed to rationalize, and eventually phase out, inefficient fossil fuel subsidies and redirect the freed funds toward social support through voluntary self-reporting, administered by a Review Panel and the OECD.

However, this has not yielded the envisaged results. Between 2017 and 2019, the G20 spent over half a trillion dollars (USD 584 billion) on average annually in "direct budgetary transfers and tax expenditure, price support, public finance, and state-owned enterprise investment to support production and consumption of fossil fuels at home and abroad," almost half of which was allocated to oil and gas production. This, incidentally, was only a 9% average reduction over the 2014-2016 average, with about a third of the decrease coming from low oil prices (Geddes, et al., 2020).

Also, this reduction was not uniform across the G20, as Australia, Canada, China, France, India, Russia, and South Africa increased their support for fossil fuels (ibid). And after the COVID-19 pandemic hit in 2020, national recovery packages have channeled billions of dollars into oil and gas subsidies and tax breaks to maintain industrial competitiveness and shore up flagging economic growth (OECD, 2021).

The International Monetary Fund (IMF) theorizes that transitioning into a low-carbon future could be orderly and economically viable, and even growth-friendly, if countries adopt two levers – carbon pricing and green supply policies – as avenues to reduce the net economic impact of net zero policies to near zero (Jaumotte, Liu, & McKibbin, 2021).

IMF's projections rely on gradually phasing in carbon pricing[2] and offsetting the burden with public investment in clean energy infrastructure[3] financed by government debt. It mathematically offsets the GDP lost due to the carbon tax-induced increase in cost of living and decrease in economic growth with the health co-benefits of lower emissions, propped up by cash transfers to support households.

Reality, however, rarely aligns with statistical modelling. Three key questions need answers:

1. Carbon pricing lacks broad public or political support even in advanced economies (Nowlin, Gupta, & Ripberger, 2020). Oil price hikes, as a fallout of the Russia-Ukraine conflict, led to protests and civil unrest in 92 countries in 2022 (Gebreab, Naadi, Sirilal, & Dale, 2022). Would the G20, mostly electoral democracies with stressed economies, further escalate the living costs of their citizenry?
2. Incremental steps are unlikely to lead to deep decarbonization. Sweden, an early adopter of carbon taxes in 1991, saw only a 6% drop in road transport emissions over 15 years (Andersson, 2019). In fact, gasoline and diesel vehicle registrations in Sweden have grown in recent years (Trafikanalys, 2017). Can carbon taxes, implemented incrementally over three decades, meaningfully contribute to the race to restrain global warming to 1.5°C?
3. Carbon taxes without directed expenditure and subsidy reform achieve little. India's 2010 coal cess earmarked its proceeds to increase renewables, but fossil fuel subsidies held firm at an annual USD 2.3 billion. In 2017, the coal cess was subsumed into the Goods and Services Tax and repurposed for broader developmental needs (IISD, 2018). At the global level, the Green Climate Fund (GCF) raised USD 10.3 billion to fund climate action in developing countries, but it is unclear if and how these funds were deployed. Why should the G20 bank on a mechanism without proven efficacy?

Carbon pricing could be tactically used to complement a portfolio of policies, including subsidizing and incentivizing technology and systems innovation, development and even phase-outs (Tvinnereim & Mehling, 2018). However, its influence on eliminating fossil fuels on time or in full is minuscule at best.

»Between 2017 and 2019, the G20 spent over half a trillion dollars on average annually to support fossil fuels.«

ALTERNATIVES TO FOSSIL FUELS? MOVING CLEAN TECHNOLOGIES FROM MINDS TO MARKETS

Transitioning from fossil fuels hinges heavily on technology. Limited grid access and unreliable power supply in develop-

»The world can only prevent warming to 1.5°C by reducing emissions by 43% by 2030.«

ing countries force people to burn coal and biomass, and use diesel generators. Despite reductions in the renewable energy generation costs, the sector remains constrained by its sources (amount and duration of sunshine, wind speeds, etc.), intermittency, and expensive storage technologies. Nuclear power is mired in political logjams and feedstock scarcity. Less than a dozen countries control critical minerals supply and processing capacities.

Industrial and transportation transformations need special attention. Energy-intensive and hard-to-abate sectors like fertilizers, chemicals, and iron and steel need cleaner alternatives, but with only 0.5 GW global electrolyser capacity (IEA, 2022), green hydrogen is still experimental. There is also no way yet to wean aviation and shipping off fossil fuels. Commercial shipping carries 90% of global trade, and most ships use heavy fuel oil, which is 30% cheaper than distillate marine fuels, and belch out sulfur oxide and other noxious emissions (Marine Insight, 2019).

Technologies are expensive to research and develop, and are aggressively guarded using legislation, patents and intellectual property rights. Technologies also must be customized to geographies, uses and users. At the February meeting of the ETWG, the G20 strongly favored a citizen-centric energy transition, rather than a purely technocratic one, building on affordable energy access for all and increased industrial energy efficiency (PIB, 2023). Transition scenarios also need to include the high costs of technology and capacity building.

COULD A STRATEGIC ECONOMIC GROUPING JUMPSTART THE ENERGY TRANSITION? THE G20 ADVANTAGE

The G20 comprises a wide range of socio-political structures, strategic interests, resource capacities and developmental journeys, with myriad opportunities and challenges. But they all face grave climate-related economic and humanitarian risks as the world hurtles toward 3.2°C warming (IPCC, 2023), which could slash global GDP by 18% by 2050. While Brazil, India and Indonesia are among the most climate vulnerable G20 countries (Swiss Re, 2021a), the USA, UK and Canada could also lose 10% – and China, almost a quarter – of their GDPs (Swiss Re, 2021b).

The G20 has evolved beyond its economic agenda to address emerging intricate issues like agriculture, energy, environment, development, digitalization, education, health, culture, tourism and security. The interlinkages of global energy, commodity and services value chains need the G20 to strategically – and sensitively – collaborate to support each other's energy transitions and economic transformations, respecting national circumstances and priorities.

The G20 commands immense resources, holding most of the world's renewable energy and green hydrogen patents (Nurton, 2020) (IRENA, 2022). It also has 64% of the vote share in Bretton Woods Institutions (IBRD, 2023) (IMF, 2023), which, if evolved to cater to modern financing needs and complexities, could be key to the global economic transformation.

Successful G20 summits have been led by plurilateral leadership (Bradford, 2022), with troika countries and their allies pooling ideas and efforts to drive ambitious agendas. The current G20 presidency being led by a troika of major developing economies – Indonesia, India and Brazil, followed by South Africa in 2025 – presents a unique opportunity to understand the nuances of transforming the lives and livelihoods of billions of people, often with meagre resources, by meeting their budding aspirations while transitioning their energy systems to lower the world's carbon footprint.

Indonesia's G20 presidency developed the decade-long Bali Energy Transitions Roadmap to accelerate the shift away from fossil fuels by prioritizing energy access, technology and finance (G20 Energy Ministers, 2022), but could not formalize it in a communiqué (Nangoy & Christina, 2022). The Indian presidency's development-oriented, climate-aware agenda anchored in the Sanskrit verse "Vasudhaiva Kutumbakam" – the world is one family – aspires to reinvigorate multilateralism, while its vision of LiFE: "Lifestyles for Environment" focuses on sustainable production and consumption and green development.

Today, the world can only prevent warming to 1.5°C by reducing emissions by 43% by 2030 (IPCC, 2023). Yet, the most compelling evidence of an abrupt drop in fossil fuel demand – the economically and socially devastating COVID-19 lockdowns – reduced emissions by only 12% in the US, 11% in the EU, 13% in the UK, and 9% in India (Jackson, 2020). The monetary, social and political risks and costs of trying achieve climate goals by arbitrarily uncoupling from fossil fuels, without firmly establishing comparable global-scale alternatives – not only of energy systems but economic structures – must be comprehensively and pragmatically evaluated.

Foresighted domestic planning and global collaboration are essential to uncouple from fossil fuels in practical and socioeconomically viable ways. The G20 must re-evaluate their energy resources, markets and revenues to adopt a structured, long-term perspective to predict energy market shifts and climate risks to improve decision-making; plan unique transition pathways based on national circumstances and global imperatives; and partner with likeminded countries and organizations to help close resource, technology, finance and capacity gaps.

»The future of billions of people is at stake. The future is now.«

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[1] 125 exajoules, including bioenergy, solar, wind, and fossil fuels with CCUS, for a 50% reduction in their emissions intensity.

[2] Assuming that carbon pricing will trigger and additional 80% reduction in emissions reductions after stimulus measures are implemented.

[3] Energy sources (primarily solar and wind, with some support for nuclear power) and sectors (transportation and services).

Breathing Easier: Examining Multilateral Efforts

Research Paper

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The Asian Development Bank Institute (ADBI) is the Tokyo-based think tank of the Asian Development Bank. ADBI provides demand-driven policy research, capacity building and training, and outreach to help developing countries in Asia and the Pacific practically address sustainability challenges, accelerate socioeconomic change, and realize more robust, inclusive, and sustainable growth.

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ABSTRACT

Air pollution has severe economic and social consequences, especially in developing economies. Air pollution in the People's Republic of China (PRC) has resulted in a serious public health crisis and massive economic losses in the early 2010s. As key players in addressing air pollution, micro, small and medium-sized enterprises (MSMEs) are usually faced with challenges in accessing affordable finance for green transformation. The major difficulties were identified as insufficient public financial resources, lack of credit history, and shortage of green project experience. This study analyzes the government policies and a PRC-Asian Development Bank (ADB) cooperation investment program to show how enabling policies, flexible program design, tailor-made financing modality, advanced technologies, and knowledge support can help in combating air pollution and mitigating climate change, providing references, experiences, and lessons beneficial for developing countries.

BACKGROUND

Nowadays, the expansion of various industries, including manufacturing, construction, building, and transportation, often drives rapid economic growth and industrialization in developing countries. These industries are critical in generating job opportunities and attracting people to urban areas, where they can benefit from better infrastructure, healthcare, and education. However, the process of urbanization and industrialization is usually accompanied by significant negative impacts on air quality. The concentration of pollutants in the air, including $PM_{2.5}$, NO_x, SO_2, and O_3, can have severe consequences for public health and

»PRC was one of the countries with higher levels of ambient air pollution among the G20 peers in the early 2010s.«

the environment. According to The Global Burden of Disease Study 2019, air pollution remains one of the leading risk factors for attributable disability-adjusted life years for individuals (Murray et al., 2020). From an environmental perspective, air pollution and climate change are two sides of the same coin and must be addressed together as they share overlapping causes and effects (UNEP, 2019).

PRC was one of the countries with higher levels of ambient air pollution among the G20 peers in the early 2010s. In 2013, PRC experienced a severe air pollution crisis, often called the "airpocalypse." The levels of $PM_{2.5}$[1] soared to hazardous levels,[2] which led to school closures, flight cancellations, warnings to avoid outdoor activities, and a spike in respiratory disease cases (Ji et al., 2014). The cost of air pollution in China was estimated to be around USD 1.4 trillion in 2013 (OECD, 2014). Since then, the PRC has implemented several measures to improve air quality, significantly decreasing air pollution at the national and local level. The government set ambitious targets to reduce air pollution in the Comprehensive Action Plan on Air Pollution Prevention and Control launched in 2013,[3] enforcing more stringent emissions standards for vehicles and factories, increasing investment in renewable energy, and closing some of the most polluting factories. In addition, the government promoted public transport, implemented measures to reduce coal consumption, and encouraged the use of renewable/cleaner fuels. The government reiterated its commitments to improving air quality in the national 13th Five-Year Plan (2016-2020) with mandatory targets of reducing the concentration of $PM_{2.5}$ in 338 cities by 18% and increasing the ratio of good air quality days from 76.7% in 2015 to 80% in 2020. In June 2018, the government issued a Three-Year Action Plan on Winning the Blue-Sky War (the "Action Plan"), specifically aiming to reduce the total air pollution in the Beijing-Tianjin-Hebei (BTH) region and its surrounding areas. Following the Action Plan, many local governments adopted air pollution reduction strategies in 2013. For instance, Hebei and Shandong governments launched provincial air pollution prevention and control plans (Heibnews.cn, 2013; Shandong Provincial Government, 2013) and committed to a 25% and 35% reduction in $PM_{2.5}$ concentrations by 2017, respectively. The major control regulations in China since 2013 can be found in Figure 1 (Lu et al., 2020). The unprecedented determination in policy reforms has contributed to the rapid decrease in air pollution levels, as shown in Figure 2 (Health Effects Institute, 2019).

Moreover, environmental policies have evolved with the changing context of air quality improvement. For example, previously, policies were mainly to decrease the dominant source of $PM_{2.5}$ from primary emissions (e.g., industrial production, vehicle exhaust and biomass combustion), but now the dominant source has shifted to secondary pollutants formed in the atmosphere through chemical reactions of precursor pollutants and transported over long distances. Responding to this change, air pollution policies are now expanding in scope, such as the inclusion of Yangtze River Delta (YRD) beyond the greater BTH region.

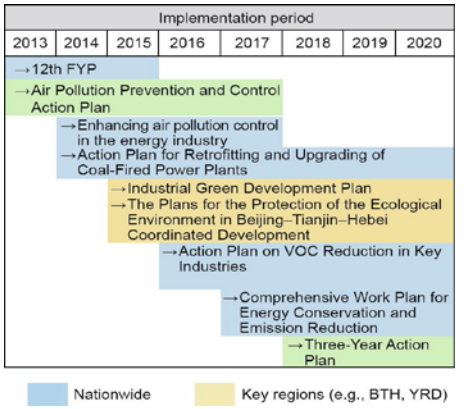
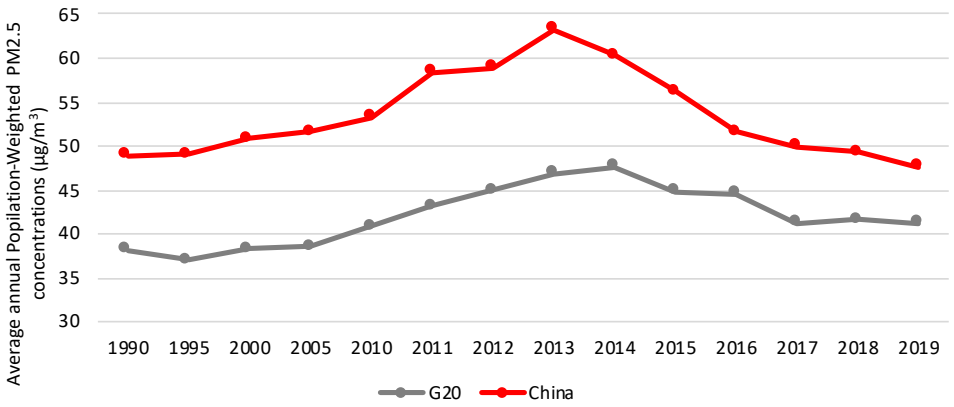


Figure 1. Summary of the major control regulations in China since 2013.
Source: Lu, X., Zhang, et al. (2020). Progress of air pollution control in China and its challenges and opportunities in the ecological civilization era. Engineering, 6(12), 1423-1431.

CHALLENGES

MSMEs are at the vanguard of this Blue-Sky Protection Action Plan with its two-sided significance. In PRC, MSMEs play a dominant role in the national economy, accounting for over 60% of GDP, 50% of tax and 79% of job creation (OCED, 2020). Unfortunately, MSMEs were reported responsible for approximately 60% of industrial pollution (Yao, 2012) in the BTH region, the forefront of combating air pollution. Despite their significant potential role in promoting the green transition, in

Figure 2. Average Annual Population-Weighted $PM_{2.5}$ concentrations in China From 1990 to 2019.
Source: Health Effects Institute (2019). State of Global Air 2019, www.stateofglobalair.org.



2013, MSMEs received only 22% of total bank loans (The Central People's Government of the Republic of China, 2013).

MSMEs face major challenges in accessing affordable green financing:

- Insufficient financing sources in the market
- MSMEs' lack of credit history or collateral
- Absence of experience in conducting green projects

To help MSMEs overcome the challenges above, The China Banking Regulatory Commission (CBRC) issued Green Credit Guidelines to urge the banking institutions to adopt green credit and sustainable finance management in 2012 (The Green Growth Knowledge Partnership). The effort was further strengthened in 2014 by introducing the Green Credit Key Performance Indicators for monitoring and evaluation. However, without a good credit history, it is difficult for commercial banks to control their risks and invest in MSMEs. Policy actions alone will not solve all problems. As a result, seeking international cooperation, which can bring holistic support, could be a promising approach to better MSMEs' involvement in tackling air pollution.

In the PRC government's 13th Five-Year Plan, approximately CNY 6.6 trillion in investment was planned for low-carbon and clean energy targets (ADB, 2016). The vast demand for financing can never be satisfied by public resources alone. The State Council of the PRC, the People's Bank of China, the China Banking and Insurance Regulatory, and other government agencies have issued several guidance notes and notices on enhancing financial services and credit support for MSMEs throughout the years (The Central People's Government of the Republic of China, 2013, 2018, 2022). One major challenge faced by the government is to design innovative financing mechanisms that can efficiently use public resources by leveraging private capital. This requires a deep understanding of factors that constrain private capital participation in green MSMEs.

SOLUTIONS

In 2015, the government of the PRC requested ADB's financial assistance during an ADB country programming mission (ADB, 2015), resulting in the establishment of a cluster lending program. As a leading innovative finance project in the cluster, the Green Financing Platform (GFP) Project was primarily aimed at mobilizing local capital for air quality improvement in the greater BTH region[4] by leveraging ADB's loan proceeds, which was further expanded to the Yangtze River Delta (YRD) region.[5] The GFP initiative was the first of its kind, dedicated to the greater BTH region and targeted emission reduction from MSMEs in sectors such as energy, transport, urban and agriculture.

Main contributions of GFP:

- Sustained policy reforms, flexible program design for better project leverage effect
- Tailored loan modality, innovations in credit enhancement
- Strengthened capacity, knowledge transfer for sustainable operations

To support the government's policy on strengthening financial services access for MSMEs and wide-area-based actions, ADB launched a GFP scale-up project in 2020 (footnote 5. The two projects in total will leverage a green financial investment of about CNY 38 billion over 15 years through EUR 585 million (about CNY 4.32 billion) ADB loans. By July 2022, ADB's loan proceeds were fully disbursed CNY 2.79 billion and supported the 47 investment subprojects and 795 guarantee subprojects with a total guarantee of CNY 1.19 billion. The aforementioned 842 subprojects have driven social investment of about CNY 11.19 billion in total. Among them, a total of 792 MSME projects have been supported, providing a total of CNY 643 million in financial support.

The GFP project adopted the financial intermediation loan modality, which is the most suitable instrument that secures broad coverage when aggregating diverse projects from various sectors. The state-owned China National Investment and Guaranty Corporation (I&G) was selected as the executing agency to set up the GFP. During the implementation, ADB's design and monitoring framework, comprising comprehensive performance indicators of co-financing scale, pollution reduction goals, and the number of low-emission projects funded, was the key driver motivating I&G to proactively facilitate, choose subprojects and carry out innovations for air quality improvement. On the one hand, by fully using I&G's strength, the platform can provide credit enhancement to all stakeholders in qualified low-emission projects, largely addressing MSMEs' chronic issue of lack of credit. Customized credit enhancement was adopted to accommodate different subprojects. In a traditional fashion of credit enhancement, I&G can provide credit guarantees and introduce financing sources from commercial banks, funds, and trusts. The customized credit enhancement supports various novel financial instruments such as green bonds, green notes and green Asset-Backed Security (ABS), significantly lowering the financing cost for MSMEs. On the other hand, the GFP project introduced a fintech-based online financial platform for MSMEs and individual finance by using real-time big data, artificial intelligence and machine learning. This significantly reduced transaction costs and challenges for MSMEs and individual finance by covering credit application, appraisal and monitoring, thus enhancing finance inclusiveness. The GFP project supported rural household rooftop solar photovoltaic subprojects, through provision of credit guarantees and the adoption of a fintech-based online platform, to tackle the challenges of farmers' lacking credit history and the dispersive geographical locations of users. The subproject is expected to help 3,000 households build distributed photovoltaic power plants on their own rooftops and the total amount of photovoltaic power generation will be about 1.6 billion kWh, reducing CO_2 emissions by 1.6 million tons (I&G, 2022).

»MSMEs were reported responsible for approximately 60% of industrial pollution.«

To effectively promote green financing, it is imperative to not only offer suitable financial products, but also to strengthen the capacity of financial institutions and MSME loaners. ADB has implemented several capacity-building initiatives, which have been instrumental in the success of the project. By providing financial intermediaries with the necessary tools and knowledge, they can effectively manage and execute green and pollution-reduction projects, resulting in sustainable operations. Additionally, capacity-building efforts can help MSMEs overcome financing difficulties and high costs by providing comprehensive training in areas such as clean energy technology development, green project screening, economic and financial sustainability analysis, and environmental and social impact assessment. As a result of these efforts, financial institutions and MSMEs can improve their capacities and increase their chances of securing external financing.

»The main contributions of the Green Finance Platform include a flexible program design for a better project leverage effect and sustainable operations.«

LESSONS LEARNED

The key features of the PRC-ADB cooperation on GFP projects in addressing MSMEs' financing difficulties that can be shared among developing countries include:

Strong government commitment and flexible design of the assistance program

Successful implementation of international assistance projects requires the government's strong commitment and the international organization's adaptive cooperation. On one side, the government of the PRC has shown a strong commitment to tackling air pollution, with ambitious targets and policies to reduce emissions. Relevant government agencies have been relentlessly making efforts on policy strengthening and reform, aiming at reinforcing the availability of financial services to MSMEs. With such policy continuity, international assistance projects can be free from one of the major risk sources – political risk – for a smooth and efficient implementation. On the flip side, the project design needs to be flexible to accommodate evolving government policies and regulations. A swift scale-up project of the GFP by ADB demonstrated a concrete case for sustained international cooperation. The experience from the PRC-ADB cooperation sheds light on addressing the MSMEs' financing difficulties under an international scheme.

A tailor-made lending modality and suitable management to encourage proactive actions

A well-customized lending modality and management scheme has been proven to be the key to success. For the successful operation of the GFP, a suitable lending modality – a financial intermediation loan – was adopted because it can best cover multiple sectors connected to air quality improvement. As a result, the financial intermediary's capacity and management became crucial factors. I&G, a financial intermediary with impressive records in investment and guaranty operations, selected by the PRC government, was a good start. On top of that, ADB conducted careful management actions upon a well-selected performance indicator set. The management scheme successfully incentivized the financial intermediary to foster green projects proactively. Innovations in increasing credit enhancement solutions and the application of digital platforms alleviated MSMEs' difficulties in accessing affordable finance and can be referenced for practice in other developing countries.

Making capacity building an essential objective of the project

Capacity building has proven to be an effective means of continuous GFP operation and co-financing. As international assistance programs cannot last forever and the demand for development will never cease, capacity building was not a by-product, but rather a main objective in ADB's programs. In GFP projects, detailed monitoring indicators such as the number of project appraisals for co-financing with commercial banks, amount of key personnel trained, and capacity building events conducted were well-planned in the first place. Through all these management actions, ADB has promoted international management experiences such as Environment and Social Management System implementation, and Environment, Social and Governance investment standards for local practice. The capacity building actions reached the grassroots level as well. The knowledge passed along from the financial intermediary to MSMEs in setting up green projects helps them increase the opportunities for accessing finance from other resources.

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[4] The region includes Beijing and Tianjin municipalities; the Inner Mongolia Autonomous Region; and Hebei, Henan, Liaoning, Shandong, and Shanxi provinces.

[5] ADB's GFP scale up project approved in 2020 expands to YRD region comprising Anhui, Jiangsu, Zhejiang provinces, and Shanghai Municipality.

Brazil's G20 Presidency in 2024

Opinion Piece

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ABSTRACT
President Lula, as next leader of the G20 in 2024, will have one of the few silver bullets to leverage nature-based solutions to reverse the global climate and biodiversity crises. The Amazon is an iconic space for this work. Speeding up global investment in nature-based solutions requires delivering on funding, finance and capacity building. Brazil, like most emerging and developing countries, faces the challenge of orchestrating quality infrastructure plans and projects with socio-environmental design and financing criteria. The capabilities of national and subnational government agencies will come increasingly to center-stage, and international cooperation in the form of grants will be as important as sustainability performance-linked sovereign credit operations at the forefront of ESG finance. To these ends, it will be critical for the G20 to ramp up climate finance in 2024, in order to deliver on the USD 100 billion per year finance commitment made by developed countries by 2025.

INTRODUCTION

The return of Lula da Silva to Brazil's presidency in 2023 has renewed hope in Brazil, and the wider world, that sustainable economic development will be resumed, and that Brazil will cooperate to reverse the global climate and biodiversity crises, even in a challenging international context. His electoral victory represents a milestone for the consolidation of democracy in Latin America. However, it will be the results of Lula's administration which will confirm whether socioeconomic progress, with effective eradication of hunger, and formal private sector employment growth, can be achieved concurrently with concrete advancements in the conservation and restoration of the Amazon, an iconic space for the climate and biodiversity agenda. In 2024, the second year of Lula's mandate, Brazil will have the opportunity to lead the G20. This will be a global showcase for the advances of Lula's government on its sustainable development, climate and biodiversity agendas. In turn, this could influence the contributions that Brazil can make to the global G20 agenda, as well as

»It will be critical for the G20 to ramp up climate finance in 2024, in order to deliver on the USD 100 billion per year finance commitment made by developed countries by 2025.«

the possibility for Brazil to ramp up climate finance in the G20 so as to deliver on the USD 100 billion per year finance commitment made by developed countries by 2025.

Lula's previous two presidential terms in Brazil, during 2003–2010, provided impressive results in the fight against hunger and poverty and against the predatory use of natural resources, and showed

that his government team was capable of doing so. From 2008 to 2014, Brazil reduced deforestation in the Amazon by 80%.[1] The Amazon Fund, managed by BNDES (Brazil's National Bank for Economic and Social Development), was created in 2008 as a key financial mechanism to stimulate compensation for greenhouse gas emissions by conserving and restoring forests. The Amazon Fund collected a few billions in financial contributions from Norway and Germany.[2] After four years of paralysis in the approval of new projects during Bolsonaro's government, the Fund was reactivated again as one of the first measures and actions of Lula's third term in government.[3]

On the social front, during the previous two Lula administrations, Brazil exited the hunger map. A total of 36 million people were lifted out of hunger and extreme poverty in Brazil.[4] At the inauguration of his third administration, Lula pledged his commitment to achieving similar outcomes in terms of social progress.

QUALITY INFRASTRUCTURE

Brazil's much-needed government results will not come, however, from a mere repetition of past successes or of the policies and programs of the past. Since Lula's first administration began in 2003, twenty years have gone by. There are now new and complex challenges, although the lessons learned from the past may enlighten the perspectives on the road ahead.

For example, Brazil has not corrected its infrastructure gap. None of the Latin American countries have done this. The national infrastructure project pipeline remains largely same as in the past, with several cases of controversial projects, charged with lack of quality and fragility in their origination and structuring. Frequently, projects lack adequate economic and upstream spatial planning. Comparative analysis, feasibility studies and cost-estimates of socio-environmental impacts are not robust, and consultation with the local and traditional communities is largely absent. The symptoms of poor planning and, frequently, non-transparent or non-participatory decision-making processes have led, as in other countries in Latin America, to the judicialization of projects and, consequently, a large list of them are subject to decisions by the Supreme Court.[5]

Since the Brisbane Summit in Australia in 2014, the G20 has focused on infrastructure investments as one key foundation of its balanced, sustainable and inclusive growth agenda. Since 2015, sustainable infrastructure has become a key and necessary foundation for achieving the Sustainable Development Goals 2030 (SDGs), and the rapid reductions in greenhouse gas emissions (GHG) – principally, carbon dioxide (CO_2) – mandated by the commitments of the Paris Climate Agreement. Considerable progress was made by G20 leaders in 2019, during Japan's G20 presidency, regarding the sustainability of infrastructure investments with the endorsement of the G20 Quality Infrastructure Principles (QII). These Principles, contained in the G20 2019 Leaders Communiqué, Annex 6, must be regarded as a central policy guidance tool to advance policy discussions in Brazil and in Brazil's G20 presidency in 2024.[6]

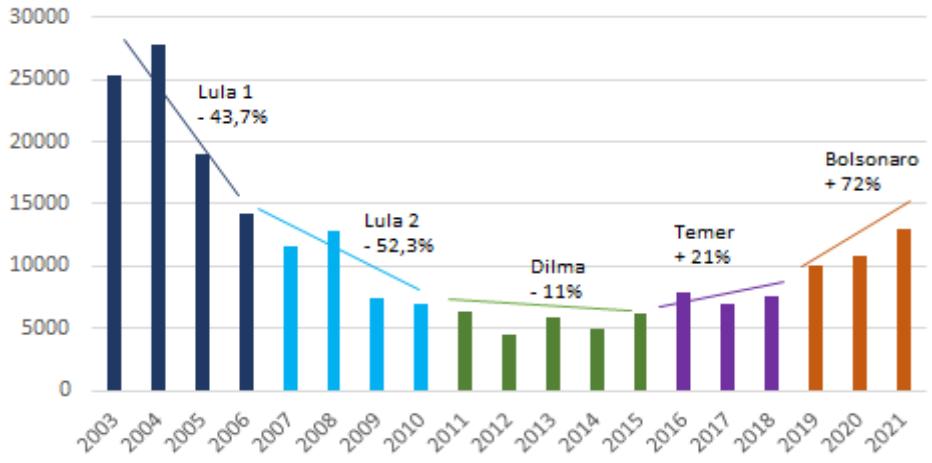
The effective integration of environmental criteria into quality infrastructure investment will require progressing from the voluntary/aspirational QII to some mandatory/binding principles and requirements, addressing areas where there is already implicit consensus or where it can be reached, particularly among G20 members. For example, the G20 policy guidance could foster an agreement among multilateral development banks (MDBs) and International Financial Institutions (IFIs), on common mandatory lending principles for deforestation-free infrastructure investments and binding requirements for infrastructure investments to be compatible with land, water, and forest conservation, the protection of biodiversity and healthy ecosystems.[7] Such an agreement could constitute a great step towards eliminating nature negative financial flows in the case of multilateral development bank financing.

»We recommend assigning a proportion of the financing for the strengthening of the capacities of national and subnational governments«

The private sector, investors and the financial sector need clarity and certainty from governments about regulatory policy

Historic Rate of Deforestation in the Amazon

Source: Historic Rrate of deforestation in the Amazon, based on data from the National Institute for Space Research, Satellite Monitoring of Deforestation in the Brazilian Amazon Forest, in km² (2003 to 2021), per presidential mandate, adapted from Observatório do Clima.



for quality and nature positive infrastructure investments. Closing the infrastructure gap, in the aftermath of the pandemic, the ongoing war in Ukraine, and the associated global economic shocks, will require unprecedented levels of private and public finance, invested in ways that genuinely respond to the bottom-up needs of countries and communities, meeting the SDG and the Paris Agreement commitments.[8]

RAMPING UP SUSTAINABLE FINANCING

The United Nations Environment Programme's Report, "State of Finance for Nature 2022," found that current finance flows to nature-based solutions (NBS) must double by 2025 and triple by 2030 in order to tackle climate change, biodiversity loss and land degradation. Finance flows to NBS are currently USD 154 billion per year, less than half of the USD 384 billion required by 2025 and only one third of the investment needed by 2030 (USD 484 billion per year).[9]

The Intergovernmental Panel on Climate Change (IPCC) special report on "Global Warming of 1.5°C" found that a third of the most effective strategies for limiting global warming are NBS, such as ecosystem protection, restoration and improved management of farmlands.[10]

Large inflows of finance for sustainable infrastructure investment aligned with NBS in emerging and developing countries are urgently needed. The delayed disbursement of the USD 100 billion per year finance commitment, made by developed countries for climate solutions in emerging and developing countries, is no longer an option in the face of devastating effects of climate change, biodiversity crisis, and land degradation globally.[11]

Our policy recommendation for the disbursement of these funds to emerging and developing countries (in many cases with heavy debt burdens, limited fiscal space and access to financial markets) is to link the rating of these credits to the environmental, social and economic sustainability factors of quality infrastructure projects (i.e., their ESG factors) and not to the sovereign risk rating. Similarly, differential incentives, such as lower interest rates, could be contemplated for quality infrastructure projects that contribute effectively to the mitigation of climate change, and are nature positive, restoring biodiversity and securing natural capital.[12]

BUILDING GOVERNMENT CAPACITIES

We also recommend assigning a proportion of the financing to the strengthening of the capacities of national and subnational governments in strategic planning and the integral sustainability assessment of infrastructure projects. Many of the financial initiatives that support infrastructure project preparation need to improve the decision-making process and the prioritization of infrastructure project pipelines, the review of feasibility studies and, fundamentally, the capacity building of governments and territories.[13] The success of the quality and sustainable infrastructure investment agenda hinges on good projects and on the preparedness of local governments and territories to formulate, procure and implement them.[14] This is why we recommend that a small proportion of the USD 100 billion committed to finance the climate agenda could be assigned to revolving funds, so as to reduce risk, strengthen the professional capacities of local governments and prepare the territories. The Amazon could provide an opportunity to showcase these measures to the global community.[15]

Professionalization in the public sector has been pointed out as a key factor for increasing government capacities, as it has a direct relation with the level of economic growth and development.[16] However, despite this evidence, many of the public sector agencies responsible for environmental and social policies and programs in emerging and developing countries are understaffed, with professionals having temporary short-term contracts (between two and four years), which impairs policy formulation and implementation capacities.

Intelligent, efficient and transparent governments are the most important "soft" infrastructure to overcome global environmental and social challenges. In this regard, Brazil now has several innovative proposals. President Lula has created an Extraordinary Secretariat (Secretaria Extraordinária), with Ministry status, to deliver state or whole-government reform at the federal level.

SCALING SUSTAINABLE FINANCING WITH PHILANTHROPIC FUNDING

The sub-national states in Brazil are also leading new initiatives to invest in nature-based solutions. For instance, the state of Pará, which has suffered half of the deforestation in the Amazon, is structuring the first credit operation of about BRL 300 million, linked to the achievement of sustainability objectives (i.e., a sustainability linked loan or SLL), with performance indicators that include the modernization of the state government.[17] The goal is to raise financing from the capital markets to strengthen the state's environmental policy, with indicators associated with the conservation of the local rivers, such as river San Benedito which is a hotspot of biodiversity among the Amazon biomass.

»There is a growing acknowledgment of the role of philanthropic funding in scaling up sustainable financing.«

Philanthropic financing will also support the financing operation relating to the realization of the conservation targets listed in the SLL that the state of Pará in Brazil is negotiating. There is a growing acknowledgement of the role of philanthropic funding in scaling up sustainable financing. Experts estimate that world philanthropic financing is significantly larger than the total of USD 1.5 trillion raised in 2018.[18] The resources from philanthropic donations can be allocated to projects whose operations include specific conservation goals and targets. Therefore, financing from credits (raised from capital markets and/or development banks) and philanthropy imply not only different sources and negotiation regimes, but also different applications. Credits can enter

the public budget to finance government modernization and its operational capacities, while philanthropy feeds directly into the project's environmental and social goals.

LOOKING AHEAD: BRAZIL AND THE G20 IN 2024

The G20 will turn its eyes to Brazil during the second year of Lula's government, anticipating the need for the government to present results and to orchestrate the means to ramp up finance and leverage global cooperation in support of the advancement of climate and biodiversity solutions in Brazil and in emerging and developing countries. The coming months are going to be a race against time to restructure and rebuild the environmental and social legacy of the previous administration and, at the same time, to realize the necessary innovations. The preparatory process of the G20 2024 in Brazil will be an important contributing factor, either for the calibration of expectations or for the aligning of financial mechanisms, cooperation and global commitments for effective and urgent action.

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Africa's Moment in Agriculture

Research Paper

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Keywords:
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INTRODUCTION

Africa is rich in key resources, making it capable of being a global economic powerhouse. Among these resources are a growing youth population and an abundance of natural commodities which, if harnessed and managed correctly, can change the face of Africa from an export-driven economy to include local manufacturing, regulated inter-Africa trade and data-driven economies. Africa is predicted to have the highest youth population by 2030, as young Africans are expected to make up 42% of the world's youth and account for 75% of those under 35 years of age. Just having enough resources and people is not sufficient to improve Africa's fate, and there are many challenges when it comes to developing human resources. Common challenges across African countries relate to the need for relevant skills, availability of job opportunities across sectors and investment to support access to skills and opportunities, especially for youth and women. Educated youth are also not spared from these challenges, especially following the impact of COVID-19 on global economies and the threat of recession: both educated men and young women are hence seeking opportunities in informal sectors.[1] Unemployment is growing into a "pandemic," with similar consequences across countries in Africa. Agriculture, however, is the backbone of many African countries as the sector employs approximately 60% of Africa's labor force,[2] with over 70% of Africans dependent on agriculture for livelihoods.[3] This is evidence that the sector holds the potential to become a key source of job creation for young people and a driver of economic growth for African states.

UNEMPLOYMENT AMONG WOMEN AND YOUTH IN SOUTH AFRICA

With a population of approximately 60 million people, the state of unemployment is among the urgent concerns for the government to manage, as unemployment

»Agriculture is the backbone of many African countries.«

rates have surged and remained above 31% since 2021. The South African government has sought out measures to address the high rate of unemployment. At the 2023 State of the Nation Address, the President asserted that one and a half million new jobs have been created in the South African economy between the third quarters of 2021 and 2022. Opportunities for employment have been created through the government's partnership with

»Challenges born from poverty and inequality have hit hardest against South Africa's youth and women.«

the private sector, along with employment projects such as the Social Employment Fund and the Presidential Employment Stimulus. Furthermore, the government

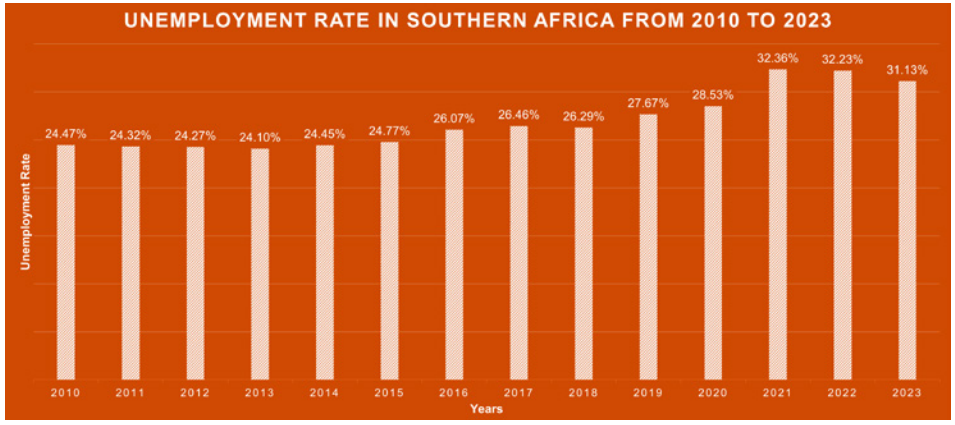
has developed a zero-rated online platform for young South Africans to access opportunities for learning and earning.[4]

»The agriculture industry should be redefined with a key focus on skills.«

Challenges born from poverty and inequality have hit hardest against South Africa's youth, women and people with disabilities. This scenario is partly due to the legacy issue relating to Apartheid as well as the rapidly increasing gap between the higher and lower income groupings in the country. South Africa is categorized among countries with the highest levels of unemployment and inequality, with youth significantly affected by the lack of job opportunities. It is claimed that the labor market has remained similar to the pre-pandemic period when comparing skills and regulations.[6] Among youth, unemployment for the first quarter of 2022 in the 15-24-year age bracket was 63.9%, and 42.1% in the 25-34-year age bracket. Just as concerning is that 47% of women were unemployed in 2022. According to Stats SA, women have to overcome higher hurdles and manage wider challenges in the job market compared to men and, where job opportunities are scarce, are forced to accept occupations that pay poorly, are labor intensive and/or are unproductive.[7]

The current unemployment statistics, particularly among women and youth, paint a bleak picture for a South African economy that is able to meet the growth targets and aspirations mapped out in the National Development Plan (NDP) and similar aspirations for the country. Women and youth make up the largest proportion of our population, so unless we are able to re-think the current model for sustainable job creation, we will forever underperform

Figure 1: Unemployment Rate in South Africa[5]



against the potential that our country has. PwC's article "Building skills to increase employability and staff retention" makes reference to a social compact between government, labor, the private sector and other stakeholders[8] which is envisaged to address and solve challenges and manage unemployment collectively. This would require a national skills plan with roles and responsibilities for public and private sector stakeholders. The social compact is being deliberated over by stakeholders; however, in the interim, the South African government has put in place objectives via the NDP which includes targets to reduce unemployment, inequality and poverty by 2030.[9] Among the sectors that have been identified for employment and skills development opportunities is agriculture, as it is a mainstay across Africa for nutrition, subsistence and commercial farming, export and trade, and job creation. In fact, from an economic perspective, the agriculture sector has been a major contributor in driving GDP growth as it has maintained strength in performance over the last two years and, according to the IDC's economic review, the Q1 2022 GDP was 19.3% higher compared to Q4 2019.[10]

The agriculture sector presents a spectrum of opportunities for youth inclusion and employment, and various African governments have developed goals that encourage youth participation in agricultural initiatives. In 2022, the African Development Bank launched a multinational initiative to support young farmers. The project, titled "Creating Sustainable Youth MSMEs through Urban Farming" (SYMUF), will ensure youth from Nigeria, the Democratic Republic of Congo (DRC) and Uganda are empowered and equipped with necessary tools to propel their success in farming.[11] The South African government has also developed the following initiatives: Youth in Agriculture and Rural Development (YARD), the Agriculture Youth Development Initiative for South Africa of 1998, the Rural Development and Land Reform Youth Empowerment Strategy of 2008 and, more recently, the National Policy for Beneficiary Selection and Land Allocation of 2020. In 2022, the government provided 140,000 small-scale farmers with input vouchers to buy seeds, fertilizers and equipment and an additional 250,000 small-scale farmers will benefit from these vouchers in 2023 to increase food security and agricultural reform. This initiative has resulted in the cultivation of 640,000 hectares of land and empowered 68% of women farmers.[12]

»It is necessary for the government, public and private sector to create access.«

The role of women in agriculture, irrespective of age, cannot be ignored. Women face ongoing gender disparities in the labor market, with worsening conditions over time. Employment for women across the formal, private household and agriculture sector remained somewhat the same from 2013 to 2019, with minimal improvement in the informal sector, whereas men experienced a dip only in the formal sector over

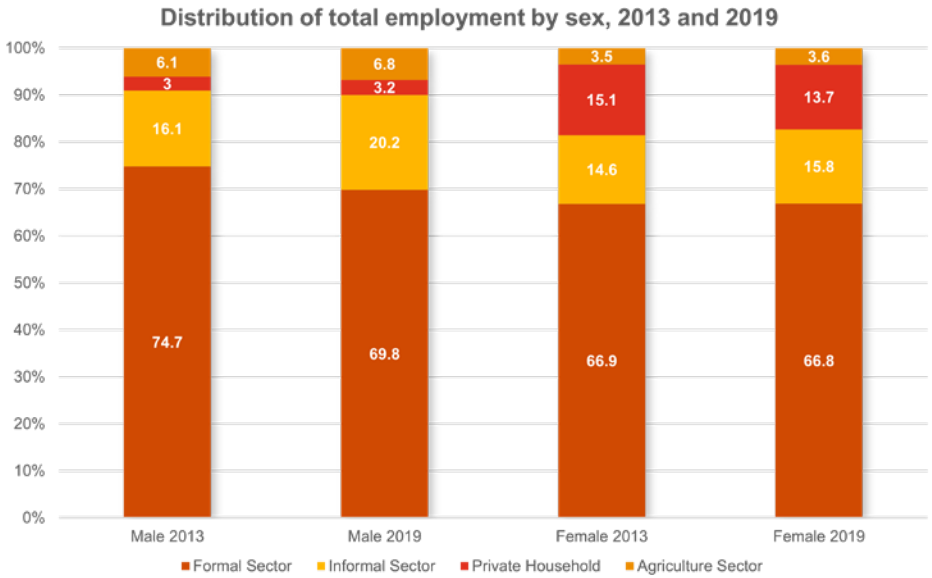


Figure 2: Distribution of Total Employment by Sex, 2013 and 2019[13]

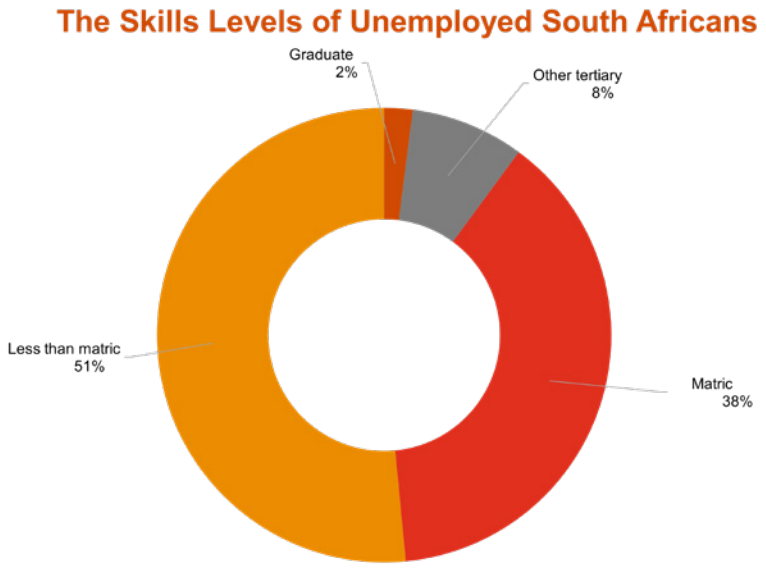


Figure 3: The Skills Levels of Unemployed South Africans[16]

the same period in time and have twice the amount of employment in the agriculture sector (Figure 2).

A 2022 Engineering News article cites John Hudson, the head of Agriculture at Nedbank, saying that, "It is important to go beyond just paperwork and lip service and to empower women within the agricultural sector tangibly, giving them the financial instruments and support they need to be innovative, to grow their businesses, and to make the most of their opportunities."[14]

It should be noted, however, that in order to adequately address employment opportunities via initiatives, investments and programs in the agricultural sector, it is critical to unpack the existing challenges. In doing so, solutions are tailored to actual challenges and not designed without truth. The next section unpacks the challenges faced by youth and women in the labor market and the agricultural sector.

CHALLENGES

Currently, the lack of labor opportunities combined with inadequate education and skills makes access to any sector near impossible. The 2021 Q2 Quarterly Labour Force Survey revealed that 51% of unemployed participants did not complete secondary education (matric) while 38% of the unemployed participants had completed secondary education (Figure 3).

The Department of Home Affairs published a list of key skills in 2021 with over 20 careers aligned to agriculture; however, the challenge is to identify individuals with an interest in agriculture and skills to match opportunities, especially where opportunities are available.[15] Thus, despite the initiatives taken by the government and organized agriculture groups, the participation of youth in agriculture is poor. Reasons and constraints include non-competitive salaries, the physical nature of the work, and lack of information on the diversity of career opportunities within the industry. It appears that youth are attracted to occupations outside agriculture as non-farming occupations appear more economically rewarding, stable, and not as physically intensive. A traditional view of farming, whether livestock or crop farming, may skew one to believe that agriculture is predominantly running a farm or working in the fields under harsh weather conditions, hence the lack of interest in agriculture.

