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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

The current confluence of global policy challenges shows how urgently we need to rethink our understanding of wealth and progress and manage the global commons. Vaccinating the global population against COVID-19, addressing climate change and the loss of biodiversity, stemming the growth of poverty and wealth gaps, and finding a global consensus on digital governance – these challenges and many others are addressed in this Journal. Because they are systemic, resolving such globally shared problems will require a comprehensive approach. Go-it-alone, nationally independent solutions are bound to fail.

»Go-it-alone, nationally independent solutions are bound to fail.«

Italy has been serving as G20 President for six months, under the slogan "People, Planet, Prosperity". We look forward to the

summits of G20 leaders, ministers and engagement groups in late summer and autumn of 2021. International cooperation is more critical than ever, and it needs a strong voice from global civil society, think tanks, businesses, international institutions and NGOs.

As every year, the Global Solutions Summit takes place halfway through the G20 Presidency, offering researchers, business leaders and policy makers a platform to contribute, primarily through evidence-based policy recommendations. This year's summit will take place in a hybrid format and will broadcast digitally all discussions, keynotes, and panels to ensure that all stakeholders can contribute and participate. We are optimistic that we will meet again in person in 2022 when Indonesia heads the G20.

And please don't forget: As a global common good, the Global Solutions Initiative is open to your ideas, contributions and networking activities. Contact us!

We are counting the weeks, days and hours until we can meet again without a screen between us. Please stay well and safe!

In hope and confidence,

Dennis & Markus

Global Solutions Journal

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ECONOMIC REALIGNMENT

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Vision brief

Recoupling shareholders, stakeholders and society

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Recoupling shareholders, stakeholders and society

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At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 155 countries with over 284,000 people who are committed to delivering quality in assurance, advisory and tax services. PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity.

The Global Solutions Initiative (GSI) is a global collaborative enterprise to envision, propose and evaluate policy responses to major global problems, addressed by the G20, through ongoing exchange and dialogue with the Think20 (T20) engagement group. The GSI is a stepping stone to the T20 Summits and supports various other G20 groups. The policy recommendations and strategic visions are generated through a disciplined research program by leading research organizations, elaborated in policy dialogues between researchers, policymakers, business leaders and civil society representatives.

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There is a growing awareness that our economies around the world are no longer consistently serving the interests of the societies in which they operate, nor of the planet on which we all depend. The environment is becoming destabilized: climate change, biodiversity loss, ocean acidification, rising sea levels, declining fresh water supplies, eroding topsoil – the list is endless. There is also a significant sense of social polarization in many countries – rising distrust, weakening of communities, a growing sense of powerlessness among the shrinking middle classes, and growing anti-globalization sentiment.

It is becoming clear that "business as usual" has become unsustainable. Why is this happening? Why does it appear that businesses have been taking decisions that are likely to be harmful to their long-term interests? How and why have our economic activities, which have delivered such significant improvements to the living conditions of so many, become increasingly disconnected – decoupled – from the well-being of so many citizens and communities and are at risk of breaching multiple planetary boundaries?

It has not always been thus. In the first four decades following the Second World War, the default assumption in both developed and many developing countries was that economic growth would deliver societal progress. The reason was that economic progress would generate not just higher aggregate income, but also enable governments to provide public goods such as better health services, education and training, and welfare services. Furthermore, economic growth would permit redistributive policies to benefit the disadvantaged without reducing the living standards of the advantaged. Thereby economic growth could empower all population groups to shape their prospects through their own efforts and combine social cohesion with ever improving living standards. Market economies, underpinned by the participation of citizens in competitive profitable businesses, would deliver improved and inclusive outcomes for the significant majority.

»It is becoming clear that ›business as usual‹ has become unsustainable.«

THE GLOBALIZATION-TECHNOLOGY-FINANCIALIZATION NEXUS

This virtuous circle appears to have stalled in the 1990s through what we will call the globalization-technology-financialization (GTF) nexus.[2] Globalization provided access to new markets at a scale not previously seen. Facilitated by enormous shifts in mindset and in the political and economic dynamic that followed the fall of the Berlin Wall and the opening up of China, the communications revolution and the birth of the internet also enabled truly global business models – businesses could not only access markets on a global basis, they could organize their operating models on a disaggregated but hyper-connected basis for the first time – the truly global supply chain. Financialization – characterized by the globalization of financial markets and

the use of financial metrics to measure the success of business and the economy – turbocharged access to capital, the globalization process and the accompanying technological advances.