A dearth of information on the diversity of opportunities can hinder one from exploring the agricultural sector. However, with access to information and practical experience, one quickly becomes aware that agriculture offers careers in research, agro-economy, food technology, smart technology (i.e., precision agriculture) and agri-financing, among other roles. As an example, the growth in smart technology, drones, and artificial intelligence in agriculture sub-sectors is improving access to data and improving farming techniques. In a semi-arid country like South Africa, where we are swiftly seeing the effects of climate change, we require more than ever a variety of skills to redesign and create sustainable and relevant solutions for food security and economic stability.

Women face similar challenges in the agriculture sector, with additional barriers that are observed in gender-disparate, male-dominated environments. Thus, as

Challenges	Impacting Youth and Women
Lack of awareness of skills development programmes and education opportunities.	Youth and Women
Lack of awareness of career options.	Youth and Women
Lack of access to credit and finance, and land.	Youth and Women
Poor financial literacy and entrepreneurial skills.	Youth and Women
Lack mentorship, collaboration, sponsors and access to networks.	Youth and Women
Lack of youth inclusion in development programs.	Youth
Limited support from private sector players.	Youth and Women
Gender related challenges.	Women of all ages
Lack of labour opportunities despite the need.	Youth and Women

Table 1: A Non-exhaustive List of Challenges Faced by Youth and Women in the Agriculture Sector in South Africa

with the youth, awareness of opportunities, skills and entrepreneurship is critical to uplifting women in agriculture. In 2022, the Minister for Women, Youth and Persons with Disabilities, Maite Nkoana-Mashabane, addressed an audience of women farmers, stating, "Historically, women farmers experience socioeconomic barriers including a lack of access to financial services that assist in sustaining their farm expenses. This is despite women farmers using environmentally conscious practices in comparison to their counterparts." Additionally, the minister emphasized that "The gender and wage gaps that were apparent decades ago are still so today. We need to see a reform of the sector to promote inclusion and drive equality."[17]

It is critical that solutions that address the challenges endemic to youth and women in agriculture (Table 1) are unpacked and linked to root causes that are not only common but specific to both groups. The importance herein is that the agricultural sector underpins individual, community and national economic security, and transformation should reflect an age- and gender-agnostic sector with attractive and sustainable opportunities for youth and women.

Drivers for change are essential to combat national challenges that inhibit youth and women in agriculture. Additionally, inclusivity and creative solutions are essential to curbing the effects of climate change, drought, the Ukraine war and loadshedding (i.e., unreliable supply

Subsector	Change Drivers	Skill Implications	Demand & Supply
Grains and Cereals & Red Meat	Climate change and drought	Green knowledge Managing extreme climate skills Incorporation of latest technology and research Disaster management Imports Business skill	**Demand**: Farmers (growers and workers), Research scientist, Agricultural scientist, Environmental research scientist, Training and development Professional, Technical instructor/ Trainer, **Supply**: Research organisations, commodity organisations, Department of Environment and Nature Conservation
Tobacco, Red Meat & Sugar	The youth bulge and skills development	Demand for skills development at younger age (high school level), employable youths supply rural skills development Management skills to manage young workforce	**Demand**: Scholars, students, rural youth, junior / middle / upper management **Supply**: Training service providers, Universities, Universities of Technology, TVETs, Ag
Red Meat, Poultry & Sugar	Brexit & EU trade agreements	Market access, Export capacity, Poultry Imports, Brexit and EU trade	**Demand**: Quality Assurance Manager, Importer and Exporter, Product Examine, Import-Export Clerk **Supply**: Universities of technology, TVETs, agricultural colleges, QCTO, commodity organisations
Fibre & Poultry	Growth of small-scale farmers	Managing extreme climate and Animal and plant health management Delivering quality product Expand businesses Communal farming practices Business skills Drought and Floods	**Demand**: Farm manager, Agricultural advisor, Agricultural scientists, Agricultural consultant, Animal health technicians, veterinarian, Agricultural scientists, Agricultural consultants **Supply**: Training service providers, Agricultural colleges, Universities, Universities of Technology
Grains and Cereal, Sugar & Tobacco	Fourth Industrial Revolution : Technology and Mechanisation	Ability to develop and research new innovation, technologies and analysis of large data sets Ability to integrate and implement new technologies and innovation in workplaces Increased need for computer skills for employees at all levels	**Demand**: employers, employees, researchers, engineering companies **Supply**: training service providers, universities, universities of technology, TVETs, Agricultural colleges, QCTO
Tobacco, Fibre, Aquaculture Milling, Pet food and Animal feed, Pest control, Poultry & Seed	Green Economy	Proper utilisation of resources Efficient use of land Knowledge Agro-Processing Efficient use of land Conservation Energy efficient methods Research and development Sustainable agriculture	**Demand**: Environmental health officer, Conservation officer, Environmental Research Scientist, Agricultural Scientist **Supply**: Training service providers, universities, universities of technology, TVETs, agricultural colleges and research organisations
Horticulture, Milling, Pet food and Animal feed & Seed	Climate change (production area is shifting eastwards, introduction of new production technologies)	New skills sets aligned with; Migration of workers, Incorporation of latest innovations and technologies, natural disaster management, plant health, business skills and imports. Research outcomes included in qualifications, curriculums and course content.	**Demand**: Employers, employees, researchers Disaster management facilitator, Agricultural scientists and Agricultural advisors, **Supply:** Training service providers, Universities, Universities of Technology, TVETs, Agricultural colleges, commodity organisations, research organisations
Milling, Pet food and Animal feed Seed & Fibre	Political and policy uncertainty, Weakening of the local currency	Import and export of products Business skills	**Demand:** Employers, employees, researchers, Agricultural scientists and Agricultural advisors, **Supply**: Training service providers, Universities, Universities of Technology, TVETs, Agricultural colleges, commodity organisations, research organisations

Table 2: AgriSETA's Key Skills Change Drivers Influencing Skills Demand and Supply in the Agricultural Sector[18]

Source: https://www.agriseta.co.za/wp-content/uploads/2021/02/Agriseta-Agriculture-SSP_DIGITAL.pdf

Horticulture	Sugar	Pest Control	Seed	Grains and Cereal
Operations management Junior management Farming technology/mechanisation maintenance Sustainable farming, adaptation and alternative energy specialists Hydro & irrigation specialists Machine operators Forklift drivers, tractor drivers, truck drivers, packers and sorters Information technology Soil specialists Food Health and Safety Mechanical engineering Financial management Agro-economics Agricultural research Specialised Horticulture Project Manager	Engineering (electrical, mechanical, chemical and agricultural) General management Supervisory development Artisan development Research economist Economist Agricultural and biological researchers Business skills for co-operatives	Irrigation Legal compliance Marketing Trade & tariff expertise Production management	Scientists Sales Financial management Junior managers Trading Business management	Grain handling Information technology Operations management Silo management Grain inspectors
Red Meat	**Milling, Pet Food & Animal Feed**	**Aquaculture**	**Poultry**	**Tobacco**
Veterinarians Auctioneers Marketing Business management Meat inspectors	Junior managers (milling supervisor) Millers Machine operators Food safety inspectors	Mechanical engineering Financial management Animal health Aquaculture farm operators Specialised Aquaculture Project Manager	Farm managers Nutritionist Veterinarians Poultry examiners	Financial management Marketing
Source: Agricultural Sector Skills Plan 2020-2025				

Table 3: Occupation Shortages and Skills Gaps in Different Agricultural Sectors[19]

of electricity), which has impacted severely on the supply of grain, among other challenges.

DRIVERS FOR CHANGE AND OPPORTUNITIES

The very basic drivers for change are rooted in poverty alleviation, which will be impacted most significantly through investment in infrastructure and growth sectors in the economy.

As mentioned, skills shortages and demand for jobs beyond the traditional farming careers in agriculture are a complex and ongoing challenge in South Africa. To unpack and identify areas of opportunity, the AgriSETA Sector Skills Plan identified eight change drivers and key associated skills in agricultural sub-sectors that could meet the supply and demand barriers. These change drivers include mitigating climate change, moving towards a green economy and the fourth industrial revolution (Technology and Mechanization) and are illustrated in Table 2.[20]

These drivers for change noted in Table 2 are applicable across the board, but particularly for women and youth. Improvement initiatives include diversity and inclusion programs as well as redefining the agriculture industry with a key focus on the skills and associated demand and supply. The critical skills list published in 2022 highlights the need for agri-professionals across sub-sectors, including the demand for agricultural scientists and agricultural engineers, among others (Table 3 left).

A study by several stakeholders in South Africa sought to unpack the future of work in the agricultural sector of South Africa and developed scenarios that considered the drivers for change and uncertainties. Two key uncertainties impact agri-employment for everyone in the country:[21]

a. **The market:** specifically, the composition of the market and the balance "between mega, small and subsistence farmers and other enterprises within the agri sector".

b. **Relevant skills:** which reflects on the knowledge and capability of existing and future individuals (youth and women included), and "the extent to which knowledge transfer is appropriate and successful."

CONCLUSION

Unemployment is currently one of the biggest challenges faced by young people and women in South Africa. Sustainable job creation, education and skills development are of paramount concern for African nation-states. Agriculture provides a spectrum of opportunities not only for youth employment but also the inclusion of women in income generation and food security.

To ensure the agricultural sector presents sustainable pathways to economic engagement for its youth and women, it is necessary for the government, public and private sector to create access to and awareness about career opportunities in agriculture. Furthermore, more information regarding agriculture as a profitable vocation with diverse pathways will be crucial for strengthening the appeal of agriculture and food production as a viable career choice for young people and women. Engaging women and young people in agriculture will also require relevant training and skills development along with financial support to agricultural entrepreneurs.

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List of figures

Figure 1	Unemployment Rate in South Africa
Figure 2	Distribution of total employment by sex, 2013 and 2019
Figure 3	The skills levels of unemployed South Africans

List of tables

Table 1	A non-exhaustive list of challenges faced by youth and women in the agriculture sector in South Africa
Table 2	AgriSETA's Key Skills Change Drivers influencing skills demand and supply in the agricultural sector
Table 3	Occupation Shortages and Skills Gaps in Different Agricultural Sectors

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Multilateralism and Global Problem-Solving

Page 66 **Towards a Functional, Inclusive Multilateralism**
Markus Engels
Global Solutions Initiative
Christian Kastrop
THE NEW INSTITUTE

Page 74 **A New Economic Globalization to Reshape the World Order**
Henry Huiyao Wang, Mabel Lu Miao
Center for China and Globalization (CCG)

Page 82 **Overcoming Negative Spillover Effects: The G20's Role in Support of Global Sustainability**
Axel Berger, Leonie Marie Droste, Tabea Waltenberg, Linda Lütkes
Sustainable Development Solutions Network Germany (SDSN)

Page 90 **True Multilateralism: The Path to Peace and Development**
Pedro Villagra-Delgado
Argentine Council for International Relations

Page 96 **Tapping the Power of International Think Tank Cooperation**
Dennis Görlich
THE NEW INSTITUTE
Markus Engels
Global Solutions Initiative

Page 104 **Together 2030 – A Multilateral und Multi-dimensional Strategy for the Global Commons**
Christian Kastrop
Global Solutions Initiative
Andreas Schaal
OECD

Page 112 **The Future Is Now: A New Urgency for Global Action**
Colin Bradford
GSI, CWD, BROOKINGS

Towards a Functional, Inclusive Multilateralism

Policy Brief

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Keywords:
multilateralism, G20, institutional reform, SDGs

THE NEW INSTITUTE is a mission-driven Institute of Advanced Study and a platform for change. It strives to develop powerful visions to fundamentally reshape society and practical solutions to turn those visions into a reality. It works in strategic partnerships with a variety of institutional and individual stakeholders – changemakers who share a common set of values and objectives.

CHALLENGE

Over the past few decades, the balance of power in the international order has undergone a sea change – and yet institutions continue to reflect the power dynamics of yesteryear. The United Nations Security Council (UNSC), for example, still adheres to a post-World War II logic with permanent members including Allied victors and official nuclear powers, despite the geopolitical tectonic shifts that have occurred since its founding. While a country's military and economic strength were the decisive factors in ranking power after the 1940s, we are now confronted by new global challenges. Climate change, the loss of biodiversity, the finite nature of strategic resources, an obscene wealth imbalance, pandemics and the emergence of artificial intelligence are social and planetary challenges that should give a prominent position in multilateralism to those who possess special capabilities to solve such challenges – along with the will to bring these capabilities to bear for the benefit of all. What is needed, then, is a reinterpretation of power[1] based on a comprehensive security analysis that re-evaluates what capabilities a threatened world needs most. It is about moving away from a predominantly military and economic approach to international relations.

The most pressing global risks also require more international cooperation, as well as new tools to solve problems. Surprisingly, however, a countervailing trend is now gaining strength, namely, an international decoupling that challenges universalist approaches. Terms such as 'plurilateralism,' as well as the pursuit of strategic autonomy or rivalry[2] and the creation of thematic clubs,[3] are expressions

of this decoupling trend,[4] which found its obscene climax in the 'me first' approach to policy popularised by former U.S. President Trump.

»We need a reinterpretation of power based on a comprehensive security analysis that re-evaluates what capabilities a threatened world needs most.«

This policy brief understands multilateralism as an international order in which institutions operate from a rules-based foundation and seek to tackle major international problems with a global approach – problems that require a global approach due to their complexity and interdependence. The paper discusses what the G20 can contribute to achieve such a multilateral order.

THE ROLE OF THE G20

The G20 is one of the most powerful confederations of states. Not only do they represent 75% of global trade[5] and produce 81% of global CO_2 emissions,[6] but all five permanent members of the UNSC are in the G20, as are all G7 countries. With India, Brazil and South Africa, emerging nations are also part of the powerful club. The G20 also claims to represent the interests of the "Global South," i.e., the poorer states and populations, and the emerging economies. In total, the G20 represents two-thirds of the world's population.[7]

Thus, the G20 states together form an unprecedented concentration of power. If the G20 members were to put aside supposedly national interests[8] in the interest of finding global solutions – thus supporting a fair international institutional order – then this model would likely prevail globally. Since many global conflicts are also echoed within the G20, an agreement in this forum would be the prologue to a worldwide reform.

In addition to its political strength, the G20 has the economic potency to finance the transformation of our societies and economies toward greater sustainability and resilience. Transforming national and regional economies and societies is not only an important condition for sustainable multilateralism to work, but could also motivate governments to engage constructively in reform toward effective multilateralism.

RECOMMENDATIONS

1. Take a comprehensive approach to security as the basis for institutional reform

According to a number of security analyses[9] produced over the last decades, factors like global environmental problems, climate damage, lack of resources, pandemics and technical developments unleash conflict and new security risks. For example, climate change leads to extreme weather, in turn triggering hunger, migration crises and violent conflicts.[10] Often, the biggest contributors to climate change are not most directly affected; instead, states and regions not responsible for major CO_2 emissions bear the brunt of climate change. This radically distorts the 'polluter pays' principle, according to which those responsible also have to repair and pay for damages.[11] Avoiding new risks[12] and making amends for existing ones require different skills than in the past. Whereas at the turn of the nineteenth and twentieth centuries, many European states still defined their influence in terms of colonies, and the people and resources they exploited, in the post-war era possessing nuclear weapons was considered a must-have for any claim to power. Nowadays, influence does not rest solely on economic, political and military power, but also on 'softer' aspects like humanitarian commitments, ecological footprint, engagement in international institutions, the ability to generate and share goods, and the development of new concepts that promote global well-being. Nations must also demonstrate competence in solving the most pressing global problems:

- Does a country contribute to the peaceful coexistence nations or is it itself involved in armed conflicts that are not legitimized under international law?
- What contribution does a country make to contain pandemics and, in this context, is it willing to forego its own benefits or economic gains to support global health as a public good?
- To what extent does a government commit to transforming its economy to net-zero and, additionally, support poorer regions in such a transformation?

In concrete terms:

- The G20 should actively participate in the UN Future Forum, which has set itself the task of restructuring the multilateral system. The G20 must be solution-oriented in the long term, which necessarily includes taking into account the interests of the weaker and most vulnerable states and population groups. Reforming the UNSC must be explicitly included in G20 proposals, even if the UN Future Forum has not yet made this its task.
- To position itself as a forum for finding global solutions, the G20 should include the African Union and the 'Vulnerable Twenty'[13] in the G20. This will not only strengthen the voice of the Global South, but also of those most affected by the growth-driven approach of the G20 members.
- The G20 should produce a joint analysis of the greatest global security risks and use the results as the basis for reorganizing the international system. This analysis must at the same time answer the question of what capabilities states need in order to respond to these security risks in a sustainable manner.

»Avoiding new risks and making amends for existing ones require different skills than in the past.«

2. Involve new actors as a condition for strengthening the legitimacy of a new regulatory framework

The age in which states alone are the subjects of international law is long gone. International humanitarian law and universal human rights treaties also designate natural persons and groups of persons as subjects of international law. This development has been reinforced by the establishment of international criminal law and its corresponding jurisdictions.

In addition to fairly representing all regions, continents, world views and religions, global institutions gain legitimacy through inclusive and diverse participation. Therefore, we should strive to have not only nation states in international fora, but also representatives of parliaments, local entities[14] and the most vulnerable groups.

Having said this, an international body composed of hundreds of members will not work efficiently. To address this, one can limit the number of participants by clustering groups. For example, the EU could be allocated a seat to represent the European perspective, and the same could apply for the African Union. Another example is the Vulnerable Twenty (V20) group, which is composed of 58 nation states. The G20 system of including engagement groups is also an instrument to ensure better representation and glean insights from different social groups, thereby gaining legitimacy. For such a multilateral forum, it makes sense to have a general assembly, a board and presidium, and a permanent bureau. Increasing opportunities to be involved in such a multilateral institution may encourage countries and potential stakeholders to join forces internationally. This could help form a new global identity in the face of planetary challenges.

Any effective reform of the international system to address global challenges will require broad acceptance – or worldwide approval, in other words – to be successful. To establish a trustful relationship with international civil society, the G20 ought to establish roundtables and townhall meetings in their member states and beyond. These would open the debate on the future multilateral system on the local, regional and national levels in order to prepare proposals for the UN Summit of the Future.

In concrete terms:

- G20 members should initiate regional and national town hall meetings to engage with their civil societies on priorities for a new international order.
- The G20 should advocate at the UN level for the participation of parliaments, regional entities, and civil society in the Future Forum, and should back up this proposal with appropriate practices. The system of G20-related engagement groups is a useful tool to ensure extended representation.

3. Make use of financial transfers as a basic condition for sustainable transformations worldwide

In addition to the institutional architecture, there is a need to think about how to foster and finance progressive change in communities to make societies and economies more just, sustainable, resilient, and social. Taking every existing financial measure or support for the Sustainable Development Goals (SDGs) into account, we are still lightyears away from what we really need. The current system is arbitrary and thoroughly dependent on the specific political decisions of the 'donors.' The rising cost of energy and food has worsened the debt crisis. New money is needed to ease poverty as well as to finance the transition towards net-zero societies.

Ways to create 'fresh money' for the Global South/SDGs include:

- Direct funding from the Global North to the Global South. Demands and appeals have been formulated quite often, for example at the COP27 in Egypt and in nearly every General Assembly of the UN. This model is appealing because it is based on the 'polluter pays' principle. Direct funding from north to south also reflects the fact that in addition to statistics that per capita consumption is also still highly unequal and unjust from the perspective of the Global South. An important first step is to act on the financial promises and commitments already given by the Global North to support poorer countries, i.e., contribute more financial resources to the loss and damage fund, which was agreed upon at COP27.
- Through supporting technical cooperation (for instance in the release of patents, if this helps to resolve crises such as pandemics). This is not about generosity, but rather about enabling disadvantaged regions to produce and apply effective goods and concepts themselves in order to make a substantial contribution toward overcoming global crises. The G20 should agree on an international regulation for global pandemics that confirms their commitment to prioritise a common global health strategy over patent and ownership rights. Such a clarification can help link issues like climate, health and security and lead to united action.
- There are growing demands in favour of a fundamental change in the policy of the World Bank and other international financial institutions (IFIs), to adjust their principles on investments and loans as well as their portfolios.[15] The mandate of the World Bank needs to be extended to finance and protect global common goods – such as biodiversity and natural resources like drinking water and oceans – to fight climate change and foster social stability. Climate lending needs improved terms or targeted budget support for governments that want to pursue transitions to make their economies climate neutral. The G7 can speed up this debate if they commit to supporting these reforms.

»New money is needed to ease poverty as well as to finance the transition towards net-zero societies.«

In concrete terms:

- In the debate on IFI reform, the G20 should make it clear that their mission is also to help address global risks, and that mandates and business practices must be changed accordingly.

- The G20 should work to establish new sources of financing, for example by imposing taxes on speculation, wealth, or the digital economy, closing tax havens and globally tax speculation or extreme wealth, or a form of minimalistic taxation of all financial transactions or digital „clicks".[16]
- The G20 should take the initiative to ensure the implementation of previous financial commitments and establish an appropriate mechanism to accelerate and automate financial commitments and their implementation.

4. Transfer programmes must ensure that transparency and good governance are conditions of funding

If the willingness to provide transfers from north to south is to be increased, it must also be ensured that 1) the financial resources provided are actually spent for their intended purposes; 2) strict transparency requirements are in effect; and 3) 'good governance' requirements apply to the recipient countries. Transparency International does important work in this area with its corruption index and also points to the structural causes of corruption.[17]

There is a consensus that donor funding commitments must be based on the SDGs and the agreements of the Paris Climate Agreement; the situation becomes more complicated, however, when we discuss, for example, responsibility for CO_2 emissions. It is clear that those who have historically been responsible for the largest share of CO_2 emissions must take responsibility for their actions – be it states or companies. It is also certain that emerging countries and economies also bear a growing responsibility for the global climate balance. Finally, it is equally obvious that all calculations of responsibility must also take into account the CO_2 per capita balance.[18]

In concrete terms:

- The G20 should develop a plan to create an international mechanism by which transfers are tied to the verifiable use of financial resources for their intended purposes, including transparency guidelines and good governance criteria.
- The G20 should work toward a legally binding definition of global public goods, the protection of which is partly the responsibility of national governments or regional entities, which must be accordingly rewarded financially.

1 This paper questions whether a definition of power that prioritizes military and economic strength is still appropriate given the complexity of global challenges.

2 https://www.swp-berlin.org/publikation/strategic-rivalry-between-united-states-and-china

3 One example is the "Climate Club", which the G7 initiated in 2022. The G7 presidency at the time made it clear that it was to be an inclusive initiative: https://www.euronews.com/green/2022/12/13/g7s-new-climate-club-promises-to-promote-socially-just-transition-to-net-zero#:~:text=in%20the%20City-,G7's%20new%20Climate%20Club%20promises%20to%20promote,just'%20transition%20to%20net%20zero&text=The%20Group%20of%20Seven%20(G7,COP27%20and%20COP15%20climate%20targets.

4 Reference Engels/Kastrop T7 Policy brief.

5 OECD, https://www.oecd.org/g20/about/

6 Destatis, https://www.destatis.de/EN/Themes/Countries-Regions/International-Statistics/Data-Topic/Environment-Energy/Environment/G20_CO2.html

7 OECD, https://www.oecd.org/g20/about/

8 We strongly doubt whether in this age of planetary risks there are still "national interests" that fundamentally stand in the way of international problem-solving. National interest – as well as entrepreneurial interest – must have an interest in maintaining the foundation of our societies by preserving our living space and overcoming poverty.

9 https://www.who.int/emergencies/risk-assessments; https://www.weforum.org/reports/global-risks-report-2023/digest; https://globalchallenges.org/; https://www.funk-gruppe.de/en/risk-fields.

10 'The evidence is clear that climate change does contribute to increased conflict, but along indirect pathways. There are a variety of context factors — in particular, socioeconomic conditions, governance, and political factors — that interact and play a key role in translating climate change into conflict risks.' See https://unfccc.int/blog/conflict-and-climate#:~:text=The%20evidence%20is%20clear%20that,climate%20change%20into%20conflict%20risks.

11 See the Special Report of the European Court of Auditors on the Polluter Pays Principle in environmental matters. https://op.europa.eu/webpub/eca/special-reports/polluter-pays-principle-12-2021/de/index.html

12 The term "new" is understood here within a longer timeline. Not least the report of the Club of Rome, published as early as 1972, showed the need for a global shift toward greater sustainability more than 50 years ago. https://www.clubofrome.org/publication/the-limits-to-growth/

13 https://www.v-20.org/

14 The fact, that the G20 has established the 'Urban track' acknowledges the view that the regional and local perspective needs to be represented in global problem solving. Regional entities do not only know how to implement necessary measures and work on this daily, close to citizens, but in the 21st century there is a visible trend that non-state regional authorities are playing a crucial role for the acceptance of governance. See: Hüsken, Thomas/Obeidi, Amal S., 2022. 'Cyrenaica contemporary. Politics, identity and justice in times of transition' in *Local Self-Governance and Varieties of Statehood*. Editors: Neubert, Dieter, et al. 2022, pp. 177 – 192.

15 'Stiglitz argued the economic reforms the IMF and World Bank often required as conditions for their lending—the so-called Washington Consensus of fiscal austerity, high interest rates, trade liberalization, privatization, and open capital markets—have often been counterproductive for target economies and devastating for their populations. In particular, he links indiscriminate lending conditionality to the onset of financial crises in East Asia in 1997 and Argentina in 1999.' https://www.cfr.org/backgrounder/world-bank-groups-role-global-development. Or see the paper from Homi Karas and Charlotte Rivard on Debts and Climate: https://www.brookings.edu/research/debt-creditworthiness-and-climate-a-new-development-dilemma/

16 https://taxation-customs.ec.europa.eu/fair-taxation-digital-economy_en

17 https://www.transparency.de/en

18 Data can be found here: https://edgar.jrc.ec.europa.eu/report_2022

A New Economic Globalization to Reshape the World Order

Policy Brief

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The Center for China and Globalization (CCG) is a leading Chinese non-governmental think tank in Beijing. It ranked 64th of the top think tanks worldwide and has been granted Special Consultative Status by UN. It has home branches in several cities,and over 100 full-time researchers and staff engaged in research on globalization, global governance, international economy and trade, international relations and global migration. It is one of the most active global think tanks in China.

Keywords:
globalization, multilateralism, interdependence governance, regionalism, cooperation

INTRODUCTION

"Hyper-globalization" ended when geopolitical conflicts, a sluggish global economy and climate change brewed discontent within the world order. To address collective global issues, it is imperative to enhance the economic connections between countries and regions smartly and to reshape global economic governance. As the practitioner and beneficiary of globalization for over 40 years, China will continue to contribute to global economic governance and embrace the new wave of globalization.

KEY ISSUES

A STRUCTURAL CHANGE

Globalization has come to a new crossroads after 40 years of unprecedented economic prosperity in the world. "Global Governance 1.0," the international system based on the UN and Bretton Woods institutions, has been confronted with various challenges ranging from changing geopolitics, rapid technical advancement, and global societal and economic transformations to the accelerating pace of climate change. As Nobel Economics Laureate Joseph Stiglitz famously said in "Globalization and its Discontents," "Globalization is not working for many of the world's poor. It is not working for much of the environment. It is not working for the stability of the world's economy."[1]

To answer the prevailing discontent with globalization, one should understand what has recently happened to the turbulent international order. The simplest answer is: the world is undergoing structural change.

A MULTIPOLAR WORLD

The world is now more multipolar, as it has witnessed the rise of developing countries in the past four decades. Nowhere is the shift to multipolarity more evident than in the rise of Asia, given that its economy is now bigger than the rest of the world combined. The simple reality is that no single power can dictate global norms and rules by itself. The existing US-led system, designed for a world where power is concentrated in the hands of one superpower, is increasingly becoming untenable.

MORE INTERDEPENDENCE

However, the multipolar world is also more interdependent. Rising interdependence stems from two related sources. The first is cross-border flows of people, goods, capital, ideas, and data that tie the interests of different countries together through global supply chains, cultural flows, and global finance. The second is the rise of transnational challenges – usually known as non-traditional security threats, such as the COVID-19 pandemic – that heavily disrupt the global supply chain. Our current system of global governance was designed in an age when the most salient security threats that countries faced were those emanating from other states. Deepening cross-border linkages and shared global threats mean that global governance should facilitate collective responses to transnational challenges.

DIGITAL ECONOMY

This growing interconnectedness is visible in the rise of transnational data flows and the global digital economy. In 2021, the digital economy's added value from 47 major economies made up 43.7% of their combined GDP, marking a 15.6% year-on-year increase, according to the report from China's Academy for Information and

Communications Technology (CAICT).[2] The pandemic accelerated this digitalization, and even though its full implications for global governance are not yet clear, they are surely profound and manifold.

Unfortunately, the booming global digital economy encounters a threat from geoeconomics, which focuses on the use of economic tools to advance geopolitical objectives. Economic relations are increasingly a source of friction undermining international cooperation and global governance. The COVID-19 pandemic further increased calls to "re-shore" production, with some governments intervening to draw supply chains home. As Pascal Lamy, former Director-General at the World Trade Organization (WTO), has pointed out, in the aftermath of the pandemic, a certain degree of precautionism – legitimate safeguarding of citizens' needs – was to be expected.[3]

RISING REGIONALISM

As global trade rules fray, a patchwork of regional deals – as vehicles for deeper liberalization – has emerged. First was the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP), launched in 2018. Then came the new free trade agreement between the US, Mexico and Canada (UMSCA), which came into force in 2020, followed by the African Continental Free Trade Area (AfCFTA), which started trading in 2021. The latest achievement is the activation of the Regional Comprehensive Economic Partnership (RCEP) in 2022.

To reform the less functional "Global Governance 1.0," we need to accommodate these dynamic regional solutions and increase their coordination so that they work together harmoniously. More importantly, we need to exploit the latest technical developments and take advantage of these interdependencies for the benefit of our well-being.

MAIN CHALLENGES AND OPPORTUNITIES

The current world order was already shifting into an uncertain period when rising geopolitical tensions between the world's largest economies daunted the international community. US-China relations are seemingly sliding into the self-fulfilling prophecy of the "Thucydides Trap," as Harvard Professor Graham Allison described it.[4] Russia's "special military operation," which began in 2022, signaled the collapse of the Yalta system founded after WWII. A dichotomy of democracy vs autocracy, a ghost of the Cold War mentality, is becoming increasingly dominant within some great powers' narratives. The common challenge posed to the world is neither the inaction on disasters or conflict nor the shedding of shared responsibility, but mutual hostility in the minds of human beings.

A MORE INCLUSIVE, INTEGRATED AND FLEXIBLE GOVERNANCE

To adapt to these realities, a new global economic governance will need to embody three principles.

1. It needs to be more inclusive. It should better represent the voices and interests of emerging economies and mobilize a new set of actors to work on global problems.
2. Global economic governance needs to be more integrated. Complex, cross- cutting challenges need to be addressed in an integrated manner, accounting for links between different sectors and issues based on strong connections between global and regional organizations, international financial institutions, and other global alliances and institutions.
3. Finally, our post-pandemic world calls for more flexible global institutions. Rather than sticking to large, unwieldy member-driven formats for all purposes, global mechanisms should be tailored to the job at hand. For some purposes, such as kick-starting the process of reforming key global institutions, a smaller group of powers may be preferable. For other tasks, it may be more suitable to forge a broad and inclusive group of nations and other stakeholders.

THE UNIQUENESS OF CHINA

China has a unique role in leveraging global governance. Its persistent development in the past half-century has not only enriched the diversity of world history but also rewritten the world economic map. Furthermore, as it became increasingly aware of the importance of sustainable development, China helped nurture the momentous Paris Agreement, along with the world's leading economies. By proposing its carbon peaking and carbon neutrality goal in 2020, China also helped consolidate the global consensus on climate change.

The outbreak of COVID-19 and Russia's war in Ukraine in 2022 severely undermined the joint effort of the international community to restructure globalization. China, on the contrary, demonstrated its economic resilience in the pandemic while managing to reconnect with the world at the end of 2022. It quickly resumed its face-to-face diplomacy with the international community, and its leadership frequently visited the major stakeholders in global geopolitics. Meeting with US President Joe Biden at the G20 Bali Summit, President Xi Jinping reassured the world of his intention to reset the framework for Sino-US relations. As the first anniversary of the war in Ukraine was approaching, China published the Global Security Initiative Concept Paper and China's position paper on the Political Settlement of the Ukraine

»Global Governance 1.0, the international system based on the UN and Bretton Woods institutions, has been confronted with various challenges ranging from changing geopolitics, rapid technical advancement, and global societal and economic transformations to the accelerating pace of climate change.«

Crisis. In the latter, China reiterates its opposition to armed attacks against nuclear power plants and its warning that "nuclear weapons must not be used and nuclear wars must not be fought" has been applauded by the international community.[5]

All of the above efforts might be squandered if other countries are unwilling to respond. China cannot work alone, and multilateralism is key for international cooperation. 2023 will witness flourishing international dialogues to revive the collaborations on bilateral and multilateral mechanisms. We are expecting that, in the coming summits of the BRICS, the G20, the G7, and the Asia-Pacific Economic Cooperation (APEC), shuttle diplomacy will bring fruitful achievements to help restore a fair and just world order.

RECOMMENDATIONS AND CONCLUSIONS

PROMOTE WTO REFORM

As bilateral or multilateral investments and trade agreements are on the rise, the WTO continues to be a core promoter of investment and trade facilitation, reducing tariff and non-tariff barriers and eliminating differential treatment in international trade. A reform of the WTO would boost the confidence of the international community in the multilateral trading system and multilateralism. In the future, we hope that all parties will promote WTO reforms and that the WTO will once again fully play its role in maintaining and mediating international multilateral trade.

RESURRECT THE CHINA-EU COMPREHENSIVE AGREEMENT ON INVESTMENT

China and the EU share extensive common interests and a solid foundation for cooperation, but over the past two years, the two sides have reached an impasse on the Comprehensive Agreement on Investment (CAI), which has been hailed as China's second round of reform and opening up. To overcome this impasse and in an effort to revive the CAI, China's National People's Congress ratified the International Labour Organization's 1930 Forced Labour Convention and the 1957 Abolition of Forced Labour Convention in April 2022. Resuming communications may mean that the two sides can negotiate and lift sanctions, allowing the CAI to go into effect as soon as possible and bringing an economic boom to Chinese and European enterprises.

MULTILATERALIZE THE BELT AND ROAD INITIATIVE

The Belt and Road Initiative (BRI) must be reconfigured as a multilateral endeavor for global governance and development. Since it was launched in 2013, the BRI has become a vector of globalization, growth, and investment in many regions. In addition, the initiative has helped build the so-called "soft" infrastructure, such as education, healthcare, and other services. When the time is right, China can propose cooperation in infrastructure between the BRI, the EU-led "Global Gateway" program, and the US-led "Build Back Better World" (B3W).

UPGRADE THE ASIAN INFRASTRUCTURE INVESTMENT BANK TO THE GLOBAL INFRASTRUCTURE BANK

Over the last six years, the Asian Infrastructure Investment Bank (AIIB) has established itself as an effective multilateral development bank (MDB) and successfully integrated into international financial architecture. With a fresh capital injection and expanded membership, the bank would be well placed to expand its remit and become the Global Infrastructure Investment Bank (GIIB). This would involve inviting new members to play a major role, including countries in other regions, such as Africa and Latin America. In addition, the GIIB could form a special body for multilateral actors, including MDBs and regional organizations, to enhance coordination between existing infrastructure initiatives worldwide.

CHINA SHOULD MOVE TOWARD JOINING THE CPTPP

China should move toward joining the CPTPP, a higher standard FTA geared to advanced economies. Joining the 11-member CPTPP would push back against decoupling and protectionism, and provide an external impetus for the next phase of reform and opening. The CPTPP's principles are well aligned with China's goals to improve Intellectual Property Rights (IPR) protection and reform state-owned enterprises (SOEs). In the long term, an enlarged CPTPP could provide a blueprint for reforming the WTO and getting the global free-trade agenda back on track. Chinese membership could help reduce friction and the rise of geoeconomics by aligning China more closely with progressive global trade norms.

ESTABLISH GLOBAL DIGITAL ECONOMY NORMATIVE AGREEMENTS AND REGULATIONS

The digital economy is a key engine and an important trend in world economic development. A new framework must be established that can support the safe and healthy growth of the global digital economy. On June 12, 2020, Singapore, Chile, and New Zealand signed the Digital Economy Partnership Agreement (DEPA); perhaps the Group of Twenty (G20) could also further explore the regulations related to digital trade based on the Osaka Declaration on Digital Economy. The establishment of an International Data Alliance (D20) composed of the world's 20 largest digital economy companies should also be considered to enhance the G20's ability to better promote global governance in the digital economy.

»China cannot work alone, and multilateralism is key for international cooperation.«

COOPERATE ON GREEN DEVELOPMENT

Green development requires new business models and forms of collaboration across the industry. Green issues may offer a more promising field to forge consensus and meaningful reform. In particular, China could work with other partners to promote the creation of a dedicated UN institution focused on climate change as a unique crisis that affects many areas of global cooperation. The UN already plays a leading role in addressing climate change through the UN Environmental Programme (UNEP) and the UN Framework Convention on Climate Change (UNFCCC).

CONCLUSION

Global governance needs to be more inclusive and geared to twenty-first century problems like climate change and addressing inequality by boosting free trade, overcoming the global infrastructure gap, and closing the digital divide. The year the book "Globalization and Its Discontents" was published was probably the heyday for China's longstanding economic growth, owing largely to the dividends of the country's reform and opening up, and its entry into the WTO to engage in the international trade system, which stimulated domestic consumers' confidence and expanded exports for the next two decades. China has been a beneficiary of globalization, and its economic growth has shifted from take-off to maturity and the age of high mass consumption. However, retrospectively, one will find that China too faces challenges, with pressures at home and questions about how other countries will respond to its rise. However, it is in the interests of both China and other countries that the world's most populous country plays a leading role in shaping the next iteration of global governance.

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Overcoming Negative Spillover Effects: The G20's Role in Support of Global Sustainability

Research Paper

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In recent years, the G20's importance as an international forum to promote the implementation of the 2030 Agenda for Sustainable Development has become increasingly evident. In 2016, the G20 leaders adopted a G20 Action Plan on the 2030 Agenda for Sustainable Development, which shall guide the actions of the G20 as a whole (Scholz & Brandi, 2018). The Action Plan has been updated by subsequent presidencies. Not surprisingly, India, which holds the G20 Presidency in 2023, has put sustainable development as part of the LiFE (Lifestyle for Development) concept on top of its agenda. As a forum of high-level policymaking, the G20 can help to achieve the SDGs through actions at the level of its member states, through international policy coordination and by supporting non-G20 countries.

Despite the focus on the SDGs, the G20 neglects one important factor that hinders other countries, especially countries of the Global South, from achieving the SDGs: negative spillover effects. Negative spillover effects are understood as undesirable external economic, social, environmental and security effects on other countries that can undermine efforts to achieve sustainable development (SDSN, 2023).

Although negative spillover effects may be a rather new concept in discourses on global sustainability, the problem itself is not. These relationships are described as "negative externalities"[1] in economics, "ecological footprint"[2] in environmental sciences or as a "Do-No-Harm" principle[3] in the context of development cooperation.

Concrete examples of negative spillover effects include the outsourcing of emission-intensive production processes; the demand for raw materials (e.g., palm oil) whose cultivation can endanger local biodiversity; the toleration of poor labor standards in global supply chains; or detrimental effects of tax havens and banking secrecy (SDSN, 2023).

»As a result of pandemics, wars and financial crises, the global community is far from achieving the SDGs.«

The G20 should be concerned about these effects: While high-income countries are at the top of SDG rankings (Germany was 6th out of 163 in 2022), countries of the Global South are rather at the bottom (Sachs et al., 2019). This ranking is upended when focusing on spillover effects (Figure 1). Here, industrialized countries repeatedly perform poorly (Germany was 149th out of 163 in 2022), while countries from the Global South lead the ranking.

The year 2023 marks the halfway point in the implementation of the 2030 Agenda and its SDGs. As a result of the pandemic, armed conflicts and financial crises, the global community is far from achieving the SDGs. With this year's High-Level Political Forum (HLPF) on Sustainable Development[4] and the SDG Summit[5] taking place in New York in July and September respectively, an important political window of opportunity exists to realize the

Rank	SDG-Index	Rank	Spillover-Index
6	Germany	13	India
7	France	42	Brazil
11	United Kingdom	48	Indonesia
19	Japan	68	Argentina
25	Italy	76	China
27	Republic of Korea	78	Turkey
29	Canada	83	Mexico
38	Australia	97	South Africa
41	United States	111	Russian Federation
45	Russian Federation	120	Saudi Arabia
53	Brazil	123	Republic of Korea
54	Argentina	125	Italy
56	China	134	Japan
71	Turkey	140	Canada
74	Mexico	141	Australia
82	Indonesia	142	United States
96	Saudi Arabia	149	Germany
108	South Africa	152	United Kingdom
121	India	154	France

Figure 1: 19 of G20 members compared in SDG Index and Spillover Index rankings (excluding the EU)
Source: Sachs et al, (2022)

crucial acceleration of sustainable development. This, however, will only succeed if high-income countries acknowledge their responsibility and take concrete action to manage the negative spillover effects they cause.

POLICY INITIATIVES TO ADDRESS NEGATIVE SPILLOVER EFFECTS

While we still have a long way to go to comprehensively address negative spillover effects, the G20 can draw on some best practice examples, both at the level of strategies and concrete legislative initiatives. Germany states in its German Sustainability Strategy that it represents "the principal framework for the implementation of the 2030 Agenda in, by and with Germany" (Bundesregierung, 2021, p.18), and thereby indirectly addresses the problem of negative spillover effects. At the European Union level, it is also recognized that a revision of trade policy is necessary to achieve the SDGs and the Green Deal and to avoid negative spillover effects (Malik et al., 2021).

Various policy instruments have been developed to reduce negative impacts from the actions of high-income countries elsewhere, especially in countries of the Global South. One approach is to establish policies and guidelines aimed at supporting sustainability in global supply chains for reducing the negative impacts of cross-border trade. At the EU level, a Corporate Sustainability Due Diligence Directive (CSDDD) is being discussed that aims at regulating the human rights and environmental obligations of companies. Although the directive has not yet been implemented at the EU level, there are already several laws at the national level, for example, the Loi de vigilance in France, the Wet Zorgpflicht Kinderarbeid in the Netherlands or the Supply Chain Law in Germany (European Commission, 2022).

In addition, there are sector-specific policies that focus on the avoidance of negative spillover effects. Examples include the EU Timber Regulation (EUTR), which prohibits products form illegally harvested timber, the EU Conflict Minerals Regulation, which aims to stop trade in tin, tantalum, tungsten and gold, or the proposal for an EU regulation on batteries. As part of the EU Green Deal, there is also the Farm to Fork strategy, which advocates a fair, healthy and ecological food system.

Another approach is the use of quality labels and certificates to create incentives for sustainable production and, at the same time, to create transparency on the demand side and trigger behavioral changes. Examples include initiatives to certify palm oil, coffee or cocoa in the food sector and the EU Ecolabel in the textile sector (Beyers, Leventon & Heinrichs, 2023; Malik et al., 2021).

However, there is criticism that these approaches are not sufficient to counter negative spillover effects. For example, while the EU Due Diligence Regulation is a powerful approach in principle, member states such as Germany inhibit its implementation and call for a lighter version. The German Due Diligence Act is criticized in terms of its effectiveness, in particular with regard to insufficient consideration of negative environmental impacts in supply chains. It is described as "a law disputed for being too much of a compromise with little consequences" (Elbel & O'Reilly, 2023, p.3). To address these problems, it is important to adopt more stringent regu-

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lations and use forums, such as the G20, to share best practices and scale-up effective initiatives.

AN AGENDA FOR ACTION

In order to design new legislative and regulatory initiatives to address negative spillover effects, it is highly important to consider the perspectives of affected countries. So far, policy making in high-income countries to regulate negative spillover effects is usually not accompanied by dialogue and consultation processes involving relevant partners from the Global South. Without such dialogue processes, the implementation of due diligence laws with transboundary impacts may lead to a rejection by countries of the Global South, which experience the adverse impacts of the activities of multinational enterprises (Luthango & Schulze, 2023, p.6). Only through the principle of procedural fairness can grievances be remedied effectively and, on an equal footing, new procedures and standards be developed. It is thus essential to consider their perceptions on how to reduce negative spillover effects without jeopardizing parallel objectives, such as poverty reduction or food security.

»In order to design new legislative and regulatory initiatives to address negative spillover effects, it is of high importance to consider the perspectives of affected countries.«

In addition to adopting regulations at national level, high-income countries should also seriously support initiatives being promoted by countries of the Global South. While the political will to move from voluntary standards to more binding regulations and laws is increasing, it is not enough to set legislative initiatives at the national or regional level without participating in multilateral negotiations. One such initiative, currently negotiated, is a legally binding instrument on business and human rights that goes beyond the present non-binding United Nations Guiding Principles (Luthango & Schulze, 2023).

Collaboration is also important when it comes to improving data to measure negative spillover effects. Even though there is, for example, the Spillover Index already mentioned above, the data on which countries produce spillover effects in what ways and where is still very poor. Thus, the index currently maps negative spillover effects using fourteen indicators (e.g., measuring victims of modern slavery or CO_2 emissions embodied in imports), but still offers room for further development and refinement. Above all, it must be complemented by more and improved data, because only with concrete knowledge can appropriate solutions be found. Measures for realization include better equipment and closer cooperation with federal statistical offices, but also with other institutions that collect data. In doing so, the ability to collect relevant data must be improved not only among polluters, but also among those affected. There should also be further incentives and obligations for companies to provide detailed data on their activities. In addition, creative ways – such as the involvement of civil society in the polluting and in the affected countries, for example Citizen Science – also offer an opportunity to improve the data situation.

Citizens also play an important role, especially as consumers, when it comes to reducing negative spillover effects. While there are already sector-specific approaches that act on the demand side, such as the use of quality labels and certificates, they should lead to more conscious purchasing decisions. Here, the political and scientific community along with civil society also have the responsibility to raise awareness. Not only individual behavior must change, but above all a political and collective rethinking of our understanding of prosperity must take place. The prevailing understanding that takes GDP as the main indicator of progress and considers further economic growth as a systemic necessity is outdated, and has also led to current global resource consumption exceeding ecological limits. Promising approaches to measuring the well-being of societies beyond GDP, such as the Global Solutions Initiative's "Recoupling Dashboard" that illustrates the correlation of economic prosperity, social prosperity and environmental sustainability, need greater political attention.

WHAT IS THE ROLE OF THE G20?

Without the G20 countries, the 2030 Agenda and the 17 SDGs cannot be achieved. Collectively, the G20 countries are responsible for 80 per cent of greenhouse gas emissions and 75 per cent of world trade. As an informal yet powerful forum, the G20 brings a diverse set of economically significant countries together that both cause and have to suffer from negative spillover effects. While the G20 itself does not adopt international regulations, it serves as a leaders' forum that has the power to set agendas, coordinate national-level policy making and set strategy goals that are later implemented by international organisations. The G20 can also support multilateral decision-making processes such as the United Nations negotiations on a binding treaty on business and human rights.

»Collaboration is also important when it comes to improving data to measure negative spillover effects.«

As it is clear that existing policy approaches are not sufficient to address all the multiple aspects and issues related to negative spillover effects, it is essential for the development of effective solutions to take into account different perspectives, especially of countries in the Global South. Furthermore, it is necessary to develop governance strategies, draft and implement laws, address data issues and mo-

tivate society to participate in the necessary changes. The best way to implement and achieve these basic requirements is through global dialogues and multilateral cooperation, tasks that fit the mandate of the G20.