The GTF nexus created an entirely new operating environment for businesses, consumers and governments. The GTF nexus weakened the geographic roots of companies. Multinational companies became able to shift activities and assets (especially intangible assets) flexibly across geographic locations to drive changes in profitability. And if they were to compete successfully, they had no choice but to do so. However, companies also began to lose the long-term social bonds that they had traditionally established with their local communities. In short, the ties of mutual obligation between business and society – the social glue that helped ensure that business prosperity was closely linked to social prosperity – became frayed.

The GTF nexus also weakened the connection between work effort and job and income security at the local level. Increasingly, job and income security became linked to the comparable performance of workers in remote parts of the world, or to the impact of increasing automation, or to a combination of both. This experience was profoundly disempowering. We are at considerable risk of a new wave of automation, disruption and disempowerment.

The specific implications for different stakeholder groups became clear over time.The social effects of business activity also fell increasingly outside the domain of the company's immediate stakeholders, defined as the "groups without whose support the organization would cease to exist."[3] Regional disparities in income and wealth, as well as job opportunities and skills, that arose through the GTF nexus are a good example of third-party effects of business falling beyond the direct business stakeholders.

»We must find a better balance between the emphasis on financial and non-financial factors in the economic and business frameworks that drive decision-making.«

It should not be surprising in light of this overall dynamic that we see a weakening of companies' ties to their broader stakeholders – employees, customers, suppliers and local communities – and the environment. In a competitive market system, with financial performance as both the dominant decision factor and the primary responsibility as owed to shareholders, combined with business models now operating with truly global scale and reach, the search for competitive advantage meant that any other consideration would be secondary.

This does not imply that in overall or average terms, or in specific countries and communities, there was not significant societal progress. As economies participated more openly in this globalized, financialized and technology-enabled economy, living conditions for hundreds of millions of citizens improved. Market economies served the purpose of improving the lives of citizens more effectively than the alternative models.

However, citizens and communities that could not compete on these terms were left behind, both regionally within countries and indeed between countries. Planetary boundaries are incapable of supporting current resource consumption levels. The well-being of citizens, communities and the planet are not ignored – but they are secondary to the priority of financial performance in the hierarchy of factors that drive business and economic decision-making. It is evident that if we wish to find a better and sustainable balance between business and society – to recouple economic and social prosperity – then we must find a better balance between the emphasis on financial and non-financial factors in the economic and business frameworks that currently drive decision-making.

In fact, there is an enormous opportunity to ensure that market economies are actively harnessed to specifically address the kinds of challenges we now face. If we are to address the systemic issues of climate and nature risk, and of social and economic inclusion, then we have no choice but to ensure that our economic and business models are intentionally designed to do so. As we have seen, we cannot assume that this is the case today, and we must identify the kinds of change needed to respond.

In the next section, we explore why it is difficult for business to recouple its measured success with social prosperity, by examining the business decision-making cycle. Next, we consider how business practices need to change in order to make recoupling possible. Finally, we explore the role of government and civil society in creating an operative environment for business that enables the desired changes in business practices.

THE BUSINESS DECISION-MAKING CYCLE

To start at the level of the individual business, it is useful to understand how the primacy of the financial is currently reflected in the decision-making process of an individual business, albeit in a simplified and generic summary form.

Strategy

By definition, business plans, priorities and the decisions which follow are intended to derive from the strategy for the business. And the primary (if not exclusive) focus is on sustaining and delivering financial performance over the period. Other factors addressed in the strategic plan are typically treated as enablers, rather than as target outcomes per se.

The foundational responsibility which underpins the strategy is that which is considered to be owed to shareholders, and this in turn has been deeply embedded in the architecture of the legal and regulatory framework within which business operates.

Planning, Implementation and Incentives

Having set the scene with a strategic plan, a business moves into planning and

implementation mode. In reality this is an iterative process, and although it is somewhat artificial to make a distinction between these two stages (or indeed any of the stages together), it is useful for this purpose.

Objectives are set for each level of management within each business unit, which reflect the cascade of objectives and priorities from the strategic plan. The nature of these objectives may vary depending on whether the particular unit has direct revenue and profit responsibility, or is responsible for delivering other enablers. In all cases, the primary objective is to deliver financial outcomes over the period of the plan, and this is reflected in the specific objectives. These objectives cascade into the personal plans of management teams and staff, and form the basis of assessment - including incentive and performance rewards, promotions and career progress etc - for these individuals.