However, in order to be effective as well as inclusive in contributing to setting a global agenda on tackling negative spillover effects, the G20 needs to reach out the countries not sitting at the table. The Indian G20 presidency should, for example, reach out to countries located in South and South-East Asia, like Bangladesh, Cambodia or Vietnam, and include them in deliberations on avoiding negative spillover effects.

This year, marking the half way point on the way to achieving the SDGs in 2030, provides an important opportunity to advance such an agenda. In light of set-backs in reaching the SDGs, the international community and especially the G20 need to accelerate action to support sustainable development not only at home but also in other countries. Tackling negative spillover effects is an important step in this direction.

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[1] A negative externality is a cost that is suffered by a third party as a consequence of an economic transaction. In a transaction, the producer and consumer are the first and second parties, and third parties include any individual, organisation, property owner, or resource that is indirectly affected. Externalities commonly arise in situations where property rights over assets or resources have not been allocated, or are uncertain (Economics Online 2020).

[2] The Ecological Footprint is the impact of human activities measured in terms of the area of biologically productive land and water required to produce the goods consumed and to assimilate the wastes generated. The Ecological Footprint can be calculated for a single individual, city, region, country and the entire planet (Global Footprint Network 2016).

[3] In development cooperation the so called "Do-No-Harm" principle specifies that possible negative consequences of development cooperation should be identified, avoided and mitigated at an early stage (BMZ 2023).

[4] The HLPF is the central United Nations platform for the follow-up and review of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) at the global level (UN HLPF 2023).

[5] The SDG Summit marks the mid-point of the implementation of the 2030 Agenda. It will bring together political and thought leaders from governments, international organizations, private sector, civil society, women and youth and other stakeholders in a series of high-level meetings. They will carry out a comprehensive review of the state of the SDGs, respond to the impact of multiple and interlocking crises facing the world, and provide high-level political guidance on transformative and accelerated actions leading up to the 2030 deadline for achieving the SDGs (UN SDG Summit 2023).

True Multilateralism: The Path to Peace and Development

Opinion Piece

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CARI / CONSEJO ARGENTINO PARA LAS RELACIONES INTERNACIONALES

The Argentine Council for International Relations – CARI is a civil society, partisan-free, non-profit organization, with a long-standing track record that has made it a flagship institution in the field of international relations in Argentina. CARI's proposal consists in deeply studying the main global challenges and the road that Argentina must take to face them. CARI produces reliable papers, supplies updated information, conducts pluralistic debates, and provides a forum of discussion.

Keywords:
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The world is facing multifaceted challenges: climate change and energy transitions; a pandemic that brought global paralysis and the danger that a similar event may happen again soon; growing inequality, the concentration of wealth in a reduced number of countries and, even in those countries, growing disparities; human rights abuses; displacement of peoples; religious and ethnic conflict; the list goes on.

These challenges must be addressed globally with the cooperation and political will of all, and particularly of the most powerful and richer members of the international community. Effective multilateralism is the key to agreeing on and implementing such a global cooperation, be it in the political sphere or in the specific and technical aspects that each of those challenges present. However, instead of a common global response to tackle these challenges, the main actors (some of whom enjoy privileges of special voting rights in matters of international peace and security) seem more inclined to engage in strategic competition between themselves than in truly multilateral action for solutions.

Something is wrong when the most powerful countries, instead of engaging in the quest for those common solutions that our planet needs as a matter of urgency, devote their energies, resources and creativity to competing amongst themselves and to deepening strategic and security-related rivalries that could put all of us at risk.

Multilateralism is not a mere plurality of likeminded countries and peoples bent on advancing their shared goals, valuable as they may be, but rather an association in which everyone respecting basic principles of human decency could work together in peace for the betterment of all, despite important differences in politics, ideology or levels of development.

»Multilateralism is not any mere plurality of likeminded countries.«

Several international organizations and groupings fulfill these criteria, with the United Nations being preeminent among them. The World Trade Organization (WTO), World Health Organization, Food and Agriculture Organization, UNESCO, World Bank, regional organizations such as the Organization of American States, the African Union or groups like G20 or Asia-Pacific Economic Cooperation, are examples of those which are and could be effective in contributing to the common search for peace and development.

CLIMATE CHANGE

Global cooperation is essential to tackle climate change, as was agreed in the Paris Agreement in 2015. With 194 signatories, all the major countries of the world committed to achieving the goals on climate change and pledged to make their own Nationally Determined Contributions (NDCs). However, the very promoters of the Agreement are in practice demanding that access to their markets should be granted only to those who comply with their own NDC. This could constitute a new barrier

»"Common but differentiated responsibilities" is not just a slogan but an international law.«

to trade not agreed by the WTO and a potential misuse of the Paris Agreement for an unintended purpose.

The principle of "common but differentiated responsibilities," present in all relevant international instruments since 1992 as a binding commitment, should not be eroded or considered as just a slogan. This principle is a rule of international environmental law and has been included in all relevant documents since the Stockholm Conference in 1972, such as the Montreal and Kyoto Protocols, and in the Paris Agreement (third preambular, articles 2.2, 4.3 and 4.19).[1] It should now produce concrete actions, effective policies and the availability of resources to help developing countries achieve the energy transition needed to stop global warming, reduce emissions and build a sustainable economy for all. The fight against climate change should be a common global goal and thus decided upon by all. Agreed and fair criteria, and real common ground amongst all developed and developing countries, should be found. Without investment, financial assistance and new technologies, the energy transition may not happen in many developing countries and the gap between rich and poor will increase globally.

All countries must make a huge effort to combat climate change and advance in energy transitions. However, the special responsibility of those who are polluting the most and for much longer, should not be minimized or diluted. It is their duty to ensure that this special responsibility is reflected in more and deeper commitments and in contributing more resources toward solving the global climate change problem.

ENERGY TRANSITIONS

Energy transitions and switching to renewable and cleaner sources of energy are pivotal for reducing emissions, decarbonizing globally and contributing to a fairer world with sustainable development and well-being for all.

To achieve the Paris Agreement goals, an energy transition is indispensable and huge resources are needed to succeed globally. This will enable developing countries to reach their NDCs under the Paris Agreement and to decarbonize globally by 2050. However, the goal of mobilizing USD 100 billion per year for climate action in developing countries, to help them with adaptation and mitigation measures, is yet to be fulfilled. Deploying renewable energies is expensive and demands advanced technologies which are mostly in the hands of developed countries. Allowing developing countries to access these technologies, and develop and deploy energy sources like photovoltaic, wind, seawater, geothermal, hydrogen, etc. at a reasonable cost, should be a goal for all.

In this context, advanced technologies for renewable energies should be made available to developing countries at a reasonable cost and in accordance with their respective capabilities, in the light of different national circumstances.

The capital necessary to utilize the natural resources needed for new sources of energy (lithium, hydrogen and others) should also be made available for their development and deployment.

An energy transition would require guaranteeing investment, research, development, etc. It should not be seen only as a means for the most advanced countries to make money through new technologies, but also as a tool for a cleaner planet, which will benefit people everywhere. This process should not be a zero-sum game but a game where all win through decarbonizing the planet and overcoming the energy deprivation in which billions of people find themselves, particularly in the developing world.

HEALTH AS A NEW GLOBAL THREAT

The COVID-19 pandemic created a new scenario that compounded the tendency in the last years toward diminishing the flow of people through borders, particularly from developing countries to the most advanced, be it for seeking work, refuge or simply a better life. Barriers to stop or to further complicate those movements grew even before the pandemic struck. Because of the virus, all movement stopped at the beginning of 2020.

Today there are vaccines, and the virus can be controlled to a large extent, but the normalization of even legal movement between countries never returned to normal and possibly never will.

The sharing of the vaccines underlined the differences between rich and poor countries. Despite the global nature of the pandemic, sharing was not the rule and people in developing countries were much less capable of getting vaccines because their countries did not have the capacity to develop them.

Even today, global access to vaccines is not guaranteed to all countries and communities and one may only wonder what the response would be if an even more lethal pandemic were to break out.

DUMPING GLOBALIZATION

The world is going through a dangerous process of increasing strategic and systemic rivalries among the most powerful countries.

Negative consequences will follow, not only for the main actors directly involved in this confrontation, but also for the rest of the world. The last few years have witnessed the emergence of new barriers to trade along with difficulties in the smooth

»A new silo mentality with blocks of countries will be a big setback for all.«

functioning of the WTO and its dispute settlement mechanism. Concepts of nearshoring, friendshoring or onshoring are emptying the hard-won victories of establishing rules for free and global trade instituted through multilateral cooperation. Open markets and fair trade, the undisputed global creed since the beginning of the 1990s, promoted by the most developed countries as the path to global prosperity and development, is today a distant memory.

Trade and investment between the most economically developed countries

and gigantic emerging economies led to a huge increase in the commerce of goods and services. This was reflected in economic growth, intertwined production systems, efficiencies in global production and supply chains, cost reduction and better prices for consumers almost everywhere.

It could be argued that the Global Financial Crisis of 2008, which originated in the developed West, did not lead to the global collapse of the world economy because of the performance of some of the larger emerging economies. These became crucial members of the new integrated global economic structure. This kept the global economy functioning and an economic and financial recovery of sorts was possible within a few years, albeit with a negative redistribution of wealth. However, at that moment, there was also an authentic multilateral decision among the most advanced economies to cooperate to find solutions which could overcome the crisis and benefit all in the context of a globalized economic framework. The G20 was to give political clout to those commitments necessary for a global return to growth. It was then clear that major economies from different regions and outlooks should participate and cooperate in order to succeed in attaining the goal of overcoming the global crisis. The aim was not only to allow those main economies, developed or emerging, to come out of the crisis but also to facilitate the whole world to do so. This was not an altruist objective but a dire need to save the global economy after disastrous financial decisions were made. The practices adopted in the most developed countries had put the whole global economic and financial system on the verge of collapse.

Some key actors in this process became economically much more powerful. For more than half of the countries of the world, trade with those key actors became the key component for commerce. This led to the increased importance of those new key actors, and with their emergence, tensions began to rise not only in the economic sphere but also in the strategic and security fields. The specter of conflict between big powers raised its head once again. The notion that systemic differences should inevitably lead to groupings of those who shared their respective political and systemic outlooks led to the scenario that there would come a point at which countries would have to choose to which group they wished to belong. Such a new silo mentality, whereby countries would only or mostly be able to trade, develop new technologies, and achieve scientific breakthroughs in every field with those who think similarly or are geographically or ideologically close by, would represent a big setback for all. It looks as though we are getting deeper into that juncture, as if we were going back decades to the end of the 1980s where the world stood divided into blocs.

Multilateralism was the answer that the world imagined, after the scourge of World War II, would avoid further wars. The principles and objectives of the UN Charter, enshrined particularly in articles 1 and 2,[2] are still valid and mandatory today and, in the context of new tensions and open conflicts, are more important than ever. The UN was intended as a means of providing a legal, moral and political frame to allow countries and societies with different values, beliefs, histories, political structures or ideas to coexist peacefully

and, if possible, contribute to growth with freedom and well-being for all. This vision is still relevant and indeed essential in contemporary times and so too are organizations which contribute to these goals.

Amongst those multilateral mechanisms mentioned above, the G20 was also conceived to find solutions to big systemic challenges through cooperation instead of confrontation. It includes the most relevant developed and emerging global actors. It has played a positive role for the best part of a decade. Now, in times of growing confrontation amongst the biggest states, it could and should again be an important tool to seek agreements. Here, political will is needed.

THE DRUMS OF WAR

In addition to these tensions and problems, we now have a war crisis in Europe. The brutal invasion of a sovereign country is already more than a year old.

The most fundamental principle of international law enshrined in the UN Charter is the nonuse of "force against the territorial integrity and political independence of a State."[3] This has once again been breached by one of the powers that are the main guarantors of the UN system.

It has been argued that such an aggression is based on alleged breaches of security agreements in decades past and that a space in Europe which is not conducive to military conflicts should be created, but this should be achieved through negotiations, not aggression.

This war is having dramatic consequences not only for Ukraine and its people but also for the whole of Europe and beyond. Seeing Europe in a major war belongs to another century, for example the nineteenth, or even the first half of the twentieth, but not to the peace-striving twenty-first century we live in today.

Peace is essential and all actors, especially those most powerful, must find the way toward negotiations which can bring about a just and durable settlement that can deliver security to all.

This war must not be allowed to escalate, go nuclear or spread, nor used to deepen rivalries and create a division of the world into blocs, pushing countries to take sides or subscribe to one particular agenda. We must return to a global world where every country can live in peace, grow, and choose to cooperate with as many other countries and peoples as possible.

This war is putting all other aspects of the global agenda that need to be addressed in jeopardy. It is worsening the existing problems that must be solved.

We could be at the brink of great danger for international peace and security. We must all step back.

The opinions expressed in this article correspond to its author and are his sole responsibility.

[1] Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104.

[2] United Nations. (1945). Charter of the United Nations and Statute of the International Court of Justice. New York: United Nations, Office of Public Information.

[3] Charter of the United Nations and Statute of the International Court of Justice, article 2 paragraph 4. Available at https://www.un.org/en/about-us/un-charter/full-text

Tapping the Power of International Think Tank Cooperation

Policy Brief

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THE NEW INSTITUTE is a mission-driven Institute of Advanced Study and a platform for change. It strives to develop powerful visions to fundamentally reshape society and practical solutions to turn those visions into a reality. It works in strategic partnerships with a variety of institutional and individual stakeholders – changemakers who share a common set of values and objectives.

The Global Solutions Initiative (GSI) is an independent, non-profit organization. Founded in 2017, GSI established itself as a guiding force in global policy through its advice for multilateral organizations like the G20 and G7. With a comprehensive program of research, outreach, and advisory activities, the GSI brings together policy, academia, civil society, and the private sector. The annual agenda culminates in the Global Solutions Summit, a high-level gathering of leaders, pioneers, and thinkers. The Berlin-based GSI is guided by the vision of its leaders Dennis J. Snower and Markus Engels and diverse international thought leaders. It strives to recouple economic progress with social and environmental prosperity to improve global governance and the everyday lives of people around the world.

GLOBAL CHALLENGES AND THE G20

There are numerous global challenges for which we urgently require global solutions, among them climate change, digital governance, migration, and financial stability. They also include challenges such as inequalities and food crises that are caused by the mechanisms underlying the current globalized economy. The policy actions of one country alone are insufficient to address these global challenges, because spillovers will impair a single country's efforts or because the scale of action is simply insufficient. Thus, solving our global challenges requires collective action through multilateral cooperation.

An important forum to coordinate collective action on global challenges is the G20, working closely with the G7 and regional unions. At the global level, the G20 is unique as the flexibility in its agenda allows the group to quickly respond to emerging challenges, such as the financial crisis of 2008 – around which the group was formed – or the COVID-19 pandemic. The presidency can host emergency meetings and add current items to its agenda, while relying on the existing G20 framework and platform of cooperation through which actors meet regularly.

On the downside, there may be too much focus on acute challenges, with the likely result that longer term challenges are edged out of the agenda or are treated as secondary. Some commentators even diagnose that governments face a "profound loss of direction about why to cooperate in the first place" (Kharas, Snower & Strauss, 2020), owing to rising populism and nationalism in many countries. To overcome this, areas of strategic cooperation that all countries agree to need to be

identified. Think tanks play an important supporting role and can address the aforementioned problems of multilateralism and the G20.

THE ROLE OF THINK TANKS AROUND THE WORLD

Think tanks, in various shapes and sizes, exist in most countries in the world. Think tank scholars provide expertise on issues relevant for public policy, for example by analyzing data sources, conducting surveys, catalyzing academic research or evaluating public policy measures (cf. McGann, 2016).

»Solving our global challenges requires collective action through multilateral cooperation.«

Apart from scholarly research and policy recommendations, think tanks often also foster exchange between the world of academia and the practical worlds of policymaking and business. In contrast to universities and other academically oriented research institutions, think tanks are focused on policy-oriented research, and hence need regular exchange with practitioners. Often, former practitioners (from politics or business) are among the ranks of their staff. Further, for effective policy advice, close communication channels with practitioners are important.

If think tanks can operate independently of government and business, such communication is particularly valuable as it offers a safe space for developing mutual understanding of positions and finding areas of overlapping interests. That way, and with profound knowledge of scholarly work and access to data, think tanks can successfully inform political decision-making.

HOW THINK TANKS CONTRIBUTE TO GLOBAL PROBLEM SOLVING

For successfully supporting problem solving in global governance processes, the national interests of all negotiating parties (e.g., in the G20) need to be understood and overlapping interests need to be found. Based on this, international consensus can be developed to deliver mutual gains.

In contrast to international organizations and their research departments, think tanks can work without being tasked by governments and hence freely point out sensitive issues of current or future concern, as long as they are independent. They can point out where (proclaimed) national interests stand in the way of solving problems, and where current public policy is ill-directed. And they can highlight issues which are not currently on the agenda of governments, but should nevertheless be addressed, in order to minimize future risks.

Think tanks can add significant value to the G20 process and other global governance forums, especially where they collaborate internationally. The T20, the official G20 engagement group of think tanks, has been set up to facilitate such collaboration and to provide research-based policy recommendations for the G20. The network started with a set of scholarly essays in preparation for the G20 Seoul Summit in 2010 (Derviş, 2010). The think tank group later became officially part of the G20 dialogue with civil society – the engagement groups – under the auspices of Mexico's G20 presidency in 2012. During Germany's G20 presidency in 2017, the T20 process became more formalized, with scholars producing research-based policy recommendations, organized into task forces which addressed the various priorities of the G20 presidency. With more than 100 contributing think tanks from the G20 and beyond, the T20 has become a major network of expertise for issues on the G20 agenda. It also allows for policy engagement with the G20 sherpas (Kharas, 2020).

USEFUL THINK TANK PRODUCTS FOR THE G20

The G20 can, broadly speaking, deliver three things: (i) supply top-level political impetus to efforts of collective action and international agreements, sometimes including financial commitments; (ii) set norms and principles for international policymaking and national policies of its member states; and (iii) start concrete policy initiatives. This list follows from studying and characterizing past achievements of the G20, as we have done, e.g., in Görlich and Stein-Zalai (2020).[1] Along the same lines, Kharas (2020) argues that the G20 is an important forum where areas of strategic competition and areas of strategic cooperation can – and should – be defined.

Against this backdrop, there are two sorts of policy advice that are considered particularly helpful for the G20: Narratives and concrete policy recommendations. Narratives can open pathways for international collaboration. International negotiations are strongly influenced by narratives, which provide the underlying rationale for policy action and paragraphs in final communiqués (Hampson and Narlikar, 2022). In that sense, a narrative provides the "umbrella" under which coalitions can gather, and it provides a story of how the outcomes can be presented to voters at home. Think tanks, in an international collaborative process, can help to develop such narratives. If narratives are backed by scientific research and are supported by an international group of independent research institutions, they gain credibility which is helpful for negotiators. The T20 is an ideal forum to identify, develop and discuss such narratives for the G20.

»With profound knowledge of scholarly work and access to data, think tanks can successfully inform political decision-making.«

Concrete policy recommendations that provide solutions to current issues on the G20 agenda are similarly helpful. As we mentioned above, the G20 countries know well how to cooperate within their processes, but they often lack the ratio-

nale for why to collaborate. With concrete policy recommendations, it may be possible to skip the why-question and directly provide the how-to. Making concrete policy recommendations requires profound knowledge and analyses of the empirical facts, knowledge of theoretical models of economic activity and behaviors, as well as institutional knowledge about national and international institutions and initiatives. Think tanks are important suppliers of such expertise and by collaborating internationally, valuable ideas can be tested and spread, or adapted to different contexts. Again, the T20 is an ideal forum in which to do that.

A PROCESS FOR INTERNATIONAL THINK TANK COLLABORATION

It is not an easy task to align an international group of researchers behind a common set of issues and foster their cooperation, especially if the institutional setup of think tanks is diverse and when political priorities change quickly. Furthermore, the set of issues discussed in the G20 is very broad.

It is important that recommendations are based on current scientific evidence and that, ideally, various country positions are adequately reflected. Such balanced evidence or opinion would then help politicians to find positions of overlapping interests, and such think tank advice is likely to have an impact. It may help if this advice is backed by a diverse group of think tanks or experts (Berger et al., 2021). Importantly, advice needs to reflect state-of-the-art research and data, and provide actionable recommendations, ideally alongside narratives that highlight overlapping interests and provide research-based pathways that give direction to support the G20.

»Structured processes for collaboration are key for think tank engagement and a successful advisory process.«

If think tanks manage to collaborate globally to understand different national problems and positions and identify the overlapping interests of countries, they can make an essential contribution to international governance forums, such as the G20. By doing this work, think tanks can help shape a rules-based international system that eventually makes every country better off.

Structured processes for collaboration are key for think tank engagement and a successful advisory process. In addition, a structured process is helpful to improve the continuity and coherence of the work. The following elements are important to define the process:

1. Set overarching topics (e.g., task forces), which are aligned with the presidency's agenda but also allow for more forward-looking input.
2. Define the final products with the needs of policymakers in mind, and as well as taking the capabilities and resources of the think tanks into account (e.g., policy briefs).
3. Be inclusive of think tanks with various disciplinary backgrounds and origins.
4. Ensure exchange formats, in which
   (a) scholars can discuss their work among peers, and
   (b) multistakeholder discussions can take place to bridge the gap between idea and implementation.
5. Actively engage with the presidency's government, especially with the Sherpa, in order to develop an effective timeline for research and advisory work. Encourage international partners to do the same in their countries to spread ideas.

This structure makes the process easy to carry over and adapt across presidencies. It also reliably leads to outputs, which policymakers expect from the T20. Finally, it sustainably strengthens the ties between researchers and institutions.

CONDITIONS FOR SUCCESSFUL COLLABORATION

The G20 countries should have an inherent interest in actively supporting the work of think tanks in the T20 as well as the work of the other engagement groups for at least two reasons. First, the engagement groups' processes improve the quality of decision-making as new sources of experience and evidence are tapped into and evaluated. Coherence and continuity can be provided if engagement groups in subsequent presidencies work together and build on each other. We have outlined in the previous sections how the process to achieve this can be organized. Second, they help to address the legitimacy problem of the G20.

The G20 is not an international institution that is constituted under international law, even though its members are represented by their current governments – sometimes, but not always, democratically elected. For that reason, the G20 cannot make binding decisions and leaders cannot be held accountable to comply with the communiqué. Furthermore, the composition of the group does not follow a transparent logic.

»G20 presidencies can benefit if they set the right conditions and tap into a global pool of knowledge, expertise and ideas.«

The dialogue with civil society, of which the T20 is part, is a response to the problem of legitimacy. The dialogue opens an opportunity for the presidency to interact with important stakeholder groups in society, for example, businesses, labor unions, women and youth organizations, or NGOs, and it gives these stakeholder groups an active channel to provide the presidency with recommendations, which ideally are synchronized with international partners participating in the engagement group.

All G20 presidencies can clearly benefit if they set the right conditions and tap into a global pool of knowledge, expertise and ideas for a successful presidency. We suggest three conditions needed for the T20, as well as other engagement groups,

to realize their mission of improving the quality of decision-making, coherence and continuity, and increasing legitimacy by representation.

1. CONTINUOUS INVOLVEMENT

The G20 presidencies must ensure continuous involvement of all engagement groups. They should provide the mandates to lead organizations in time so that adequate preparations and handovers can take place. While this is vital for continuity, it also strengthens participation and thereby representation, as reliable relationships can be built. Commitment to the process, which builds on top of their regular work, will be rewarded in the long run.

2. FORMAL PATHS OF INFORMATION AND INFLUENCE

The G20 presidencies need to establish formal ways for the engagement groups to interact with government decision-makers. Theis should be a two-way process. On the one hand, it is important for engagement groups to learn from policymakers which issues are important to them and where inputs from an international civil society group is especially useful. On the other hand, recommendations need to reach the right decision-makers. Regular interaction between the Sherpa and the mandated leaders of the engagement groups must be ensured.

3. INDEPENDENCE

The participation of engagement groups only adds value when their work has been conducted independently of the government. If the engagement groups only duplicate the thinking of governments, decision-making quality will not improve. Neither can dependence increase legitimacy. Furthermore, if the mandated lead institutions are not independent, there will be no or only limited participation by international partners.

When these conditions are met, think tanks can effectively inform forums such as the G20, which are so vital to find solutions to global challenges. In general, civil society is an important actor in driving the needed changes and transformations, both as a provider of ideas and demands from the group it represents, and as an implementer of the decisions made at the political level.

Note: A longer version of this article was previously published by the Asian Development Bank Institute in "A World in Crisis, a World in Progress: Growing Better Together". Available online: https://www.adb.org/publications/a-world-in-crisis-a-world-in-progress

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[1] Examples for (i) are the G20's decisions to support the Basel III agreement for improved financial stability and the support for the Paris agreement. Examples for (ii) include the promotion of paradigms such as macroprudential financial regulation, or a standstill agreement for protectionist measures amid the financial crisis. Examples for (iii) are the "25 by 25" goal to improve gender equality by reducing the female employment gap, or the initiation of the base erosion and profit shifting (BEPS) initiative to combat tax avoidance.

Together for 2030 – A Multi-lateral and Multidimensional Strategy for the Global Commons

Opinion Piece

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THE NEW INSTITUTE

THE NEW INSTITUTE is a mission-driven Institute of Advanced Study and a platform for change. It strives to develop powerful visions to fundamentally reshape society and practical solutions to turn those visions into a reality. It works in strategic partnerships with a variety of institutional and individual stakeholders – changemakers who share a common set of values and objectives.

GLOBAL SOLUTIONS
THE WORLD POLICY FORUM

The Global Solutions Initiative (GSI) is an independent, non-profit organization. Founded in 2017, GSI established itself as a guiding force in global policy through its advice for multilateral organizations like the G20 and G7. With a comprehensive program of research, outreach, and advisory activities, the GSI brings together policy, academia, civil society, and the private sector. The annual agenda culminates in the Global Solutions Summit, a high-level gathering of leaders, pioneers, and thinkers. The Berlin-based GSI is guided by the vision of its leaders Dennis J. Snower and Markus Engels and diverse international thought leaders. It strives to recouple economic progress with social and environmental prosperity to improve global governance and the everyday lives of people around the world.

A global warning and a global opportunity: While our ecosphere is in urgent danger, multilateralism is now more important than ever before. A huge, dynamic upscaling of global finance[1] for global commons and common goods, and for supporting the Sustainable Development Goals (SDGs), is urgently needed. Time is running out. We must act quickly to avoid a deadly spiral for humanity and the planet:

- We are halfway to 2030, but we remain far from achieving the SDGs. Since 2020, multiple crises have been eroding development progress.
- An estimated 100 million people fell into extreme poverty due to COVID-19. Around 40 million more will follow due to the war in Ukraine.[2]
- Left unchecked, climate change and related extreme weather events will drive 130 million people into extreme poverty by 2030.[3]
- The SDG financing gap has increased in developing countries from 2.5 trillion before COVID-19 to 3.9 trillion in 2020. At the same time, closing this gap would cost less than 1% of global finance.[4]

Safeguarding global common goods is key for the survival of mankind. Right now, the scale and delivery of action on global common goods is both lacking and lagging.[5]

The financing system for global common goods is overcomplex and politically arbitrary, requiring explicit additional financial decisions by global institutions, G20/G7 leaders, G7/G20 finance ministers and central bank governors and other emerging global players. Taking into account the existing complex ecosystem of technical, political and financial support for developing countries in line with SDGs,

we should nevertheless start an additional discussion to investigate options for a highly dynamic new global finance source to support the SDGs, global commons and global common goods. This has to be done against the backdrop of the current challenges in global governance and the pushback on multilateralism, which must be reversed as quickly as possible.

The pursuit of global commons or common goods (GCGs) was cemented by the international community in Rio de Janeiro, 2012, as a follow-up to the Millennium Development Goals (MDGs). The seventeen SDGs came into effect in 2016, with the aim of making huge progress by 2030 in combatting not only climate change but also sixteen other relevant global common goods, as preconditions for the continued life of humans and the global ecosystem.

»We should investigate options for a highly dynamic new global finance source to support SDGs, global commons and global common goods.«

In addition, the legally binding "Paris Agreement," adopted at COP21, also came into force in 2016. It was meant to be a game-changer, seeking to keep global warming below two degrees Celsius above pre-industrial levels through joint global action.

As the latest Intergovernmental Panel on Climate Change (IPCC) report now shows, surpassing the 1.5 degree Celsius threshold will create huge problems, as several ecosystems are getting close to, or are already at, their tipping points.[6] Inaction or delay will have huge negative impacts on all ecosystems, global commons and global common goods, and in some aspects it will take thousands of years to reverse or ameliorate these effects, if this is even possible. All adaption measures might fall short of common needs. Life for humans might be rather harsh, if it is possible at all.

Climate change, therefore, is the ever-accelerating central driver of a drastic change in human living conditions, and is the harbinger of global degradation and increased losses of ecosystems that have existed for millions of years. We are already seeing this, and more is to come: numerous secondary and tertiary effects like rising sea levels, food and water crises, fires, floods, droughts, hunger, health issues and pandemics, rising migration and many other related issues. This means unprecedented economic losses and failure, deteriorating work and social conditions, and the decoupling of societies. The deterioration of financial stability and fiscal resources follows as a result of the loss of political stability in many countries and regions. All this will be accelerated by rising populations in developing and emerging countries.

What the last 2000 years has shown us of how human societies react under stress is rather depressing. Societies often get into deep trouble – depending, of course, on different cultural heritages. History – not least the twentieth century – has shown that democratic, open and liberal societies tend to become more inward-looking and more authoritarian when big crises emerge. Similar effects have also been observed in countries with different long-standing political cultures and history. They also often make a turn under stress, becoming more authoritarian, more closed-off and more inward-looking.

It is not unreasonable to assume that our economic situation will remain challenging. Economic deterioration, environmental degradation and their related effects could further hamper the political economy across the globe. As a consequence, the individual appetite for financing "outside" issues like the SDG agenda will likely become more and more limited in the long term. Even if the facts are known, political leaders may not prioritize financing common goods outside their home country, diminishing or simply stopping efforts in this direction. In this regard, there is perhaps no difference between developing or emerging countries and industrial countries. The prevailing attitude is: "My people and my country first!"

Foresight studies show that in the near and long-term future, country policies are likely to become much more national and maybe also regional, but in any case, less global.[7] Bigger players with huge strategic assets and resources of their own may follow a "fortress approach." This may be supported by long-term strategic decisions creating a friendly "backyard," as relatively strong global players buy off weaker ones to create a space of neo-colonial influence or dependency. In other scenarios, this need may also lead to outright military action against neighbors to safeguard long-term access to relevant strategic goods such as energy, food, water or other natural resources.

Looking at what is now happening in Ukraine, it is not difficult to imagine what may happen next as a result of similar or other motives. One might therefore conclude that the possible future global scenario described above can already be observed in a nutshell, right at our front door.

»A quantum leap in creating a new and sustainable global economic system is key to combatting climate change.«

Indeed, it is no longer a secret. We are now 70 years on from the disaster of World War II. In the global order of cooperation that followed, starting with the Marshall plan for Europe, global common values were – after a very controversial debate – written in the Universal Declaration of Human Rights. The United Nations was founded, including the prominent – and currently rather mute – Security Council, together with UN agencies plus the multitude of globally operating common institutions like the International Monetary Fund (IMF), the World Bank, the World Trade Organization (WTO), the OECD and others. Some of these institutions, such as the WTO, are undergoing important re-

forms while others, such has the OECD, have proven their relevance to serve as a bridge between advanced and emerging economies while not having universal membership.

»To pursue our SDG and climate targets at the same time, we need to define effective multilateral solutions and ensure affordable financing for the developing world.«

In addition, "newer" institutions like the G20 – once functioning and relevant, despite an ongoing issue of membership and scope – are under pressure to deliver in a challenging geopolitical context. New coalitions or associations – also temporal or issue-specific – of a regional or functional nature are emerging, by and large dominated by one of the remaining or upcoming global players like the US, China, India, Brazil, Indonesia and others. At the same time, the succeeding G20 presidencies of Indonesia (2022), India (2023), Brazil (2024) and South Africa (2025) pose new opportunities to jointly advance the SDG and climate agendas with innovative instruments.

The risk of fragmentation and segregation continues, politically and economically. Indeed, we are seeing the long-lasting, western capitalist paradigm and its "global growth engine" stuttering, and this is feeding all of the processes described above, nationally and internationally. Its central issue is the ongoing and now increasingly rapid changes to global value chains (GVCs). The summer of global trade is turning to autumn or winter, and the next summer seems out of sight – perhaps it will never come around again.

The prevailing terms of the time are therefore "deglobalization," "degrowth," "friend-shoring" and "nearshoring." GVCs are no longer about "just-in-time" or cheap products and services. The new approach to GVCs centers around security, resilience, renationalizing and, above all, multidimensional sustainability. Digital product chains are no longer about easy access and quick use, but must consider issues of IT-sustainability, trustworthiness, digital exploitation, "dark patterns," AI and, most of all, data privacy.

In principle, a quantum leap in creating a new and sustainable global economic system is indeed key to combatting climate change and the other related ecological challenges. But this necessary shift will take time, to create a new, more fair and acceptable balance for all stakeholders, especially for the weaker players in developing or emerging countries. At the same time, it will also have severe consequences which will, most likely, feed existing political unrest on a global scale.

This brings us back to the main issue. How can we quickly tackle climate change and other related environmental challenges with the necessary financial firepower, in a holistic way, in line with creating a new and fair economic system beyond old-fashioned traditional capitalism on a global scale, whilst also reinventing the multilateralism that is so necessary to tackle these challenges, in line with a global common spirit and in spite of our differences in values and culture?

The "silver bullet" proposed here – of course meant as a new but decisive member of an already existing and very sophisticated SDG "support-team" – is a new, non-arbitrary and highly dynamic financial source.

The existing SDG and development "support team" is a well-tailored but also complex system with a lot of elements. It encompasses general or tailored and differentiated support of all kinds, both international and public, including private capital. International institutions like the UN organizations play a prominent role, and there is access to World Bank and IMF programs, Special Drawing Rights support or debt relief measures. Development banks offer additional support, and regional multilateral development banks (MDBs) help a lot. There are also numerous initiatives from the G20, the G7, and other organizations, regional gatherings and initiatives. There is both conditional and unconditional support. There are multiple civil society organizations, foundations, philanthropists and NGO initiatives offering specific support, combatting the "Washington Consensus" or inadequate austerity proposals. National development ministries, their offices and their financial funds also play a big role. There are also various additional political and very relevant future initiatives e.g., the Gabriel Zucman approach to tackling tax havens. The OECD has proven over the last two decades that a fairer, more inclusive and more efficient international tax agenda is possible, with its Global Forum on Transparency and Information for Tax Purposes, its Inclusive Framework on Base Erosion and Profit Shifting and the current work on taxation in the digital economy and a global minimum tax.

Nevertheless, three important issues remain in the SDG architecture. First: Of course, such a diverse system is in itself overcomplex. There is no "clearing" or coordination mechanism. It is impossible create an overview for donors and receivers that aligns and focuses all possible support systems for optimal individual, regional or global effects, e.g., for the SDGs. Second: A lot of these programs are arbitrary, and nearly always require new political decisions, mostly within stakeholder groups, to prolong or give additional financial support, while also revising conditionalities. These problems will only increase if multilateralism deteriorates and new nationalisms are on the rise, as described above. Third: It's simply too little, too late. The need by far outstrips the resources available.

Currently, 80% of global finance is held in high-income countries and less than 3% of sustainable investments are carried out in lower-income countries.[8]

To pursue our SDG and climate targets at the same time, we need to define effective multilateral solutions and ensure affordable financing for the developing world.[9] And we need to be creative and ambitious, drawing on innovative instruments like results-based investment and blended finance. Our strategies need to combine several avenues to reach the SDGs while at the same time delivering on our net zero ambitions:

1. We need to work toward an efficient, inclusive and transparent way to discuss the effectiveness of our policies toward net zero emissions, such as the recently established OECD Inclusive Forum on Carbon Mitigation Approaches (IFCMA) which is designed for policy dialogue, data collection and effective policy solutions.
2. We need to address the bottlenecks in SDG financing, including by addressing the debt crises in many emerging and developing countries by refocusing the works and mandates of multilateral development banks and international organizations.[10]
3. We need to involve the private sector in the solution in order to leverage the "millions to the trillions." The OECD is playing its part through our joint work with the UN Development Programme on comparable impact standards and our OECD Blended Finance Guidance and Principles, which have informed G20 principles during Indonesia's G20 presidency.[11]
4. We need more integrated responses that reflect the multidimensionality of development. This means breaking out of traditional economic mindsets to embrace multidimensional well-being metrics and policy design. It means promoting lifestyles that foster consumption and production models compatible with planetary boundaries and equity (LiFE approach) as promoted by the Indian G20 presidency.
5. Policy makers could, in various global governance fora, discuss new ways of financing the SDG and climate agendas.
6. In such a context, decision makers might look again at a possible financial transaction tax (FTT or Tobin Tax)[12] on all financial operations, without any exception, or perhaps an even broader "click-tax" on all digitally operated transactions. Some internal calculations can easily show that this could be a real game-changer for SDG financing, without creating economic or political distortions and also avoiding the pitfalls of the current developments described above.
7. Of course, much more is needed, beginning with an adequate institutional design for central collecting, and a means of spending the funds effectively with effective control and oversight, and with a view to connecting the existing SDG and development financing ecosystem. Of course, creating a new independent international body for administration or using an existing one linked to the current system will not be an easy task, but the effort would be most worthwhile.

A bold multidimensional and multilateral approach, including several avenues with new and different instruments, is needed in order to make progress toward successfully combatting climate change and safeguarding important global common goods without putting national states or multilateral institutions under further additional fiscal and political stress. This may help to avoid anti-liberal authoritarian moves or aggressive nationalism, and thus help to stop the downgrading of human rights and the hampering of civil society solidarity, agency and empowerment. Beyond all cultural differences, we may thereby finally come back toward a certain renaissance of global multilateral cooperation, which respects the ecosphere above all else.

This article is written in the personal capacity of the authors.

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The Future Is Now: A New Urgency for Global Action

Opinion Piece

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The China-West Dialogue (CWD) is an inclusive project which draws together thought-leaders from China, Canada, Chile, Europe, the UK, Japan, Korea, and the United States. The CWD seeks to define an "alternative framework" for China-West relations at a moment when the toxic US-China bilateral relationship dominates geopolitics. Global governance issues in particular have been significantly hampered by these rising bilateral tensions.

Keywords:
responsibility, discourses, governance, shifts, steps

THE NEW URGENCY

On 21 March, the International Panel on Climate Change issued its most dire report, stating that global temperatures are now likely to rise above the 1.5 degrees Celsius threshold in "the first half of the 2030s." This brings forward the 1.5-degree target by nearly twenty years.

To avoid this disastrous trend, the IPCC report states that two steps would be necessary: industrialized nations would have to reduce CO_2 emissions by half by 2030, and "stop adding carbon dioxide to the atmosphere altogether by the early 2050s" (Plumer, 2023). In other words, the current target of achieving net-zero CO_2 emissions by 2050 will no longer be enough; ZERO emissions have to be achieved by "the early 2050s," because carbon off-sets will then be necessary to hold temperature rises closer to 1.5 degrees.

These new projections basically imply a categorical shift not only in the timeframe within which action needs to be taken to avoid highly catastrophic impacts from climate change, but also in the scale of action needed.

As the New York Times reported, "To stave off a chaotic future … government and companies would need to invest three to six times the roughly $600 billion they now spend annually on encouraging clean energy in order to hold global warming at 1.5 to 2 degrees, the report says" (Plumer, 2023).

To scale-up to this level of investment to avoid catastrophes would require a massive effort that needs to be undertaken now, not later. The urgency is clear. The future is now. Action must begin, now.

»These new projections imply a categorical shift in the timeframe within which action needs to be taken to avoid the impacts from climate change.«

THE NEW CONTEXT

As super-charged as the new climate change trajectories are, global warming is not the only drama on the world stage.

All countries are facing the turbulence caused by middle class anger with the sense of exclusion, disappointed expectations, and being left out of the benefits of global growth. This widespread anger has revealed a loss in confidence in institutions, markets and governance to deliver for ordinary people. This disenchantment with socio-economic-governance outcomes has fueled polarization in domestic politics and nationalism in international relations. The international spillover effects of internal social and political divides create an extremely unfortunate conjunction of forces that generate geopolitical tensions which dampen the international cooperation and coordination needed to address the systemic global challenges facing the world as a whole. The last layer of constraint is the Russian war in Ukraine, which has stimulated global inflation and external debt pressures and drained fiscal resources in all countries

which could otherwise be available to address systemic issues.

Just at the moment when it is abundantly clear to the most casual observer that all these systemic risks are interconnected, it becomes increasingly clear how constrained the world is in dealing with them. We have known for some time that we have to energize recoupling, alignment and sustainability together. Now, there needs to be an acceleration of these efforts.

The short-term pressures are consuming available resources, even before discounting into the present the imperative investments necessary to deal with not only climate change, but also social inclusion, global health, public education, digitalization and AI, and strengthening domestic and global governance. Even though the evidence is now clear that as a global community we must come together and mobilize resources and clarify public purpose as imperatives for systemic sustainability, the constraints are daunting.

»Just at the moment when it is abundantly clear to the most casual observer that all these systemic risks are interconnected, it becomes increasingly clear how constrained the world is in dealing with them.«

ARE THERE WAYS FORWARD?

Are there ways to articulate the human predicament which instill in publics a sense of the stake each person has in the global outcomes for the future, a sense of social responsibility within their communities, workplaces, families and nations, and a sense of urgency and understanding? These could enable convergent public discourses and debates that might generate the actions that are necessary to strengthen economic prospects and social outcomes for all, institutional mechanisms that work for the benefit of societies as a whole, and environmental sustainability across sectors and around the world. Can the current moment lift peoples' horizons beyond the parameteres of self-interest and individual benefit, to an understanding that the fate of everyone impacts the conditions of all?

CIVIL SOCIETY FORUMS AS MODES OF GOVERNANCE IN TIMES OF CRISES

The Global Solutions Summit grew out of the Think20 (T20) of the German G20 in 2017 when Dennis Snower created it as a broader, more inclusive forum that would meet annually in Berlin rather than rotate among capitals of G20 host countries, as is the case with the T20. The Global Solutions Summit (GSS) is not just composed of think tank experts, academics and researchers but includes thought leaders in business, labor, religions, science, policy-making, politics, reaching out to women and youth. It is a veritable reflection of civil society in most countries. The GSS has as its focus the global context and systemic challenges of our time. It is not biased toward one profession or another, or one region over others, or one political tendency over another.

The focus of the GSS does make it a platform for concerned global citizens who are seized by the conjunctural moment we are in to interrogate, explore, question, elaborate and articulate ways in which humanity, nations, cities and individuals can exercise agency over problems in the public square, envision pathways forward and imagine ways of taking responsibility for global outcomes rather than relying on markets or current leaders or existing institutions to determine the global future.

The overall purpose of this global platform is to interact with each other in ways that enable seeking, finding, and formulating pathways forward to better futures than would be the case if we had not stepped up and joined together to take charge of the global future rather than be subject to how it might evolve, unguided by the human mind and imagination.

The need to step up and steer the future rather than be a victim of it is amply demonstrated by an observation in the New York Times regarding the annual Economic Report of the President of the United States by the White House Council of Economic Advisers. "The report broadly suggests that climate change has upended the concept of risk in all corners of the American economy, distorting markets in ways that companies, people and policymakers have not fully kept up with. It also suggests that the federal government will be left with significantly higher costs in the future if it does not better identify those risks and correct those market distortions" (Tankersley & Flavelle, 2023). "Correcting market distortions" has not been a central concern of mainstream economics. This observation highlights the intensity of the current context.

»The overall purpose of this global platform is to interact with each other in ways that enable seeking, finding, and formulating pathways forward to better futures.«

The opinion writer, Thomas L. Friedman, has written a startling article explaining the enormous impact anticipated from AI in general and the GPT-4 that will cause "everything, everywhere (to) change all at once" (Friedman, 2023). He shows a way forward for all of us in Berlin in mid-May of 2023 and beyond: "We are going to need to develop … 'complex adaptive coalitions' … where business, government, social entrepreneurs, educators, competing super-powers and moral philosophers all come together to define how we get the best and cushion the works of A.I. No one

player in this coalition can fix the problem alone. It requires a different governing model from traditional left-right politics. And we will have to transition to it amid the worst great-power tensions since the end of the Cold War and culture wars breaking out inside virtually every democracy."

The Global Solutions Summit is itself a "different governing model." We have a clear set of challenges in front of us. There is now a new urgency to force actions and solutions. The Global Solutions Summit is not a decision-making forum. No one elected any of us to decide anything. But it is a caldron for generating fresh ideas, new approaches, complex perspectives, and practical solutions that can contribute to shifting public discourses and political dynamics to facilitate crucial steps forward toward deliberately designed futures rather than default outcomes resulting from failures to take responsibility for human destiny.

The opinions expressed in this article correspond to its author and are his sole responsibility.

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Economy & Social Well-being

Page 122 **Measuring Prosperity Ethically**
Dennis J. Snower
Global Solutions Initiative

Page 130 **Connecting Value and Values**
Sonja Haut
Novartis

Page 136 **Inequitable Access and Cyber Threats**
Prof. Syed Munir Khasru
The Institute for Policy, Advocacy and Governance (IPAG)
Damien Manuel
Australian Information Security Association (AISA)

Ashutosh Chadha
Microsoft

Abhishek Singh
The University of Adelaide

Page 144 **Value Beyond Accounting – from Sustainability Disclosure to Meaningful Business Steering**

Tobias M. Wildner, Florian Klinkhammer, Dimitrij Euler
Value Balancing Alliance

Page 152 **Everyday Meeting Spaces as Infrastructures for Democracy**

Rainald Manthe
Center for Liberal Modernity

Page 158 **Bridging the Lifelong Learning Gap**

Romora Edward Sitorus, Denni Puspa Purbasari
The Coordinating Ministry for Economic Affairs of the Republic of Indonesia

Elan Satriawan
The National Team for The Acceleration of Poverty Reduction (TNP2K)

Fajar B. Hirawan
Centre for Strategic and International Studies Indonesia (CSIS)

Page 166 **Digital Technologies in Education**

Estefania Charvet, Daniela Garcia Villamil
Southern Voice

Measuring Prosperity Ethically

Research Paper

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GLOBAL SOLUTIONS
THE WORLD POLICY FORUM

The Global Solutions Initiative (GSI) is an independent, non-profit organization. Founded in 2017, GSI established itself as a guiding force in global policy through its advice for multilateral organizations like the G20 and G7. With a comprehensive program of research, outreach, and advisory activities, the GSI brings together policy, academia, civil society, and the private sector. The annual agenda culminates in the Global Solutions Summit, a high-level gathering of leaders, pioneers, and thinkers. The Berlin-based GSI is guided by the vision of its leaders Dennis J. Snower and Markus Engels and diverse international thought leaders. It strives to recouple economic progress with social and environmental prosperity to improve global governance and the everyday lives of people around the world.

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THE CHALLENGE

Many of the problems that people around the world face nowadays – such as climate change, biodiversity loss, financial instability, inequalities of opportunity – derive from a deficiency in the moral foundations of capitalism. They are collective action problems that are not addressed within the current framework of the market economy. People should be acting in ways that take into account the consequences of their actions for others, but they fail to do so because the capitalist system often gives them incentives to pursue their selfish interest to the detriment of others.

A central reason for this deficiency is that the prosperity of nations and businesses is not measured appropriately. National and business prosperity are measured primarily in terms of GDP and shareholder value, respectively. This deficiency is not inherent in the capitalist system. Rather, it is a failure to measure success within the capitalist system in ways that promote the pursuit of human flourishing.