Reporting

Management reporting is the essential data within the business used to manage the business and to incentivise performance. It is generally (if not exclusively) related to financial performance for revenues, costs and profits, as well as other Key Performance Indicators (KPIs) which support such performance (eg sales pipeline).

A similar dynamic applies to external financial reporting, typically done on a quarterly basis, and based on a combination of regulatory standards and requirements, and the expectations of investors.

The quarterly reports are used by analysts and investors to gauge the financial performance and outlook for the business, and typically involve investor calls and substantive engagement with management. The priority focus is on the financial performance of the business, the immediate outlook for financial performance, and any other KPIs which might influence such performance.

External reporting is also intrinsically linked to governance, which is also dealt with below. For investors, access to information based on a common reporting standard is essential, as it offers a critical data point for the making of comparable investment decisions. Current reporting standards are exclusively focused on financial performance, and are supported by a wealth of technical detail, expertise, an entire profession, and stringent regulatory requirements.

Governance

For this purpose, governance can be considered to be the framework within which the relationship between the owners of a business (shareholders) and the operators of the business is established. This includes a set of formal fiduciary/legal responsibilities which typically reflect the primacy of shareholders, as well as mechanisms including the role of the board of the company and non-executive directors who are responsible (amongst other things) for representing the interests of shareholders in the oversight of the business.

A shareholding interest in a public company can typically be assumed to be an exclusively financial interest, typically managed by professional/institutional investors acting on behalf of others. Engagement with the business is reflective of this, and the governance framework is designed to establish and reinforce this financial primacy. The business access to

public capital is typically a function of the degree to which it delivers on this basis, and as explained above this is then intentionally embedded in the management and operating (and incentives) framework of the business itself.

»Adjusting the operating environment for businesses in the broader policy sense is essential.«

GUIDING THE EVOLUTION OF BUSINESS DECISION-MAKING

Although this is a generic and simplified description of the decision cycle, it offers an opportunity to identify the kinds of change necessary for an evolution in how business decisions are made, so they may reflect the broader interests of society:

- The formal responsibilities of a business must specifically reflect the interests not only of shareholders, but also of stakeholders and third parties who are significantly affected by business decisions. These responsibilities must be reflected in the expression of both general duties owed as well as the specific corporate purpose of a business. It is clear that they can be specified appropriately and predictably only in the context of an enabling operative environment, shaped by government and civil society (as described below).
- The reported performance of a business must reflect not only its financial performance, but also its performance with respect to societal and environmental impacts. Similar to current financial reporting standards, such external reporting must also be aligned with common standards for non-financial reporting, ensuring both consistency and comparability for investors and others.
- A business must reflect these broader responsibilities and related objectives in its overall strategy and plans, which in turn must be reflected in the management of the business and the related incentives
- Finally, the governance framework more broadly, including investors, governance boards and management teams, must be aligned so that the business activities are true to the broader social and environmental responsibilities of the business, including shareholders. Put differently, there cannot be an inherent conflict within the governance construct that inhibits the capacity of the business to deliver on this basis.

GUIDING THE EVOLUTION OF THE ENVIRONMENT WITHIN WHICH BUSINESS OPERATES

The influence of the primacy of the financial is clear in the analysis of business decision-making and in the interdependent elements of a system intentionally designed to prioritize accordingly. However, the same design premise underpins the approach to the economic, policy and social environment within which business operates. How is it that the changed context of GTF nexus also impacts in this regard?

Adjusting the operating environment for businesses in the broader policy sense

is essential. Individual businesses cannot be expected to successfully pursue this evolution alone, however well-intentioned. There are compelling examples of businesses taking a lead in this respect, and this is necessary, but not sufficient to move overall economic activity at the required pace and scale. It is also difficult for a business to pursue stakeholder value – or broader societal value – when its competitors pursue shareholder value. On this account, governments must set an operative environment requiring businesses generally to be purpose-driven in the public interest, and in doing so shift the balance between shareholders, stakeholders and significantly affected third parties.

»We have an extraordinary opportunity – and responsibility – to reorient our market economies to intentionally serve the interests of societies.«

This public interest extends beyond the immediate stakeholders of business, namely, its employees, suppliers, customers and the communities in which it operates. With regard to environmental externalities of business, it is clear for example that significant costs fall on unborn generations, who are not among the current stakeholders of business. The social implications of our current model – disempowerment and increasing inequality, for example, are third-party effects that also extend far beyond the direct business stakeholders.

Business cannot be expected to take such third-party effects into account without an operative environment that enables it to translate them into measures of business success. An example is to be found in the net zero targets for carbon emissions. Once these targets are appropriately defined – to achieve a scale of value-chain emission reductions aimed at limiting global warming to 1.5°C above pre-industrial levels, while neutralizing residual emissions that are infeasible through permanent removal of equivalent amounts of atmospheric carbon dioxide – and then embedded in the operating requirements for business generally, then business will be able to take environmental costs for unborn generations into account. With such targets in place, business can be given the latitude to exploit all profitable opportunities consistent with its purpose-driven objectives. The role of government is to set the sustainability objectives and the boundaries of the operating environment, not to unilaterally determine the means for reaching the objectives. The latter is the business of business.

Analogous endeavors need to be made with regard to the social repercussions of business. Once again, for example, business cannot be expected to take the third-party effects of regional disparities into account without appropriate facilitation from government, such as through government procurement policies, public infrastructure and investment programs

and "leveling up" measures designed to activate business for example in deprived areas.

In all of these illustrative examples, the critical point is to shift the emphasis in decision-making by government away from the primacy of the financial (economic efficiency, GDP growth) and towards broader societal outcomes, balancing the financial and the non-financial, and ensuring that business does likewise as it participates in the market economy based on expectations and boundaries established by government designed to deliver recoupling.

A crucial step in this direction involves measuring and reporting on the broader impact of business – on both business stakeholders and third parties – including the above-mentioned effects arising from the GTF nexus.[4] Next, these measures will have to be translated into targets relevant for corporate reporting. Existing environmental, social and governance (ESG) metrics lack the consistency and comprehensiveness required. The requisite changes in measurement and reporting of business performance calls for corresponding changes in macro-level reporting and alternatives to GDP.

SUMMARY

Business and economic success has become decoupled from social success in terms of well-being in thriving sustainable societies. The decoupling is the result of a systemic failure – a system designed to prioritize financial and economic performance no longer operates successfully and sustainably in a world that has been utterly changed by the globalization-technology-financialization nexus. We have an extraordinary opportunity – and responsibility – to reorient our market economies to intentionally serve the interests of the societies within which they operate, to reflect the interests of broader stakeholders as well as shareholders, and to do so sustainably. This requires us to be very intentional about reflecting this objective in the elements of our economic and business models, which currently reflect the primacy of the financial. This applies to businesses, to governments, and to civil society. We must urgently recouple shareholders, stakeholders, and society.

[1] PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details.

[2] The workings of this nexus are explained in Kelly and Sheppard (2017).

[3] This is the original usage of the term (Freeman and Reed (1983).

[4] A first normative framework for measuring broad-based economic, social and environmental components of societal wellbeing is described in Lima de Miranda and Snower (2020).

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Governance

Italy's G20 and T20: Impact in a challenging global framework

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The Italian Institute for International Political Studies (ISPI) is an independent, non-partisan, non-profit think tank providing leading, training, research and viable policy options to government officials, business executives and the public at large wishing to better understand international issues.

The 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. The T20 Italy strives to be inclusive, digital and policy-oriented in order to better engage the research community, policy-makers and the public at large in the context of the year-long Italian Presidency of the G20.

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As states – unfortunately with still insufficient coordination – strive to emerge from the COVID-19 pandemic, many other challenges are queuing up and need to be addressed in the coming months and years. Beyond the health emergency, multilateral institutions and the world economy have to be revived. In particular, bottlenecks to international trade flows and global value chains should be removed; the transition to a digital and sustainable economy must be managed by striking an effective balance between equitable economic growth and care for our planet; and rivalries between countries should be tempered through a rules-based multilateral framework that ensures a level playing field and avenues to mend disagreements.