GDP and shareholder value do not take proper account of environmental degradation and social fragmentation. For example, climate change and biodiversity loss clearly endanger the present and future of humanity, but these phenomena are often not counted as detriments to GDP and shareholder value. Social fragmentation prevents people from engaging in the collective action that is required to overcome such problems, but when globalization and robotics undermine the social fabric of communities, these social consequences are given little attention in our measurement of national and business prosperity.

Capitalism is a system that enables people to mobilize resources, goods and services in the pursuit of given goals. If the goals are defined and measured inappropriately, then the market system will function inappropriately as well. On this account, a major challenge of our times is to rethink the measurement of prosperity, at both the national and business levels.

By measuring prosperity in ways that are consistent with the achievement of meaningful human well-being – individually and collectively, now and in the future – and by accounting and reporting on such measures, we come into a position of conceiving how the capitalist system can be redirected to serve the genuine interest of humanity and the rest of the natural world.

ETHICAL MEASUREMENT OF PROSPERITY

Failures to address collective action problems are invariably moral failures. The reason is simple: An essential purpose of moral values is to promote intrinsic cooperation within groups and suppress destructive selfishness. Moral values can thereby help people address collective challenges, such as public good and common pool resource problems.

»GDP and shareholder value do not take proper account of environmental degradation and social fragmentation.«

On this basis, it is wrong to engage in economic activities that lead to the destruction of our natural world or to the destruction of our communities, preventing us from addressing these and other collective challenges.

Prosperity should be measured in ways that enable us to address our collective action problems at all the relevant levels – local, regional, national, multinational and global. This requires human well-being to be measured more profoundly and extensively than GDP and shareholder value.

»The capitalist system can be redirected to serve the genuine interest of humanity and the rest of the natural world.«

There are three major concepts of well-being. The first focuses on pleasures, such as those from consuming food, entertainment and walks in the countryside. These pleasures arise from the satisfaction of human wants. The second is life satisfaction. This focuses on how people evaluate their life as a whole, rather than their feelings in real time. The third concept centers on the pursuit and achievement of one's moral values.

The pleasure-based concept is close to the economists' traditional notion of utility: well-being is simply the discounted sum of utilities from the satisfaction of wants. The underlying pleasures are fleeting. Life satisfaction is more durable, but it characteristically depends on one's mood, self-esteem, personality, seasonal effects and outlook on the future (e.g., hopeful versus despairing).

The third concept, by contrast, is central for leading meaningful, fulfilling lives. It is impossible to find meaning in one's life without living in accord with one's moral values. It is impossible to find fulfillment in one's life without having aligned one's actions with one's sense of moral purpose.

On this account, the ethical measurement of prosperity becomes central for the redirection of capitalism towards human fulfillment. Before exploring the content of such measurement, it is important to review the roles that moral values play in guiding actions.

THE SAGE DASHBOARD

Though there are many existing measures of well-being, none has thus far been focused exclusively on the pursuit and achievement of moral values.

The SAGE Dashboard is the first purely normative dashboard of well-being.

It is composed of four components:

1. Solidarity (S, measuring social cohesion and embeddedness): This covers the needs of humans as social creatures, living in communities with a sense of belonging.
2. Agency (A, measuring empowerment): It covers the need to shape one's life through one's own efforts, both personally and collectively. It includes mastery of the environment, personal growth and the attainment of personal and collective goals.
3. Goods, in the material sense of goods and services (G, comprising conventional measures of GDP): This variable is central in the economists' toolkit.
4. Environmental sustainability (E, measuring the ability of the natural world to sustain and regenerate itself): It includes not only the consumption of what economists call "environmental services," but also the need to participate in the flourishing of the natural world.

Each of these components has a corresponding normative foundation of well-being:

- Solidarity: communitarianism
- Agency: classical liberalism
- Material goods: materialistic utilitarianism
- Environmental sustainability: eco-ethics.

These normative foundations are clearly related to core values that have been identified by other contributors to the literature on moral values. For example, with regard to Jonathan Haidt's moral foundation theory (e.g., Haidt 2013), the categories of Care/Harm, Loyalty/Betrayal, Authority/Subversion and Sanctity/Degradation can all be considered aspects of Solidarity, whereas Liberty/Oppression and Fairness/Cheating can be viewed as aspects of Agency.

The underlying claim of the SAGE dashboard is that it represents values, as well as the corresponding sources of well-being, that all people appear to have in common, transcending national and cultural boundaries. This claim is built on the following insights:

- Since the success of homo sapiens is built largely on cooperation and niche construction, humans have evolved motives to socialize (particularly in groups of limited size) and to use their capacities to shape their environment.
- Consequently, personal empowerment (the exercise of agency) and social solidarity have become fundamental sources of human well-being – along with consumption of goods and services and environmental sustainability.

When people's important material needs have been met, when they feel securely and meaningfully embedded in society, when they have the power to influence their circumstances in accordance with self-determined goals, and when they live respectfully of planetary boundaries, then they achieve a wider sense of human well-being than when they simply maximize GDP growth. Failure to achieve any of these ends is associated with suffering. The inability to meet basic material

»The ethical measurement of prosperity becomes central for the redirection of capitalism towards human fulfillment.«

needs signifies extreme poverty; lack of empowerment signifies a lack of freedom, self-expression and self-determination; failure to achieve social solidarity is associated with loneliness and alienation; and living unsustainably means robbing future generations (as well as others in the current generation) of the opportunity to lead flourishing lives.

The goals of economic prosperity, empowerment, solidarity, and environmental sustainability are "on a par" (Chang, 2017) in the following sense: (a) each component of well-being is better than others in some respects, (b) none seems to be at least as good as the others overall, in all relevant respects, and (c) there is no common unit by which they can be measured with regard to overall well-being, though they may be comparable ordinally for decision purposes. When sources of well-being are "on a par," they are qualitatively different in terms of overall well-being, but nevertheless in the same neighborhood of such overall well-being. This means that if, in a particular social context, when choices between two jobs in different disciplines (e.g., becoming a lawyer or a doctor) are on a par, then offering a slightly higher wage in one job will not make that job preferable. Such choices are "hard choices," because "they are comparable, but one is not better than the other, and yet nor are they equally good" (Chang, 2017, p.1).

»A normatively-based dashboard of well-being, spanning the policy-business divide, is a first step towards the achievement of moral capitalism.«

The gains from empowerment and solidarity generally cannot be translated into temporally invariant money terms to measure economic prosperity. In order to thrive, people need to satisfy all four purposes – their basic material needs and wants, their desire to influence their destiny through their own efforts, their aim for social embeddedness, and their need to remain within planetary boundaries. Empowerment is valueless when one is starving; consumption has limited value when one is in solitary confinement; and so on. Furthermore, the gains from empowerment, solidarity, economic prosperity and environmental sustainability are different in kind and thus not readily commeasurable.

That is the reason why empowerment, solidarity, economic prosperity and environmental sustainability are to be understood as a dashboard. Just as the dashboard of an airplane measures magnitudes (altitude, speed, direction, fuel supply, etc.) that are not substitutable for one another (e.g., correct altitude is not substitutable for deficient fuel), so our four indexes are meant to represent separate goals. Only when a country makes progress with respect to all four goals can there be some grounds for confidence that a broad array of basic human needs and purposes is being progressively met.

EMPIRICAL ANALYSIS AND ILLUSTRATIONS OF RELEVANCE

A SAGE dashboard has been developed for the measurement of national performance for over 160 countries over the last two decades. The methodology and data sources underlying this empirical exercise is described in Lima de Miranda and Snower (2020, 2022).

This is part of an ongoing empirical effort to develop these measures further and to relate them to other dashboards of well-being, such as the OECD Better Life Index (2019), the Social Progress Index (Stern et al., 2022) and the Sustainable Development Goals (Schmidt-Traub et al., 2017). Relevant measures from these other dashboards will be incorporated into the SAGE framework, in accordance with well-defined criteria. Thereby other empirical efforts can enrich normative measures of well-being and, conversely, our normative measures can enrich the other dashboards by identifying those sources of well-being that arise from living in accordance with one's values. On this account, the SAGE dashboard is not to be understood as an alternative to existing well-being dashboards, but as an ongoing empirical effort to distill and categorize existing data within a framework focused on the moral foundations of well-being.

The political and social insights to be gained from the SAGE dashboard are far-reaching. For example, two years before Donald Trump won the U.S. Presidential election, Agency suffered a steep decline, Inward Solidarity stagnated, while Outward Solidarity fell. (See Figures 1 and 3 in Lima de Miranda and Snower (2022).) In the period 2006-2016, Solidarity (both Inward and Outward) fell by 6% and Agency dropped by 12% in the U.S. These psycho-social developments were masked by a steady rise in GDP. Had such phenomena received the serious attention that they deserved, we could have gained a deeper understanding of Donald Trump's electoral appeal and new insights into ways of dealing with the underlying discontent. ("This time, it's not the economy, stupid.")

One year before the Brexit referendum, Outward Solidarity in the U.K. plummeted, Inward Solidarity rose, while Agency declined (as shown in Figures 1 and 3 below in Lima de Miranda and Snower (2022)). Over 2006–2016, Inward Solidarity in the U.K. fell by 2%, Outward Solidarity was stagnant, and agency fell by 5%. This, too, provides a very different picture of British well-being than the steady rise of U.K. GDP. Once again, prominent recognition of these developments would have given rise to a different assessment of the social problems leading to Brexit than the ones on which Prime Minister David Cameron was focused. (Again, "It's not the economy, stupid.")

More recently, the success of public health measures to control the spread of the Covid-19 pandemic – particularly, the success of social distancing measures – depended heavily on public compliance. Perceived compliance with social distancing is empirically correlated with lower stress and anxiety levels and fewer depressive symptoms. Such public compliance has been shown to rely heavily on social solidarity (Lima de Miranda and Snower, 2022). Inward Solidarity is the binding force that induces members of a society to pursue a common purpose. If confidence in the existing political and judicial institutions is high, then this com-

mon purpose can be mobilized by the government in the public interest. Outward Solidarity is essential to deliver public support for multilateral efforts to contain the pandemic.

CONCLUDING REMARK

The SAGE dashboard addresses the widespread concern that the workings of modern, capitalist economies are not well attuned to the promotion of societal flourishing and environmental sustainability. We claim that a normatively-based dashboard of well-being, spanning the policy-business divide, is a first step towards the achievement of "moral capitalism," in which businesses can compete for profits and consumers can fulfill their needs equitably and inclusively.

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Connecting Value and Values

Opinion Piece

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NOVARTIS

Novartis is a multinational pharmaceutical company headquartered in Switzerland. It is one of the largest pharmaceutical companies in the world. The Novartis purpose is to reimagine medicine to improve and extend people's lives. Novartis was created in 1996 through a merger of Ciba-Geigy and Sandoz. Novartis and its predecessor companies trace roots back more than 250 years, with a rich history of developing innovative products.

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Values are fundamental beliefs that guide individual and societal behavior. They shape attitudes, decisions, and actions. Often considered immovable and ironclad, values evolve over time. Most recently, values have shifted in response to changing social, environmental, and economic situations.

In fact, the latest evolutions in values are significant. People are now demanding that companies and governments become more conscious of their impact on society and the environment, and, consequently, decide and act accordingly.

Consumer preferences, employee preferences, and investment behaviors are already reflecting this shift in values. More and more, consumers are choosing products and services that are environmentally friendly, socially responsible, and ethical. A study conducted by McKinsey and NielsenIQ from February 2023 reveals that "consumers increasingly care about sustainability – and are ready to back it up with their wallets."[1] The study focused on the US consumer goods market. It went beyond an earlier sentiment survey from McKinsey[2] that evaluated the stated preference of consumers in 2020. In that study, over 60% of respondents announced that they were prepared to pay higher prices for sustainably packaged products. The new study, however, checked actual sales growth. It found that products making environmental, social, and governance (ESG) related claims averaged 28% cumulative growth over the past five-year period, versus 20% for products that made no such claims.

Employees are concerned about sustainability, too, and some of them profoundly. They are gradually seeking out companies that prioritize strong values and a positive impact. Companies that fail to offer these qualities are exposed to the threat of "conscious quitting," a term made famous by Paul Polman in a seminal article from February 2023.[3] Conscious quitting means that employees will leave their jobs, should their expectations on the congruence of the values enacted by their employer and their own values be severely disappointed. This attitude is even more pronounced in the incoming workforce from the millennial generation and Gen Z. Conscious quitting, hence, has a much more noticeable, more harmful effect on employers than quiet quitting. Quiet quitting is the attitude by which employees limit their engagement on the job to the absolute minimum. A Gallup survey from September 2022 found that half of the US workforce applies quiet quitting.[4]

It is certainly not a surprise that generations also differ in their investment behavior.[5] "Values play a key role in how Gen Z and millennials behave financially," states an article by J.P.Morgan Wealth Management.[6] A significant majority of that age cohort want their investments not only to deliver a return, but also to be a force for good. Impact Investing, aimed at delivering a measurable social or environmental benefit in addition to a financial return, is gaining prominence rapidly. As a consequence, the Global Impact Investing

»ESG is becoming essential to every investment strategy.«

Network (GIIN) reported in October 2022 that the worldwide impact investing market had reached USD 1.164 trillion, although the asset class had been recognized as such only five years earlier. Also, other investors are looking for companies that demonstrate strong ESG performance. As Exploding Trends puts it, "ESG is becoming essential to every investment strategy."[7]

TRENDS TOWARDS SUSTAINABILITY AND THE NEED TO MEASURE IMPACT

Evidence like this exemplifies the growing importance of sustainability in its broadest sense. The term sustainability itself has thereby outgrown the boundaries of meaning it received from the pivotal 1987 Brundtland report by the United Nations on "Our Common Future."[8] Back then, sustainability was connotated mostly with developmental imperatives for poor countries and the environmental implications of consumption in rich countries. Nowadays, sustainability stands for much more as it encompasses resilience, futureproofing, and transparency including social, environmental and economic dimensions.

»Leading impact valuation approaches capture positive and negative impacts along the entire value chain of a company.«

In response to these shifts in values, companies are adjusting their messaging. For digital advertising, sustainability is becoming a priority.[9] There are more substantial adaptations too: Companies are adopting new business models, strategies and new performance indicators. Following a six-month consultation process, in September 2020, the World Economic Forum issued the report "Towards Common Metrics and Consistent Reporting of Sustainable Value Creation."[10] Remarkably, the report positions the measurement and valuation of a company's impact on society and the environment, also known as impact valuation, as most desirable, yet currently ambitious. Impact valuation involves assessing the company's impact on various stakeholders, such as employees, customers, suppliers, communities, and the environment, and assigning a monetary value to it. Leading impact valuation approaches capture positive and negative impacts along the entire value chain of a company. One example is the Novartis social, environmental, and economic (SEE) impact valuation practice.[11] The approach aims at helping companies identify areas where they can improve their social and environmental performance and create more sustainable business practices. Feasibility has been demonstrated by the Value Balancing Alliance across broad range of sectors,[12] and real-world use cases are manifold.[13] Its full potential has yet to be tapped.

Governments, on the other hand, are on a similar journey. They have been recognizing the need to move beyond the Gross Domestic Product (GDP) as the one established metric of wealth. Following the foundational conference with the same title, "Beyond GDP,"[14] the EU commission established a dedicated initiative.[15] Its objective? "Developing indicators that are as clear and appealing as GDP, but more inclusive of environmental and social aspects of progress." This seems to underline the case for monetized impacts. The Beyond GDP initiative brings together resources, reports, data hubs, and frameworks that take into account social and environmental factors. One such framework is SAGE,[16] also referred to as the recoupling dashboard. It articulates matters of Solidarity, Agency, material Gain, and Environmental sustainability on an equal footing. It aims at providing a more holistic view of the well-being of society and moving beyond traditional economic measures, namely GDP.

CONVERGENCE IS DESIRABLE

Clearly, both the company approach on impact valuation and the SAGE approach respond to the same drivers and share a common goal – to create a more sustainable economy and contribute to the well-being of society. While the company approach focuses on measuring the impact of individual companies, the SAGE approach aims to measure the well-being of society as a whole. Beyond that, a deeper conceptional and operational alignment of the approaches could be meaningful. The following benefits for governments in understanding and deepening touchpoints come to mind: increased economic policy efficiency, greater immediacy and policy effectiveness, improved country risk management, improved transparency and accountability.

In view of such attractive upsides, the question then becomes: How can the micro-perspective of companies converge with the macro-perspective of governments?

YET, CONVERGENCE CANNOT BE TAKEN FOR GRANTED

Delving into the two approaches, one discovers quickly the most obvious parallel. It lies in the latter two elements of both approaches that deal with economic and environmental metrics, namely "GE" – material Gain and Environmental sustainability – of the SAGE dashboard and "EE" – Economic impacts and Environmental impacts – of SEE impact valuation. Material gains and economic impacts are both closely linked to GDP. While the material gain of the SAGE dashboard is measured in GDP per capita, the economic impact expresses the contribution to GDP of a company.

The environmental topic appears to lend itself to similar, immediate coupling, too. However, this superficial impression is deceptive. The environmental sustainability component of SAGE uses the Environmental Performance Index[17] (EPI), established for countries. Does the EPI react to the collective environmental impacts of all businesses present in the same countries? If so, a direct relationship for the two indicators is established. However, there is no way of knowing this from the outset. In case there is no such linkage, questions would arise for both approaches regarding the limitations of their use. More research is certainly required in this field.

This finding about the need for more research definitively also applies to the question of how solidarity and agency of the SAGE approach translate to performance indicators for the social impact of businesses. On the latter, the Value

Balancing Alliance currently includes the elements of training, occupational health and safety, living wage, child labor, forced labor.[18] All of these components affect human well-being. Do they affect human well-being in the same way as the solidarity and agency elements of the SAGE approach do? Not necessarily. In the SAGE dashboard, country-level solidarity is measured by giving behavior, trust in other people and social support; and country-level agency comprises of labor market insecurity, vulnerable employment, life expectancy and years in education.

»A start has been made, but much remains to be done.«

THE PATH TOWARDS INDICATORS INCLUSIVE OF ENVIRONMENTAL AND SOCIAL ASPECTS OF PROGRESS

In summary, a convergence of the micro-perspectives of companies and the macro-perspectives of governments has not fully emerged on its own. A start has been made, but much remains to be done. Even in the area of environmental sustainability, certain linkages require further research. In the social field, even more work is required to make the concepts link up coherently. In addition to these efforts, one should not neglect the condensation of approaches within these perspectives. In both the private and the public sectors numerous metrics, measurement and data efforts are underway, seeking to address the challenge of connecting value with today's values. While many approaches certainly have merit in their own rights, it is useful to ensure coherence, consistency, and scalability.

Overall, the shift in values towards sustainability, transparency, and also ESG, is more than likely to continue in the coming years. With it comes the need to fundamentally shift the way value is measured for companies and countries. For both the private sector and the public sector, valid approaches are proposed by SEE impact valuation and the SAGE dashboard. In the future, both should become part of a regulatory framework to effectively support sustainable business practices and policy development. At that time, the relationship between the approaches should be clearly laid out as a basis for the creation of a more sustainable future for society and the environment.

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Inequitable Access and Cyber Threats

Policy Brief

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AISA Australian Information Security Association

As a nationally recognized not-for-profit organization, the Australian Information Security Association (AISA) champions the development of a robust information security sector by building the capacity of professionals in Australia and advancing the cyber security and safety of the Australian public as well as businesses and governments in Australia.

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Keywords:
digital divide, internet access, cyber threat

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The University of Adelaide is a member of Australia's prestigious Group of Eight research-intensive universities, which stands tall among the world's leading institutions of learning and innovation. The University is organized into three academic faculties and six administrative divisions. The university is consistently high rated by the most respected international assessment bodies that consider them one of the top 1% of universities worldwide.

ABSTRACT

The COVID-19 pandemic accelerated global digital transformation, resulting in the manifold benefits such as increased connectivity, boosted productivity, and innovation impetus. The transformation also highlighted the uneven access to digital products and services. According to the World Bank, approximately 40% of the world population is still unconnected to the internet,[1] with the majority living in developing countries. This lack of internet access is attributable to several factors including the absence of digital infrastructure and technology, high costs, and prevailing distrust in technology.

Uneven access to digital products and services also has major implications for the digital economy and cybersecurity. Digitalization of goods and services has the potential to contribute to developing economies. Conversely, increased digitalization risks a rise in cyber-attacks and data breaches. A report by Cybersecurity Ventures estimates that global cybercrime will cost businesses USD 10.5 trillion in 2025 – growing by 15% a year.[2] This is a major concern for both businesses and individuals. While these attacks can lead to the theft of sensitive information, including financial and personal data, they will also decrease trust in technology with debilitating effects on its adoption.

These challenges must be addressed by policy reforms at both the national and international level; firstly, by recognizing the challenge posed by the digital divide. The digital divide is not yet considered a problem in many countries, causing minimal action from governments. This policy brief (PB) will highlight how the digital divide could prevent countries from achiev-

ing economic prosperity and keeping up with global goals, like the Sustainable Development Goals (SDGs). This PB will emphasize the need for undertaking actions for strengthening technological infrastructure and improving internet affordability. The importance of technological standardization calls for cross-country collaboration and agreed norms to prevent harmful use of technologies, cyber-attacks and malicious software. Equally important is for governments and international platforms like the G20 and G7 to come together in promoting high-tech products, like artificial intelligence, machine learning, and the online economy, to unleash creativity while safeguarding privacy, security, and individual rights.

»The digital divide could prevent countries from achieving economic prosperity and Sustainable Development Goals (SDGs).«

BACKGROUND

The pandemic has catalyzed a transition to digital platforms, proving the importance of access to the internet, a key force for socioeconomic inclusion. Technologies and digital space have led to robust growth in areas like working from home, children's education, social welfare services, telemedicine, and availability of financial products in rural and remote areas. The digital divide affects different populations and groups in varying ways across different socio-economic strata. Advanced economies possess higher levels of digital access than developing economies. Similarly, Sub-Saharan Africa has one of the lowest levels of internet accesses despite having high permeation of mobile money transactions.

A country's inequities, such as income inequity and opportunity inequity, may be further aggravated due to uneven digital access, especially for vulnerable groups. Digital access may be proportionate with productivity, especially in developing countries, as exemplified by businesses with reliable internet access that continued operations during Covid lockdowns.[3] By 2020, 60% of the world population were internet users, according to the World Bank.[4] According to the World Population Review, by 2022, 69% of the world population, or 4.9 billion people, were active internet users.[5] However, this also signifies that the rest do not have internet access, which is often distributed disproportionately both within and across countries.

Lower and middle-income countries experience wider digital disparity, both within their boundaries as well as in comparison to their economically advanced counterparts. Further, lopsided growth results from inequitable attainment of development goals across the globe. Vulnerabilities in cyber space are also a major challenge which may result in cyber threats ranging from phishing attacks to cyber terrorism. Governments, private organizations, other entities, and individuals face significant cyber threats in the digital space.[6]

Lack of digital equity also contributes to lack of digital hygiene practices which can expose citizens and businesses to cyber threats. Cyber breaches have varying degrees of impact ranging from economic, financial, and reputational damage. Theft of corporate or sensitive government information can result in security breaches and put lives, property or even economies at risk. The economic cost of cyber breaches includes theft of government information, theft of financial information and money, trade disruption and decrease in business. Furthermore, individuals, businesses, organizations, or governments may fall victim to loss of privacy, or even experience a downturn in business stability and profits.[7]

CHALLENGES

As economies become more digitally driven, the effects of the digital divide are visible in the socio-economic landscape. As digital skills become an integral part of higher skilled jobs, countries or communities excluded from access to the digital space fall behind in accessing the economic benefits of acquiring digital literacy and capabilities.[8] 2.9 billion people are still offline, 96% of whom live in developing countries.[9] Marginalized groups bear a disproportionate disadvantage as the digital divide amplifies prevalent inequities. The digital divide also affects employment and income generation opportunities.

Education is another area in which the disadvantage of the digital divide is felt. The pandemic demonstrated how economies and businesses, which had better access to digital space and technologies, strengthened learning and improved innovation. The pandemic also exposed the digital divide experienced by low-income urban as well as rural communities due to unreliable or unaffordable access.[10] Similarly, while the pandemic showed the power of digital education platforms during lockdowns, it also showed how students or researchers without digital access trailed behind.

The digital divide is disadvantageous to groups with poor internet access as the internet is a large source of knowledge, and Information and Communication Technology (ICT) tools increase learning and research potential. As the digital space influences social interactions through social media and other digital platforms, people, organizations, or communities with poor digital access are excluded from wider global opportunities for social interactions and networking, including professional and cultural recognition.[11] Similarly, inequitable access/adoption of digital technologies by micro, small and medium enterprises (MSMEs) restrict market access and supply chains, which has a detrimental impact on business.

Inequitable digital access hinders SDG achievement. SDG 1, related to eliminating poverty, is impacted as the digital divide aggravates economic inequities by limit-

»Digital inequity contributes to lack of digital hygiene practices, exposing citizens and businesses to cyber threats.«

ing access to economic, educational, and employment opportunities. SDG 3, related to good health and well-being, is affected as access to digital health services has become crucial. While targeted digital health initiatives may benefit some communities, inequitable effects can also result from oversights or the economic disadvantages of nations. For example, an advanced economy may quickly benefit from uses of digital health, as opposed to a lower-income country with limited digital health services. A similar problem exists for SDG 4, which relates to access to education, or SDG 9 which relates to industry and innovation.

»Providing access to digital products, promoting digital literacy, and integrating digital governance is the way forward.«

Inequitable access to technologies and infrastructures translates to inequitable opportunities, especially for lower- and middle-income countries as class, race, and gender gaps are heightened. Internet and mobile banking, microcredits, community online platforms, and market access are examples of meaningful technological solutions to achieve financial inclusion. Problems particular to remote or vulnerable communities can be addressed by targeted investments and efforts to realize access to microcredit or internet banking, and community-centric online platforms such as those for care of the elderly and people with disabilities. For instance, rural agrarian women who require access to financial products or even people caught in humanitarian emergencies can benefit from digital connectivity.[12] However, in the absence of focused a effort, the digital divide continues to widen.

Digital transformation entails adopting new governance, business, and operational models alongside new technologies, requiring investment and organizational efforts. From poor finance availability to inadequately skilled human resources, many challenges persist. There exists a need to foster a shift in mindset, cultivate digital literacy, allot resources, develop infrastructure, and ensure robust feedback mechanisms to create an equitable and secure digital space.[13] The challenges are compounded by cyber threats that present risks to digital capabilities and facilities. Governments and organizations must protect platforms with robust security systems by establishing policy, structures, and monitoring and reporting mechanisms. It is essential to have multiple authentication solutions and other technological remedies.[14] The storage must be based on a "needs basis" and access to sensitive data must be directed by regulatory controls and guidelines.

RECOMMENDATIONS

The reasons for the digital divide can be classified into three main issues: an access divide, an availability divide, and an applicability divide. The access divide, including affordability concerns, which arises from socio-economic differences, requires investments and infrastructure facilitation. The availability divide, which arises from language or other such barriers, limits usage of digital technologies and services, even when they are accessible. Progress made in closing gaps in areas such as gender and disability will be key in reducing the availability divide. Conversely, such a usage divide also arises from a lack of digital skills for which skill development is essential. Applicability, which refers to the aptness of the available technologies, determines the quality of digital usage. Such a gap also stems from poor digital literacy or lack of knowledge.[15]

Policies to promote affordability in accessing the internet and technologies are central. Governments must facilitate the establishment of infrastructure in relevant locations. While advanced economies must ensure that telecommunications infrastructure is set up with minimal urban-rural gaps, emerging economies need to promote infrastructure facilitation overall without neglecting socio-economically challenged communities.

Governments must encourage private organizations, entities, and citizens to avail infrastructure facilities at incentivized rates. Further, government policy must redirect investment into telecommunication infrastructure and developments, with specific provisions to promote private investments. Promoting internet availability to businesses by increasing access to financial products is an example.[16] The use of technology and cyberspace must conjoin trust and good cyber hygiene practices.

An apt regulatory mechanism must guide businesses and education toward bridging the digital gap. Targeted investments in skills development, including integrating digital literacy in primary, secondary, and tertiary education can be promoted to bridge the gap in digital literacy, enhance digital skill competencies, and inculcate the capacity to discern the right knowledge. Governments can also offer job upskilling as well as monetary and other incentives.

»G20 and G7 cooperation on digital development is crucial, now and for the future.«

Since the digital space is an economic platform unbound by geographical territories, it is in the interests of all governments to encourage growth cooperation in bridging the digital divide. The cooperation of trade blocs and economic forums such as the G20 and G7 on digital development is crucial, now and for the future. Knowledge and technology exchange agendas must be broadened across blocs and transnational development agencies. Access to digital products and hardware, promoting digital literacy, and policy to promote and integrate digital governance is the way forward.

Opportunities for cross-border cooperation and growth, and public-private partnerships must be created for addressing cyber threats. Apart from enabling robust cybersecurity practices, cross-border col-

laboration among countries and across government and private sectors must ensure the sharing of threat intelligence, leveraging data sharing and AI to track cyber criminals and disrupt cybercrime activity. Building the requisite framework, including development of cybersecurity professionals, is also significant. At a national level, robust software solutions and optimum infrastructure, along with a regulatory governance structure, are needed to ensure minimal vulnerabilities in the cybersecurity realm.

Encouraging public-private partnerships allows flexibility in building resilient software and hardware solutions. A standardized security code must be developed and implemented for ensuring maximum security in the global network – from the level of private individuals to across governments. Careful consideration must be ensured in the standardization process, concerning the requirements of all stakeholders including developing economies and marginalized communities. Further, a monitoring system along with provisions for receiving feedback and simultaneously fine-tuning systems are prerequisites.

Strong systems will limit criminal activities regarding sensitive government data, which even has the potential to topple economies. However, risks affecting the larger population such as identity theft, data theft, financial theft, impersonation, operational disruptions, and systems compromise must be dealt with in the three-fold manner of implementing protocols for prevention, monitoring, and penalizing offenders. It is essential that national and international policies are congruent, as the goal of ensuring cybersecurity is global.

CONCLUSION

In a world that is progressively becoming digitalized, economic and personal transactions require deliberate action to ensure that cyberspace is equitable and safe. To utilize the great tools that humanity has at its disposal, the digitally equipped world must strategize to minimize the risks while maximizing their adoption. Though the learning process may occur in tandem with the progress of digital transformation, using technology in the most constructive way is of paramount importance. The risks of uneven access and cybersecurity threats are the other side of the coin which may dampen the adoption of digital transformation products and services. The challenge for policymakers is to provide safe and secure digital access to those who are left behind, while ensuring that their legitimate socio-economic aspirations are not jeopardized by the risks and threats that lurk in the cyber world.

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Value Beyond Accounting – from Sustainability Disclosure to Meaningful Business Steering

Research Paper

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Keywords:
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Institutions:

The Value Balancing Alliance e.V. (VBA) is a non-profit organization with the ambition to change the way company performance is measured and valued. The alliance's objective is to create a global impact measurement and valuation (IMV) standard for monetizing and disclosing positive and negative impacts of corporate activity and to provide guidance on how these impacts can be integrated into business steering.

The Helmholtz Centre for Environmental Research (UFZ) is a member of the Helmholtz Association of German Research Centres and internationally renowned for its expertise within environmental natural, political and economic science. The research unit Environment and Society has a strong focus on science-policy interfaces and regularly advises governments, regulatory agencies, NGOs and corporates.

ABSTRACT

The availability of reliable, transparent and truly holistic sustainability information is a prerequisite for meaningful and transformative business and investment steering. Up to now, such data remains highly fragmented, difficult to interpret and generally scarce. As a consequence, numerous jurisdictions intend to significantly increase and standardize corporate reporting requirements of physical impact data (e.g., metric tons, m^3, ha). Although such information might be sufficient for regulators or science to understand and track a company's sustainability performance, it is less suitable for and compatible with established corporate and investment decision processes. To address this challenge, the Value-Beyond-Accounting approach converts reported information into monetized and thus decision-ready data. This conversion makes reported sustainability disclosure directly employable within established management and investment steering approaches such as Cost/Benefit, Cash Flow or Net Present Value analysis. The Value Beyond Accounting approach is aligned with the Impact Measurement and Valuation (IMV) methodology jointly developed by the Value Balancing Alliance (VBA) and the International Foundation for Valuing Impacts (IFVI) and piloted by an increasing number of multinational corporations such as BASF, Bayer, DHL/Deutsche Post, Holcim, Novartis or SAP.

THE PIVOTAL ROLE OF REPORTING DATA FOR DECISION MAKING

The fundamental task of accounting and reporting is to transparently and objectively present useful information or data. This focuses on aspects, activities and – ultimately – the substance of the disclosing company, which are deemed relevant for concerned stakeholders such as regulators, tax authorities, investors or the public

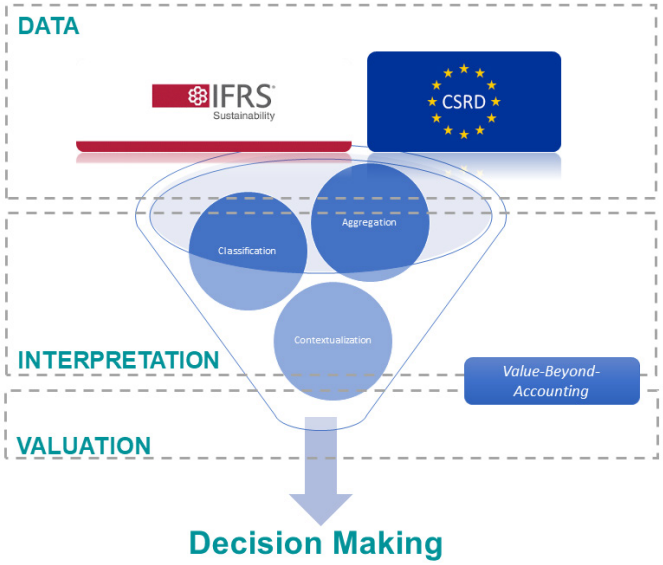


Figure 1 outlines the importance of reporting data for decision making and the role of the *Value-Beyond-Accounting* approach.

at large. As a consequence, reporting data is the fundamental building block of corporate, financial and regulatory decision making (Figure 1) (Wildner et al., 2022).

»Reliable, transparent and truly holistic sustainability information is a prerequisite for meaningful and transformative business and investment steering.«

The types and amounts of information necessary to intelligibly yet adequately visualize and describe the reporting entity and its activities is traditionally defined by reporting standards that reflect the concerns of predominantly financial stakeholders. These standards generally establish principles and general quality requirements about the type, scale and scope of information to be disclosed as well as concrete practical procedures regarding the collection, measurement, presentation and communication of such processes and information (Wildner et al., 2022).

If understanding and monitoring the activities and condition of the reporting entity is material to society in general or to vulnerable groups in particular, it is in the public interest to enforce reporting standards that mandate transparency – and thus obligatory disclosure of relevant information. The development of generally accepted the financial accounting standards within and across jurisdictions over the past century exemplifies such a process.

With the development of national and international capital markets towards the middle of the nineteenth century, and their increasing importance for both private capital investors and national economies as a whole, significant fluctuations in capital market values were commonplace. Often, this was due to an asymmetrical distribution of important information on the economic situation of individual market participants, entire sectors or national budgets, up to and including deliberate misrepresentations or disclosures of misleading or irrelevant information. In order to put an end to this behavior – and to be able to prosecute it – duties to keep accounts and to disclose economic circumstances were introduced in numerous states according to codified specifications or legal frameworks (e.g., the General German Commercial Code of 1861). With increasing globalization and interconnectedness of national capital markets, an internationally recognized financial reporting standard, the International Accounting Standard (IAS), was introduced in 2001. Based on an ongoing discussion and development of generally accepted reporting characteristics since the early 1970s, the IAS is a highly successful and widely recognized framework of relevant accounting/reporting features, which is recognized by 166 nations to date. It has been instrumental in defining what is "useful" information with regards to regulated reporting requirements, thus promoting transparency and comparability of economic information within and across almost all economies (Wildner et al., 2022).

THE LINK BETWEEN FINANCIAL AND SUSTAINABILITY REPORTING

The outlined process is well established for financial reporting and has led to a high, albeit not all-encompassing, level of transparency and general trust with respect to the usefulness of reporting data. By contrast, nearly a decade on since the first non-financial disclosure regimes, such as the EU's Non-Financial Reporting Directive (NFRD) came into force, the outlined process for visualizing relevant socio-ecological impacts and dependencies of market participants is still in its infancy (Laine et al., 2022).

Compared to traditional financial metrics, sustainability-related concerns such as poverty, climate change or biodiversity loss interact in highly complex and non-linear ways – with the magnitude of consequences on business and society often unknown. Reliable, useful and truly holistic sustainability data are a prerequisite to visualizing and understanding these intricate processes to enable meaningful and transformative business steering and decision making (Figure 1). To date, sustainability data remains highly fragmented and generally scarce, substantially inhibiting urgent transformation processes both within society and, especially, within industry.

To tackle this fundamental flaw in light of runaway climate change and nature loss, both the European Union (EU) and the IFRS Foundation are about to transform the scale, scope and quality of corporate sustainability reporting for a significant part of the global economy. Within the EU, the Corporate Sustainability Reporting Directive (CSRD) defines and enforces mandatory sustainability reporting requirements relating to socio-ecological impacts and dependencies, as well as associated risks and opportunities – commonly referred to as "Double Materiality." Eventually, these requirements will affect more than 50,000 entities (EFRAG, 2023).

»Complete transparency around individual valuation coefficients [...] is paramount in creating reliable, faithful and ultimately useful sustainability data.«

On a global scale, the IFRS Foundation's International Sustainability Standards Board (ISSB) intends to develop a voluntary global baseline for sustainability reporting, building on its significant expertise and international acclaim established within financial reporting. As a consequence, and in contrast to the EU's approach, the IFRS has focused on the disclosure of socio-ecological risks and opportunities – commonly referred to

as Financial Materiality – only indirectly addressing impacts and dependencies – commonly referred to as Impact Materiality (IFRS, 2023).

THE SIGNIFICANT ROLE OF A COMMON UNIT OF ACCOUNT

While, to increase market acceptance and minimize compliance costs, both the EU and IFRS sustainability reporting standards are built on established financial accounting frameworks, a fundamental difference between financial and sustainability disclosure is rooted in the way performance is measured, reported and ultimately valued (i.e., the unit of account). Financial accounting predominantly reports quantitatively and in monetary terms, while qualitative data (or otherwise physical units such as kg or m^3) prevail within established sustainability accounting.

Increased reporting of qualitative or physical impact data (e.g., metric tons, m^3, ha) might be useful for scientists and regulators to sufficiently understand and track a company's sustainability performance, but it remains less suitable for and incompatible with established societal,

»Monetary valuation allows translation of qualitative or physical information [...] into comparable and decision-ready data.«

corporate and investment decision-making and monitoring processes. As long as a significant part of non-expert society and corporate decision-making processes cannot adequately translate and contextualize this reported data, the potential for transformative change of both the real economy and the financial markets remains seriously restricted.

HOW MONETARY VALUATION MAKES A DIFFERENCE

While decision makers are increasingly aware of the negative socio-ecological impacts and dependencies of their business activities, many – intentionally or unintentionally – disregard these aspects in their strategic agenda. For example, activities with high water utilization in arid regions cause more damage to both the environment and society compared to the same activities in regions with an abundance of water. Yet such nuances of high societal value fall short under current asset valuation and sustainability reporting approaches. Although it is possible and commonly required by established reporting standards to visualize these effects qualitatively or by using a variety of physical units of account, such reported data remains subjective and difficult to understand and compare, especially in the eye of the non-expert beholder.

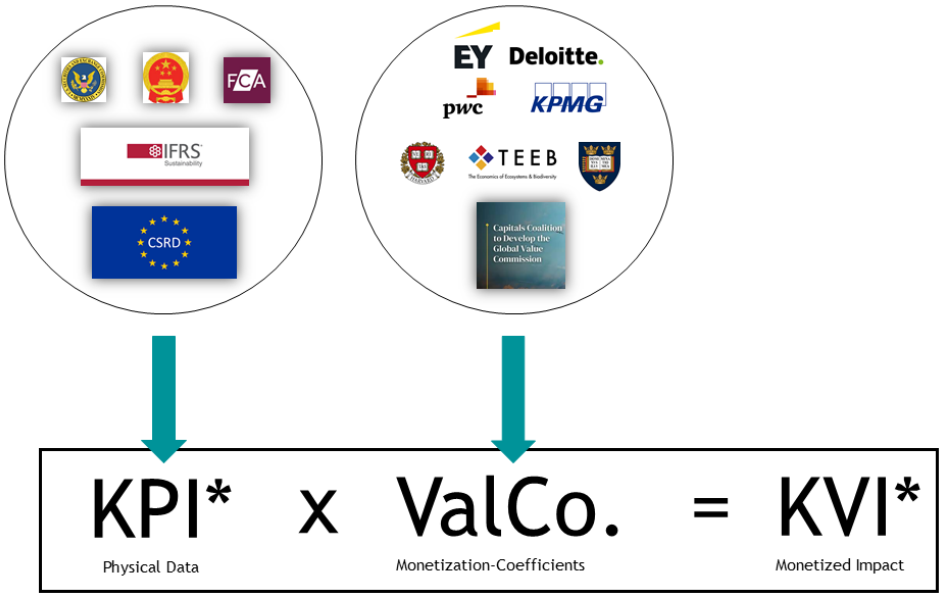
Sensibly and transparently reflecting non-monetized data, e.g., in asset valuation or cash flow forecasts, is difficult, if not impossible. This seriously inhibits the usability of current sustainability reporting data for corporate decision making. However, decision makers tend to disregard more than just the exploitation of natural resources like water that may affect the balance sheet once the risk is uncovered, but also other realms like loss of biodiversity, climate change or social injustice. As a consequence, socio-ecological impacts and dependencies giving rise to risks and opportunities in connection with the business model may be severely underestimated, mispriced and potentially wrongly managed and mitigated.

Enabling decision makers to better assess the positive and negative effects of business models, as well as the scale and magnitude of these effects, requires corporate impacts and dependencies on the environment and society to be made tangible and compatible with financial accounting-based decision-making processes. Monetary valuation allows translation of qualitative or physical information related to a company's environmental and social footprint into comparable and decision-ready data, which can be used together with established financial performance data to express the corporate value contribution more holistically, transparently and intelligibly.

HOW TO CONTEXTUALIZE SUSTAINABILITY DATA – THE *VALUE-BEYOND-ACCOUNTING* APPROACH

To render reported sustainability data more accessible for societal, and especially corporate, decision making, the Value-Beyond-Accounting approach con-

Figure 2 describes the Value-Beyond-Accounting approach: translating patchy sustainability reporting information into intelligible and comparable decision-ready data.



*Key Performance Indicator (KPI); Key Value Indicator (KVI)

verts reported physical data, or Key Performance Indicators (KPIs), into monetized and thus contextualized Key Value Indicators (KVIs), using context and location-specific, strictly science-based valuation coefficients (Figure 2).

This simple and transparent process makes reported sustainability data directly employable within established management and investment steering approaches such as Cost/Benefit, Cash Flow or Net Present Value analysis. It allows corporate as well as societal decision makers to consider sustainability-related concerns at par with financial performance data and, crucially, within established means of risk management and regulatory compliance, such as stress tests or resilience analysis.

Contextualization of vastly disparate types of data within one common and accepted unit of account significantly improves comparability between reporting entities or specific economic sectors while significantly improving the accessibility of disclosed information to non-sustainability experts. This last aspect of a democratically just and fair societal uptake of sustainability-related information is often overlooked by both standard-setters and regulators, who assume that any user of reported data can understand and interpret disclosed information within the context of his/her decision process (Wildner et al., 2022). It is within these conflicting poles of reported sustainability data being both objective and comprehensible to a wide range of societal stakeholders that monetization via the Value-Beyond-Accounting approach can substantially increase both the usefulness and relevance of reported sustainability information.

The Value-Beyond-Accounting approach is informed, advanced and applied by the Impact Measurement and Valuation (IMV) methodology jointly developed and piloted by the Value Balancing Alliance (VBA) and the International Foundation for Valuing Impacts (IFVI). Leading academic institutions including the Harvard Business School, Oxford University or the Leibniz and Helmholtz Associations provide and monitor its scientific rigor, while an increasing number of leading international corporations such as BASF, Bayer, DHL/Deutsche Post, Holcim, Novartis or SAP apply the methodology in practice.

THE WAY FORWARD

Although the contextualization of reported sustainability data via the Value-Beyond-Accounting approach can significantly promote truly sustainable decision making, various challenges need to be considered. Complete transparency around individual valuation coefficients and their strictly science-based calculation logic is paramount in creating reliable, faithful and ultimately useful sustainability data that fundamentally and continually align and comply with the evolving regulatory environment, such as the Corporate Sustainability Due Diligence Directive (CSDDD) or the Sustainable Finance Disclosure Regulation (SFDR). The lack of physical reporting data or KPIs concerning downstream activities or environmental and social aspects beyond climate should be addressed proactively. While upcoming CSRD and ISSB reporting will significantly increase the scale, scope and quality of reported sustainability information, it will take several years until a reporting infrastructure that is still in its infancy will produce significant amounts of useful and comparable data. As constantly stressed by international bodies such as the Intergovernmental Panel on Climate Change (IPCC, 2023) or the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2020), time to act is of the essence. Companies should therefore be encouraged to make use of and engage with existing reporting standards and initiatives to proactively reflect relevant sustainability concerns within their decision-making processes and thus sustainably increase their true value creation.

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Everyday Meeting Spaces as Infrastructures for Democracy

Research Paper

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LIB MOD Zentrum Liberale Moderne

The Center for Liberal Modernity is a Berlin-based Think-Tank that stands up for the defense and renewal of open society. Liberal Modernity, as such a combination of individual freedom, democratic republic, cosmopolitanism and cultural diversity is facing pressure worldwide. It is challenged from within as well as from the outside. In times of fundamental changes there is a need for crosspartisan reflection about the future of our common society and the international order. For us the individual freedom and social cohesion, personal responsibility and strong public Institutions belong together.

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Keywords:
social infrastructures, democracy, social cohesion, space & democracy

Two simultaneous trends are changing the way people live together around the world. One is the global megatrend of urbanization. People are drawn to cities by the lure of economic and social advancement, entertainment, diverse infrastructure and job opportunities. It is estimated that up to seven billion people worldwide will be living in cities by 2050.[1]

There is a downside to this process. Rural areas are becoming increasingly isolated. Social structures, infrastructure, doctors, shopping and leisure facilities are disappearing. Villages and towns are becoming deserted.

These two trends are two sides of the same coin, and they are massively changing the way people live together. Neighborhoods are being built or rebuilt at a rapid pace, people are moving, social networks are shifting, dissolving, and reassembling. Often, social infrastructures don't form as quickly as physical ones. Social networks are important to protect people from loneliness, to provide support in times of crisis, to provide a sense of security, and much more. Not only this, but something else is at stake: our democracy.

It is not just urbanization and rural depopulation. The world faces many immense challenges. Foremost among them is climate change. The consequences of global migration, digitalization, wars and crises, health crises and much more are still hard to predict and are putting pressure on societies. All this is changing how we live together, where we can live, what our cities look like, how we move, how we eat and how we work. The 2020s are a decade of major global change – and there is no end to the turbulence in sight. All this is leading to a renegotiation of our social interaction, indeed our democratic coexistence. This renegotiation requires certain (infra)structures.

WE NEED TO RENEGOTIATE HOW WE LIVE TOGETHER

There has been a lot of talk about infrastructure lately. Often, it's about (dilapidated) buildings, pipes, bridges, cables, roads and railways. These are all important to societies. They frame and enable life, transport and prosperity. But democracies need infrastructure too, because they have long since ceased to function as in the ideal of the ancient polis, an assembly of equal men who solve problems together through discussion. Modern democracies are complex in order to cope with a complex world, and so they need a variety of underlying infrastructures.

DEMOCRACIES NEED INFRASTRUCTURE

Democracies are based on equal fundamental rights for all. Fundamental rights, argues Princeton political scientist Jan-Werner Müller, need infrastructures to be effectively implemented. He focuses in particular on political parties and free media. They structure time in democracies through decisions, elections and events. They also – at least potentially – give a large part of the population access to democratic processes.[2]

Democracy is not just about parties, media or institutions. For most people, these are very distant; indeed, they rarely have anything to do with them. Politics is conveyed to the majority of people mainly through the media (which is another reason why they are so relevant). What people actually experience are citizens' offices, that work well or not so well, good or

not-so-good schools, streets and squares, clubs, cafes and pubs. Where those places wither or disappear, a piece of everyday democracy falls away.

»We need to renegotiate how we live together.«

How will the street, or the square around the corner, be transformed? Who will I meet at the parents' evening at school? Who will I meet on the train? And with whom can I argue about politics, and philosophize about life, in the local pub? Everyday meeting places are, in short, the places where we experience democracy in everyday life. It is here that we meet other people, experience their differences and yet perceive them as equals. It's also where we experience how negotiation between people works – or doesn't. Little is written about these places, but their role can hardly be overestimated.

MEETING PLACES ARE THE EVERYDAY INFRASTRUCTURE OF DEMOCRACY

In recent years, a different kind of meeting place has come to the fore: political fora, often used to discuss certain issues, sometimes also to bring together people who would otherwise rarely meet. There is a lot of discussion about citizens' councils in particular, and some high-level experiments, for example in France, Germany and the EU. Often the focus is on a single big issue, such as how to deal with climate change, and the results should be concrete. Participants are often randomly selected to represent as broad a cross-section of the population as possible.

These new formats are important; they add deliberative forms to the principle of representation that many democracies claim to use. However, they are also far removed from the daily lives of most people and are not suitable for experiencing and consolidating democracy in everyday life.

HOW DO MEETING PLACES WORK?

Why everyday meeting places are important is best illustrated by considering what happens when they are missing. The US-American sociologist Ray Oldenbourg complains that the US-American middle class only commutes by car between the family home in the suburbs and the workplace in the city. He contrasts these first and second places with what he calls third places, where people interact and are socially or culturally stimulated. These cafes, bars, hairdressers, beer gardens and the like are easily accessible, have low standards and bring very different people together.[3]

These places have both individual and community benefits. Individually, they reduce loneliness – the new epidemic – and are places where people learn new things and are exposed to different perspectives.[4] Socially, they are hotbeds of everyday democratic debate, where people learn to tolerate, debate and compromise with others and their different attitudes. In addition, according to Oldenbourg, they are places where people can act out; where they can vent their feelings, but in a socially controlled way.[5] And sociologist Eric Klinenberg adds that well-maintained third places encourage people to take responsibility for their surroundings: The better maintained a street is, the more people will take care not to litter it. The better the social net in a neighborhood, the better people can cope with catastrophes – because they look after each other.[6]

What makes everyday places "meeting places"? First of all, we use them every day, i.e., we encounter them on the routes that we travel: We use the roads, the suburban train or the bus together, we eat lunch in a café near our workplace, in the evening we go to the swimming pool or to the gym, and sometimes we go to the parents' evening at the local school. Secondly, they are easily accessible: None of these places require a great deal of effort or money to enter. You may need to buy a ticket for public transport or pay for a beer in a bar, but the investment costs are reasonable. Thirdly, they are largely voluntary, or at least they do not force certain encounters, and there are alternatives.

What happens in these places? That is very different. One activity that takes place in all everyday meeting places is casual observation. Whether in cafes, swimming pools, on the street, in the metro or in the library, we meet people who are different from us in some way. We share a common space, are sometimes even engaged in the same activity, and yet we are different. Differences take on faces, they become associated with concrete people. Someone in the library is reading Thomas Mann instead of fancy Georgian-German author Nino Haratischwili, but he actually looks quite nice. A mohawk with a suit? Unusual, but why not. This casual observation, this experience of diversity, is invaluable for democracies, because it is based on people willingly making compromises and not necessarily asserting their interests. This requires them to recognize others as legitimate members of a society – for which they need to experience those others on a regular basis.

But that's not all: Additional linguistic exchange takes place in pubs, in political education, in specially created spaces of encounter, or on benches in the park. Anyone who has ever spent a night in a pub discussing a sensitive issue with a supporter of a different political persuasion knows the value of such encounters: You can agree to disagree – and still have a beer together. Nobody would do that on social media. Many formats of political education work in a similar way.

In some places you can even meet people on a regular basis. At home, in schools, in youth clubs or at the old men's evening boules game in the park: The same people can meet, whether they want to or not. This is an opportunity to get to know each other better and to deepen relationships based on a shared activity or a shared place of residence. "Acquaintances" play an important role in feeding new information into networks, i.e., exposing us to opinions, views and information that are not familiar to us. Since it is acquaintances and not strangers who provide this information, we need to take them seriously.

»Democracies need infrastructure.«

Some meeting places also offer the opportunity to do different activities together. Practicing rescues with the volunteer fire brigade, singing cantatas or gospel with the choir, playing chess in the park in front of an audience, taking sports classes at

the gym, or gardening in the community garden – all of these involve working with others, sometimes strangers. This shared activity is an important building block of community.[7]

DEMOCRACY WITHOUT ENCOUNTER IS SHORT-LIVED

The Corona pandemic showed how important encounters are for people. Democracies can get by with fewer encounters for a while if they have stable institutions, but this does not work in the long run.

Now, one might say: That's a nice list, it's all important for democracies, but it works, so what's the problem? The problem is that in many places, these meeting places are disappearing.

Two examples: In the UK, pubs are dying. This trend has been going on for a long time: While there were over 60,000 pubs in the UK in 2000, there are now just over 46,000. The Corona pandemic has accelerated this trend, and rising energy prices are putting even more pressure on venues.[8] The situation is similar for public swimming pools in Germany. Affordable summer fun at the pool, currywurst and chips or swimming twice a week as a workout? This is becoming less and less possible, because swimming pools are increasingly being replaced by much more expensive water parks that offer a lot of fun but only for those who can afford it.[9]

»Meeting places are the everyday infrastructure of democracy.«

The list goes on: small kiosks are dying because they have to compete with supermarkets and online deliveries, many voluntary clubs are desperate for members, libraries are being merged and youth clubs are being closed.[10] There is at least some good news: The number of fitness studios, for example, is increasing in most countries – individual exercise rather than club exercise is the trend. Urban gardening is taking over the few open spaces in big cities and making them greener.

MEETING PLACES NEED TO BE PROMOTED

Meeting infrastructures are undergoing major changes. In many places, these changes are accompanied by losses, but new things are also emerging. This makes it all the more important not only to observe these processes, but also to actively promote opportunities for encounters.

What does this mean at a political level? In general, everyday meeting places should be promoted because they benefit democracy. However, this doesn't mean that artificial meeting places should be created everywhere. Rather, places that people already use should be promoted, such as pubs and swimming pools, libraries, village shops and clubhouses, parks and streets.

Some suggestions for concrete policies:

1) Funds for meeting places in structurally weak areas

Meeting is especially important where it is diminishing. In areas affected by depopulation, where the economy is crippled, there is a downward spiral. Fewer people and fewer businesses mean less money for the communities, which leads to fewer opportunities to shape the future. This is where targeted help is needed, not only with economic development, but also with the promotion of meetings. The pub has to close for financial reasons. Why not pay the rent? Doctors move to the next town. Why not keep a surgery open twice a week next to the village shop? How can the park in the town center be maintained? Together – and with support from a fund. These funds can be used in individual regions or countries, and as an instrument of development cooperation. Why not promote democracy through meeting places?

2) Co-design instead of forced gratification

Meetings rarely work the way they are designed on the drawing board. If you tell people what to do, it often goes wrong. That's why it is important to create open infrastructures that can be used in different ways. So, how do you find out what people need? You ask them. Participation processes are essential to the design of meeting places – that's the only way they'll really be used, the only way they'll be designed the way people need them. Participation itself is a small school of democracy.

3) Remove barriers, encourage mixing

For meeting places to promote democracy, they must not be too exclusive, but must welcome a variety of people. Therefore, the entry requirements should not be too high. This applies to financial, logistical and knowledge barriers.

4) Multifunctional facilities

Places can have multiple functions: Schools can offer classes during the day and space for voluntary associations and initiatives in the evening. Their auditoriums can be used for performances, classrooms for counselling services and much more.

5) Exchange on meeting infrastructures

Last but not least, there is a need for forums to exchange views on the everyday foundations of democracy across disciplinary and national boundaries. The G20 and its associated processes can be places for this, as can city summits or UN conferences.

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Bridging the Lifelong Learning Gap

Policy Brief

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The Project Management Office of Kartu Prakerja oversees and manages Kartu Prakerja Program. Kartu Prakerja is a training fee assistance and incentive program for workers, laborers, job seekers, and micro- and small-business owners who are affected by the COVID-19 pandemic and in need of increased competence. This program, launched in March 2020, is aimed at helping job seekers stay relevant by acquiring new skills or upgrading existing ones.

Keywords:
lifelong learning, productivity, upskilling, reskilling, training, social assistance

The National Team for the Acceleration of Poverty Reduction (TNP2K) is an institution established to coordinate the national poverty reduction strategy and improve the effectiveness of current social protection programs in Indonesia. With the Vice-President of Indonesia as the chair, TNP2K operates as an internal think-tank responsible for conducting research, drafting policies and programs, developing a national targeting system, and carrying out monitoring and evaluation of national poverty reduction programs.

The Centre for Strategic and International Studies (CSIS) in Jakarta is an independent, non-profit organization focusing on policy-oriented studies on domestic and international issues. It was established in 1971.

INTRODUCTION

Lifelong learning is the ongoing pursuit of knowledge and skills throughout a person's life, beyond the formal education system. It is an essential component of personal and professional growth, helping individuals adapt to changes in their environment, stay relevant in the labor market, and contribute to the advancement of society. Without access to lifelong learning opportunities, individuals risk falling behind in the labor market and missing out on job opportunities. Therefore, bridging the lifelong learning gap is essential to ensure that all individuals have the skills and knowledge needed to adapt to changes in the labor market and contribute to the advancement of society.

The benefits of lifelong learning are numerous and extend beyond just individual skill development. For individuals, lifelong learning can lead to increased job opportunities, higher wages, and a greater sense of personal fulfillment. It can also lead to improved mental health outcomes, increased social engagement, and a greater ability to adapt to changing circumstances. Society as a whole also benefits from lifelong learning, as it leads to a more skilled and adaptable workforce, increased innovation, and greater social cohesion. Lifelong learning can help to reduce income inequality and promote economic growth, as individuals gain the skills needed to compete in a rapidly changing job market. Additionally, lifelong learning can lead to greater political engagement and social inclusion, as individuals develop a deeper understanding of the issues facing their communities and the world at large.

Lifelong learning has become increasingly relevant in the current global econo-

my, where technology and automation are rapidly transforming the labor market. The World Economic Forum (WEF, 2020) estimates that by 2025, half of all employees will require reskilling or upskilling to keep pace with job requirements. Challenges in the labor market, such as the gig economy and the rise of automation, also highlight the importance of lifelong learning (International Labour Organization, 2021; Acemoglu & Restrepo, 2020; Gomez-Pena & Morrison, 2018). The WEF predicts that by 2025, the top skills in demand will include analytical thinking and innovation, active learning and learning strategies, and complex problem-solving. Equitable access to learning opportunities for all is central to lifelong learning and to achieving a just and sustainable future for all.

»Equitable access to learning opportunities for all is central to lifelong learning and to achieveing a just and sustainable future for all.«

The need for upskilling and reskilling has become more pressing than ever, as individuals must adapt to changing job requirements and industries must respond to shifting market demands. Lifelong learning (adult learning) has emerged as a critical solution to bridge this gap, enabling individuals to acquire new knowledge and skills throughout their lives and empowering them to thrive in the 21st-century economy. According to the UNESCO Institute of Lifelong Learning (2019), over the last decades, spending on adult learning and education (ALE) has not reached sufficient levels, not only in low-income countries but also in lower-middle-income and high-income countries. Nearly 20% of UNESCO Member States reported spending less than 0.5% of their education budgets on ALE, and a further 14% reported spending less than 1%. This situation can lead to lower employability, reduced earning potential and limited social mobility for those who lack access to lifelong learning opportunities.

As countries strive to bridge the lifelong learning gap, Indonesia's Kartu Prakerja program emerges as a model worth emulating. This program highlights the potential of public-private partnerships to develop market-driven training courses that cater to the diverse needs of adult learners.

EMBRACING LIFELONG LEARNING FOR ALL

In Indonesia, the framework for lifelong learning is included in the national development plan, which is aligned with the Sustainable Development Goals (SDGs) 2030 agenda. The United Nations SDGs involve a specific target linked to lifelong learning, namely SDG Target 4.4. This SDG target intends to significantly expand the number of youth and adults with the necessary skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship by 2030. Indonesia has made significant progress toward achieving this SDG target.

Despite some progress, there is still a long way to go for Indonesia to achieve the SDG targets related to lifelong learning. Purbasari, Satriawan, and Sitorus (2022) show that 90% or 120 million of the Indonesian work force have never participated in any certified training. The proportion of the Indonesian younger population (15–24 year olds) who are Not in Education, Employment, or Training (NEET) is 22%, one of the highest in the ASEAN countries. Furthermore, there are significant disparities in access to education and training, with women, rural communities, and disadvantaged groups facing significant barriers to accessing lifelong learning opportunities.

Thus, Indonesia has taken a proactive approach to address the challenges related to lifelong learning by implementing the Kartu Prakerja program. In the context of Indonesia, the importance of achieving SDG 4 is magnified by the country's large and diverse population, its rapidly growing economy, and the challenges posed by technological advancements and globalization. Ensuring that all citizens have access to quality education and lifelong learning opportunities is crucial for maximizing the nation's human capital, fostering innovation, and maintaining competitiveness in the global market.

KARTU PRAKERJA PROGRAM: BUILDING A FUTURE-READY GENERATION

Indonesia's Kartu Prakerja program has gained significant attention as one of the best practices for a lifelong learning initiative. Launched in March 2020, shortly after the nationwide lockdown and social restrictions enacted in Indonesia in response to COVID-19, the program provides training and financial support to all Indonesian citizens over 18 years of age and not currently enrolled in any formal education, including workers, laborers, job seekers, and micro- and small-business owners who are affected by the COVID-19 pandemic and in need of increased competence.

»International collaboration among G20 countries in lifelong learning can lead to a more skilled and adaptable workforce, ultimately boosting economic growth and reducing inequality.«

Kartu Prakerja has proven to be an effective public-private partnership model, leveraging technology and collaboration with private-sector companies to deliver accessible and relevant training programs to adult learners. These programs cover various sectors, including digital technology, agriculture, and creative industries, among others. During the COVID-19 pandemic, the program provides financial assistance to participants to help cover the cost of internet access and other expenses

related to online learning. This is important, as many individuals may not have the financial resources to access online learning platforms without assistance.

The Kartu Prakerja program addresses the lifelong learning gap by making training more accessible and affordable to a broader population segment. With its end-to-end digital design and on-demand training scheme, Kartu Prakerja has proven its inclusivity by serving citizens in all 34 provinces and 514 cities and regencies across Indonesia, including those living in the underdeveloped, outermost, and remote (3T) regions. It is also accessible and inclusive to those who have been traditionally underrepresented or underserved in adult education, such as low-income individuals, rural populations, and those with limited access to formal education.

Kartu Prakerja's ecosystem comprises of numerous key components, including training institutions, digital platforms, job platforms and payment system providers. By the end of December 2022, the Kartu Prakerja ecosystem included 6 digital platforms, 180+ training providers, over 1200+ trainings, 4 job platforms, and 6 payment system providers. The training institutes are entrusted with implementing the training programs, issuing training certificates, and providing periodical updates to the Project Management Office on the implementation. The digital platforms serve as a digital marketplace that creates and curates training inventory, enables training institutions to register for the program, and enables beneficiaries to browse and select from various trainings offered on the platforms. In addition, the payment system providers, which include banks and e-wallet providers, are responsible for accurately delivering incentives to the beneficiaries' accounts.

By expanding access to skill development opportunities, the Kartu Prakerja program is vital in promoting lifelong learning in Indonesia. It not only contributes to the country's efforts towards achieving SDG target 4 but also serves as a model for other countries facing similar challenges in providing inclusive and equitable education and training opportunities for their adult populations. Queen Máxima of the Netherlands, during her remarks at the B20 Indonesia Summit in 2022, agreed that Kartu Prakerja has demonstrated how partnering with digital training institutes, job platforms, online marketplaces, and fintechs can support millions of beneficiaries. This includes building skills to start businesses or finding employment while providing cash assistance directly to the e-wallet in beneficiaries' mobile phones.

The Project Management Office of Kartu Prakerja is open to independent research agencies evaluating the impacts of the Kartu Prakerja program. Studies by J-PAL SEA and Presisi Indonesia have shown that Kartu Prakerja has successfully improved the competencies, productivity competitiveness, and entrepreneurship of its beneficiaries (Kartu Prakerja Program Management Report, 2021). According to J-PAL SEA (2021), when comparing the effect of program impacts on beneficiaries with non-beneficiaries, Kartu Prakerja successfully encourages the use of training certificates when applying for jobs by 172%, increases the possibility of starting a new job by 18%, and increases the opportunity to start a business by 30%. Presisi Indonesia (2021) also shows that Kartu Prakerja develops entrepreneurship skills by 49% and increases income for those who were initially unemployed by 32%.

The Kartu Prakerja program has demonstrated the potential of lifelong learning to provide individuals with the skills and knowledge needed to succeed in the modern workforce. By exploring the lessons learned from this program, policymakers and stakeholders can develop innovative solutions and best practices for lifelong learning that can be applied on a global scale.

LEVERAGING PUBLIC-PRIVATE PARTNERSHIPS FOR A THRIVING FUTURE

The Kartu Prakerja program in Indonesia has shown promising results in bridging the lifelong learning gap and providing opportunities for adult learners to upskill and reskill. By leveraging technology and public-private partnerships (PPPs), the program has successfully connected learners with learning and employment opportunities and contributed to the development of Indonesia's human capital.

Several lessons could be learned from Kartu Prakerja's innovations in PPPs. First, partnering with private sectors to align training with labor market demands. One of the strengths of the Kartu Prakerja program is its focus on providing training courses that are relevant to current and emerging labor market needs. By engaging with private training institutes through a competitive market-based scheme, the G20 countries can learn from Kartu Prakerja to ensure that their training programs are tailored to address skills gaps and meet the requirements of employers, ultimately improving employability and labor market outcomes for participants.

»Investment in lifelong learning is not only essential for individuals to thrive but also for the economic development of nations.«

Second, expanding access to training opportunities. The Kartu Prakerja program demonstrates the potential of PPPs to expand access to training programs, particularly for underserved populations. By working together, government, private sector, and training institutions can pool resources, and share risks to make lifelong learning opportunities more accessible for all citizens. By prioritizing the needs of marginalized groups, such as women and people with disabilities, Kartu Prakerja has helped create a more inclusive and equitable workforce in Indonesia.

Third, ensuring quality and accountability. A successful PPP model requires robust quality assurance mechanisms and transparent monitoring and evaluation systems. The G20 countries can learn from the Kartu Prakerja program by establishing clear monitoring and evaluation frameworks, performance metrics, standards, and accountability frameworks that ensure the quality and effectiveness of training programs delivered through PPPs.

COLLABORATING TO TRANSFORM LIFELONG LEARNING

International collaboration among the G20 countries to bridge the lifelong learning gap could lead to numerous potential benefits. By sharing best practices and innovative solutions for lifelong learning, the G20 countries could improve their overall economic growth and development by investing in their human capital. One concrete action that the G20 countries could take is to establish a knowledge-sharing network for lifelong learning. This network could facilitate the exchange of ideas and strategies, including effective policies, technologies, and training programs.

Another multilateral action that the G20 countries could take is to establish a global fund for lifelong learning. This fund could provide financial support for initiatives that help individuals acquire new skills and knowledge throughout their lives. The fund could also support research on lifelong learning and the development of new technologies and approaches that promote effective lifelong learning.

International collaboration among the G20 countries is crucial for bridging the lifelong learning gap and promoting human capital development. Investment in lifelong learning is not only essential for individuals to thrive but also for the economic development of nations. By working together, the G20 countries could share knowledge and resources, and develop more effective solutions that support lifelong learning and enable individuals to thrive in the rapidly changing global economy.

CONCLUSION

Overall, bridging the lifelong learning gap is essential for the future of work and economic development. The lessons learned from Kartu Prakerja provide valuable insights into how to design and implement effective lifelong learning programs. In this spirit, here are three key takeaways: First, adult learning is critical for the modern workforce. With the rapid pace of technological advancement and changes in the global economy, upskilling and reskilling are becoming increasingly important for individuals to remain competitive in the job market.

Second, Kartu Prakerja is an excellent example of a successful lifelong learning program that leverages public-private partnerships to provide relevant training to adult learners. By collaborating with private sector companies and utilizing project management methodologies and tools, the program has delivered high-quality training that meets the needs of various industries.

Third, international collaboration among the G20 countries in lifelong learning can aid in the creation of a more skilled and adaptable workforce, ultimately boosting economic growth and reducing inequality. By sharing best practices and developing tailored training programs, these countries can ensure that all individuals have access to the education and training they need to succeed in the twenty-first century.

In order to bridge the lifelong learning gap, it is essential that individuals, governments, and organizations prioritize lifelong learning and invest in effective lifelong learning programs. By doing so, we can ensure that individuals are equipped with the skills and knowledge they need to succeed in the rapidly changing global economy, and that our societies are able to thrive and prosper in the years to come.

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Digital Technologies in Education

Opinion Piece

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SOUTHERN VOICE | 10 years

Southern Voice is an open platform for think tanks. It contributes to the global dialogue on the Sustainable Development Goals (SDGs). Its ultimate aim is to address the existing 'knowledge asymmetry' and 'participation deficit' in the dialogue on development. It does this by producing, promoting, and disseminating evidence-based policy analysis by researchers from Global South countries.

Keywords:
digital technologies, learning outcomes, skills, multistakeholder approach, fourth industrial revolution (4IR), sustainable development

Education as we know it might soon become obsolete. Ensuring that education systems remain relevant and responsive to the dynamic local conditions of students and their needs has put a growing drive to challenge traditional teaching methods, curricula and pedagogical strategies at the top of the agenda (UNESCO, 2022; 2021). Revising the content taught in school is equally as important as examining how students are learning. This was confirmed by the vast majority of countries during the 2022 Transforming Education Summit, where 69% cited the need to rethink curriculum content and methods to improve learning. A vast majority of countries attending the summit (90%) also raised concerns about digital learning aspects, such as connectivity gaps, access to free digital learning contents, and the need for strengthening populations' digital skills (UNESCO, 2022). This piece reflects on the promising role digital technologies play in the learning process and the need for a multistakeholder approach to harness the potential of the integration of technologies in education.

WHAT ARE STUDENTS LEARNING?

While there is common consensus on the importance of acquiring demonstrable skills through the education system, approximately half of the students who have graduated high school worldwide have not obtained minimum basic competencies (UNESCO, 2022; 2021). Similarly, close to 60% of youth globally do not possess minimal proficiency levels in reading and math (UIS, 2017). Such alarming circumstances have given rise to extensive discussions about the potential of digital education strategies to improve the quality of learning (Hollow & Jefferies, 2022; Haleem et. al., 2022). Students are also failing to gain other relevant skills, such as communication, critical thinking, and cultural connectivity (Epicedu, 2020), and other context-relevant subjects related to citizens' local or national challenges (World Economic Forum, 2020).

While country-relevant abilities help students face structural problems such as violence, machismo or corruption, forward-looking skills prepare students for upcoming challenges and equip them with tools to foster a sustainable future for all (D. Castillo, F. Ripani, S. Cueto, personal communication, March 1 and 16, 2023). Take as an example the Fourth Industrial Revolution (4IR), which is changing the way society lives and works (Khatun & Saddat, 2020). The 4IR is at the root of structural transformations, thus affecting the labor market and the skills workers require to thrive (Autor & Salomons, 2018). Education is pivotal in supporting the workforce to gain the right skills and remain relevant amidst changing labor market demands. Skills such as creative problem-solving and continuous learning seem crucial (Duyar, Mina, & Owoh, 2019; D. Castillo, F. Ripani & S. Cueto, personal communications, March 1 and 16, 2023), yet are not a priority in schools' curricula. The achievement of the 2030 Agenda also helps to illustrate the need for prioritizing new learning outcomes. Society can certainly benefit from new generations who relate differently to the environment, the planet and other human beings (UNESCO, 2021). Failing to consider these aspects when rethinking school curricula perpetuates an obsolete education system.

WHAT IS THE ROLE OF DIGITAL TECHNOLOGIES IN EDUCATION?

While the use of digital technologies in education is not new, it has grown exponentially since the pandemic outbreak (Sotiriou & Giovanardi, 2021; OECD, 2020). This sudden shift to virtual education made society more aware of technologies' remarkable potential in education as well as their limitations. Challenges that came along with large-scale implementation included a lack of digital infrastructure, access to devices, and digital skills of students and teachers, particularly in the Global South (Tadesse & Muluye, 2020).

»Rethinking what is taught is equally as important as rethinking how students are learning.«

While connectivity and infrastructure challenges are pressing, not enough has been said about how technologies can help students gain emotional and social skills, such as curiosity, compassion, or courage (OECD, 2022). Some have questioned whether digital learning can in fact support the development of "life skills" such as bravery, confidence, entrepreneurship, and kindness (Pereira et al., 2022). It is still uncertain whether digital technologies improve collaboration and care for each other, or foster empathy. As important as it is to recognize the role of technology, the role of teachers, families and other fellow students is and will remain crucial. Worldwide school closures during the COVID-19 pandemic evidenced the shortcomings of replacing schools with virtual spaces, even in countries with relatively equitable connectivity and access to digital technologies (UNESCO, 2021). There is a social aspect in the learning process that cannot be neglected. After all, learning is a shared activity (Darling-Hammond et al., 2019).

HARNESSING THE POTENTIAL OF DIGITAL TECHNOLOGIES IN EDUCATION

Digital technologies and education are two complex systems that are different in nature. Defining how both function and relate to one another is vital in understanding how they can best support learning. On the one hand, education often depends on complex political processes, which makes it stiff and adjustments slow. Democratic and inclusive decision-making driving new education policies and agendas often involves lengthy, but necessary, deliberations among multiple actors at various levels. Similarly, public education institutions rely on the state's funding and welfare measures to act. Conversely, digital technologies are flexible, adaptive, and constantly changing. The private sector primarily drives its evolution, following a market-oriented logic. Continuously creating, engineering, and innovating is embedded in its very nature. These different dynamics between both systems must be well understood to harness the potential of integrating digital technologies into education.

The continuously innovative nature of digital technologies and the rigidity of the education system are both barriers to their integration. In particular, the gaps digital technologies are creating in acquiring skills relevant for the future are difficult to address. It seems that, as technological advancement accelerates, learning inequality continues to expand (S. Cueto, D. Castillo and F. Ripani, personal communication, March 1 and 16, 2023). For instance, an often-cited benefit of digitally enabled education is that it can reach remote areas or excluded students through distance learning (Hallem et al., 2022). Not only does this depend on the digital uptake of students in remote areas, but there is no conclusive evidence on the impacts of online learning in promoting equity in quality education. Another challenge in harnessing the potential of these systems is to uphold diversity, multiple ways of knowing, interculturality and solidarity in learning (UNESCO, 2021), which demand soft and interpersonal skills, and which go against digital technologies' tendency toward standardization.

VARIOUS STAKEHOLDERS, ONE GOAL

Digital transformations are systemic processes that embed adjustments in technological, cultural and institutional aspects (Cerda et. al., 2021), and comprise a range of actors in this ecosystem. Therefore, harnessing the potential of digital technologies in education demands a multistakeholder approach in which the government, the private sector, and society all play a central role. While the government takes the lead in putting the necessary policies and regulations into place, the private sector should work toward reconciling innovation with education's social objectives and committing to transparency and accountability practices. Families, as representatives of society, are also pivotal in determining who and how students can benefit from digital technologies.

THE ROLE OF THE GOVERNMENT

The government has the enormous responsibility of leading the digital transformation of education and steering it toward public interests (Langthaler, 2020). One of its core tasks is to ensure that the agendas of different members of the digital education ecosystem are in sync with national priorities and development needs and strategies. Given that the private sector leads innovation in technologies for education, an important role of the government is to take a leading role in public-private partnerships for education.

»Digital technologies and education are two complex systems different in nature.«

The government also needs to ensure that technologically driven education is based on the logic of "common goods" and a human rights approach, so that it can secure free, public and quality education for all (UNESCO, 2021; D. Castillo, F. Ripani, S. Cueto, personal communications, March 1 and 16, 2023). The only way to guarantee this right to education is by making sure that digitalization of education does not exacerbate existing inequalities and negatively affect the most vulnerable. To do

»Failing to consider these aspects when rethinking school curricula perpetuates an obsolete education system.«

this, the government can enforce control measures to mitigate the risks of reproducing stereotyping, bias, and racism in digital platforms, as well as regulate how data on education is produced and used for decision-making processes (UNESCO, 2021).

THE ROLE OF THE PRIVATE SECTOR

Private actors gained increased momentum in digital education during the pandemic and will have a growing role in the years ahead (Sotiriou & Giovanardi, 2021; Charvet & García, 2022). With digital technologies becoming key platforms for learning, tech companies are assuming a crucial role as intermediaries in delivering quality education for all (UNESCO, 2021). As intermediaries, companies ideally reconcile innovation with the social and sustainable objectives of education, while aligning digital education services with current and future labor skills demands.

The tech industry can support the state in developing digital transformation strategies and help to fill in some of the gaps that countries face in reconfiguring education. For instance, online education companies can complement the state's upskilling and lifelong learning programs by offering short, flexible courses (Sotiriou & Giovanardi, 2021). Infrastructure and internet service providers can promote access to online education, for example by lowering costs in digitally excluded areas (Kundu & Ambast, 2022; Barrantes, Burneo & Duffó, 2022; D. Castillo, F. Ripani, S. Cueto, personal communications, March 1 and 16, 2023). Simultaneously, companies must take the lead in committing to transparency and accountability practices. Ethical practices such as anonymizing students' and teachers' personal data (UNESCO, 2022), information sharing among sectors, and democratizing the contents of education to uphold academic freedom must prevail.

THE ROLE OF FAMILIES AND CIVIL SOCIETY

Family, as a primary social group, plays a central role in harnessing the potential of digital technologies in education. Parents determine individual opportunities to benefit from digital learning because their beliefs and perceptions about digital technologies – their purpose, safety, or usefulness – define the household rules about who uses them, for how long and under what conditions. Older boys own and use digital tools more often than girls, who often experience greater surveillance, control, and restrictions (Kundu & Ambast, 2022; Barrantes, Burneo & Duffó, 2022). Findings from case studies conducted in India, Tanzania and Peru report that the internet is often perceived as unsafe, inadequate, or unsuitable for women and girls. (Southern Voice & Centre for Budget and Governance Accountability, 2022: Southern Voice & Institute of Peruvian Studies, 2022; Kundu & Ambast, 2022; Barrantes, Burneo & Duffó, 2022). If perceived as a threat rather than an opportunity for collaboration and expansion of knowledge, both children and adults may have less openness to learning, creating, and interacting through digital education platforms.

»Harnessing the potential of digital technologies in education demands a multistakeholder approach.«

Similarly, parents with low digital uptake or a traditional view of the classroom may, for instance, be more reluctant to see the value in interactive or gamified education platforms. A key challenge pointed out by one of our interviewees is that twenty-first century parents must understand that education without digital skills is incomplete, and that these are both a goal and a resource (S. Cueto, personal communication, March 1, 2023). This is fundamental because the possibility of harnessing digital technologies to address some of education's shortcomings requires complex digital skills development, which is dependent on the sustained use of, and exposure to, technologies.

RECOMMENDATIONS

Harnessing the potential of digital technologies in education at the national and global levels calls for reflections on:

- The nature of both systems, digital technologies and education. While the first is constantly changing, the second is slower and takes more time to catch up.
- How are digital technologies supporting students to be better prepared for future challenges?
- What context-relevant and forward-looking skills do students need to learn?
- What are the elements mediating the relationship between digital technologies and education?
- What are the roles each actor plays in successfully integrating digital technologies and education?

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Sustainable Development

Page 178

Digitalization: A Government-Driven, Infrastructure-First Approach

Deokryong Yoon, Yaewon Hyun, Seonkyeong Kang
Korean Development Institute (KDI)

Page 188

Vulnerability and SDG Financing Gaps

Isabella Massa, Leslie Bermont Diaz
UN Sustainable Development Solutions Network (SDSN)

Page 198

Policy Recommendations for Digitalization of Agriculture and Sustainability

Stefan Heinke,
Felipe Carvalho
Bayer

Page 204

Redirecting Digital Public Infrastructure

Venkatachalam Anbumozhi
Economic Research Institute of ASEAN and East Asia (ERIA)

Page 214

Digital Government and Smart Cities – Developments in Argentina

Paul Grainger
University College London (UCL), Cyberspace

Silvia Lanza Castelli
Universidad Siglo21, Universidad Tecnologica Nacional (UTN)

Page 222

Digitalization and the Future of Work: Perspectives from the Global South

Ramiro Albrieu
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Digitalization: A Government-Driven, Infrastructure-First Approach

Policy Brief

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INTRODUCTION

In the twenty-first century, digitalization has become a critical factor for economic growth, as new economic activities and products are created and productivity is increased through digitalization. Digitalization has become a necessary task for economic actors to remain competitive in the market. In light of this, individuals, businesses, and countries are exploring pathways on how to promote digitalization. Based on the case of South Korea, this paper seeks to explore the implications of digitalization strategies.

South Korea has been striving to gain momentum for economic growth recovery through digitalization by pursuing the policy approach of "government-driven, infrastructure-first" for digital transformation. This aims to lower entry barriers to digitalization, enabling all citizens to participate in the socialization of innovation and inclusive growth, regardless of individual economic conditions. Further, the policy also aims at increasing the efficiency of the public sector through innovation, leading digitalization, and spreading innovative effects to society. As a result, South Korea has been evaluated as being ahead of the world in terms of digital infrastructure. However, the effect of innovation and growth engines is still limited to large and high-tech companies, leaving Small and Medium-sized Enterprises (SMEs) behind in terms of digitalization and utilization. Therefore, it is necessary to implement policies at a micro level to encourage as many economic actors as possible to participate in digitalization. The next task is to develop policies tailored to specific groups through software development that meets demand, human resources training, and government digitalization. Nevertheless, the South Korean "government-driven infrastructure-first" strategy is regarded as having formed the basis for positioning South Korea as a pioneer of digitalization.

DIGITALIZATION AND DIGITAL INFRASTRUCTURE

Digitalization is the process of converting analog information into a digital format. This enables faster and more efficient economic development through higher productivity, innovation, and increased trade between economic actors (Brynjolfsson, 2011; Katz & Koutroumpis, 2013). A number of scholars and international organizations offer policy frameworks to achieve digital transformation. The Organization for Economic Cooperation and Development suggests seven domains: Access, Use, Innovation, Jobs, Society, Trust, and Market openness (OECD, 2020). The European Commission's Digital Economy and Society Index (DESI) also provides five dimensions: Connectivity, Human Capital, Internet Use, Information Technology Integration, and Digital Public Services. The IMD World Digital Competitiveness Report measures data using the dimensions of knowledge, technology, and future readiness (IMD, 2022). Although there are differences in title of dimensions, the detailed indicators can be grouped into five broad categories: digital infrastructure, investment in digital development, ICT use, human capital, and legal and regulatory framework (Table.1). However, there is no specific guideline that determines which policy area should come first. The need to prioritize a specific policy area must be considered for better and more efficient policy implementation.

Categories	OECD_Going Digital Toolkit	ITU_Digital Ecosystem Development Index (Based on the study by Raul L. Katz)	European Commission_Digital Economy and Society Index (DESI)	IMD World Digital Competitiveness
Digital Infrastructure	**Access** - Communications infrastructures and services that underpin the use of digital technologies.	**Infrastructure** - Degree of connectivity via digital infrastructure, including fixed and mobile broadband connections	**Connectivity** - Supply and demand of fixed and mobile broadband	**Technology** - Regulatory framework, capital concentration on ICT development, usage of digital services and infrastructure
Investment	**Innovation** - Investment to ICT development	**Digitization of production** - Usage of digital services within production chain	**Connectivity** - Supply and demand of fixed and mobile broadband **Information Technology Integration** - ICT Integration in businesses and e-commerce	**Technology** - Regulatory framework, capital concentration on ICT development, usage of digital services andinfrastructure **Knowledge** - concentration on the education and training
ICT Use	**Market Openness** - Proportion Share of businesses involved in e-commerce, e-trading, including regulations to prevent the industry **Society** - Use of internet and digital services **Use** - The power and potential of digital technologies and data for stakeholders depends on their effective use	**Household digitization** - Affordability of digital services, including e-government, healthcare, and social services **Connectivity** - Digital penetration and service users **Competitive intensity** - Competitions within the market **Digital industries** - Revenues created by digital market **Factors of digital production** - Capital used for developing ICT	**Information Technology Integration** - ICT Integration in businesses and e-commerce **Digital Public Services** - Technolog usage for public activity such as e-Government	**Future readiness** - Adaptive attitudes of users, business agility and IT integration with social and economic services
Human Capital	**Jobs** - Job development, including education, training and social protection	**Household digitization** - Affordability of digital services, including e-government, healthcare, and social services	**Human Capital** - Internet user skills	**Knowledge** - Concentration on the education and training
Legal and Regulatory Framework	**Trust** - Trust on privacy protection and ICT security	**Institutional and regulatory** - Measurement to guarantee the privacy and data protection while using ICT	**Information Technology Integration** - ICT Integration in businesses and e-commerce	**Future readiness** - Adaptive attitudes of users, business agility and IT integration with social and economic services

Table 1. Category of Digitalization Policy Domains
(Source: OECD Going Digital Toolkit, ITU Digital Ecosystem Development Index, European Commission Digital Economy and Society Index, IMD World Digital Competitiveness)

Although there is no concrete global toolkit that sets policy priorities for the digitalization process, studies and surveys show that accessible digital infrastructure is essential for accelerating digital development. (World Bank, 2018; World Bank, 2022) Digital infrastructure is the digital ecosystem that connects society. Digital infrastructure includes fixed and mobile broadband connections, internet backbones, satellites, software platforms, other devices and software that support the Internet of Things, and data and cloud computing facilities (ITU, 2020). Recently, publicly available open-source software (OSS) and hardware (OSH) are also playing a role in infrastructure development. According to a study on open-source services as a public good, the EU's GDP would increase by 0.4% if the EU increased its contributions to OSS and OSH by 10% (Blind et al., 2021).

The importance of digital infrastructure was clearly demonstrated during the COVID-19 pandemic. During the lockdown, all economic and social connections were made through digital platforms. Rural areas that lack digital infrastructure face productivity challenges because they have fewer economic transactions, poorer access to information, and fewer learning opportunities. The World Bank's projects to build accessible digital infrastructure in the Mashreq and Kosovo regions clearly demonstrate this. Increased accessibility to information has improved social life, as people have access to social services, including health care and education (World Bank, 2018; World Bank, 2020; IDB, 2020). Quality internet access and digital platforms are critical for remote working and learning, availing oneself of social services, economic practices, and even social life.

Of course, digital infrastructure is not the only player in digitalization. Digital infrastructures such as fixed and mobile broadband contribute to economic growth, but there are diminishing effects and the impact of digital infrastructure deployment varies depending on regional characteristics. This suggests that infrastructure development should be accompanied by additional measures, which underscore the role of policy and institutions in promoting digitalization (ITU, 2020; Katz & Koutroumpis, 2013). Despite these shortcomings, the studies agree that digital infrastructure is the foundation for digitalization.

»Digital infrastructure is the digital ecosystem that connects society.«

CASE OF SOUTH KOREA

Landscape of South Korea's Digital Infrastructure

South Korea is recognized to have one of the most universal and advanced digital infrastructures in the world. It ranked second among 176 countries in the International Telecommunication Union (ITU)'s 2017 ICT Development Index. In terms of internet and mobile penetration rates, 100% of urban and rural populations are fully covered by a 4G mobile network and have access to the internet at home (ITU,

»South Korea's approach of "government-driven, infrastructure-first" has played a pivotal role in building a strong digital infrastructure.«

2021). South Korea was the first country to commercialize and ensure nationwide coverage of 5G networks in 2019, and it has since announced plans to pioneer 6G. The country is also among the world's top performers in the digitalization of its public sector. According to the UN DESA's 2022 E-government Index, South Korea is the leading country in Asia, and third worldwide in e-government development.

The digital infrastructure of South Korea has laid the foundations for it to become a major player in the global digital industry (ITU, 2020). Its digital infrastructures, such as affordable, high-speed broadband networks, served as breeding grounds for innovation. South Korean companies such as LG, Samsung, and SK have not only become household names in the consumer electronics industry worldwide, but they have also consolidated their dominance in the production of digital components, such as semiconductors and industrial batteries. The digital industry continues to be of pivotal importance to the South Korean economy, with research and development (R&D) expenditures accounting for 4.81% of GDP in 2020, making South Korea the second-largest R&D spender by GDP among OECD countries (KISTEP, 2022). In addition, the digital industry contributed significantly to the country's overall economic growth, with the industry accounting for 11.4% of total GDP (USD 177.5 billion) in 2020 (Invest Korea, 2020).

GOVERNMENT-DRIVEN, INFRASTRUCTURE-FIRST

South Korea's approach of "government-driven, infrastructure-first" has played a pivotal role in building a strong digital infrastructure. Based on this approach, the government implemented a series of top-down policies, with particular focus on the strategic implementation of telecommunications and broadband networks. As early as the 1970s and 1980s, the government recognized the importance of connectivity and invested nearly 1% of its GDP to construct a universal telecom network. This investment was followed by a $620 million upgrade to infrastructure in the 1990s. Furthermore, the government also enacted laws to prohibit unreasonable rates for fiber line access and market monopolization. These efforts led to universal fiber access, faster speeds, and lower costs.

As the 2000s heralded the age of the internet, the government pushed to ensure broadband networks to provide universal internet access. South Korea quickly achieved nationwide broadband coverage by encouraging competition in the broadband market and providing rural broadband subsidies. To better coordinate its digital infrastructure efforts and policymaking, the South Korean government established the Ministry of Information and

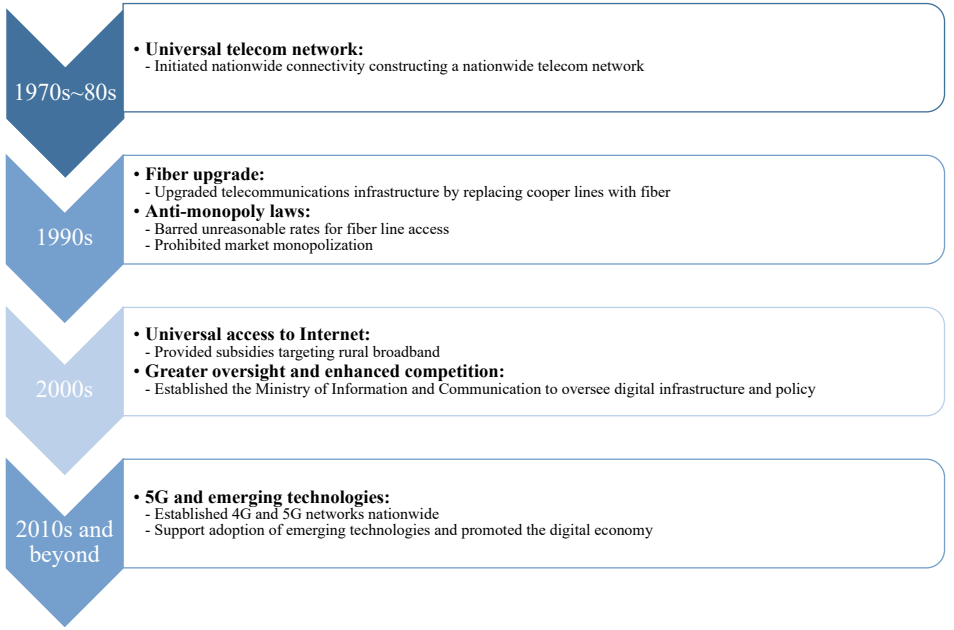

Figure 1. Major initiatives to build South Korea's digital infrastructure

Communication. In the 2010s, the Korean government continued to invest in digital infrastructure, establishing a nationwide 4G network in 2011 and a 5G network in 2019. These networks have enabled widespread adoption of digital technologies like mobile payments and artificial intelligence and have played a significant role in bolstering South Korea's digital economy.

Nonetheless, challenges such as market distortions, low digital adoption among small and medium-sized enterprises, and a digital skills gap remain. A 2021 OECD review of South Korea's aggregate productivity growth revealed that the majority of its productivity growth was contributed by a small number of firms in a few industries. The computer, electronic, and optical equipment industries had the highest productivity growth in South Korea between 2010 and 2018, with an annual average growth rate of 6.7%, while the construction industry had a much lower annual average growth rate of 0.1%. Furthermore, R&D investments continue to be concentrated on select companies in these limited industries. According to a report by the Korea Institute of S&T Evaluation and Planning, the top ten companies accounted for nearly half (47.1%) of the total R&D investment in the country in 2021. In response, the South Korean government needs to increase investments and provide incentives to foster innovation in various industries.

Furthermore, there must be increased support for SMEs as they face more diffi-

»Korea's policy aims to induce all economic entities, including consumers, to participate in digital transformation.«

culties in fostering digital competitiveness than their larger counterparts. According to a 2020 survey by the Korea Small Business Institute, only 23.9% of SMEs in South Korea had adopted digital technologies, and 57.7% cited a lack of information and knowledge as the main obstacle to adoption. This lack of adoption is further exacerbated by the fact that the digital skills gap between generations is highest in Korea among OECD countries. While 77% of adults in Korea have basic or above basic digital skills, only 25% have advanced digital skills, which is below the OECD average of 31%. Additionally, the share of older adults (ages 55-74) with basic or above basic digital skills was 52%, which was significantly lower than the OECD average of 65% (World Bank, 2016). To address this, the Korean government needs to support capacity building for digital literacy and skills among all citizens and provide incentives and support for SMEs for improved adoption of digital technologies.

CONCLUSION

In conclusion, digitalization poses both opportunities and risks for countries and economic players worldwide. To address these, many countries, as outlined in the OECD Digital Economic Outlook 2020, have established national strategies that focus on enhancing the capacity to utilize digital technology, fostering manpower, supporting R&D investment, and raising consumer confidence. These policies are designed to strengthen supply capacity, build competitiveness at the industrial level, and promote the participation of individuals and households as consumers.

According to Klaus Schwab's book, The Fourth Industrial Revolution (2016), which is a guide on digital transformation, upgrading society in the digital world requires interaction among consumers, suppliers, leaders, and members of society, rather than relying solely on government or corporate top decision-makers. Hence, governments are increasingly implementing policies that support all members of society in participating and playing their roles in digital transformation.

In South Korea, the government has prioritized infrastructure development to facilitate the participation of all members of society in digital transformation. The South Korean government aims to lead the digital transformation by instilling trust about digital technology among social members and improving government efficiency. Unlike traditional industrial policies, which focus on supporting specific industries, South Korea's policy aims to induce all economic entities, including consumers, to participate in digital transformation. This policy also seeks to provide digital infrastructure at an affordable rate for everyone to use, reflecting the policy intention of achieving inclusive growth through participation in innovation.