One year after the WHO declared the novel coronavirus to be a Public Health Emergency of International Concern (in a nutshell, a pandemic), COVID-19 is still hitting our societies hard, with over 2.5 million official deaths globally as of early March 2021. Measures undertaken to contain the virus' spread have plunged our economies into the deepest recession in over a century. The International Monetary Fund (IMF) estimated a 3.5% decline in global GDP in 2020 (much steeper than the 0.1% decline recorded during the Great Recession in 2009). Furthermore, the pandemic-induced economic crisis will have highly asymmetric effects, heightening existing inequalities, both between countries and within them. The World Bank has recently announced that extreme poverty is set to rise for the first time in three decades, adding 80 to 150 million "new poor" globally by the end of this year. Inequality is expected to rise not only in low- and middle-income countries, but also in advanced economies: In December 2020, the OECD estimated that the Gini coefficient was poised to rise by more than 10% in a single year, more than ever in the past half century. This further aggravates a trend of rising inequalities occurring for decades, but which had been steadily decelerating over the past few years. Therefore, in high-income countries the number of poor, fragile and vulnerable households is set to increase. This could in turn reverberate onto other countries too, as public support for official development aid dwindles, and public opinion turns more inward, possibly growing increasingly distrustful of an open, globalized and international economy.

»Beyond the health emergency, multilateral institutions and the world economy have to be revived.«

To face this unprecedented global downturn, countries have already injected an estimated USD 14 trillion into the economy, with US President Joe Biden's USD 1.9 trillion relief bill the most recent example of this global race to support a faltering economy. However, stimulus, too, has been unequal, with richer countries able to spend much more per capita than poorer ones, and therefore sheltering

their citizens from the full, immediate impact of the health emergency. On a related note, despite the benefits of stimulating the global economy, such a massive fiscal "bazooka" will eventually turn into a substantial increase of public debt worldwide, rising from 84% in 2019 to 98% in 2020. Hopefully, the rollout of vaccines will get us out of the health emergency, but we should not underestimate the risk of falling into another emergency: the risk of defaults and financial crises. All over the world, non-performing loans have been rising for almost a year and the number of sovereign credit ratings that have been downgraded in 2020 has soared to the maximum in four decades. Again, even emerging and frontier markets continue to suffer from large and persistent fiscal deficits, which are harder to finance under tight credit conditions and mounting debt at the international level.

As we address these urgent challenges, we should not forget longstanding trends that are deeply changing our societies and economic systems. Digital transformation is accelerating as we press forward with remote work and distance learning. In the EU, close to 40% of those working began to telework fulltime during the worst phases of the pandemic, as compared to just 5% before the outbreak (with 9% teleworking "at least some time"). To be sure, digitalization allows us to reap new benefits and creates new opportunities; but it also provides unique challenges in terms of jobs and education, especially for vulnerable groups. With schools fully closed for an average 3.5 months in 2020, according to UNESCO, 40% of countries worldwide failed to support learners at risk, students lost between 65% and 85% of learning achievements throughout the year, and poorer students fared much worse than richer ones. As for jobs, according to the OECD, low-wage work can be done remotely only 15% of the time, as compared to over 50% of high-paid jobs. As new inequalities widen the gap between the haves and have nots, the need to find the right balance between people's health and their present and future well-being has to go hand in hand with the need to include the planet in the equation, making sure that any upcoming recovery is achieved through climate-friendly investment, with sustainability at its core.

»The rollout of vaccines will get us out of the health emergency, but we should not underestimate the risk of falling into another emergency: the risk of defaults and financial crises.«

Italy's Presidency of the G20 thus comes at a very timely (although rather uncomfortable) moment. The challenges faced by the Italian government, as well as by the rest of the G20 members, are daunting;

but they are also an unprecedented incentive for those who are part of the global community of experts and thinkers to help world leaders safeguard "People, Planet, and Prosperity", the '3Ps' chosen by the Italian government as the keywords of its G20 Presidency in 2021. These need to be tackled together; if we fail to act quickly and in a timely manner, we risk having less healthy people on an unhealthy planet and less prosperity (and more inequality) in the years and decades to come.

Within the framework of Italy's G20 Presidency, ISPI is the National Coordinator and Chair of the Think 20 (T20), the engagement group which acts as the "ideas bank" of the G20. Eleven thematic task forces, bringing together 87 co-chairs and 180 members drawn from the think tank and academic community worldwide, have been set up. These cover a wide range of policy areas, from global health to climate change, from international trade to digital transformation, from inequalities and social cohesion to multilateral governance, to name a few. The task forces' work officially kicked off at the beginning of February during the T20 Inception Conference. This event gathered (virtually) top-class experts worldwide who discussed the critical challenges defined by the aforementioned "3Ps". In parallel, the task forces' co-chairs carefully vetted proposals for policy briefs submitted by researchers worldwide. Out of the 650 very competitive and high-quality policy brief abstracts submitted by around 1,800 co-authors, our co-chairs selected around 160. Despite these figures, the T20 will ultimately be successful if policy briefs bring about a set of research-based, clear-cut and down-to-earth policy recommendations to be handed over to the G20 leaders in view of the Rome Summit in October.