Digital transformation is a nascent policy domain not only in South Korea but in all countries. In the long run, South Korea's "government-driven, infrastructure-first" policy is expected to contribute to addressing issues of the digital divide by promoting social innovation that alleviates inequality through preemptive expansion and open use of digital infrastructure. This policy is an example for other countries that are considering framing policy priorities in the digitalization process.

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Vulnerability and SDG Financing Gaps

Research Paper

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SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

The Sustainable Development Solutions Network (SDSN) mobilizes global scientific and technological expertise to promote practical problem solving for the Sustainable Development Goals (SDGs) and the Paris Climate Agreement. It works under the auspices of the UN Secretary-General and supports the implementation of the SDGs at local, national, and global scales, in collaboration with UN agencies, multilateral financing institutions, the private sector, governments, and civil society.

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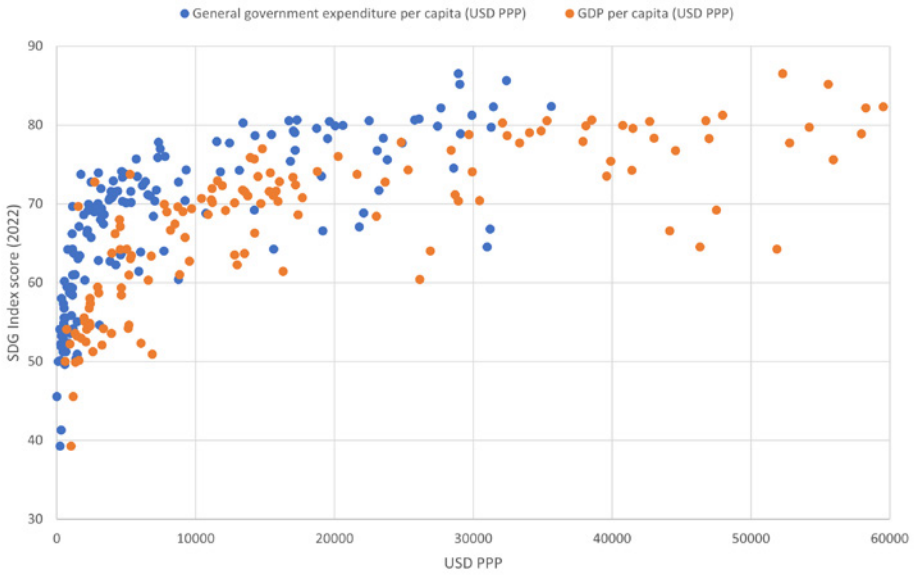
THE LACK OF PUBLIC SPENDING IS PREVENTING THE WORLD FROM ACHIEVING THE SDGs BY 2030.

At this mid-point on the way to 2030, the Sustainable Development Goals (SDGs) are not being achieved, and for the second year in a row, the world is no longer making progress on the SDGs (Sachs et al., 2022). Poorer and vulnerable countries, including Small Island Developing States (SIDS), face the largest SDG gaps due to the fact that the SDGs are above all an investment agenda into physical infrastructure (access to clean water, electricity, transport, energy, digital), human capital (health, education) and the planet (life on land and under the water), and these countries face severe financing constraints that have been gravely aggravated by the still ongoing "Triple C" crisis – Covid-19, Climate Change, and Conflict.

The dire shortfall in public outlays is among the main reasons why the SDG Agenda is far off-track around the world, and especially in poor and vulnerable countries. Figure 1 shows that overall, there is a positive and statistically significant correlation between SDG performance, as measured by the Sustainable Development Solutions Network (SDSN)'s SDG Index, general government expen-

Figure 1. General Government Expenditure and GDP Per Capita Versus SDG Performance
Note: For representation purposes, outliers with GDP per capita above USD PPP 60,000 are excluded.
Source: Authors' elaboration based on Sachs et al. (2022) and World Bank (2023).



»The dire shortfall in public outlays is among the main reasons why the SDG Agenda is far off-track.«

diture and GDP per capita. Therefore, poorer countries, which also tend to have low levels of fiscal spending, experience more difficulties in achieving the SDGs. It is worth noting that for poorer countries spending relatively little (approx. less than USD PPP 10,000 per capita), including most vulnerable countries, a small increase in public spending is associated with significant progress on the implementation of the SDGs. For richer countries with high public outlays, however, the quality of spending and other factors (e.g., the quality of institutions) might matter more than the quantity of additional spending.

HIGHLY VULNERABLE COUNTRIES MOBILIZE SMALLER AMOUNTS OF PUBLIC SPENDING AND HAVE LOWER LEVELS OF SDG PERFORMANCE.

Countries' capacity to mobilize large amounts of public spending to show progress on the SDGs is linked to their degree of structural vulnerability. Figure 2 shows that countries with low levels of structural vulnerability – as measured by the SDSN's pilot Multidimensional Vulnerability Index (MVI)[1], may mobilize more than USD PPP 14,000 per capita on average, while countries with high and medium structural vulnerability levels can only spend half of this amount (around USD PPP 7,000 per capita). On average, countries with a high and medium level of vulnerability attain lower scores on the SDG Index (65 and 68, respectively) compared to countries with a low level of vulnerability, which reach an average score of more than 10 points higher (Figure 2).

TO MAKE THE SAME PROGRESS ON THE SDGs, COUNTRIES WITH HIGH STRUCTURAL VULNERABILITY NEED TO MOBILIZE TWICE THE AMOUNT OF PUBLIC EXPENDITURE SPENT BY COUNTRIES WITH LOW VULNERABILITY.

A key issue for policy makers is to assess the incremental financing needed by countries to achieve the SDGs (i.e., SDG financing gap), considering their level of structural vulnerability. By using a simple linear regression model controlling for GDP per capita (which filters out the effect of richer countries having higher initial amounts of spending per capita, as shown in Figure 1), we show that – for a given initial level of development (GDP per capita) – countries with high structural vulnerability need to mobilize larger amounts of public expenditure to make progress on the SDGs compared to countries with low levels of vulnerability (Table 1). On average, in countries with low vulnerability, spending one additional percentage point (pp) of GDP helps to raise the SDG Index by 0.22 points. On the other hand, in countries with high vulnerability, raising public expenditure by the same amount leads to an increase of only 0.10 points in the SDG Index. In other words, to increase the SDG Index by one point, countries with low vulnerability need to spend an additional 4.5 pp of GDP, while highly vulnerable countries need to spend an additional 10 pp of GDP.

Therefore, to make the same progress on the SDGs, highly vulnerable countries need to spend double the amount spent by countries with low vulnerability. Such additional effort is due to the fact that highly vulnerable countries are more susceptible to climate hazards and other exogenous shocks that threaten and sometimes even reverse their progress towards achieving the SDGs.

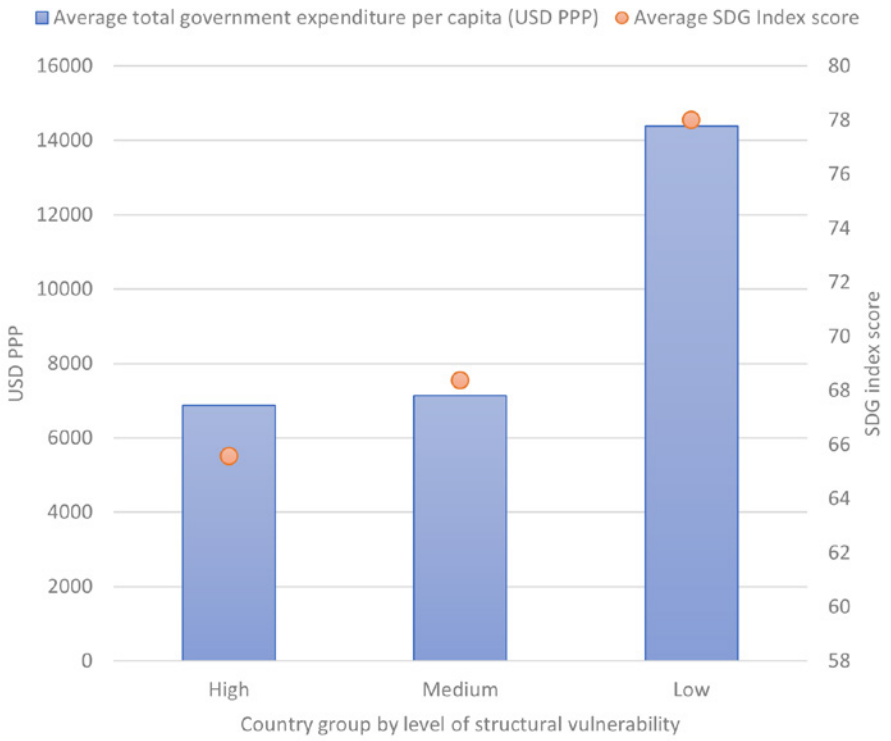


Figure 2. Government Expenditure and SDG Performance, by Level of Structural Vulnerability

Notes: Sample of 152 countries, including 22 SIDS, of which 17 are highly vulnerable and 5 have medium-vulnerability. Reduced version of the SDG index using 74 indicators (out of 95) to maximize country coverage. According to the statistical distribution of the SDSN's pilot MVI values, countries are classified as low- (score below 19), medium- (score between 19 and 27), and high-vulnerability countries (score above 27).
Source: Authors' elaboration based on IMF (2022) and Sachs et al. (2022).

»To make the same progress on the SDGs, highly vulnerable countries need to spend double the amount spent by countries with low vulnerability.«

TO REACH AN SDG INDEX SCORE OF 80, HIGHLY VULNERABLE COUNTRIES NEED TO SPEND AROUND 4 PERCENTAGE POINTS MORE OF THEIR GDP ANNUALLY COMPARED TO COUNTRIES WITH LOW VULNERABILITY.

What is the magnitude of the additional expenditure needed by high- and low-vulnerability countries to reach a level of sustainable development at which both physical infrastructure and human capital outcomes have mostly been achieved? By using the regression coefficients reported in Table 2 and controlling for levels of economic development, we estimate that the additional annual spending needed for the median highly vulnerable country to reach the SDG Index score of 80[2] (i.e., the score reached by the top one-third of best performing countries) is equivalent to about 7% of GDP[3]. On the other hand, countries with low levels of structural vulnerability only need to spend an additional 3% of their GDP. Therefore, highly vulnerable countries need to spend around 4 percentage points more of their GDP annually compared to countries with low vulnerability to reach the SDG Index score of 80 (Figure 3). Compared to the global median, highly vulnerable countries need to spend 1.6 pp of GDP more to reach the SDG Index score of 80, while countries with medium vulnerability need to spend only 0.3 pp more. Countries with low vulnerability, meanwhile, have lower financing needs than the median country in the world, as

Table 1. Public Expenditure Versus SDG Index Score, by Level of Structural Vulnerability

Notes: The regression we run is: sdg score$_i$ = c+ß$_1$ expenditure$_i$ + ß$_2$log(GDP per capita$_i$) + ε$_i$
Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001. Low-vulnerability countries are defined as those with a MVI value below the median value of the whole sample (median MVI = 23), while high-vulnerability countries are defined as those with a MVI value above the median value of the whole sample. High MVI countries include 21 SIDS, while Low MVI countries include 1 SIDS. Reduced version of the SDG Index using 74 indicators (out of 95) to maximize country coverage.
Source: Authors' elaboration based on IMF (2022), Sachs et al. (2021), and Sachs et al. (2022).

	Low MVI countries	**High MVI countries**
	Reduced SDG Index score	Reduced SDG Index score
Public expenditure (% GDP)	0.22***	0.10*
	-0,03	-0,04
Log of GDP per capita (USD PPP)	6.28***	4.85***
	-0,3	-0,7
Constant	4,45	18.0**
	-3,4	-6,1
Number of observations	85	67
R^2	0,82	0,47
Adjusted R^2	0,82	0,45

Table 2. The Role of Public Expenditure and Structural Vulnerability in Reaching the SDGs

Notes: The regression we run is: sdg score$_i$ = c+ß$_1$ expenditure$_i$ + ß$_2$log(GDP per capita$_i$) + ß$_3$ MVI$_i$ + ε$_i$
Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001. Reduced version of the SDG index using 74 indicators (out of 95) to maximize country coverage.
Source: Authors' elaboration based on IMF (2022), Sachs et al. (2021), and Sachs et al. (2022).

	Whole sample
	Reduced SDG Index score
Public expenditure (% GDP)	0.17***
	-0,03
Log of GDP per capita (USD PPP)	5.71***
	-0,5
MVI	-0.25**
	-0,08
Constant	15.9**
	-5,2
Number of observations	152
R^2	0,7
Adjusted R^2	0,7

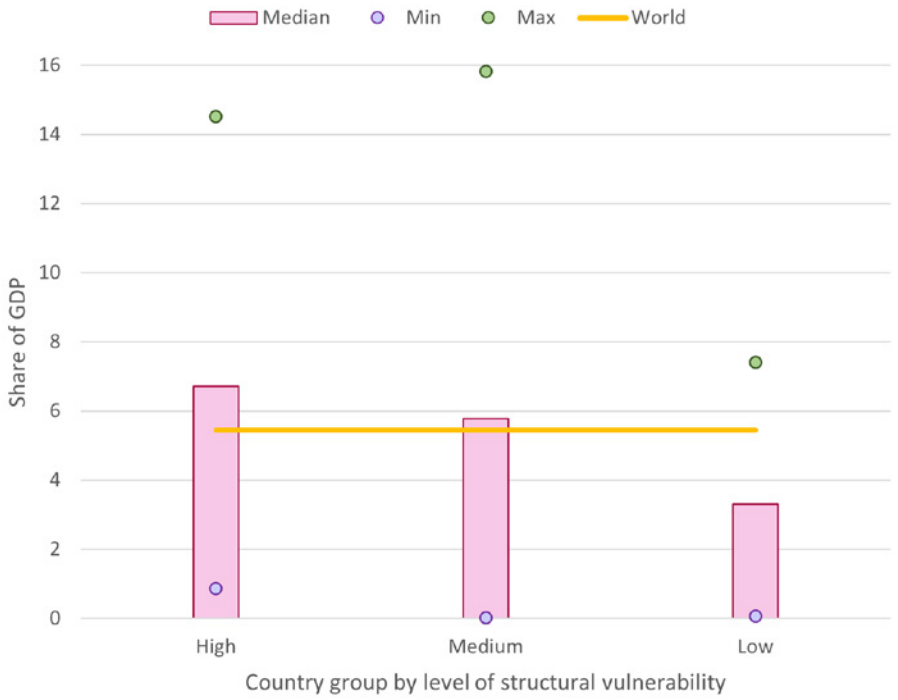


Figure 3. Median Annual Additional Expenditure to Reach an SDG Index Score of 80, by Level of Structural Vulnerability and Compared with the World's Median
Note: Sample of 129 countries, including 22 SIDS of which 17 are highly vulnerable and 5 have medium-vulnerability.
Source: Authors' elaboration.

their median annual additional expenditure is lower by almost 2.5 pp of GDP (Figure 3).

HIGHLY VULNERABLE COUNTRIES STRUGGLE MORE TO CLOSE THEIR SDG FINANCING GAP ON THEIR OWN. TRADITIONAL AND INNOVATIVE TARGETED FINANCING MECHANISMS CONSIDERING COUNTRIES' VULNERABILITIES SHOULD BE FACILITATED.

How can countries close their SDG financing gaps? Figure 4 shows that, on average, all vulnerable country groups require financial resources far beyond what they can generate from their own domestic resources to cover the total financing needed to achieve the SDGs (i.e., current expenditure plus SDG financing gap). However, the difference between government revenue and total SDG financing needed is even greater in highly vulnerable countries (Figure 4). Indeed, among countries with low levels of vulnerability, the difference between total

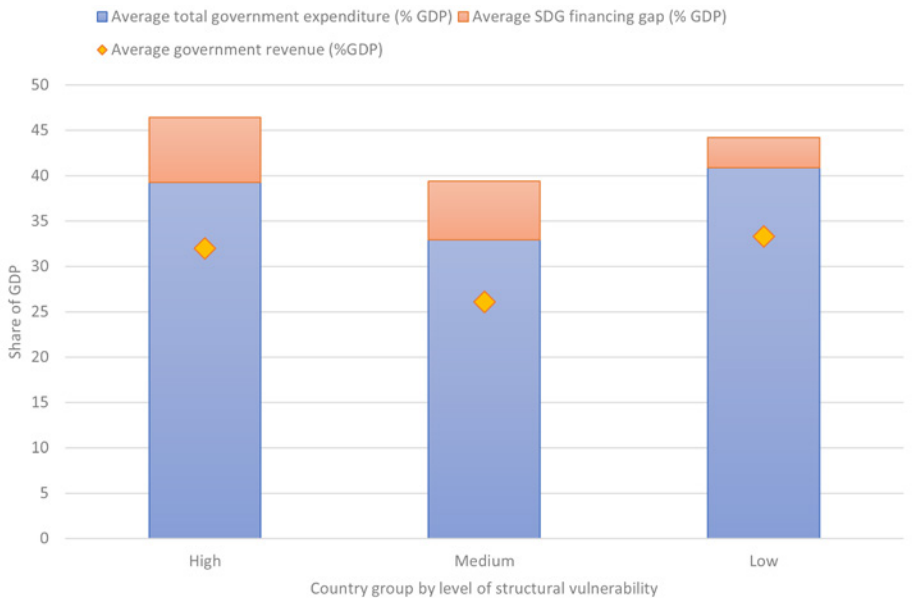


Figure 4. Average Annual Government Revenue, Government Expenditure and SDG Financing Gap
Note: Sample of 152 countries, including 22 SIDS of which 17 are highly vulnerable and 5 have medium-vulnerability.
Source: Authors' elaboration.

financing needed for achieving the SDGs and government revenue is 10 pp of GDP, while it reaches 15 pp among countries with high levels of vulnerability. So, highly vulnerable countries cannot afford to cover the total financing needed to achieve the SDGs relying only on domestic revenues. A global plan promoting the development and use of targeted financing mechanisms, addressing countries' specific vulnerabilities, is urgently needed to finance sustainable development, especially in countries such as SIDS, which are characterized by small tax bases and high levels of debt distress.

While the Official Development Assistance could be mobilized to respond to

»A global plan promoting targeted financing mechanisms addressing countries' specific vulnerabilities is urgently needed.«

SDG financing needs in countries characterized by high economic and developmental vulnerabilities, insurance mechanisms coupled with compensation funds should be created to help countries highly exposed to the adverse consequences of climate change. The costs of adapting to climate change and of recovering from loss and damage (L&D) after climate-induced disasters are massive and should

»Highly vulnerable countries cannot afford to cover the total financing needed to achieve the SDGs relying only on domestic revenues.«

be borne by countries that are historically more responsible for climate change. The COP27 that took place in November 2022 in Sharm El Sheikh marked a turning point in climate justice, as countries agreed on the creation of a specific L&D Fund. The fund will be financed by countries responsible for high greenhouse gas emissions and will provide financial compensation to the nations that are most affected by the consequences of climate change. A new report by the UN (2023) recognizes the L&D Fund as a pivotal innovative mechanism to increase global liquidity and leverage resources for sustainable development, in the context of the call for a global SDG Stimulus.

Other innovative financing solutions could also play an important role in supporting SDG-related investments, including SDG bonds. However, according to the existing rating systems, most of vulnerable countries, including SIDS, do not have creditworthiness and so cannot have access to these financial instruments unless support is provided by International Financial Institutions to de-risk bonds and raise debt in capital markets. The IMF's Special Drawing Rights could be used to leverage additional funding to support development. Debt swaps, such as debt-to-development, debt-to-climate or debt-to-environment, are state-contingent tools that could also be used by vulnerable countries to restructure their growing debt and free up resources for SDG progress.

Beyond the scale of financing, it is essential to consider additional elements that may shape the way towards achieving the SDGs. The achievement of the SDGs also depends on the quality of governance, trust in institutions, local and national authorities' technical capacities, as well as international peace, among other aspects.

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[1] The SDSN's pilot MVI is a composite index which assesses countries' structural vulnerability across three dimensions: economic (exposure to exogenous economic and financial shocks); developmental (vulnerability due to geophysical constraints); environmental (exposure to climate change and natural hazards).

[2] The total annual additional public expenditure needed by country i (% GDP) to reach a SDG Index score of 80 is computed as follows: $annual\_add\_exp\_gdp_i = (minexp\_all_i - expenditure_i) / (2030 - 2018)$, where $minexp\_all_i = \frac{(80 - coeff\ constant - (\beta_2 * Log(GDP\ per\ capita_i)) - (\beta_3 * MVI))}{\beta_1}$ (see equation described in the note of Table 2).

[3] Despite differences in the methodology and scope, this result is in line with the SDG financing gap estimated by Tiedemann et al. (2021) for a selection of 25 small developing states, including 23 (highly vulnerable) SIDS (about 6.7% of GDP).

Policy Recommendations for Digitalization of Agriculture and Sustainability

Policy Brief

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Keywords:
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A COMPANY PERSPECTIVE

Agriculture around the globe is facing a challenging future. Limited arable land, population growth, climate change, food waste/loss and a declining, aging farmer population all present problems to be overcome. Moreover, a healthy food system will be central to achieving the UN's 2030 Sustainable Development Goals (SDGs) to end poverty and hunger. While these challenges are massive, they are not insurmountable. Innovation will allow farmers to meet these growing economic, environmental, and societal challenges.

In this regard, digitalization – the collection, storage, analysis and sharing of data – has become one of agriculture's most promising evolutions. Digital farming combines a farmer's knowledge with cutting-edge technologies, such as artificial intelligence, proximal and remote sensing and variable application technologies, helping to make more informed and real-time decisions. It holds great promise to make the global food system more productive, resilient and environmentally sustainable. (McFadden et al., 2022)

Yet, digitalization is not only about new technologies. It will change the way of business for many of the value chain partners involved. Farmers, big and small, can improve farm management planning and de-risk their operations. With real-time data on weather patterns, soil moisture levels, and crop health, farmers can make informed decisions about planting and harvesting schedules, reducing the risk of crop failure due to weather events or disease outbreaks. Additionally, and importantly, smallholder farmers can have better access to information and trainings, and improved ability to utilize technologies and engage in additional markets. Digital solutions targeted to the needs and skills of smallholder farmers can support their inclusion and increase yield and profitability where it matters most.

In order to leverage the possibilities of digital agriculture, strong policy support is needed to make it happen. The following is a look at several ways the digitalization of our food system is advancing, solving global nutritional challenges, and alleviating environmental impacts, as well as our rationale and recommendations for policy making in this direction.

ON THE FARM – DIGITAL AND PRECISION FARMING

A field of crops may appear on the surface as uniform and homogenous; in reality, it is comprised of complex variables including soil composition, moisture levels, pest pressures and other agricultural conditions. Digital farming incorporates data to understand and use the variability within the field. It increasingly enables farmers to choose the most suitable seed variety, the best planting density and time, and to optimize the use of water and fertilizer. Then, precision machinery enables the execution of the agricultural plan and the timely, spatially fine-tuned application of inputs. The benefits of digitally managed and easily adjusted irrigation, fertilization and planting schedules promises to result in more efficient use of resources such as water and land (World Bank, 2019) and

»Strong policy support is needed to make it happen.«

increased yields. Optimized spraying of pesticides avoids overuse and minimizes run-off. The benefits are positive environmental effects (World Bank, 2019), cost reductions and higher productivity.

»Digitalization makes the value chain more transparent.«

So, what do we know about the current benefits of digital and precision farming? A 2022 report concluded that "on-farm productivity, sustainability, and resilience benefits from digitalization have been well documented for commercial row crop farms" (McFadden et al., 2022). A universal understanding of impact will remain difficult as it depends on various factors such as field conditions, equipment and software quality. For example, reductions in herbicide use will be higher in a field with spatially limited weed occurrence versus a thoroughly infested field. However, companies and the scientific community are rushing to develop advanced solutions. Progress in sensor quality, advanced precision equipment, more reliable prediction models and a more complete portfolio of solutions will drive costs down and efficiencies up. Success also depends on sufficient data exchange among public and various private actors and the avoidance of data siloes.

Digital and precision farming uptake is highest among larger farms in high-income countries (World Bank, 2019). Policies should support the adoption by all, including smaller and diverse farms, organic or conventional, and farmers in developing countries. Smallholders in developing countries need precision application solutions which are affordable. Access to service providers and technology sharing platforms like TroTro Tractor[1] or Hello Tractor[2], which connect growers and service providers (Finger et al., 2019), is growing and providing initial helpful solutions.

EMPOWERED COLLABORATION

Digitalization makes the value chain more transparent, allowing for product traceability spanning from on-farm production to the end consumer (World Bank, 2019). Thus, a customer buying fruits may be able to identify the farm from which they originate (e.g., through the Global Gap Number).[3] Consumers find information about the production standards which may additionally be verified through a label. For the food systems, the value in such tracking and monitoring lies in the improved efficiency of supply and the avoidance of food losses (World Bank, 2019). The farmer knows what to produce and has the benefit of secured buyers. The local supermarkets, traders and food companies benefit as traceability reduces the risk of incompliant or sub-quality production. For example, they can track their production standards concerning regenerative agriculture or carbon emissions. Such partnerships have specific value in developing countries and the ability to integrate small scale farmers into markets. Implementation costs are a challenge but the contribution of such projects to the SDGs can be high.

Digitally enhanced platforms go beyond the value chain and create an ecosystem of actors to co-create value (Hein et al., 2020). Platform solutions exist in many forms and with different purposes. An interesting example is a digitally enhanced platform for regenerative agriculture (ForFarmers by Bayer)[4]. A farmer considering low-till approaches or the use of cover crops may use this marketplace to receive and share information, to access agronomic support and complementary offers of various companies. This platform also enables access to rewards (company incentives/discounts/carbon credits) for carbon sequestration or reduction practices. For companies, the benefit of participating is the access to a progressive group of customers. E-platforms typically reduce the search costs for matching with partners (World Bank, 2019).

DIGITALIZATION DRIVES NEW BUSINESS MODELS

Digitalization impacts business models. Traditionally, and still today, agricultural input companies conduct business by selling inputs. With progressing digital transformation, this model leads to the increasingly integrated offering of products, digital services and agricultural practices. As digital agriculture develops, it creates more reliable prediction models and enables precision applications, thereby allowing the value creation and capture to shift to an agricultural outcome. For example, a farmer may pay for yield increases achieved through optimal planting density in combination with a certain seed variety. Such business models decouple productivity growth from input use and set the right incentive for environmental sustainability.

Farmers who seek financial rewards for the implementation of climate smart

»Digitalization impacts business models.«

agriculture need various forms of support. They need to *measure* the amount of GHG avoided, and to *report* this to a third party which can then *verify* the results (World Bank, 2022). Such measurement, reporting, and verification (MRV) activities are needed to prove that an agricultural practice like the use of cover crops has avoided or removed GHG emissions. Current systems often rely on manual labor, are costly and error-prone (Autenrieth, 2020). MRV benefits significantly from digital tools which automatically record activities, replace manual labor and increase the reliability of recording. Efficient MRV is the foundation for "unlocking climate finance" (World Bank, 2022) and thereby covering pertinent costs and rewarding producers financially. The objective is to make carbon farming a relevant income stream for producers.

BARRIERS

While the benefits are real, the barriers to adoption of digital agriculture are also real. Insufficient, low quality and expensive connectivity is an issue in many regions, but particularly severe in rural areas in developing countries. A lack of digital skills for farmers, extensionists, administrators, etc. is also a concern in both developed and developing countries (Trendov et al. 2019). Upfront costs limit the uptake of digital software and hardware, as does a lack of user-friendliness, limited use

cases, high operator skill requirements, mistrust of algorithms, and technological risk (McFadden et al., 2022). Particularly worrisome is the digital divide between developed countries and emerging economies with the severe risk of leaving vulnerable groups behind. Furthermore, the internet gender gap is an issue, as women often have reduced access to the internet compared to men, especially in South Asia and Africa (Sibthorpe, 2023).

»We recommend a national strategy to assess the strengths and weaknesses of existing digital systems and develop a coherent policy approach.«

POLICY IMPLICATIONS

We recommend a national strategy to assess the strengths and weaknesses of existing digital systems and develop a coherent policy approach. Elements of such a strategy should include:

1. A well-developed digital infrastructure in rural communities as a precondition for digital farming. Governments must work to enable reliable and affordable connectivity to support the broad adoption of digital farming tools especially in developing countries and with special investments and targeted offerings for vulnerable groups.
2. Governments should strengthen digital capacity in administration, the university curricula, and extension services to provide education to farm decision-makers, particularly on digital and entrepreneurial skills.
3. Public funding and incentives should be allocated to enable farmers to innovate their operations through sustainable digital technologies (i.e., financial and non-financial programs, tax credits, lower interest rates, reducing trade barriers, etc.).
4. Governments and intergovernmental organizations should support research and development in digital technologies for agriculture. This can include funding for public-private partnerships to develop new technologies and promote innovation in the agricultural sector.
5. Legislative and regulatory frameworks which define farming practices (i.e., sustainable use legislations) should encompass and drive the uptake of digital farming tools, for instance, tailored recommendations, digital as a component of Integrated Pest Management decision making, precision application technologies and digital record keeping.

CONCLUSION

Digitalization is a game changer for a more sustainable agriculture. It is pushing the envelope in big ways, enabling access, precision management, and climate-smart farming all over the world. However, it is important to remember that while digitalization is a critical enabler, it is not the solution on its own.

We believe that the convergence we are seeing today between science, data and digital technologies will be key to unlocking critically needed, sustainable solutions that address the most urgent challenges facing our food systems. It can and must have a decisive impact.

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[2] https://hellotractor.com/

[3] https://www.globalgap.org/uk_en/ggn-label/about-the-ggn-label/index.html

[4] https://bayerforground.com/farmers

Redirecting Digital Public Infrastructure

Research Paper

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The Economic Research Institute for ASEAN and East Asia (ERIA), based in Jakarta is an international research organisation established in 2007 by a formal agreement among 16 Heads of Government in 2007. It works closely with the ASEAN Secretariat, policy makers and research institutes from East Asia to provide intellectual and analytically sound evidence-based policy recommendations. ERIA conducts research under three pillars: Deepening Economic Integration, Narrowing Development Gaps and Achieving Sustainable Development Goals.
In order to disseminate its research findings and solicit inputs from various stakeholders, ERIA organizes seminars and symposia which nurture a sense of community in the region.
The policy recommendations are intended to help in the deliberation of the annual summit leaders and ministerial dialogues.

Keywords:
infrastructure, digitalization, sustainability

As the concept of Digital Public Infrastructure (DPI) has gained prominence in recent years, governments around the world are currently putting forward new policy initiatives and regulatory frameworks to govern the application of digital technologies and data flows. However, most initiatives disregard the implications of digitalization for environmental sustainability. As the world is facing multiple simultaneous sustainability challenges, several multilateral environmental agreements on climate mitigation, green energy transition, and sustainable consumption have been signed by the global community. These two regimes of policy making are seldom connected and have not systematically addressed the question of what digital public infrastructure means for the Sustainable Development Goals (SDGs). This article outlines the key pathways that can guide the G20 in the use of digital public infrastructure for a deep sustainability transformation, through maximising the environmental benefits of DPI by using a supply chain approach, enhancing smart city applications, promoting growth-oriented business models for big tech companies, and the development of a governance architecture for a DPI-driven low-carbon circular economy.

THE DEVELOPMENT PROMISE AND SUSTAINABILITY PERILS OF DIGITAL PUBLIC INFRASTRUCTURE

The ecosystem for DPI could be visualized at three levels: physical and platform layers, and app-level products. DPI plays a crucial role in ensuring equitable access to resources and fostering innovation in the digital age. Key components of DPI include:

a) Digital identity infrastructure: Secure and universally recognized digital identification systems that enable citizens to access public and private services (GSMA, 2020).
b) Payment infrastructure that facilitates resource transfer with low transaction costs (Ingram, McArthur & Vora, 2022).
c) Data governance and sharing infrastructure: Systems that facilitate the secure and ethical collection, storage, and sharing of data among different stakeholders to promote "data trust" (Davies, 2021).
d) Data exchange infrastructure: Publicly available software and technical standards that facilitate interoperability and collaboration among different digital systems to promote data portability (Flippe & Hassan, 2020).
e) Access Infrastructure: Universal, affordable, and reliable internet connectivity for all citizens (World Bank, 2021).

»That digitalization of public infrastructure can potentially lead to the decarbonization of economies, and positively impact sustainability outcomes, is uncontested.«

f) E-government services: Digital platforms that allow citizens to access government services, such as healthcare, education, and social welfare, online (OECD, 2021).

That the digitalization of public infrastructure can potentially lead to the decarbonization of economies, and positively impact sustainability outcomes, is uncontested. On the other hand, rapid digitalization could also contribute for increased carbon emissions in multiple ways:

Transition to Sustainable Energy: Climate change, food security and energy efficiency are inextricably linked. The International Energy Agency (IEA, 2022) estimates that energy efficiency accounts for 49% of the measures needed globally to stay in line with a 2°C temperature increase scenario (and 56% in the G20 countries). For a sustainable energy transition, the G20 nations need to prioritize renewable energy sources and optimize energy usage, increase energy efficiency, and leverage new and emerging technologies energy. For instance, adoption of smart grids, decentralized energy systems such as microgrids, and community-level renewable systems, can accelerate this transition as well as promote energy democracy. At a micro level, artificial intelligence-powered systems, such as building automation systems that utilize machine learning algorithms to optimize building heating, ventilation, and air conditioning systems, can reduce energy consumption.

»Use of digital communication tools and virtual services can fast track the transition to a sustainable economy.«

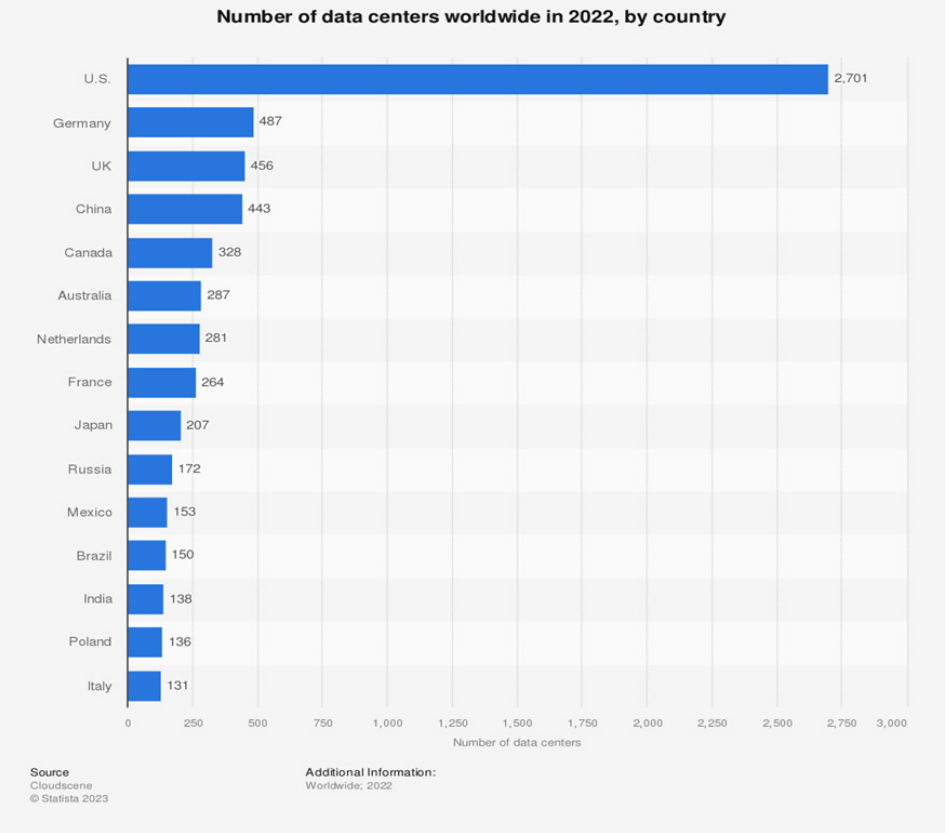
Climate adaptation and resilience: G20 nations account for 80% of all global emissions, making them crucial players in the global efforts to mitigate climate change. On the other hand, the physical infrastructure in the G20 nations is threatened by the impacts of climate change, such as extreme weather events, flooding, and sea-level rise. While the dangers are well recognized, there is not a single accepted pathway to building climate resilience. DPI and attendant technologies can support national and regional level climate adaptation and resilience efforts, for example through early warning systems for natural disasters, drought monitoring systems, and flood management systems. Satellite imagery and remote sensing technologies can track deforestation, monitor air and water quality, and assess the health of ecosystems.

Sustainable Agriculture: Agriculture plays an important role in all economies by contributing to their GDP, employment, and food security. While the exact levels of contribution vary across nations – for example, agriculture contributes 15-18% of India's GDP – there is an urgent need to transition agriculture in the G20 to become both climate-resilient and climate-smart. For example, remote sensing and satellite imagery can be used for weather forecasting and monitoring crop growth, soil conditions, and land-use changes. Smart irrigation systems also allow for real-time monitoring of water usage and water quality, and application of water-saving technologies. Supported by mobile applications, this can help farmers make informed decisions and adopt precision agriculture practices, to optimize crop yields, reduce waste, and conserve resources. Globally, about one-third of all food, approximately 1.3 billion tons, is lost or wasted each year. Blockchain technology may be applied to increase transparency and accountability in agricultural supply chains and reduce wastage.

Finally, industry 4.0 technologies using autonomous and connected systems, artificial Intelligence (AI), cloud computing, and the Internet of Things (IoT) can play a big role in transforming agriculture, making it thrive and facilitate food security. To realize this potential, open data on weather, seed genetics, environmental conditions, and soil data, can play a crucial role in helping the agricultural sector.

Greening Digital Infrastructure: The role of digital infrastructure – both soft

Figure 1: Distribution of Growing Digital Centers Across the Globe



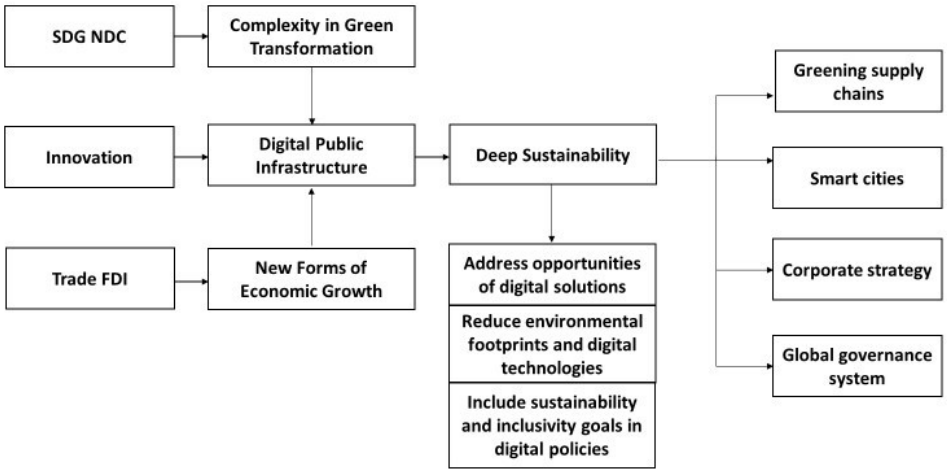
and hard – in promoting economic growth and reducing economic inequality is uncontested. For instance, an AIIB (2022) study indicates that every 10% increase in broadband (3G & above) penetration increases GDP pa in developing countries by 1.38% and doubling broadband speed leads to a 0.3% increase in GDP growth.

However, as digital technology applications increase in scale and complexity, the physical infrastructure on the back end also increases proportionately. Data centers are a good example. As of January 2022, there were over 6300 data centers, almost all of which are in G20 countries. Asia Pacific is the fastest growing region for hyperscale data centers. Data centers are estimated to consume around 1-3% of global electricity demand (Masnet et al., 2021), 0.3 % of global carbon emissions (Andrea & Edler, 2015), use significant amounts of water and produce substantial amounts of e-waste. This number is expected to grow with the increasing reliance on digital technologies.

On the other hand, the use of digital infrastructure can encourage the adoption of energy-saving tools and methods, lowering the carbon footprint. Use of digital communication tools and virtual services can fast track the transition to a sustainable economy. For instance, DPI facilitating remote work, online education, and telemedicine can contribute to lowering environmental impact.

Digital tools can monitor waste generation, collection, and recycling, promoting a circular economy. Further, supply chains can be made transparent and effective with the aid of technologies like blockchain. DPI can aid in the investigation, development, and use of clean technologies and support energy transition efforts. Smart grids, for instance, make it simpler to incorporate

Figure 2: Pathways by which DPI Could Become a Platform for Solutions to Sustainability Challenges



renewable energy sources, and the sharing economy can be supported by appropriate digital platforms. Implementing green ICT policies and standards can potentially offset the negative environmental effects of digital infrastructure.

The rapid advancement of digital technologies has the potential to transform public infrastructure dramatically. For instance, digitalization can increase both the economy's and the government's ability to contribute to a "resilient, sustainable, and inclusive" future. The concept of DPI has acquired prominence in recent years as digital technologies have become increasingly integral to modern societies (Gasser et al., 2020). DPI refers to a set of foundational digital systems and services, often developed and maintained by governments or non-profit organizations, that provide public goods and support the functioning of digital societies (Mansel, 2020).

DPI can be conceptualized as a digital equivalent of traditional public infrastructure, such as roads, bridges, and utilities. It provides essential services that enable the functioning of digital societies and economies, including internet access, digital identity systems, and data repositories (Ndemo, 2021).

Digital tools can facilitate faster and more expansive public engagement, inviting communities to co-design new infrastructure and vote on improvements, while also causing nuanced digital and data governance. Digital technologies can make it easier to gather, analyze, and disseminate environmental data, allowing for better resource management and decision-making.

Digital public infrastructure can help speed up progress on the SDGs by levelling the playing field for an array of service

»DPI can be conceptualized as a digital equivalent of traditional public infrastructure, such as roads, bridges, and utilities.«

providers using the physical and platform layers of digital infrastructure.

Figure 2 shows the drivers, opportunities and possible pathways by which DPI can contribute to deep decarbonization. Digital public infrastructure is foundational and cross-cutting. Since verifying an identity or making and receiving a payment are at the core of most transactions, it can create connections for a digital stack, i.e., work in tandem at the policy, process and technology levels will allow sectoral applications to be built on top, and help produce public benefits without public ownership.

The rapid advancement of IoT and fourth industrial revolution technologies have made it possible for governments to transition DPI at scale and with low marginal costs. Some of the related technologies, including robotics, artificial intelligence, decentralized edge computing, advanced analytics, automation, and block chain technology are helping to make such infrastructure more viable and easily scalable.

Despite the advantages outlined above, challenges related to sustainable development will persist. For example, an explosion in digitalization for our industry

and economy will lead to an increased reliance on digital networks, platforms, and services. The environmental and social impacts of this are not well studied or understood. Hence, examining the effects of digitalization on sustainability at the local, national, regional, and global levels is crucial as it continues to reshape different facets of society.

POLICY PATHWAYS FOR THE G20 TO HARNESS THE OPPORTUNITIES OF A DEEP SUSTAINABILITY TRANSITION

The G20 member countries in the past have acknowledged the significance of the digital economy and taken action to benefit from it. This includes initiatives such as the G20 Digital Economy Working Group (DEWG), which aims to facilitate collaboration between G20 members in promoting meaningful digital transformation. In the recent past, the Italian and Indonesian presidencies identified digital transformation as a pathway for aiding the post-pandemic economic recovery, as the shifting contours of the global economy into the digital space have opened new frontiers for development in G20 member countries. The Indian presidency has identified four themes focusing on DPI – sharing implementation experiences of digital identity in various countries, sharing of cyber security solutions for MSMEs, use of geo-spatial technologies for infrastructure development and DPI to boost attainment of the SDGs. The G20 Digital Innovation Alliance, launched by Indonesia, also pointed out that future digital technologies and public infrastructure should be built according to regenerative designs that improve economic resilience and foster social equity.

To ensure that the digital public infrastructure delivers a deep transformation to support sustainable transformation, the G20 economies need to work on a set of governing principles. Four areas where digitalization could work for deep sustainability are:

1. Minimizing the environmental impacts of creating, operating, and using digital public infrastructure by incorporating the principles of carbon neutrality, circularity, and eco-efficiency along the global value chains. In this regard, national entitles need to prioritize sustainable procurement policies and establish green procurement policies that prioritize the acquisition of digital products and services that have a lower environmental impact. Implementing policies and regulations that promote sustainable supply chains across industries, including measures to address environmental and social risks in global supply chains, has become imperative.
2. Responsibly opening up and integrating digital technology, data and platform applications that foster low carbon circular economy in smart cities. The incorporation of digital technologies into urban planning and city management can lead to better environmental outcomes. For instance, IoT-enabled sensors and smart grids, etc., make it possible to manage waste, water, and energy more effectively. Digital tools can also improve public transportation systems, resulting in less traffic and lower greenhouse gas emissions. Digital infrastructure, such as GIS systems for mapping, urban heat island analysis, and transportation planning, can be used to create more sustainable, liveable cities. Sustainable mobility analytics, such as real-time traffic and transportation data, can be used to inform urban planning and promote sustainable transportation practices. Eco-friendly fleet management, such as telematics systems for monitoring fuel efficiency and emissions, can be used to reduce the environmental impact of fleet operations.
3. Transforming the growth-oriented business models of big digital tech companies into net zero economic pursuits. The current models focus on setting and enforcing green ICT standards to lessen the environmental impact of digital technologies and advance energy efficiency. Encouraging the adoption of circular economy principles in the digital sector, such as the reuse, repair, and recycling of electronic devices, will be useful in reducing waste and conserving resources. Implementing policies and regulations that encourage responsible device disposal is important. Implementing corporate policies that require the reduction of the carbon footprint of digital infrastructure projects, including data centers, telecommunications networks, and other digital facilities is also warranted.
4. The integration of specific sectoral policies and new oversight institutions is needed to shape future DPI towards deepened sustainability and economic resilience. The growth in DPI, while accelerating the move towards decarbonisation, more efficient data-driven governance and democratic and open governments, also poses several challenges for governments and citizens. Uneven access to digital infrastructure has exacerbated existing inequalities and created new policy and implementation challenges. Underserved communities face barriers to accessing the benefits of digitalization and participating in the digital economy. Independent initiatives that thrive within and across countries, government, private sector, and civil society stakeholders, can result in fragmented approaches on all of the above and consequently lead to sub-optimal sustainability actions. Various policies to promote sustainable innovation can be promoted, including encouraging and supporting innovation in digital technologies, such as the development of low-carbon cloud computing and decentralized

»To ensure the digital public infrastructure delivers a deep transformation to support sustainable transformation, the G20 economies need to work on a set of governing principles.«

systems; encouraging cross-sector collaboration among public, private, and civil society stakeholders to develop comprehensive, context-specific strategies for long-term sustainable digitalization; improving data trust, transparency and portability through Open Data Platforms (ODP); and developing ODPs to increase their accessibility and transparency, allowing for more informed decision-making in areas such as climate change, energy, and resource use.

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Digital Government and Smart Cities – Developments in Argentina

Research Paper

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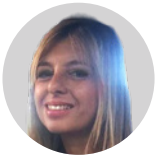

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UCL founded in 1826 in the heart of London, UCL is London's leading multidisciplinary university, with more than 16,000 staff and 50,000 students from over 150 different countries. UCL is consistently ranked as one of the top ten universities in the world (QS World University Rankings 2010-2022) and is No.2 in the UK for research power (Research Excellence Framework.