Therefore, we will do our best in the coming months to ensure that our contributions are meaningful for G20 governments. To maximize impact, we will first strive not to lose sight of the current global situation, one in which competition among big powers is high and rising, and where regional rivalries complicate multilateral efforts. Second, we should carefully look at what the G20 is and what this forum can realistically achieve. These are key preconditions for us to identify the issues on which the G20 can effectively deliver. In a nutshell, we should "prioritize our priorities." In some areas, such as the fight against climate change, the G20 may help negotiations gain momentum and create the appropriate political environment at the global level, while leaving it to other forums (e.g., the UNFCCC) to identify the specific objectives and tools. To this end, Italy bears a great responsibility this year, as it will also be co-chairing the COP26, together with the UK.

More generally, "prioritize our priorities" implies that, in a world where multilateralism has been severely weakened in recent years, we need to focus our efforts mostly on those policy areas where concrete deliverables and concrete outcomes are possible. The world needs immediate solutions that are ready to use, such as: granting universal access to vaccines (for instance, by strengthening the COVAX platform for low and middle income countries); promoting better coordination between national and regional recovery packages; enhancing debt relief initiatives for developing and least developed countries beyond the Debt Service Suspen-

sion Initiative (which, by the way, was a key deliverable obtained during the Saudi G20 Presidency); seeking convergence on the taxation of tech giants and advancing together on the definition of the "Principles for a human-centered Artificial Intelligence" (already set during the Japanese Presidency); designing better financial regulation on green investment. The G20 should and can help achieve meaningful and substantial progress in each of these policy areas.

We will also try to tackle the flaws that risk undermining the effectiveness of the whole T20 exercise. Achieving impact and effectiveness should remain our primary goal; however, we cannot accomplish this at the expense of inclusivity and diversity. This is why we have involved authors and co-chairs from as many countries as possible, preserving at the same time an accurate gender balance (co-chairs of the 11 T20 task forces come from all the continents and 42% are women).

In conclusion, the criticism that many observers have directed at the G20 over the past few years is often well-founded. After the successful coordination of global economic stimulus in the wake of the 2007–2009 Great Recession, the summit's ability to deliver has dwindled. This has led some to believe that the G20 is too large and too diverse to be relevant, and to propose reverting to the G7 or to moving towards a Summit for Democracy. Paradoxically, this has also spurred calls to make the G20 even more inclusive, likely having in mind a sort of resurrected Assembly General of the United Nations. Nonetheless, despite criticism, the G20 remains the only true global forum that is able to represent a majority of the world's population, producing three quarters of the world's GDP (and greenhouse gas emissions), in a sufficiently compact format to make it likely to negotiate and achieve a multilateral consensus.

The fact that the G20 process is hindered by growing geopolitical rivalries should not lead us to discount the process altogether. It is the duty of G20 governments, with the support of the T20 and the other engagement groups, to make sure that the summit goes back to its halcyon days, and that it is able to make a real difference in safeguarding people, the planet, and prosperity.

The Rome G20 Summit: A window of opportunity to build back better

The Rome G20 Summit can mark the return of diplomacy and multilateralism and the beginning of building back a better global order. It will depend on much more than a return of the United States.

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Joe Biden, G20, Rome, role of Europe, role of middlepowers

Institution:

ATLANTIK-BRÜCKE

Founded in 1952, Atlantik-Brücke aims to deepen cooperation between Germany, Europe and America on all levels. Transatlantic cooperation is and remains a decisive factor for global order and stability, especially in difficult times. Now that nationalist tendencies are gaining popularity worldwide, Atlantik-Brücke is even more committed to its mission. It advocates multilateralism, open societies and free trade. As a non-profit and non-partisan association, Atlantik-Brücke strengthens the exchange between politics and business, but also between young leaders and representatives of civil society beyond party lines. Atlantik-Brücke offers a platform for different perspectives and a lively debate.

In recent years, multilateralism and its institutions have seemingly been under siege. While they have never been free from criticism, at no point have their core principles been so fundamentally questioned. Much of this had to do with the previous US administration's view of the world as an arena where only the powerful prevail. They saw no point in continuing to invest in the order and institutions the US had helped create in response to the devastating experiences of two world wars, and which it led throughout the Cold War. Even more, however, this was predicated on a growing perception that multilateralism and its institutions don't serve the people by helping eradicate the world's problems, but that, as a club for the privileged, they exacerbate them. These voices of disaffection were exploited by those seeking a return to the world to where it was at the beginning of the 20th century, when the world was an arena ruled by great-power considerations.

Despite being severely put to the test, multilateralism prevailed. But during this difficult time, the institutions of multilateralism found themselves robbed of their ability to cooperate, leading to estrangement and trench mentality, and reinforcing the perception that they are unable to deliver. This became blatantly evident when, in the face of a pandemic, the G20 could not even agree on a name for the virus, thwarting a common coordinated response. The discussion came at a high cost: Even today, there is no coordinated response to one of the most serious crises mankind has faced, the COVID-19 pandemic.

This is the situation the 46th President of the United States, Joseph R. Biden, inherited in January. And from his first day in office, he sent a clear, consistent message to the world: America is back. Diplomacy is back. Joe Biden has affirmed that his administration will be a leading promotor of multilateralism. His objective: to "build back better" the institutions that can help overcome some the most profound challenges facing humanity, in particular health and climate change. One of his first acts in office was to sign executive orders ending the withdrawal of the United States from the World Health Organization and re-joining the Paris Climate Agreement.

When President Biden assumed office, the siege on multilateralism ended. However, whether this is merely a temporary reprieve before the window of opportunity closes does not depend on the US President alone. It depends on whether the other states participating in these fora are equally willing to invest more in building back a better order.

There are good reasons to do so. Contrary to widespread perception, the G20 and G7 have proven their ability to form common responses to crises – as they did during the financial crisis of 2008, when they swiftly adopted mechanisms to effectively address its root causes. In fact, both formats have their historic roots in dealing with crises that a single state could not have overcome alone. But none of these crises were of such magnitude and impact as the COVID-19 pandemic.

The pandemic has magnified and further fuelled problems that already existed. It has affected millions of lives and livelihoods across the globe, and further deepened the socio-economic divide within our societies. It has shown how vulnerable our global and interconnected world is, bringing the global value chain to a complete

standstill for months, and it continues to put international travel and personal exchange on hold.

»In recent years, multilateralism and its institutions have seemingly been under siege. While they have never been free from criticism, at no point have their core principles been so fundamentally questioned. Much of this had to do with the previous US administration's view of the world as an arena where only the powerful prevail.«

Everyone will be poorer after the pandemic. But the most severely affected are low-income countries, which are neither fully integrated into the global value chain, nor have the means to finance vaccinations, let alone deliver them to their populations. Without sufficient access to the vaccine, these countries will remain closed and left out of the global value chain. They will continue to pose a risk of renewed outbreaks, with the consequences we know only too well now.

On the other hand, the pandemic has sparked a leap in technological innovation and has driven the digitalization of our economies. Technology was at the core of the miraculous speed at which COVID vaccines were developed in an international effort, and it has helped maintain economic activity while physical contact has been impaired. At the same time, however, some companies undergoing digital transformation have laid off workers, while others engaged in the digital economy posted record profits largely exempt from taxation.

Amid the tectonic geopolitical, social and technological shifts accelerated by the pandemic, there are many incentives to disregard all pledges of solidarity and resort to a "my nation first" approach – and few incentives to do the opposite. Sadly, this reflex was painfully visible in Europe in the early days of the pandemic, when borders were shut and no solidarity with those European countries most heavily affected could be observed. Luckily, this has changed since, but the lesson that – especially in the face of profound challenges – Europe's nations are stronger together was hard learned.

The dilemma of balancing national interests and international cooperation is a major challenge for the new US President. No other country has been hit harder by

the coronavirus, both in number of people infected and those who died as a result. Unemployment skyrocketed, and many people could no longer afford their rent, mortgage payments or food. At the same time, the country has been undergoing a rapid demographic transformation, and the previous administration left a legacy of deep political division and polarization.

Joe Biden has opted for a different path. He knows that America's prosperity and way of life is inexorably linked to a global order built on the rule of law. But he also knows that this system will only prevail if it tangibly improves the lives of people, rather than appearing as a string of distant summits on global news networks.

Already, the new administration has demonstrated its resolve in delivering on its promises. President Biden pledged to deliver 100 million vaccinations in his first 100 days in office. The United States quickly took the lead in vaccinations per day, reaching Biden's target on his 58th day in office. Congress passed a massive USD 1.9-trillion COVID-relief package, promising immediate relief to those hit hardest, and addressing some key long-term challenges in education and infrastructure. And while the new president's critics look for flaws, 76% of the population supports the stimulus package. Who would have thought this turnaround possible at the end of last year, when the United States was the world's corona problem child?