Keywords:
cities, regions, smart government, digital governance, Social Ecosystem Model (SEM)

Cyberspace has become an integral part of modern society, which impacts every facet of our life from the electrical grids that power millions of homes to the transportation and telecommunication networks that mobilize and connect people.

Universidad Siglo21 is a private university located in Corboda, Argentina.

Universidad Tecnológica Nacional is a public university in Córdoba, Argentina.

ABSTRACT

There is a growing awareness of the importance of regional economies – generally, a city and its hinterland – in supporting economic regeneration and expansion. A Social Ecosystem Model (SEM) has been developed that seeks to comprehend the holistic dynamics of working, living, and learning within an economically defined space.[1] There is an important role for organizations such as the G20 in promoting the wider adoption of a local model as a means of promoting economic regeneration, expansion, and social justice.

There are two parallel developments that need to be considered when examining the "smart city" digital government and smart government. These are convincingly demonstrated by developments in cities such as Buenos Aries and Córdoba in Argentina. A smart city is a technologically modern urban area that uses different types of electronic methods and sensors to collect specific data. City application systems use data to make better decisions by storing different infrastructure and city processes. Examples include Milton Keynes, London and other cities around the world.[2] Therefore, digitalization empowers citizens and makes the city smart.

Our discussion will focus on recommendations to strengthen digital innovation in government processes, the role of education and training in promoting an inclusive economy, and social and educational growth. This would imply generating actions to align the training of competencies with the Sustainable Development Goals (SDG) of both governments and citizens. These actions would make it possible to fulfil the potential of telecom-

»A Social Ecosystem Model (SEM) has been developed that seeks to comprehend the holistic dynamics of working, living, and learning.«

munications and intelligent information systems. Therefore, ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, social protection and job opportunities, while tackling climate change and environmental protection.[3]

Global cities and city regions provide a crucial context for the exploration and development of the social ecosystem model. We argue that cities such as London, Guangzhou, Shanghai, Tokyo, and New York can be understood as "supernova cities," with a mono-center and convergent travel to work patterns.[4]

Looking towards Latin America, Buenos Aires – officially the Autonomous City of Buenos Aires – the capital and primary city of Argentina, is well advanced in becoming a smart city. By 2020 it had digitalized 50% of its procedures or government service transactions. This is expected to rise to 90% in 2023. Administrative and repetitive processes have been reduced or simplified by digital means. The opening of its systems gives greater visibility to young entrepreneurs, academic opportunities, and start-up companies who are thus able to train new talent and more easily access their markets. In the central region of Argentina, in relative isolation, the distinctive region of Córdoba has shown that territories are ecosystems for the generation of knowledge and social empowerment, capable of creating social and economic value, where local and regional governments, and their basic public services, play a fundamental role as guarantors of citizens' access to health, water, sanitation, education, employment or housing.[5] Despite the effects of the pandemic and the resulting economic crisis, Córdoba has created a modern and innovative state with a technological platform that allows access to different procedures and citizens' web services. More than 1,100,000 digital citizens are registered in a digital platform (CiDi or Digital Citizen platform in Córdoba Province)[6] and since the current management of the city of Córdoba came to power, almost 100 procedures have been digitalized, allowing the services to be brought closer to the residents of the city (VeDi or digital neighbor platform in the Córdoba capital city).[7]

Córdoba has developed several strategies with the aspiration of becoming a smart city through digital transformation, circular economy and innovative mechanisms to position the city globally. According to an Argentine national survey, Córdoba ranks first in the category of "Provision of Online Services."[8] The new regime has prioritized the construction of a smart city and the modernization of the state-region with the aim of improving its citizens' quality of life. It has determined to implement an open innovation strategy, with GovTech facilitating both public and social innovation services. GovTech is a whole of government approach to public sector modernization.

Moreover, under this framework the city of Córdoba has received technical assistance from CAF Development Bank of Latin America and two venture capital funds (ALAYA Capital Partners and Dux Capital) to launch the "Cordoba Smart City" (CCI Fund / Fondo CCI). This is the first GovTech-targeted fund in Latin America.

The fund pursues strategic objectives:

- Promotes the modernization of the public sector and its innovation capacity
- Contributes to the development of Córdoba as a smart city
- Supports the growth of startups with GovTech and smart city solutions, and
- Transforms the city of Córdoba into a regional innovation hub[9]

In addition, the government of Córdoba considers young entrepreneurs to be fundamental actors in achieving structural transformations on the road to sustainable development. High school and university students as well as young professionals have participated in workshops for the exchange and discussion of the main concepts of the Open Government paradigm and the Sustainable Development Goals (SDGs).[10] One of the important topics discussed was Open Government. Open Government strategies and initiatives are based on the principles of transparency, integrity, accountability and stakeholder participation, according to the OECD.[11]

A Further example is the activity of Universidad Siglo 21, a private university with headquarters in Córdoba.[12] It has a strong social commitment to the training of professionals. It is committed to contributing to the SDGs and presents a yearly sustainability report.[13]

Another example is the Universidad Tecnológica Nacional[14] at Córdoba which has been rapidly changing their curriculum for engineering education to accommodate to the skills and requirements of young entrepreneurs and demands of the labor market.

Picture 1 illustrates an International Engineering Workshop at the Universidad Tecnológica Nacional during March, 2019, supported by the British Council and UCL, where engineering students, academics, government authorities, and employers were able to talk about the need to match training and education to labor market information in the field of engineering in the regional ecosystem.

The challenges were to create sustainable, inclusive, educational, social and economic growth based on city regions. This differs from the exclusionary "elite" entrepreneurial/technological ecosystems of globalized centers such as Silicon Valley and the City of London, where talent is imported from around the world, and is

based much more on area-based collaborative networks of educators, employers, local government, civil society and local anchor institutions. Here, open digital technologies are used to communicate, facilitate skills development and encourage civic participation. (The Hamburg G20 Final Communiqué aimed to "bridge digital divides along multiple dimensions, including income, age, geography and gender," and to "ensure that all our citizens are digitally connected by 2025"). This contrasts with the much-lauded "high skill ecosystems."[15]

»Global cities and city regions provide a crucial context for the exploration and development of the social ecosystem model.«

Of particular importance in the social ecosystem model are the spatial and place-based approaches to Vocational Education and Training (VET). New forms of partnership working are emerging, with technical and higher education bodies acting as anchor institutions for skills development within a smart, regional economy, supporting urban reform and renewal.[16]

While such elite ecosystems do link the worlds of work, living and learning, they do so in a reversionary sense, creating detached elites by acting as talent magnets for graduates from elite universities, creating urban social displacement. They do not bridge the social divide, rarely interacting with a new underclass. Consequently, such systems are potentially unstable. The skills involved can be relocated on no more than a whim, with little legacy left to their urban host.

A social ecosystem is supported by socially designed digital technologies, as in the case of Buenos Aries and Córdoba. This involves a leading role for horizontal networks and local anchor institutions, involving a variety of social partners in the public realm and private sector.[17] The first stage of this model is the identification of a shared public mission, or narrative, and agreement on local leadership to help bring together the different social forces and their specialist functions within a defined geopolitical space. Education, anchor institutions and new, digitally supported networks will play a crucial role in defining the parameters and functions of such a social ecosystem as being place-based. VET anchor organizations can meet the needs of a wide range of learners and social partners by providing bridges and interactions between educational and work-based settings and facilitating ladders of progression for local citizens through partnership working and shared personnel with employers of all sizes. This creates a series of urban-focused developments that embrace the new local economy and high-skilled work; housing development, transport connectivity and sustainable living; integrated health and social care services; and connective digital developments. Life-long learning is at the heart of these developments, because that provides the prospect of inclusive and sustainable growth, moving the emphasis from a formal, acquired qualification towards a continuous process of maintaining competence.[18]

We recommend that G20 policy makers work towards establishing a devolved Social Ecosystem Model (SEM) that seeks to promote inclusive economic, social and educational growth. This would involve the encouragement of global-narrative educational leaders to move their emphasis from skills supply (based on qualifications) to a greater emphasis on skills co-production between different social partners, including the entire local community, to map out future sustainable ways of working, living and learning in rapidly changing global city regions.

The notion of spatial digital connectivity is described in the concept of the "City as Platform," in which the networked city sees citizens as co-designers, co-producers and co-learners. Cities can now utilize four connective assets – people, data, infrastructure and technology.[19]

Skills training for regional economic activity is crucial. As VET institutions increase in scale and become more multi-faceted, they come to support economically coherent regions, growing closer to employers, politicians and civic leaders.[20]

Equally important is for a regional skills system to involve a complex set of relationships between vocational and academic education providers and employers. These are embedded in a yet more complex regional economic system. Organizations within these systems need supply chains and skills networks which may serve many similar organizations, and which are supported by a periphery of skills and capabilities that are crucial to their operational needs – a network of competence.

»Particularly important in the social ecosystem model are the spatial and place-based approaches to vocational education and training.«

For a system to be successful, it must assess the replacement needs of public and other civic services, work with employers to assess future skills requirements, and collaborate in order to provide appropriate learning environments. Such institutions recruit staff from among those active in the local economy and this helps establish communities of practice that can maintain a high awareness of developing skills needs and employment patterns. These institutions must develop their vision through their understanding of the character of local economic activity, the interrelated nature of supply chains, and the professional and technical competencies necessary to support them. It is in this way that regional economic areas achieve their distinctive nature: a set of interrelated, networked competencies.

Finally, the deployment in smart cities of networks such as 5G and advanced technologies will support the enablement of critical applications such as the Internet of Things (IoT) and sophisticated traffic and proactive processes automation, among others. In addition, the optimization of the use of telecommunications resources will make it possible to manage highly efficient and automated systems, increase citizen traceability and the preservation of security and cybersecurity, and prioritize any issues such as natural disasters.

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Digitalization and the Future of Work: Perspectives from the Global South

Policy Brief

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The South American Network of Applied Economics (Red Sur) is an academic research network founded in 1998 by a number of South American public and private universities and Think Tanks, with the support of the International Development Research Centre (IDRC). Red Sur's mission is to contribute to regional socio-economic analyses and debates by understanding global dynamics and identifying responses to development challenges. It seeks to generate valuable knowledge and develop policies to address the challenges of inclusive and sustainable growth in South America.

Keywords:
future of work, innovation, technology, Global South

DIGITALIZATION AND THE QUEST FOR DEVELOPMENT

The heated debates around the recently launched ChatGPT – a generative AI chatbot – and its disruptive impacts on society are just another indication of the deep transformational power of digitalization in our everyday life. The production, trade, and consumption of goods and services and their corresponding practices are undergoing a fundamental transformation due to the convergence of diverse organizational and information and communication technologies (ICTs) with artificial intelligence (AI). This includes the datafication of everything and everyone, and the growing prevalence of data-driven decision-making in business.

Digital technologies are critical to the labor market because they can redefine the entire world of work. Consider how the Neolithic revolution transformed hunter-gatherers into farmers and how the industrial revolution converted the self-employed into factory workers.[1] In some cases, new labor relations brought about workers' movement from low- to high-productivity jobs, contributing to increased economic growth and unprecedented improvements in living standards.

In the past, countries that escaped low-growth and development traps have created new, better paid jobs by leveraging the advantages of emerging technologies. How can we transform this new wave of rapid technological change into an opportunity for development in the Global South? Which are the appropriate policy frameworks – in terms of technological change, skills development, and labor market regulations and institutions – that governments in the Global South should follow?

NOT A SINGLE ANSWER

There is no straightforward answer to these questions; economic and social transformation is deeply rooted in the local context. Even digitalization, which largely involves shifting economic and social activities from the physical world to the digital realm, is subject to the capabilities of local firms, the skills of domestic workers, the available infrastructure, and the state of government finances, among other factors.

The Global South differs markedly from the Global North in this regard. Therefore, it is crucial to first comprehend the unique elements characterizing the challenges for the future of work in the South on various fronts, such as technological sophistication, educational systems, and labor market features. Secondly, the Global South is not a homogeneous entity; rather, it is comprised of a diverse range of countries with varying historical, institutional, and social contexts. Therefore, after addressing the challenges characterizing the Global South as a whole, regional perspectives are discussed.

Failing to adapt the conceptual framework for the future of work to local realities might result in too much concern being placed on issues that are not of high priority and, even worse, missing policy questions that are critical to the development agenda.

THE GLOBAL NORTH/GLOBAL SOUTH DIVIDE

Debates in the Global North on technology and the future of work are built on the premise that AI-centered technological innovation is booming,[2] and its growth is exponential. The future is already here. But

today's labor and skills development institutions, which were effective in shaping technological innovation toward dynamic and inclusive labor markets[3] in the pre-ICTs era, are not appropriate to confront the challenge of AI and other emerging digital technologies.

»Digital technologies are critical to the labor market because they have the ability to redefine the entire world of work.«

Thus, this view of the future of work highlights a mismatch between the speed of technological change and the speed of human adaptability: Technological innovation moves exponentially, while institutions evolve linearly. This mismatch explains the recent widening in income inequality and needs to be fixed by institutional reform.

In a context where the conceptual field is dominated by science fiction,[4] the Global North's narrative on the future of work represents a good first step for guiding public frameworks, as it breaks away from the (largely unfounded) fears of robots dominating humans. However, this narrative has its own set of assumptions regarding the pattern of technological change, the functioning of institutions and, more generally, everything that matters to the future of work.

How to enrich the debates to reflect the challenges and opportunities of the Global South? A natural next step is to add context and diversity to these debates. Fortunately, a lot of research has been carried out during the last decade to assess what the future of work is likely to be in the Global South (see our own research here).[5] In a first attempt to systematize this research and data, we have identified four key structural features in which the Global South and the Global North differ, and which need to be emphasized in any meaningful narrative about the future of work in the developing world.

First, in the past, the Global South has failed to make the most of global technological innovations, and remains a follower in the age of AI.[6] This matters because governments in the Global South cannot take exponential innovation for granted. Of course, developing countries need to understand the consequences of fast automation. However, today, automation is probably not as much of a threat as failing to encourage a more accelerated diffusion of new technologies.

Second, the challenges of skilling and reskilling are more complex in the Global South,[7] as many current and future workers are excluded from education and training institutions. Furthermore, those who are integrated in these institutions suffer the consequences of low-quality education systems.[8] From a Global South perspective, curricula reform must be addressed, incorporating new elements of analysis – low coverage, bad quality, and scarce finance.

Third, labor market institutions differ in fundamental ways. While in the developed world, technological change is challenging formal jobs, in the less developed world we need to add to these threats the likely impacts in the informal sector, as non-standard forms of employment are the norm.[9]

Fourth, inequality in the Global South goes well beyond income. In these countries, the uneven distribution of voice, digital capital, skills, and firms' capabilities translates into a marked inability to take advantage of emerging growth opportunities, such as technological innovations. Getting into the complex issues related to structural inequality is key for countries in the Global South.

REGIONAL PERSPECTIVES

These structural elements are common to developing countries; they comprise a shared agenda for the future of work in the Global South. However, the Global South is composed of very different countries, where labor market features differ in terms of how demographics, inequality, technological change and skills formation, as well as culture and history, interact with each other. Thus, to go a step further from a single Global South framework, in the rest of this article we put additional effort into understanding the most distinct elements characterizing the challenges facing the future of work in three regions of the Global South: South and Southeast Asia, the Middle East and North Africa, and Sub-Saharan Africa.

Balancing Growth in South and Southeast Asia

This region, comprising almost a third of the global labor force, has experienced a long period of high economic growth, sustained in large part by the diffusion of technological innovations.[10] Although South and South-East Asia are still far from reaching the living standards and welfare levels of advanced economies, this dynamic of accelerated growth has sharply increased inequality within countries.[11]

One way to think about the region's key challenges going forward is through the Kuznets Curve.[12] The Kuznets Curve shows the relationship between the level of well-being of an economy (approximated by GDP per capita) and its level of inequality. For most of the advanced economies until the mid-twentieth century, this curve has an inverted U-shape, so that once a country reaches a certain level of GDP per capita, it modifies its growth model to make it more inclusive.

»Taking ownership of the Global South's transformational capacity is the first step to building a brighter future of work.«

Many countries in this region are advancing along the first part of the curve, moving workers from rural areas to cities, accelerating growth and inequality at the same time (although poverty rates are at a historical low). Therefore, the great challenge ahead for South and Southeast Asia is not the rate of technological innovation, but the direction of change. It is therefore a question of rethinking policy frameworks

for making growth more inclusive by design[13] – and the labor market has a key role to play.

»It is crucial to first comprehend the unique elements characterizing the challenges for the future of work in the South.«

How can we achieve better equity outcomes in the region? There are four key elements that should be part of this narrative about "balancing growth":

- The first has to do with structural transformation, and refers to switching the focus from manufacturing to services[14] as the target sector to lead the way, increase productivity, and create quality jobs.
- The second is associated with the impact of the high diffusion of labor intermediation platforms,[15] particularly in the low-skilled segments of the labor market. Their effect in terms of quantity and quality of jobs are varied, but tend to be more negative the greater the oversupply of labor in these markets is.
- The third point refers to the readaptation of workers' skills[16] in the labor market. There is a need to innovate in technical and vocational education and training (TVET) in order to adapt to informal settings.
- Finally, the issue of inequality in the digital world, which particularly penalizes women,[17] is largely unaddressed in policy frameworks.

Finding Schumpeter in the Middle East and North Africa (MENA)

Successful structural transformation implies that a set of innovations emerges and makes obsolete the technologies and ways of producing of the past, thus automating specific tasks and creating new jobs in the most dynamic activities. This process of structural change was described by Joseph Schumpeter as one of creative destruction and is one of the leading forces behind technological innovation and its positive impact on productivity, job creation, and real wages.

The MENA story of digitalization and jobs stands out for the relative absence of creative destruction dynamics.[18] The region continues to rely heavily on commodity exports for growth and employment generation, and very little has been achieved in terms of productive diversification.

The primary indicator of innovation anemia is related to the dynamics of GDP per worker. According to productivity data[19] compiled by the World Bank, growth in GDP per worker was almost exclusively due to new capital investments in natural resource-intensive sectors. At the same time, total factor productivity, the main proxy for technological innovation, contributed negatively to the growth of GDP per worker. In other words, the allocation of new investments has been detrimental to innovation and creativity. This should raise a red flag in terms of the sources of growth and job creation in the region.

Thus, the main challenge for MENA's future of work will be to fundamentally change its growth model.[20] In the past, high levels of natural wealth allowed for a substantial expansion of the public sector, dictating investment and innovation decisions, in addition to being one of the leading employers in the economy.[21] Moreover, the combination of a large state with high natural wealth led to a counterpart in the educational system. In this scheme, incentives have been placed on obtaining the necessary credentials[22] to enter the public sector, rather than acquiring the skills to become employed in the more productive, future-oriented industries. This explains the low-productivity dynamics observed in the region.

A future of work narrative for MENA must encourage innovation and private sector risk-taking. Timing matters, as the next fifteen years will bring a rebound in the relative size of the young population. In a nutshell, the region needs to reconnect to the innovation dynamics of growth, that is, to "find Schumpeter." The issues that need to be emphasized in this narrative relate to:

- A very small and protected private sector and an overly large public sector
- A high dependence on natural resources
- An education system based more on credentialism than on twenty-first century skills
- A damaged relationship between the state and the citizenry
- Private sector behavior and public policies

The Future of Work is the Future of Sub-Saharan Africa

The story of digitalization and jobs in Sub-Saharan Africa differs substantially from those mentioned above. While societies in the rest of the world are aging rapidly, Sub-Saharan Africa is young, about to enter the demographic dividend stage, and the demographic transition is unusually smooth.[23] In other words, the challenges of job creation at the global level in the coming decades will be concentrated in Sub-Saharan Africa. The labor market of the future will be shaped by the stock of skills, the technologies and the regulations of African labor markets.

The need to create more than 500 million jobs in the next three or four decades meets a complex outlook in terms of adaptability to change. In the technology realm there has been a lot of progress in recent years, but in relatively simple, end-user applications. Still, much remains to be done towards the creation, dissemination and adaptation of complex AI solutions on a large scale.[24] On the skills side, there is underinvestment in critical skills, there is mis-investment in routine skills rather than creative ones, and there are severe problems of inequity, which go beyond income or gender. Finally, the productive bias towards agricultural activities

»The challenges of job creation at the global level in the coming decades will be concentrated in Sub-Saharan Africa.«

implies a low employment elasticity for economic growth.

Therefore, the biggest challenge for Sub-Saharan Africa regarding the future of work is to match structural transformation with the demographic dynamics[25] of a long-lasting expansion in the labor force.

With the labor force being set to double in next three decades, the pressure to create jobs will be very strong and policy frameworks must be revised to accelerate change:

- In terms of technology, the goal must be to go beyond leapfrogging in simple technologies.
- In terms of skills, investing decisively in the current education system is key.
- In regulatory issues, policies must increase efforts to encourage productivity gains in the informal sector.
- Finally, a major underlying challenge for embracing the needed transformations is the limited capacity of governments in terms of resources, capabilities, and incentives.

CONCLUSION

There is a fundamental mistake in trying to predict the future: it doesn't exist yet. Taking ownership of the Global South's transformational capacity is the first step toward building a brighter future of work.

In this document, we sought to provide a first set of elements that serves to adapt the standard narratives on the future of work to the context of different Global South regions. We hope it helps developing countries toward framing policies that reflect their background and challenges.

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Environmental Solutions

Page 234

Valuing the Invaluable to Meet the Paris Agreement

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Page 242

Coastal Women and Net-Zero Energy Transitions

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Page 250

Closing the Gap of Water Financing

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Economic Research Institute of ASEAN and East Asia (ERIA)

Page 260

Peatland Rewetting as a Nature-Based-Solution

Hans Joosten
Greifswald University/ Greifswald Mire Centre

Page 268

Climate Change, Resource Degradation and Food Security

Martin Piñeiro
Argentine Council for International Relations (CARI)

Pablo Elverdin,
Agustin Tejeda Rodriguez
Group of Producing Countries from the Southern Cone (GPS)

Page 274

(Un)Paving the Way for Heat Resilience in Cities

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Valuing the Invaluable to Meet the Paris Agreement

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BROOKINGS

The BROOKINGS Institution's Africa Growth Initiative believes that the time is right for Africa to sustainably and inclusively converge with the rest of the world in terms of standards of living, opportunity, and GDP per capita income. The BROOKINGS Institution supports this process by producing and disseminating high-quality, independent policy research, which helps establish long-term strategies for economic growth and enhances the programs of Africa's key partners in Washington, D.C.

DevvStream

DevvStream is a technology-based ESG carbon streaming company that advances the development and monetization of environmental assets, with an initial focus on carbon markets. DevvStream implements curated green technology projects that generate renewable energy, improve energy efficiencies, eliminate or reduce emissions, and sequester carbon directly from the air.

greenlines

Greenlines Technology is democratizing access to carbon markets with powerful digital MRV tools that generate carbon-based financial incentives from aggregated sustainable human activities in the urban mobility and e-commerce sectors.

LSF
THE LIQUIDITY & SUSTAINABILITY FACILITY

The LSF was designed by the United Nations Economic Commission for Africa, in collaboration with Afreximbank, in response to several major challenges facing African countries, in particular the ongoing coronavirus pandemic, the historical high cost of borrowing for African Sovereigns and the urgent necessity to address climate change and its consequences.

SUOMI ADVISORY GROUP

Suomi Advisory Group is a leading consulting and intellectual property development firm specializing in environmental and social financial asset identification, development, and commercialization for businesses, organizations, and governments globally.

Keywords:
environmental markets, carbon trading, sustainability, capitalism

The world is facing a crisis of unprecedented scale as climate change continues to wreak havoc on the environment. The transition to a sustainable economy requires a complete rethink of energy generation and consumption paired with a circular economy. However, new financing instruments must be developed to complement more traditional ones that place value in sustainability-aligned activities. We must place a value on environmental and social assets to accelerate capital deployment in alignment with our climate goals.

The transition towards valuing environmental and social assets requires a complete rethink of our economic system. It is time to align environmental protection and social development with capitalism to accelerate capital deployment in alignment with our climate goals.

"If we don't act now, this century may be one of humanity's last. We can build a safer, fairer, more resilient world. But we need to move quickly."
– UN Secretary-General, Antonio Guterres

PHASE I. — THE CURRENT SITUATION: OVERLOOKING THE VALUE OF ENVIRONMENT AND SOCIETY AS RESOURCES RATHER THAN LIABILITIES.

For far too long, we have failed to recognize the value of our environment and society as assets, instead treating them as liabilities that impede economic growth. As a result, our planet is on the brink of environmental catastrophe, with climate change posing an existential threat to humanity.

Capitalism, as it has been practiced in recent decades, has largely incentivized economic activities that are at odds

»For far too long, we failed to recognize environment and society as assets, instead treating them as liabilities that impede economic growth.«

with environmental protection and social development. The relentless pursuit of profit has resulted in widespread pollution, deforestation, and other unsustainable practices that are contributing to the degradation of our planet. Moreover, social inequality has grown, with marginalized communities disproportionately affected by the negative consequences of these activities.

One of the key challenges in achieving this goal is the lack of financial instruments that place value in sustainability-aligned activities. Traditional financial instruments, such as stocks and bonds, do not take into account the environmental and social impacts of the companies or projects they invest in. As a result, the market fails to accurately price the risks associated with these impacts, leading to underinvestment in sustainable activities.

To address this challenge, we must place a value on environmental and social assets. Carbon and methane emissions, particulate matter, HFCs (hydrofluorocarbons), SF6 (sulfur hexafluoride), water, plastic waste, biodiversity, social development, and the empowerment of minorities are just some examples of the assets that must be recognized as valuable. By valuing these assets, we can create a new class of sustainable investments that incentivize sustainable practices and social development.

In the realm of carbon markets, two approaches that are gaining attention are voluntary and compliance markets. While voluntary carbon markets have seen remarkable growth, with projections estimating their aggregated value to reach USD 40 billion by 2030, up from USD 2 billion in 2021,[1] driven by corporate demand to achieve voluntary net zero commitments, there is also potential demand from countries striving to meet their decarbonization targets via mitigation outcomes (ITMOS) under Article 6.2 of the Paris Agreement. On the other hand, compliance markets, which reached a total value of USD 909 billion in 2022,[2] up from USD 859 billion in 2021, despite a 20% decrease in global carbon permit trades, highlight the continued focus on pricing. However, the global weighted-average carbon price of USD 28/ton remains insufficient to incentivize meaningful decarbonization efforts. To meet net zero ambitions, carbon prices need to rise significantly to reach USD 140/ton by 2030 and USD 250/ton by 2050 in advanced economies, as identified by the International Energy Agency (IEA)[3]. This underscores the growing importance of carbon pricing in driving effective climate action as an effective financial incentive to drive widespread implementation of clean technologies and solutions.

As we approach 2030, it is likely that countries will increasingly utilize Article 6 of the Paris Agreement, which facilitates voluntary cooperation on climate mitigation efforts, including market-based mechanisms like emissions trading, to support the implementation of their nationally determined contributions (NDCs) under the agreement. This is expected to drive up the demand for recognized high-quality carbon credits as countries look to leverage this mechanism to achieve their targets. Moreover, the rules set out in Article 6 require transparency and robust accounting to ensure the environmental integrity of the emissions financial assets being transferred, which would further support the creation of a new digital-first environmental financial asset backed by reliable and verifiable data.

PHASE II. — TRANSITIONING FROM ANALOG TO DIGITAL: ESTABLISHING THE FOUNDATIONS FOR A DIGITAL CREDIT MARKET.

To truly align environmental protection and social development with capitalism, we need to create a new breed of "digital environmental assets" (DEAs). These DEAs will allow a fast and efficient flow of capital to quantifiable environmental benefits. The creation of DEAs will transform environmental and social assets from a liability to an asset.

While many could be tempted to dismiss DEAs as simply another type of "carbon credit," DEAs and offset credits (and other current environmental financial instruments) differ in several ways.

Firstly, DEAs use transparent and verifiable data collected through technology-enabled monitoring, reporting, and verification systems, while traditional offset credits and environmental credits are collected using labor-intensive manual processes. Secondly, DEAs are often more specific and targeted in their focus, while offset credits are typically more general in nature. Thirdly, DEAs can be designed to align with specific environmental or social goals and can be customized to meet the needs of different stakeholders, while offset credits are typically limited to carbon offsetting and may not address specific social or environmental issues. Lastly, DEAs can be traded on digital platforms, enabling faster and more efficient transactions, while offset credits are typically traded through more traditional channels.

DEAs could be standardized across jurisdictions, enabling cross-national transactions to occur. Procurement processes could attach DEAs as another financing instrument to accelerate and attract investments into sustainable projects, such as renewable energy generation in developing economies.

DEAs have the potential to replace multiple financial instruments linked to environmental attributes, creating a more standardized and efficient market for investors. Currently, various instruments such as offset credits and Renewable Energy Certificates, among others, exist but lack standardization. DEAs could streamline the market and make it easier for investors to navigate by providing a

»By valuing the invaluable, we are leveraging capitalism to reach our climate goals.«

common framework for valuing and trading environmental and social attributes. Additionally, DEAs would be data-intensive and transparent, reducing the risk of double-counting and ensuring that investments are directed toward actual emissions reductions or other environmental and social benefits.

»Article 6 of the Paris Agreement sets the stage for a global market for digital environmental and social credits aligned to the NDCs.«

The World Economic Forum has released a briefing paper titled "Recommendations for the Digital Voluntary and Regulated Carbon Markets" in March 2023.[4] The paper makes two main recommendations. Firstly, carbon markets should have a common baseline taxonomy and expand to include new financial products and "beyond-carbon" tradable assets. Secondly, the report recommends the use of digitally native credits and emerging technologies, such as advanced remote sensing and distributed ledger technology, to support automation in validation and verification, and to improve auditability.

The creation of DEAs requires transparent data collection frameworks and technology infrastructure for credibility. Blockchain technology enables secure and transparent data sharing, which is essential for creating DEAs. Data standards must also be developed to harmonize data points and enable interoperability across different issuers of carbon credits. Regulatory frameworks must support the trading of DEAs as other commodities to bring liquidity to these activities and ensure that capital flows to the most efficient decarbonization activities.

By creating digital environmental assets, we can enable a faster transition to a net zero economy. DEAs will ensure that environmental protection and social development are no longer liabilities but assets, accelerating the transition to a sustainable society.

PHASE III. — FUTURE OUTLOOK: A GLOBAL MARKET WHERE ENVIRONMENTAL AND SOCIAL PERFORMANCE CAN BE TRADED AS COMMODITIES.

As environmental and social assets gain recognition, we can expect them to be tradable in financial markets globally. This will enable investors to take long or short positions on the environmental impact of companies or assets and provide a way for companies to finance their green projects through the issuance of tradable environmental and social assets. Here are a few examples:

- Energy Efficiency: Energy efficiency could deliver up to 40% of the carbon emissions reductions needed to achieve net zero emissions by 2050[5]. If 50% of the one million commercial buildings in the US adopt a DEA that helps them reduce energy consumption by 20%, the potential revenue could be in the billions of dollars.

Digital Credit Type	Acronym	Underlying Asset	Measurement Unit
Digital Carbon Reduction Asset	DCRA	Reduction of 1 metric ton of GHG emissions	tCO2e
Digital Carbon Removal Asset	DCRoA	Removal of 1 metric ton of GHG emissions	tCO2e
Digital Water Quality Asset	DWQA	Improvement of water quality	1%
Digital Biodiversity Asset	DBA	Improvement of biodiversity	1 species
Digital Social Empowerment Asset	DSEA	Empowerment of disadvantaged communities	1 person
Digital Plastic Waste Reduction Asset	DPWRA	Reduction of plastic waste	1 ton
Digital Sound Pollution Asset	DSPA	Reduction of noise pollution	1 decibel
Digital Light Pollution Asset	DLPA	Reduction of light pollution in cities	1 lux
Digital Mental Health Asset	DMHA	Improvement of mental health	1 person
Digital Women Empowerment Asset	DWEA	Empowerment of women in society	1 person
Digital Social Development Asset	DSDA	Improvement of social development	1%
Digital Particulate Matter Reduction	DPMRA	Reduction of particulate matter (PM2.5)	1 microgram/m^3
Digital Nitrogen Oxide Reduction Asset	DNOxRA	Reduction of nitrogen oxide emissions	1 kg
Digital Sulfur Dioxide Reduction Asset	DSO2RA	Reduction of sulfur dioxide emissions	1 kg
Digital Hydrofluorocarbon Asset	DHFCA	Reduction of hydrofluorocarbon emissions	1 kg CO_2e
Digital Landfill Gas Reduction Asset	DLFGRA	Reduction of landfill gas emissions	1 metric ton
Digital Forest Preservation Asset	DFPA	Preservation of forests	1 hectare
Digital Ocean Conservation Asset	DOCA	Conservation of ocean ecosystems	1 km^2
Digital Sustainable Agriculture Asset	DSAA	Adoption of sustainable agriculture practices	1 hectare
Digital Renewable Energy Asset	DREA	Production of renewable energy	1 MWh

Figure 1: List of proposed Digital Environmental Assets (DEAs) and their units of measure.

- Renewable Energy: Renewable energy could provide up to 44% of US electricity by 2050[6]. If 50% of the 100 utilities in the US adopt a DEA that helps them integrate more renewable energy into their grid, the potential revenue could be in the billions of dollars.
- Sustainable Agriculture: Sustainable agriculture practices could help reduce greenhouse gas emissions from lifestock by up to 30%.[7] If 10% of the two million farms in the US adopt a DEA that helps them reduce the use of fertilizers and pesticides, the potential revenue could be in the billions of dollars.
- Water Management: Water scarcity affects more than 40% of the global population and is expected to increase.[8] If 50% of the 100 cities in the US adopt a DEA that helps them reduce water consumption by 20%, the potential revenue could be in the billions of dollars.

Carbon and environmental markets are growing, and they will need to be regulated in the same way as other commodities to bring the necessary liquidity to these activities. The US Commodity Futures Trading Commission (CFTC) and Securities and Exchange Commission (SEC) have both shown interest in regulating these markets. The CFTC has established a Climate Risk Unit to focus on the role of derivatives in understanding, pricing, and addressing climate-related risks, and there is debate over whether the CFTC should establish a broader regulatory framework for voluntary carbon markets. The SEC has proposed climate risk-related disclosure and reporting rules, including mandatory disclosures regarding internal carbon pricing and the use of carbon offsets or renewable energy credits as part of a registrant's net emissions reduction strategy. A strong regulatory environment will involve the creation of international standards and protocols for data collection and verification.

As the market for environmental and social assets grows, we can expect to see a dramatic reduction in the "Green Premium," which refers to the additional cost of using green technologies compared to traditional technologies.

Ultimately, the emergence of a global market for environmental and social assets will help us transition to a sustainable society. By valuing the invaluable, we will be able to align environmental protection and social development with capitalism and accelerate the deployment of capital toward achieving our climate goals. As Mark Carney, former Governor of the Bank of England, once said, "The transition to net zero is the greatest commercial opportunity of our time." By embracing this opportunity, we can create a better future for ourselves and for generations to come.

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7 Food and Agriculture Organization of the United Nations. https://www.fao.org/3/i3437e/i3437e.pdf

8 Organisation for Economic Co-operation and Development (OECD). https://www.oecd.org/about/impact/addressing-water-scarcity.htm

Coastal Women and Net-Zero Energy Transitions

Policy Brief

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INTRODUCTION

Empowering coastal women and supporting their participation in sustainable energy solutions can accelerate the transition to net-zero emissions, particularly in areas vulnerable to climate change. Coastal areas are among the most vulnerable to climate change due to rising water levels, leading to the submergence of land, permanent loss of previously livable areas, and the relocation of communities. The National Ocean Service reports that global sea levels are rising at an eighth of an inch every year, and attributes the rise to the expansion of water as its temperature increases due to global warming and the melting of glaciers (NOAA, 2021). The rising water levels in oceans and seas put the people living along or close to coastlines at an increased risk of nuisance flooding, which leads to the submergence of land, permanent loss of previously livable areas, and the relocation of communities from their homes (Hauer et al., 2021).

The flooding along the coast is exacerbated by an increased incidence of

Figure 1: Impact of Climate Change on Women. Adapted from the Food and Agriculture Organization of the United Nations.

Climate change impacts	Impacts exacerbate gender inequalities
Crop	**Household food provision;** increasing work load
Fuel shortage	**Household fuel provision;** more time for fuelwood collection
Water scarcity	**Household water provision;** contaminated water; more time for water collection
Natural Disasters	**Women's** greater incidence of mortality
Disease	**Lack of access to health care;** contaminated water; more time for water collection
Displacement	Forced migration increases women's vulnerability
Conflict	Loss of lives; violence against women

natural disasters around the coast (Ebi et al., 2021). The dense population along the coast increases the number of people affected by climate change in these areas. The coast of Southeast Asia, for instance, is one of the world's largest and most dynamic coastal stretches, covering an estimated 20% of the planet's surface area. In the five years between 2015 and 2020, the region experienced multiple natural disasters. Their effects were exacerbated by significant ecosystem degradation due to human activity, such as improper development to meet the needs of a booming tourism industry and extensive fishing and agricultural practices to feed the burgeoning coastal population (Noor et al., 2022).

Whilst coastal communities experience the effects of climate change universally, women are exceedingly vulnerable to changes in weather patterns. A study on the Ilaje coastal region of Nigeria found that women are the community's first contact with environmental resources due to political, educational, economic, and sociocultural factors, increasing their vulnerability to climate change (Akinsemolu & Olukoya, 2019). Therefore, women are the first and most affected community members when the environment is destroyed, as shown in Figure 1.

The United Nations Development Programme (UNDP) found that the stress from the adverse effects of climate change led to increased frustration and aggression within coastal communities in the Caribbean, which raised incidences of physical and sexual assault on women (Bolaji, 2020). The increased incidence of the physical and sexual abuse of women in coastal areas following climate-related disasters is replicated in coastal communities beyond the Caribbean. Coastal women in Bangladesh reported sexual harassment while collecting relief supplies after their homes were hit by a cyclone (Hasan & Shovon, 2012). Despite facing higher risks and shouldering a greater burden of the impact of climate change than men, women are often sidelined in making decisions or taking leadership of climate change initiatives. By empowering coastal women and supporting their participation in sustainable energy solutions, their communities can achieve net-zero energy transitions more efficiently and equitably, accelerating the transition to a more sustainable future.

THE ROLE OF COASTAL WOMEN IN SUSTAINABLE ENERGY SOLUTIONS

Women in coastal communities can play critical roles in achieving SDG 13 (Climate Action) through reducing emissions from energy production and aiding net-zero energy transitions. As the makers of energy-related decisions in the home, women can reduce emissions by adopting environmentally friendly energy sources. Coastal areas have naturally high solar radiation levels. The solar radiation levels in the coastal region of the Gulf of Mexico, for instance, reach 6.7 kWh/m² making the region highly suitable for producing solar photovoltaic power (Villicana et al., 2015). Coastal communities in other parts of the world have capitalized on their high solar radiation by producing and using solar power. Coastal communities in Kenya, along the East African coast, are harnessing the high solar radiation by adopting solar power, a renewable form of energy with zero emissions, for their energy needs (Takase et al., 2021). A study evaluating the viability of a similar solar energy drive among coastal communities in Chile found that the production of solar energy using mono-Si technologies would yield constant solar energy all year round (Ferrada et al., 2015). The adoption of the technology by the communities would reduce their emissions from non-renewable energy sources whose production and combustion emit carbon dioxide and other greenhouse gases. The transition to solar energy is impossible to achieve without the cooperation of women, who are the primary decision-makers on the form of energy used in households for lighting, cooking, and other purposes. For instance, solar energy provides a safe means of food storage, reducing emissions from food waste and providing women and other vulnerable groups with a food cushion to feed their families (Mbow et al., 2019). The positive reception of solar energy among women in different coastal communities makes them more receptive to other energy-efficient solutions.

Women's role as the makers of energy decisions in their homes extends to decisions about food production, preparation, and storage. The knowledge they gather in their efforts to feed their families can be harnessed and used to reduce emissions from the production and consumption of energy. For instance, one universal source of income among coastal women from different parts of the world is mangrove farming. Mangrove trees are crucial to coastal ecosystems. Coastal communities in Africa, Asia, and South America use mangroves as a source of wood, to produce charcoal and firewood for cooking, to feed livestock, and as a source of traditional medicine. Mangrove roots are home to over 2,000 species of fish and are important to the retention of soils in coastal areas amidst inundating shorelines and regular flooding (Cormier-Salem, 2017). Mangrove forests also store large amounts of carbon, reducing the emission of greenhouse gases (Adame et al., 2021). Coastal women can use their knowledge of local ecosystems to reduce emissions by using specific parts of mangrove trees as a source of energy for cooking or smoking food for preservation, while saving the trees and forests to benefit from their carbon storage. They can also use their indigenous knowledge to harvest roots for medicine and leaves for baskets and medicine, leaving the trees standing to preserve the home of the marine life that thrives in mangrove forests and maintain the forests' carbon storage ability.

THE BENEFITS OF INVOLVING COASTAL WOMEN IN NET-ZERO ENERGY TRANSITIONS

Involving coastal women in their communities' transition to a low-carbon status quo can lead to more effective and efficient

»Off-grid renewable energy can help rural communities achieve energy access and decarbonize their economies while promoting gender equality and social inclusion.«

solutions by ensuring that renewable energy sources that are mainly maintained and used by women are fronted as potential alternatives to fossil fuels and receive the necessary attention and financial consideration in budgetary allocations. Figure 2 below shows some outcomes that were achieved when women were involved in environmental conservation efforts, which included the adoption of sustainable energy. For instance, traditionally, investment in fossil fuels, hydro, and geothermal energy dominates energy research and budgetary allocations. Such discussions often ignore biomass, a renewable energy source that is primarily produced and used by women (Lieu et al., 2020). Involving coastal women in discussions of low-carbon energy would prompt all stakeholders to consider the use of algae biomass to produce energy for cooking. Since cooking accounts for 70% of all energy demand along coastal areas, its universal adoption as the primary source of energy for food preparation would be a significant step towards the communities' net-zero efforts.

One of the potential economic benefits of involving coastal women in net-zero energy transitions is the collective savings that will result from reduced reliance on expensive and non-renewable energy when women drive the adoption of cheaper and more environmentally friendly energy sources. As key decision-makers in the energy source used to power their homes, women are more likely to endorse and adopt energy solutions if they are involved in the decision and are well informed on their benefits. Their involvement is also instrumental in ensuring that the laid-out strategies to drive net-zero energy transitions will not face social, cultural, or economic barriers to their implementation (Osman-Elasha, 2012). For instance,

Figure 2: The Outcome of the Empowerment of Coastal Women as Climate Action Ambassadors. Adapted from the United Nations Environment Programme (UNEP).

wind energy is one of the cheapest sources of renewable energy, which is also easy to adopt in coastal areas alongside solar energy. Europe anticipates the ability to produce enough wind power to power 1 million homes along the continent's East coast by 2030 (Wang, et al., 2023). Despite having potential, such projects often fail to achieve their intended outcomes due to the exclusion of women. In coastal communities in India, for instance, women take the lead in harvesting clean water, guarding natural resources, and educating their communities, yet they lack access to basic information regarding climate change (Sorensen et al., 2018). Including them in decisions to overhaul expensive and carbon-based sources of energy in favor of net-zero energy sources will reduce the cost of energy consumption while driving net-zero energy transitions. Finally, involving women in the transition to a zero-carbon future will reduce gender-based violence and help address gender inequality through inclusion, access to information on reducing the risk of injury in the wake of adverse weather patterns, and better protection for women from the violence that results from the effects of climate change.

CONCLUSION

Coastal women are crucial stakeholders in environmental conservation efforts and should be involved in net-zero transitions owing to their role as the main users of energy in their households. However, they are often overlooked in decision-making and their access to information regarding net-zero energy transitions is equally limited. Policy makers can reverse the traditional exclusion of coastal women in sustainable energy solutions by involving them in all stages of the formulation of policies to this end. The women will be particularly valuable in the information gathering, decision-making, and implementation stages of policies that will drive net-zero energy transitions such as the adoption of renewable energy. We must support the inclusion of women in sustainable energy solutions and other efforts and initiatives that are driving net-zero energy transitions.

RECOMMENDATIONS

We can harness the potential of coastal women and accelerate the transition of their communities to net-zero emissions in the following ways.

1. **Involve women in leadership and decision-making process**

Coastal women have a vast knowledge of their communities' food and energy needs. Their insight in discussions on renewable energy, organic food sources whose production does not use chemicals that release greenhouse gases,

»Women's participation in decision-making can enhance the effectiveness of policies and programs, leading to more sustainable and equitable outcomes.«

and resource conservation is invaluable. Their inclusion in decision-making and leadership for sustainability initiatives will yield practical solutions to environmental challenges that coastal households will adopt to realize intended benefits such as the adoption of renewable energy, reliance on energy-efficient food preparation and storage methods, and the conservation of critical resources such as mangrove forests.

2. Invest in clean energy solutions

Most coastal communities rely on traditional sources of energy such as wood and charcoal, which are associated with respiratory health problems (Jestin-Guyon et al., 2023). Their combustion emits carbon. Furthermore, the continued use of charcoal and wood contributes to deforestation, which worsens flooding and soil erosion and increases carbon emissions from the loss of mangrove forests (Adame et al., 2021). Since women have demonstrated willingness to adopt clean energy solutions, investment in alternatives to wood and charcoal will drive coastal communities towards the achievement of net-zero emissions.

3. Support women's entrepreneurship and innovation in sustainable energy

Traditionally, women face barriers to accessing capital and other resources needed to support innovation. Female entrepreneurs and innovators lack support for their innovations, including sustainable energy solutions that would reduce the communities' reliance on unsustainable energy sources that emit carbon and destroy the forest cover. With adequate support, women would create sustainable energy solutions and use their extensive networks of fellow women to drive the adoption of the solutions in all households within and beyond the community.

4. Promote women's safety for sustainable energy interventions

Extreme weather events, such as storms and floods, which are common in coastal areas, increase incidents of gender-based violence (GBV) in the community (van Daalen MPhil et al., 2022). The high prevalence of GBV in coastal communities threatens the safety of women, preventing them from participating fully in energy interventions that drive the community towards net-zero emissions. Vulnerable women and girls in coastal communities can be protected through GBV awareness-raising campaigns.

These four steps will unlock, secure, and advance the full potential of coastal women as agents of change toward achieving net-zero emissions in the future.

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Closing the Gap of Water Financing

Policy Brief

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In order to disseminate its research findings and solicit inputs from various stakeholders, ERIA organises seminars and symposia which nurture a sense of community in the region. The policy recommendations are intended to help in the deliberation of the annual summit leaders and ministerial dialogues.

1. INTRODUCTION

Water development underpins various human development issues, ranging from food security, people's livelihoods, and industrial growth to environmental sustainability worldwide. In response to rapidly increasing water demand, catalyzed by technical, scientific, and economic progress due to increasing population and economic activity, groundwater withdrawal accelerated during the twentieth century in most countries across the globe, reaching unprecedented levels at the beginning of the current century. UNESCO estimated that the total global groundwater withdrawal in 2017 was 959 km^3, and was distributed unevenly throughout the world (UNESCO, 2022).

According to the 2022 Sustainable Development Goals (SDGs) Report, more than 733 million people lived in countries with high and critical levels of water stress in 2019 and at least three billion people relied on water whose quality is unknown due to a lack of monitoring (UN, 2022). The same report also suggests that the current pace of progress needs to be increased by four times to meet the drinking water, sanitation, and hygiene targets by 2030. Without concrete actions and progress, 1.6 billion people will lack safely managed water, 2.8 billion people will lack safely managed sanitation, and 1.9 billion people will lack basic hand hygiene facilities by 2030 (ibid.). In addition, without action, five billion people will be living in areas with poor access to water by 2050, with women and children disproportionately affected (Alliance for Water Stewardship, 2021).

Besides the humanitarian and livelihood threat, unmitigated water risks might also translate into material financial risks.

»At the center of the global challenge is the financing for water and sanitation projects, especially in emerging markets.«

Over the past twenty years, the number of deaths caused by floods and droughts alone has exceeded 166,000, with economic losses of almost USD 700 billion (EM-DAT, 2019). Furthermore, the global economic losses related to water insecurity include USD 260 billion per year from inadequate water supply and sanitation along with an additional USD 94 billion annually from the water insecurity of existing irrigators (Sadoff et al., 2015). On the business side, according to the 2020 CDP survey of over 2,900 corporates, the value of water-related detrimental business impacts is around USD 16.7 billion and, in the future, could increase up to USD 336.3 billion (OECD, 2022). The survey indicates that the main drivers of detrimental water-related business impact were physical events (78%), such as flood and drought, followed by regulatory impacts (15%), including changes in the regulation of discharge quality and volume, increased water prices, and tighter standards on water efficiency (ibid.).

2. THE WATER FINANCING GAP

At the center of the global challenge is the financing for water and sanitation projects, especially in emerging markets. Although investment in water services and water resources improve the well-being of people and the resilience of ecosystems and economies, a substantial investment gap persists. One estimate suggests that the global financing needed to achieve SDG 6 (clean water and sanitation), is up to USD 1 trillion or around 1.21% of the global gross product (Strong et. al., 2020). Moreover, the present value of additional investment needed to achieve universal and equitable access to safe and affordable drinking water for all by 2030 is around USD 1.7 trillion (Hutton and Varughese, 2016), which is around three times larger than the current investment level. Similarly, the IFC estimates that the total capital investment required to meet SDG for water sanitation amounted to USD 114 billion annually until 2030, while the current financing flow is around USD 18 billion annually or less than one-sixth of the total financing needs (IFC, 2022). Furthermore, the capital cost for basic and safely managed services for water resources vary widely across world regions. Proportional to its economic size, the capital investment needed to provide basic and safely managed services for water in developed countries "only" costs around 0.12% of GDP, while the world average is 0.39%; the cost in Southeastern Asia reached up to 0.45%, and in Sub-Saharan Africa it is substantially higher at 2.01% of its GDP (Hutton and Varughese, 2016).

3. THE CHALLENGES FOR SCALING UP WATER FINANCING

Although a solid social and economic case exists for water-related investments, financing flows are currently not commensurate with investment needs. Currently, the sources of funding and financing include tariffs, public budgets, official development aid (ODA), and commercial finance, with each source having its own problems in scaling up. Several factors serve as barriers to enhancing the flow of investment toward water projects.

First, water valuation is complex. Water services and water resources are characterized as semi-public goods. Thus, water-related investment generates a mix of public and private benefits in the form of valued goods and services as well as reduced water-related risks. The mix of public and private benefits results in prevalent undervaluing of the resource and benefit from the investment by both sectors, and this could hinder investment opportunities. For instance, investing in water supply, sanitation, and wastewater treatment will produce public benefits in the form of improved public health and ecosystem financing, and private benefits in the form of good health, better income and livelihoods, improved education outcomes, and financial returns on industrial or agricultural production that depends on water use. The mix of public and private benefits resulting from water-related investment is difficult to monetize and undermines potential revenue flows, thus creating undervaluation problems (OECD, 2017).

The undervaluation problem is reflected in the pricing which is often very low and insufficient to cover operation and maintenance costs. In addition, it is challenging to translate the benefits of investments that contribute to water security into potential revenue flows, particularly for avoided costs or cross-sectoral benefits (OECD, 2018). For instance, in the case of water supply and sanitation services, utilities often fail to collect enough revenue through tariffs to cover operational and capital expenditures (Alaerts, 2019). Furthermore, over half of the countries surveyed by the UN-Water Global Analysis and Assessment of Sanitation and Drinking Water stated that water tariffs are at a level that allows the recovery of only 80% of operating and maintenance costs (UN-Water, 2019). Therefore, it is crucial to have a well-designed allocation regime for the management of water resources to avoid the issue of overexploitation. The sector of water and sanitation provision requires strong public regulation, as water resources management links closely between upstream and downstream utilization, and the regulation is expected to mitigate spillovers, though it may lack effectiveness as it also depends on a working tariffs scheme. The wide range of tariffs schemes might not produce the "right" valuation; thus, strong public regulations are also necessary to minimize market distortion.

»Enhancing financing flows toward water-related investment requires urgent attention, action, and collaboration.«

Second, scale and context matter. Considering the nature of local service delivery and resource management, water-related investments are often fragmented

and relatively small in scale. Water and sanitation services are sourced and provided locally. This scale tends to be small compared to the size of deals sought by financial providers, in which investors prefer transactions ranging between USD 20 million to 1 billion and thus avoid small and context-specific investment classes (Alaerts, 2019; OECD, 2018). Besides the small-scale issue, water projects typically

»If investing in climate change is commercially viable, the private sector will likely participate.«

consist of several different characteristics throughout all stages. Each of these stages is often very specific. "Water-related investments" refer to a broad range of distinct investments in a largely heterogeneous landscape. For example, "water infrastructure" is a broad term that encompasses a wide range of activities – from the river basin or catchment scale to the household tap, traversing projects as diverse as water supply and sanitation, flood protection, irrigation and reservoirs (Money, 2017). Water projects with a wide range of scale and purposes entail different levels of capital intensity and repayment periods, commercial and legal risks, and varied rates of economic, financial, and social returns (ibid.). The combination of the small scale and specific context of water projects raises transaction costs and makes emerging innovative financing models difficult to scale up (OECD, 2018).

Third, water infrastructure is typically attributed to the high capital intensity and long-term projects with high sunk costs. These characteristics require a high initial outlay followed by a long payback period (of about 20 to 30 years) (OECD, 2018; Cardascia, 2019). However, this project profile does not match a commercial bank that principally finances projects with short-term horizons (Cardascia, 2019). Long-term financing with affordable terms is of limited availability. The risks also evolve throughout the phase of the project cycle, i.e., they are lowered when a project matures and/or due to appropriate blending with public support instruments. Therefore, the suitable types of financiers and financial instruments will be different across project cycles, creating a problem of attracting the right investors and instruments for a particular phase of the project (Gietema, 2022).

Fourth, there is a lack of appropriate analytical tools and data to assess complex water-related investments and to track their records (OECD, 2018). The attractiveness of an investment is reflected in its risk-return profile, and investors rely heavily on its ability to assess investment and operation risks. Investors tend to channel their funds away from projects without credible data and analytical tools, due to high uncertainties and monitoring costs. Lack of regulatory requirements for water risks disclosure and reporting by financial institutions significantly contributes to this issue (Cardascia, 2019). Also, credit rating agencies are lacking in this area, creating limited information about the creditworthiness and performance of projects and borrowers for water-related projects.

The previous points discussed the issue of the availability of funds to invest in and support water-related projects (supply side). However, the demand side, namely, the ability to deliver these projects, is no less important. The fifth challenge stems from the fact that water-related project preparations tend to be suboptimal. Project developers often have limited technical, financial, and institutional capacity to prepare bankable proposals. Water infrastructure projects often suffer from poor preparation of project pre-feasibility and design, and weak pipeline identification structuring and implementation (Cardascia, 2019). Experiences in various projects in developing countries show that projects are socially beneficial but unbankable. As a result, the private sector will only participate, and donor institutions will only assist, if the project or investment is viable.

4. THE ROLE OF MULTILATERAL INSTITUTIONS IN ENHANCING WATER FINANCING

Enhancing financing flows toward water-related investment requires urgent attention, action, and collaboration across stakeholders. Considering the various limitations faced by countries that struggle to fill the financing gap, especially developing countries, it is clear that multilateral institutions could play a substantial role in closing the gap. Despite the fact that countries have adapted based on what may work given their institutions, numerous challenges to filling the water-related investment gap persist. These range from limited fiscal capacity, suboptimal institutional capacity, relatively poor project preparations, and lack of enabling environment, to political and social risks.

Due to limited fiscal space and inflexible discretionary spending, and the shallow domestic financial market, external funding is important to support the sustainable agenda (Songwe, Stern, and Bhattacharya, 2022), including financing water projects. This external financing can come from multilateral institutions, philanthropy, or the private sector. If investing in climate change is commercially viable, the private sector will likely participate. However, because some projects are not fully commercially viable, the government or multilateral institutions must de-risk them.

»Multilateral institutions can take various strategic measures to improve existing initiatives to enhance financing flows.«

One approach is to expand the use of concessional financing, including grants and blended finance. By pooling funds from various actors, such as Multilateral Development Banks (MDBs) and International Financial Institutions (IFIs), blended finance has the multiplier potential to crowd-in more significant funding due to the reduction in investment risks (Li et.

al., 2022). This can be achieved by creating innovative blended financing structures to make the risk-return profile for water-related projects more attractive to private investors. For instance, MDBs and IFIs could agree to be the first to endure losses in water financing and thereby increase the expected risk-adjusted return for private investors (ibid.). In addition, promotion of the "WaterEquity" model to commercial banks, regional development banks, rural banks, and credit unions at a lower-than-market rate of return will be beneficial to ensure that loans are still affordable for MSMEs and low-income families while ensuring profits for financial institutions (LPEM FEB UI & Water.org, 2022).

Further, MDBs and IFIs need to coordinate with the government at the national and sub-national levels as well as with relevant stakeholders in the context of surveillance, capacity development, risk assessment, and sustainable diagnostic tools. This has been demonstrated by the initiative of the Resilience and Sustainability Trust Fund by the IMF, with USD 50 billion in pledges to scale up the resilience aspect of low- and middle-income countries to long-term shocks (World Economic Forum, 2023). Such initiatives need to be scaled up and will be suitable to finance water projects due to their potential to improve society's resilience.

An enabling environment is also critical for attracting private investments. In the proposal to reform the sovereign credit rating assessment, water projects can be included as high-quality assets, which can help to reduce the cost of funds. World Bank (2021) proposed reforming the sovereign credit rating to be adjusted by its biodiversity and to include environmentally friendly assets as safe assets. This can provide incentives for banks to hold assets on their balance sheets and extend more credit toward water-related investments, thus lowering the cost of capital. Multilateral institutions could contribute by pushing forward the agenda of such reforms. Another critical element for creating an enabling environment is the issue of transparency. When it comes to transboundary issues in particular, transparency and public consultation is one of the key aspects contributing towards creating an enabling environment for community participation, especially enhancing the participation of women. Transparency and public consultation could be extended to the coordination of identifying and monitoring impacts (ERIA, 2020).

Moreover, growing interest in sustainable finance serves as an opportunity to enhance the financing flows toward water projects. Developing sustainable taxonomies will reduce uncertainties by providing clear metrics and definitions of sustainable projects. Currently, globally agreed or harmonized definitions of "green economic activities" are often unsuitable and not ready for use by various countries (Siregar and Wihardja, 2023). For example, in 2014, the International Capital Market Association (ICMA, a consortium of global investment banks) came up with principles for green bonds which lack a detailed definition of "green." In Indonesia, the Financial Service Authority (*Otoritas Jasa Keuangan*) enacted a regulation in 2017 for issuing green bonds that lists 11 business activities which are eligible for funding through green bonds, adopting the principles formulated by the ICMA. However, the regulation does not provide a more detailed taxonomy for a green economy in terms of definition, criteria and coverage of specific economic activities or sub-sectors, and therefore the classification of green bonds remains vague (Siregar and Prabowosunu, 2022). MDBs and IFIs could step in by developing a global green taxonomy that can be adopted and implemented more easily by various countries.

5. CONCLUDING REMARKS

To summarize, water stress has become one of the standout challenges of our time and affects all world regions. If we do not act, five billion people will have poor access to water by 2050, and this will disproportionately affect women and children. However, water provision and quality have been among the most overlooked challenges in many developing countries. The barriers to closing the water financing gap stem from structural issues, the nature of the projects, the lack of proper and adequate data, and project preparations. Multilateral institutions can take various strategic measures to improve existing initiatives to enhance financing flows toward water development interventions. However, this requires strong action, commitment, and collaboration.

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Peatland Rewetting as a Nature-Based-Solution

Opinion Piece

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GREIFSWALD MIRE CENTRE

The Greifswald Mire Centre (GMC) is – as an interface between science, policy and practice – innovator and originator in solutions for peatlands, locally and worldwide. The GMC is a strategic cooperation between the University of Greifswald, the Michael Succow Foundation, and the Institute of Sustainable Development of Landscapes of the Earth (DUENE e.V.).

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Peatlands are different from other ecosystems: In natural peatlands, dead plants do not fully decompose and are not completely recycled. Part of the plant material – together with the carbon captured by photosynthesis – is conserved under water-saturated, oxygen-free soil conditions and stored perpetually as "peat." This makes peatlands to the most important long-term carbon sink of the terrestrial biosphere.

Peatlands are ancient ecosystems. They have sequestered carbon over thousands of years and as a result contain a disproportionately high amount of carbon (C). Forests hold, on average, 140-230 tons of C per hectare, and peatlands 1,000-2,000 tons of C per hectare, i.e., an order of magnitude more (Temmink et al., 2022). Globally, peatlands and peaty soils – both collectively called "organic soils" – on 3-4% of the world's land contain 600 billion tons of peat carbon, i.e., almost twice as much as the total carbon biomass of all forests on 31% of the world's land (UNEP, 2022).

Peatlands are important as sinks and as stores. The sink function should not be overestimated; the long-term carbon sequestration rate of the world's peatlands (100 million tons per year) merely offsets 1% of current global annual anthropogenic carbon dioxide (CO_2) emissions. Even if we would reach five times this rate (because of higher temperatures, atmospheric nitrogen fertilization, higher atmospheric CO_2 concentrations, hydrologic and hydrochemical manipulation, and directed vegetation management), this sink effect would only compensate for 5% of current anthropogenic emissions (Joosten & Couwenberg, 2021). Therefore, peatlands will not save the world. But they can help. And they will become increasingly important, as other persistent sinks are rare and ineffective (Ho, 2023). We desperately need sinks to compensate for unavoidable emissions from vital human activities and for getting CO_2 out of the atmosphere.

Natural wet peatlands are also emitters of methane (CH_4), a gas with a strong greenhouse impact. Peatlands are therefore often depreciated. However, the emission of methane from peatlands does not increase the atmospheric concentration of methane any more, because the same amount of methane disappears as is newly emitted annually. This is because peatlands are (very) old and the lifetime of methane is only twelve years, meaning that peatland-derived atmospheric methane concentration has reached a "steady state." In contrast, the CO_2 concentration in the atmosphere continuously decreases due to the persistent CO_2 sink effect of natural peatlands. Despite their methane emissions, peatlands have cooled the global climate over the last 10,000 years by about 0.6° Celsius (Joosten et al., 2016). Methane emission is a side-effect of peat formation, which enables carbon sequestration and storage in the first place.

The immediate climatic significance of peatlands is in their enormous carbon stocks. Worldwide, 88% of peatlands are still in a largely natural state. However, humans have disturbed 12% of peatlands (an area of 500,000 square kilometers) to such an extent that they no longer form peat (UNEP, 2022). On the contrary, the penetration of oxygen into the drained soil leads to the continuous disintegration of peat, producing carbon dioxide and nitrous

oxide (N_2O) emissions, while methane emissions from drainage ditches continue. Emissions strongly correlate with average water level. In Central Europe, each further lowering of the water level by ten centimeters leads to an extra emission of five tons of CO_2 equivalents per hectare and year; in the tropics, the figure is as high as nine tons. An arable field on drained peat in Germany emits the same amount of greenhouse gases per hectare and year as a medium-sized petrol-combustion car driving 185,000 kilometers, and an oil palm plantation in Indonesia emits as much as flying 50 times from Berlin to Jakarta, and vice versa. A liter of milk produced from peat soil is as CO_2-intensive as burning two liters of petrol (Joosten, 2022).

»Methane emission is a side-effect of peat formation, which enables carbon sequestration and storage in the first place.«

Currently, the 12% of drained organic soils worldwide emit two billion tons of CO_2 equivalents per year through microbial peat oxidation (UNEP, 2022). Peat fires add another estimated 500 million tons per year on long-term average (Joosten & Couwenberg, 2021). Drained peatlands on merely 0.1% of the surface of our planet cause 5% of all global anthropogenic greenhouse gas emissions. Most of these emissions come from agricultural land. Without countermeasures, these emissions will deplete 41% and 12% of the GHG emission budget left to keep global warming below 1.5 or 2 degrees, respectively (Joosten, 2022).

Many more problems are associated with peatland drainage. The lowering of the water level amplifies local and regional climate warming, as less solar radiation is used for evaporation and more for heating the air. Drainage also leads to the loss of typical peatland biodiversity. The nitrate resulting from peat mineralization causes eutrophication of water bodies, including the seas. Drainage-induced compaction changes the hydraulic properties of the peat and reduces peatlands' capacity to store water and regulate runoff. In continental and warm climates, the frequent water level fluctuations lead to the formation of cracks, which prevent capillary water supply. A loose, fine-grained and water-repellent topsoil then develops, which in the end is home to desert species at best (Joosten, 2022).

Peatland subsidence has also been underestimated thus far. Depending on climate and land use, drained peatlands lose between a few millimeters and several centimeters of height per year due to peat oxidation and compaction. The resulting lowering of the surface requires deepening of the drainage ditches, which in turn promotes further subsidence and ditch deepening. This "vicious circle of peatland use" eventually necessitates the construction of polders with dikes and pumps to keep the peatland artificially drained. In the Netherlands, large areas have sunk by more than 8 meters after 1,000 years of peatland drainage, and a large part of the country now lies well below sea level. Peatland subsidence costs the Netherlands 200 million euros per year from damage to roads and sewage infrastructure and will cause an estimated 80 billion euros damage to buildings by 2050 (Joosten, 2022).

While the sea level is rising, the peatland is literally bogged down. In coastal areas, which are often densely populated, subsidence increases the risks of flooding and saltwater intrusion. Considerable parts of the Malaysian and Indonesian coastal peatlands, which have recently been drained for oil palm and pulpwood cultivation, will in the next decades be flooded by the sea due to ongoing subsidence. Diking, poldering and pumping, i.e., the interim solutions tried in Germany, England, California or Florida, will not work in Indonesia and Malaysia because of the huge extent of drained peatland and the enormous amount of rainfall. It would also not stop subsidence and only delay the inevitable abandonment of drainage-based peatland use (Joosten, 2022).

REWETTING OF DRAINED PEATLANDS

Rewetting, i.e., raising the groundwater to or above the peatland surface, is the ultimate solution to the problems outlined above. Rewetting significantly reduces greenhouse gas emissions, may reactivate carbon sequestration, cools the local climate, restores typical peatland biodiversity, removes nitrate and other pollutants, protects areas downstream against flooding, and increases the groundwater reserves in the catchment area (Bonn et al., 2016). Many of these effects are important for adapting to climate change with its more frequent and more intensive rainfall and extended dry periods (Joosten, 2022).

From a climate perspective, through worldwide peatland rewetting, we could:

- prevent 500 million tons of peat carbon losses annually,
- prevent a major part of the 2,500 million tons CO_2 equivalent of annual peatland emissions,
- sequester 2,000 million tons of C globally in the newly established peat-forming layer at the surface (this is a one-off sink, happening only once upon rewetting), and
- reinstall an extra annual sink of 15-75 million tons of C (Joosten & Couwenberg, 2021).

»A litre of milk produced from peat soil is as CO_2-intensive as burning two litres of petrol.«

The G20 has a special role to play in this respect. Not only do the G20 countries contain the vast majority of the world's peatland area, but the G20 member states are also responsible for 90% of all greenhouse gas emissions from drained peatlands. Indonesia, the Russian Federation, the European Union and China are the World's largest emitters, whereas the emissions from the G20 countries USA, Canada, the United Kingdom and Brazil are also substantial (UNEP, 2022).

The highest priority and the greatest challenge lie in the rewetting of heavily drained peatlands that are intensively managed for vegetable, fruit, potato or sugar cane cropping, bioenergy production, dairy farming and oil palm and pulp wood cultivation.

»Drained peatlands on merely 0.1% of the surface of our planet cause 5% of global anthropogenic greenhouse gas emissions.«

Until now, most rewetted peatlands have been converted into new "wet wildernesses" or managed for biodiversity purposes, but we cannot afford for the entire 500,000 km² to be taken out of production. We need more and more biomass to support the Earth's growing population and to decarbonize the world. We must therefore develop production techniques that avoid the environmental damage of conventional drainage-based peatland use and allow us to use wet and rewetted peatlands productively.

PALUDICULTURE AS A PRODUCTIVE SOLUTION

Paludiculture aims to produce crop or livestock products on peat soils, while conserving the peat carbon stock and minimizing greenhouse gas emissions. Whether these goals are achieved depends not only on the types of produce, but above all on the permanently wet conditions under which farming takes place (Wichtmann et al., 2016).

Paludiculture is being tested worldwide (Ziegler et al., 2021). On nutrient-rich sites in Europe, the focus is on reed (for high-quality building materials), cattail (for construction panels, insulation, fodder, peat and plastic substitutes, etc.), unspecified biomass (for heat and energy) and alder (for furniture and veneer). On more nutrient-poor sites, the focus is on peatmoss (as a substitute for fossil peat in horticulture) and sundew (for medicinal purposes). More options exist in Southeast Asia. Of the 1,376 species of higher plants growing in natural peat swamp forests, 534 (39%) are already being used (Wichtmann et al., 2016; Joosten, 2022).

The environmental benefits are very promising, but paludiculture faces difficulties in large-scale implementation. Paludiculture is fighting against the historical legacy of 10,000 years of dry agriculture. Our western society has never learned to farm wet, and has always striven to drain water as quickly as possible. As a result, rules and laws are not adapted to wet agriculture, incentivize drainage-based land use or obstruct wet land use. Paludiculture usually requires a redesign of the entire value chain. Those who embark on paludiculture need curiosity and patience, as many crops are still in the pilot stage and need further research and development. It starts with acceptance and training, followed by selection and breeding of suitable species, new techniques, new infrastructure and logistics, new products, and new markets (Wichtmann et al., 2016; Joosten, 2022).

A FUTURE STRATEGY FOR OUR PEATLANDS

Peatland rewetting is one of the most efficient nature-based solutions. It is actually without alternative, but requires either a complete cessation of cultivation or a comprehensive transformation to new, wet forms of cultivation. Net zero CO_2 emissions by 2050 implies that Germany must re-wet 500 km² of drained peatland annually; the European Union 5,000 km², Europe 10,000 km² and the world 20,000 km² per year (Joosten, 2022).

The complete phase-out of drainage-based peatland use is a task for society as a whole. It requires cross-sectoral strategies with ambitious goals and measures, defined intermediate steps and recommendations for directly addressed actors. Peatland rewetting should be integrated in the reorganization of landscape hydrology, which is in any case necessary to adapt to climate change.

All of these tasks should be guided by the state. However, the massive implementation that is necessary cannot be realized in a fully centralized manner. The size of the area as well as the necessary time flexibility and creativity require framework conditions that are rather given by the "market".

A performance-based remuneration through the sale of carbon certificates would allow a quick entry into peatland rewetting, enabling economic competitiveness with drainage-based, conventional peatland use until paludiculture is technically fully developed and economically self-sustaining. The state should promote such carbon markets by facilitating efficient and transparent emission assessment and certification, guaranteeing minimum prices for CO_2 certificates, and providing the legal basis for large-scale implementation (Joosten, 2022).

After 2050, everyone must be at net zero, and it will no longer be possible to generate carbon certificates through CO_2 avoidance. Alternatively, income on agricultural peatlands must then be guaranteed through competitive paludiculture, CO_2 sequestration and/or the rewarding of other ecosystem services (Joosten, 2022).

»G20 member states are responsible for 90% of all greenhouse gas emissions from drained peatlands.«

The message is clear: Wet peatlands must remain wet, drained peatlands must be made wet again and if we have to use peatlands, we must use them wet.

Peatlands must be wet: for the land, for the people, for the climate, forever!

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Climate Change, Resource Degradation and Food Security

Policy Brief

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The Argentine Council for International Relations – CARI is a civil society, partisan-free, non-profit organization, with a long-standing track record that has made it a flagship institution in the field of international relations in Argentina. CARI's proposal consists in deeply studying the main global challenges and the road that Argentina must take to face them. CARI produces reliable papers, supplies updated information, conducts pluralistic debates, and provides a forum of discussion.

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GPS is a network of private institutions from Argentina, Brazil, Paraguay and Uruguay acting in the field of food security seeking to contribute to the integration of the food systems of the Southern Cone Countries and their International projection with a strategic vision of the world and the region.

One of the greatest challenges for humanity is how to address, in a coordinated manner, the urgent need to mitigate climate change and the degradation of natural resources with the requirements of increasing the production of safe and nutritious food in the context of constant population growth.

»Climate change will continue to put pressure on food production, especially in regions with vulnerable ecosystems.«

Climate change, armed conflicts and economic shocks continue to push more people into food insecurity. After a period of relative stability, since 2015, the food security indicators have worsened globally. Between 702 and 828 million people were affected by hunger in 2021[1] and the prevalence of malnutrition jumped to 9.8% of the population (FAO, 2022). The nutritional differences between countries have been exacerbated as a consequence of the uneven economic recovery post-COVID-19.

Climate change has also contributed to malnutrition in many regions and is expected to push 8 to 80 million people into food insecurity by 2050. Further, emerging climate-related food and food safety risks are increasing globally, putting human and animal health at risk (IPCC, 2022).

Extreme weather events have increased in intensity and frequency, impacting the growth rate of global agricultural productivity (IPCC, 2022). Soil and water resources are also threatened. Soil degradation currently affects around 1,660 million hectares of land, impacting 34% of global agricultural lands (FAO, 2021). Moreover, there are concerns that some of the current global crop and livestock areas will become climatically unsuitable as a result of increasing greenhouse gas (GHG) emissions (IPCC, 2022).

Annually, 10% of global renewable water resources are withdrawn for human use. The physical scarcity of water and the contamination of freshwater sources are of particular concern in some regions across the world (FAO, 2021). A substantial part of the water stress and contamination of watercourses is a consequence of poor agricultural practices. Currently, 11% of the world's rainfed land and 14% of its grazing land face frequent droughts (FAO, 2020). Drought and flood risks for agricultural land are projected to increase with each degree rise in global warming (IPCC, 2022), exacerbating water management challenges, particularly in regions that already suffer from water scarcity.

Thus, the evidence indicates that climate change will continue to put pressure on food production, particularly in regions which have highly vulnerable ecosystems and a smaller endowment of renewable natural resources.

A significant effort is needed to reduce the environmental impact on global food systems through adaptation and mitigation measures. However, any mitigation effort must be made keeping in mind its consequences for other dimensions. In particular, it is necessary to take into account the persistent regional imbalances between food supply and demand. Any policy that affects supply from surplus regions will affect food security in deficit regions.

So, promoting policies for sustainable development requires comprehensive planning. The need to respond quickly to climate change and growing social demands may tempt governments to come up with unilateral and inflexible tools. However, even laudable goals can lead to the wrong tools and bad policies can exacerbate vulnerabilities, increase risks and deepen existing inequalities (IPCC, 2022).

In this sense, any policy tool must consider the climatic conditions and the endowment of natural resources for the sustainable production of food and other agricultural products. These are not the same all over the planet and some regions have clear agroecological advantages.

The availability of renewable water, edaphic conditions of the soil, climatic conditions and agricultural practices are critical elements for the environmental sustainability of food systems. In terms of GHG emissions, for example, Europe and Central Asia are expected to register an emission reduction of 0.14% per year for each percentage point of increase in agricultural production by 2030, while emissions in Latin America and the Caribbean will grow by 0.08% per year. This is very low in comparison to the rest of the regions, which will nearly triple their GHG emissions in this period.

So, if the impact differs depending on where production takes place, the most logical solution is to boost production where food systems are more efficient from an environmental point of view.

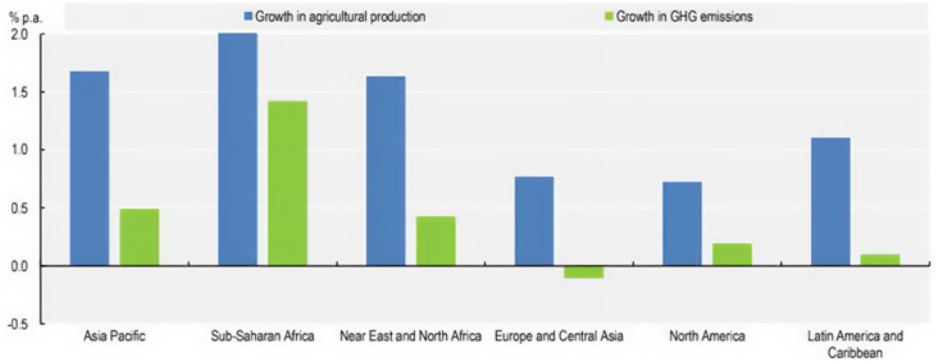

Figure 1: Annual Change in Agricultural Production and Direct GHG Emissions, 2022 to 2031.

Note: Projected annual growth in direct GHG emissions from agriculture together with annual growth in the estimated net value of production of covered crop and livestock products (measured in constant 2014-16 USD prices).

Source: OECD-FAO (2022).

However, this is not recognized by most countries, and many of them are imposing barriers to trade for environmental reasons without a solid scientific basis to support them. Even worse, these new barriers do not consider the differential impacts they may have on different food production ecosystems around the planet.

These kinds of responses are inefficient from an environmental point of view and, by restricting trade, threaten global food security (Elverdin et al, 2022). Further, by imposing unjustified requirements, without adequate financing, they will also adversely affect the livelihoods of millions of small farm producers around the world.

For example, Beckman et al (2020) estimated the global impact of the implementation of the Farm to Fork and Biodiversity Strategies implemented by the EU. Even in its most conservative scenario, with the application of these policies only in the European Union countries, where there are no restrictions on international trade, an additional 22 million people worldwide will be plunged into food insecurity by 2030. If this policy proposal is replicated globally, the estimate could rise up to 185 million new hungry people.

»The logical solution is to boost production where food systems are more efficient from an environmental point of view.«

After nearly a decade of worsening food security indices, the design of any environmental sustainability strategy regarding food systems must take into account the various trade-offs between environmental, productive, economic and social consequences. It is not possible to define a single strategy for environmental sustainability concerning global food systems; it must mutate and adapt to different agroecological, socio-cultural and economic conditions of each region (Piñeiro et al, 2021).

»Removing unjustified trade barriers will improve global food security and reduce the total environmental impact.«

Increasing efforts in research, innovation and technology transfer to generate new basic knowledge to improve productivity, reduce environmental impact and increase the resilience of food systems should be a priority.

However, these efforts will not be enough if at the same time they do not seek to reduce hunger in the world. Removing unjustified barriers to food trade in order to facilitate the flow of food surpluses from regions of greater environmental efficiency will reduce the total environmental impact of global food systems.

In turn, increasing investment and implementing new green financial mechanisms in these regions will allow the spread of climate-smart technologies and sustainable food production practices, thereby improving global food security indicators and reducing the environmental impact per product unit. There is still a lot of scope to improve the indicators of sustainability of food systems, but this depends on getting the necessary financing.

According to the International Food Policy Research Institute (2022), up to 350 billion USD per year will be needed to meet climate targets related to food systems. Currently, only about 20 billion USD (4% of total global climate funds) of the globally available green funds are directed towards agriculture, forestry and other land use (AFOLU). The total funding needed could be obtained from a re-prioritization of existing agricultural subsidies, which stands at an estimated 620 billion USD annually (Gautam et al, 2022). The discussion about repurposing internal support is on the rise, especially since it has been detected that a big part of this type of agricultural support has had negative effects on the environment (FAO, IFAD, UNICEF, WFP and WHO, 2022; OECD, 2021). Therefore, from a global perspective, a relocation of those same economic resources to countries with better environmental performance would be the optimal solution (Martin et al, 2022). Promoting this discussion in international forums is necessary, since many of the areas with good environmental performance are found in developing countries.

There is no doubt that food systems contribute significantly to GHG emissions, which requires the development of sustainable value chains and a reduction in losses and waste. Promoting the development of climate-smart and productive food systems will require a joint global effort, including major food producing and consuming countries, and the relevant international organizations. The main objective should be the development and promotion of environmentally conscious production systems, especially in those regions which are endowed with abundant renewable natural resources, and which will always be the main source of global food security.

However, efforts to tackle food security, natural resources sustainability and global warming should not be limited exclusively to food production. It is necessary to revise all the production systems prevalent in the main producing countries, using a sustainable strategy that promotes economic and social development while preserving natural resources and reducing GHG emissions.

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[1] The COVID-19 crisis would have pushed 150 million people into situations of food insecurity (FAO, 2022).

(Un)Paving the Way for Heat Resilience in Cities

Policy Brief

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INTRODUCTION

The world's cities are relentlessly becoming hotter by the day. Two main causes behind the large temperature increase in cities are: climate change and urbanization. On the one hand, the sustained rise in the concentration of atmospheric CO_2 is causing more frequent, severe and lasting heat waves (IPCC, 2022). As global warming intensifies, the resulting changes in the climate will bring about even more severe and extensive heat extremes. On the other hand, sustained urban sprawl causes the loss of vegetation in favor of asphalt, bricks and cement. This provokes the inadvertent modification of the local climate (Oke, 1987), with an accumulation of heat in urban centers, commonly referred as urban heat islands. Heat waves and urban heat islands behave synergistically, causing cities to experience increasingly extreme and stifling temperatures (B. J. Stone, 2012; IPCC, 2021). This unprecedented heating comes at a high cost.

Rising temperatures cause economic burdens, public health impacts, and urban infrastructure disruptions (Sáez Reale, 2023). Heat reduces economic activity by discouraging people from engaging in commercial activities outside of their homes due to discomfort. Even a 1°C rise in temperature above 36°C can lead to a drop in retail sales of up to 10%, having a considerable impact on the local economy (City of Athens, 2018). High temperatures have a direct impact on people's health and can have catastrophic results. In many developed countries, such as the US, extreme temperatures kill more people than most other climatic events combined (Keith & Meerow, 2021). Surprisingly, these deaths are often not associated with heat, and therefore go unnoticed as casualties of climate change. Moreover, heat damages transportation systems and urban infrastructure in a wide variety of ways. High temperatures negatively affect the operation of trains, buses and private cars. Heat can even melt the asphalt on roads and runways, as witnessed in July 2022 at Luton Airport in the UK.

FOCUS ON THE MOST VULNERABLE

Heat distribution in the built environment is spatially uneven and has dangerous and worrisome consequences for the most vulnerable. Heat distribution in the city depends on several factors, including the quality of construction of buildings and dwellings and the quality and quantity of green infrastructure provision, such as urban trees. Not all individuals are affected equally: The elderly, children, people with mental or cardiac diseases or those with lower incomes are at greater risk from sustained exposure than the rest of the population. Less social isolation, access to air conditioning devices, and proximity to green open public spaces can reduce the likelihood of mortality in an extreme heat event.

»Rising temperatures cause economic burdens, public health impacts, and urban infrastructure disruptions.«

During the 1995 heatwave in Chicago, which resulted in over 700 deaths, the risk of dying increased significantly for individuals who had underlying health issues that required them to stay in bed, were unable to take care of themselves, did not leave their homes regularly, lived alone, or lived on the top floor of a building. Conversely, engaging in social activities and having social contact decreased the likelihood of dying during a heatwave, as individuals with stronger social networks were more likely to receive help and support from an acquaintance (Semenza, 1996). These findings are consistent with mortality analysis of more recent heat waves, such as the ones that occurred in Buenos Aires, Argentina in 2013 (Almeira, Rusticucci, & Suaya, 2016) and Montreal, Canada in 2018 (Ha, 2021), or systematic literature reviews on heat mortality (Basu, 2009).

Heat impacts are profoundly enhanced by aspects of social vulnerability related to the populations' living conditions. Globally, one out of every four urban dwellers – 1 billion people – lives in slums or informal settlements and lack adequate housing and access to basic services (UN-Habitat, 2020). About half of the G20 countries and other rapidly expanding urban areas in the Global South have informal settlements. Such areas face inadequate planning and lack of building permits, primarily due to the way in which the land was occupied. As a result, public spaces, water and sanitation infrastructure, and greenery most often fall short. Even in G20 countries, those below the poverty line tend to live in hotter areas than the wealthy. A study of twenty US southwest urban areas found that on average, the poorest 10% of communities were 2.2° hotter than the wealthiest ones (Dialesandro et al., 2021).

Considering that we are facing a new, warmer climate reality, and that the impacts affect the most vulnerable, it is essential to promote urban planning that focuses on improving heat equity (Keith and Meerow, 2022). Heat equity refers to the inhabitants' right to have thermally safe indoor and outdoor environments, including their residences, places of employment, study, recreation, and commuting. To promote urban heat resilience, urban planners and public officials must prioritize heat equity. This involves ensuring that heat mitigation and management strategies are distributed fairly across communities, with a focus on helping those who are most vulnerable to high temperatures.

ENCOURAGE AND SUPPORT LOW-CARBON HEAT-RESILIENT CITY ACTION PLANS

While cities are at the frontline of climate change impacts, such as extreme urban heat, they are also at the frontline of addressing climate change by fostering possible solutions to its consequences. The global urban area will increase threefold in the next 30 years, and the share of urban population will rise from 55% in 2018 to 68% in 2050 (United Nations, 2019). The G20 nations and the Global South must invest in tools and policies to encourage heat-resilient urban development. This includes promoting green infrastructure, sustainable health and housing systems, urban regeneration and land use with equitable access for all, and fostering the energy transition towards renewable energies. Additionally, city plans must be inclusive and participatory, focusing on the most vulnerable, and include risk-management strategies for when extreme events occur.

Transitioning from gray to green infrastructures in cities has proven to be very successful in both lowering the cities' CO_2 emissions and in reducing the actual city temperatures, and thus helps them adapt to the new hotter climate. Nature-based solutions help reduce emissions by carbon sequestration through trees and plants, and mitigate the heat by providing shadow, promoting biodiversity and creating cool areas, such as parks, where people can thrive. Green initiatives have already been proven to successfully reduce the heat in cities like New York (USA), where a million trees were planted in eight years, or Medellín (Colombia), where 30 "green corridors" provide an interconnected twenty-kilometer network of shady routes including new bike lanes and walkways across the city. Small-scale innovations are being tested all over the world, like "pocket forests" with native plants introduced in Dublin (Ireland), Philadelphia (USA) or Córdoba (Argentina), or green rooftops (Toronto, CA), which have numerous benefits for their communities.

Moreover, investing in resilient health and housing systems is the fundamental strategy for both attending to the populations affected by extreme heat, and for thriving in a hotter climate, as cities have cool buildings, cool outdoor spaces and cool homes to rely on. In this sense, the Urban20 (2022) has called upon the G20 to work with cities to invest in health and housing as a cornerstone to an economic and social recovery for all. Sustainable city plans include passive cooling strategies aiming to reduce mechanical refrigeration in buildings, and thus mitigating the associated residual heat and greenhouse gas emissions. In this regard, best practices include revising code regulations to consider building orientations, materials and designs that promote energy efficiency and ventilation; building retrofitting strategies to encourage modernization of old buildings' technologies and materials; and district cooling actions, designed specifically for reducing the heat efficiently in targeted areas.

»It is essential to promote urban planning that focuses on improving heat equity.«

How cities grow has major consequences for the quality of life of its inhabitants, especially in terms of equal access to critical infrastructure such as water supply, sewage, energy, transportation, education and health services and public spaces (Lanfranchi et al., 2018). Further, it also has substantial effects on the environment, since cities tend to expand over peri-urban land which has important ecological system functions such as wetlands, agriculture, and biodiversity reserves. Effective land use planning, namely promoting dense, compact, and diverse cities, has huge benefits in terms of efficiency and access for urbanites. Urban renewal strategies, when they appropriately add vegetation cover, have been effective at improving

»The G20 nations and the Global South must invest in tools and policies to encourage heat-resilient urban development.«

the vitality of the area and its relationship with the surrounding environment, but have also been proven to mitigate heat island effects when strategically targeted, as experienced in Shanghai, China (Wei and Shu, 2020).

Furthermore, cities need to transition their energy systems toward low-carbon alternatives, and the G20 countries have a key role in making this transition possible. Fossil-fuel based energy systems are largely responsible for the cities' Global Energy Interconnection (GEI) emissions accelerating climate change and exacerbating urban temperatures. Cities need to plan for more transport-oriented renewable-energy systems, aimed at reducing emissions and residual heat, as well as promoting more active mobility solutions. ICLEI – Local Governments for Sustainability's 100% Renewable Energy city plans are great examples of cities' efforts that need to be boosted by national strategies and investments. The Urban20 Communiqué (2022) calls for cities to commit to fossil-fuel phase out, finance the renewable energy transition, reduce barriers, raise awareness, and prioritizing sustainable mobility.

All these processes, particularly the renewal projects, instead of being done vertically in a top-down manner, should be done taking into account the voice of the communities living in the cities and making them part of the urban co-design process. Planners should recognize and respect the diverse needs and histories of different groups and engage them in decision-making processes. By promoting equitable participation and outreach to marginalized groups, planners can work to redress past injustices and create a more just and resilient future.

Sustainable city plans must include strategies that prepare cities, public officials and the communities for the occurrence of extreme urban heat. This means assessing the city's vulnerabilities and their main risks and planning accordingly. It is absolutely imperative to move toward risk-informed urban planning and development. This decision-making process takes into account the risks faced by communities that are most vulnerable to disasters and redirects development to reduce disaster risk. There is a growing amount of evidence to assist cities through this process, such as the United Nations Disaster Risk Reduction guide "Words into Action" (UNDRR, 2023) or CIPPEC's Local Risk Management report (Sáez Reale, Esteban and Acosta, 2022), that systematizes tools and inspiring cases on this topic. Local risk maps and a heat vulnerability assessment are important tools that allow cities to spatially identify the main risks, assets and vulnerable populations that may be highly affected by an extreme event. Designing an emergency operative plan is critical, as it sets out the responsibilities and courses of action during the event. Other tools such as risk-reduction plans will be of great help in reducing vulnerabilities in the medium and long run, along with a comprehensive climate action plan. There are multiple available tools for cities to inform their policy decisions, such as the Heat Action Platform of the Arsht-Rockefeller Foundation, enlightening cases summarized in the "Beating the heat" guide (UNEP, 2021) developed by UN Environment Programme and The Cool Coalition, or the C40 Knowledge Hub.

The only way to succeed in finding real, on-scale solutions and strategies to address extreme urban heat and its consequences is substantially improving awareness. We need to talk about it, invest in it, and work together: academia, civil society, private and public sector, both on the national and subnational levels, to create real resilient cities. No one can solve this challenge on their own; we need to work together to tackle climate change and thrive as humankind in a new, hotter environment, and we need to start now.

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The Global Solutions Initiative

The Global Solutions Initiative (GSI) is an independent, non-profit organization. Founded in 2017, GSI established itself as a guiding force in global policy through its advice for multilateral organizations like the G20 and G7. With a comprehensive program of research, outreach, and advisory activities, the GSI brings together policy, academia, civil society, and the private sector. The annual agenda culminates in the Global Solutions Summit, a high-level gathering of leaders, pioneers, and thinkers. The Berlin-based GSI is guided by the vision of its leaders Dennis J. Snower and Markus Engels and diverse international thought leaders. It strives to recouple economic progress with social and environmental prosperity to improve global governance and the everyday lives of people around the world.

ABOUT THE GLOBAL SOLUTIONS SUMMIT

The Global Solutions Summit is the world's premier forum for transforming research into policy for the G7, G20 and beyond. It advances global economic, environmental, and social prosperity by connecting thought leaders and decisionmakers, visionaries and pragmatists from policy, academia, civil society, and the private sector. Held annually in Berlin, this year's conference takes place May 15–16, 2023.

THE GLOBAL SOLUTIONS INITIATIVE'S INVOLVEMENT IN THE T20/G20 TIMELINE

Think20 (T20)

Think20 (T20) is the official engagement group of the G20 bringing together leading think tanks and research centers worldwide. It serves as the 'ideas bank' of the G20 and aims to provide research-based policy recommendations to the G20 leaders. In 2023, India holds the G20 presidency and therefore also the T20 presidency.

The T20 core group is composed by leading Indian institutions and chaired by Amb. Sujan R. Chinoy (Manohar Parrikar Institute for Defence Studies and Analyses). The T20 secretariat is chaired by the Observer Research Foundation (ORF).

More information at www.t20ind.org

Think7 (T7)

Think7 (T7) is the official think tank engagement group of the Group of 7 (G7). Under the T7 process, global think tank experts develop research-based policy recommendations for consideration by G7 countries and partners, in coordination with the G7 presidency.

The Asian Development Bank Institute (ADBI) is hosting T7 as part of Japan's 2023 G7 presidency, under the T7 Japan theme Addressing Crises, Reigniting Sustainable Development, Bridging the G7 and G20. ADBI Dean Tetsushi Sonobe is T7 Japan Lead Chair.

More information at www.think7.org

Our vision

Recoupling: Making economies and polities serve societies across the globe and the generations.

Our mission

INSIGHTS
Provide research-based and expert policy advice that tackles major global challenges which need global cooperation and are addressed by G20 and beyond.

CONVENING
Bring stakeholders from business, civil society, politics and research together to develop solution-oriented policy proposals for the global common good.

OUTREACH
Promoting awareness of systemic challenges and global problem-solving efforts.

Publications

EMPOWERING DIGITAL CITIZENS REPORT (GIDE)
The Empowering Digital Citizens report by Dennis J. Snower and Paul D. Twomey was launched at the Global Solutions Summit in Berlin on March 28, 2022. The product of two years of work by the GIDE community, it lays out practical policy to innovate markets so that consumers can control, & benefit from, who accesses and uses their data: digital citizenship.

www.global-solutions-initiative.org/programs/digital-empowerment/

G20 INSIGHTS
The G20 Insights Platform offers policy proposals to the G20, produced by Task Forces from the Think20 (T20) Group, the Global Solutions Initiative's Council for Global Problem-Solving as well as experts from renowned think tanks. G20 Insights provides a complete archive of the policy briefs produced by Think20 Engagement Groups since 2017. The policy briefs produced by the Think7 Germany during the German 2022 G7 Presidency can also be found on the G20 Insights Platform.

www.g20insights.org

GLOBAL SOLUTIONS JOURNAL
With articles by scholars and researchers of the Council for Global Problem-Solving (CGP) and thought leaders from across sectors, the journal provides a bridge between research-based recommendations and best-practice examples addressing global challenges on the G20 and G7 agendas.

www.global-solutions-initiative.org/publications/journal

INTERSECTING
INTERSECTING has been launched by the Global Solutions Initiative and GIZ and is distributed by the Global Solutions Initiative. It is geared towards think tanks, civil organizations, and international institutions, in particular the G20/T20.

www.global-solutions-initiative.org/publications/intersecting

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Council for Global Problem-Solving

The Council for Global Problem-Solving (CGP) is the intellectual core of the Global Solutions Initiative. The Global Solutions Initiative thanks the highly committed members of the CGP for their intellectual advice and their valuable contributions.

The CGP is an accessible, permeable organization, open to all think tanks and research institutions that fulfil its terms of membership. CGP members have their own website to float new ideas, debate underlying issues, and publicize their policy work in progress. The resulting Policy Briefs are disseminated through the G20 Insights Platform: www.g20insights.org and the CGP Platform: www.global-solutions-initiative.org/core-communities/council-for-global-problem-solving/

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