The message this sends to the US citizens and the world is: The United States government is back, and it delivers on its promises. President Biden has proven that the complex web of checks and balances is no obstacle to speedy and decisive government action. How was this possible? Above all because Joe Biden and his administration believe in the resilience and capability of the US system. As CNN's Fareed Zakaria recently quoted a senior White House official as saying: "You have to work every

»When President Biden assumed office, the siege on multilateralism ended. However, whether this is merely a temporary reprieve before the window of opportunity closes does not depend on the US President alone. It depends on whether the other states participating in these fora are equally willing to invest more in building back a better order.«

day at all the details, grind the stuff out, persuade, cajole to get [everyone] on the same page. [...] For people like us, [...] task number one is to make government work."[1]

The key question for this G20 Summit is whether the participants share this mindset: the understanding that the global challenges affecting humankind, which know no borders, cannot be overcome by a single state alone; and that multilateralism and its institutions are not an end in themselves, but our best means to deliver tangibles in our fight against common challenges.

There are good arguments for this approach. Historically, multilateralism may not have lifted humanity into paradise. But it has certainly kept us from retreating into the abyss of world war, as experienced in the first part of the 20th century. It also is at the core of the growth in global prosperity over the past 30 years. Nostalgia for "better times," however, does not help us respond to current and future challenges. A historical view helps us understand where we come from and where we stand – but this cannot become a misplaced search for blame, it must instead be a search for ways to improve and become more resilient in the future. More immediately: Multilateralism and its institutions, especially the informal G20 and G7 summits, are incredible force multipliers that help governments to deliver better on their promises. They are in our best interest and, in an age of global security challenges, they may be our only bet. Multilateralism, diplomacy and the rule of law are not obstacles to delivering improvements in the world – but their most powerful enablers.

The early days of Joe Biden's presidency show that change and progress are possible, not only in domestic politics, but also in international relations. Despite the differences and friction on many aspects with China, the US president made it clear that competition will not hinder cooperation in areas where both countries' interests coincide. Both have an interest in global health, open markets, and sustainable growth. Neither of the two most powerful states in the world is capable of confronting these challenges alone. It remains to be seen whether China assumes this view and lives up to the expectations it has raised in multilateral fora in the past four years. This means engaging in meaningful cooperation to counter the social and economic impact of the pandemic, particularly for debt-laden, low-income countries, and considering climate change not as a field of systemic rivalry but as a challenge to humanity. The G20 Summit in Rome is a great opportunity for China to show its commitment to global responsibility.

The G20 Summit will be Joe Biden's first as president and the last for German Chancellor Angela Merkel. The chancellor has rightly received much credit for her defense of multilateralism in recent years. Germany has also assumed a leading role in countering climate change. After 16 years in office, Chancellor Merkel will not stand for re-election, creating much uncertainty in Europe and beyond about the future role of Germany, a bastion of stability amid the many crises since 2008. To Angela Merkel, the G20 Summit, too, is a great opportunity to contribute to her legacy, and take a leading role in starting to build back multilateralism better. To do so, however, will require the chancellor to not be distracted by the laurels she undoubtedly deserves for her achievements, nor by

the upcoming elections and the tendency to seek short term gains rather than make long-lasting commitments.

The G20 Summit is thus not only a window of opportunity for the two geostrategic antagonists – the US and China – to signal that despite their substantial differences, reason guides their relationship, and that with power also comes responsibility. It is also an opportunity for the other group members. After four years of holding the line on multilateralism, and a year in which physical meetings both formal and informal were impossible, the Rome Summit provides a great opportunity to re-engage and exchange ideas with a forward-looking perspective. No other platform is better suited for this than the informal G20 and G7 formats, and it is hard to imagine an environment more inspiring than Rome.

In closing, a word of caution: Whether we use this window of opportunity to turn the tides on multilateralism is not only a question of the closing communique. It rests much more on the ability of participants to re-establish and revive trust – the trust to inspire confidence that despite differences, cooperation among states is possible. It is in our common interest.

[1] https://www.washingtonpost.com/opinions/biden-is-showing-the-world-that-us-government-can-work-again/2021/03/04/2cf54be2-7d27-11eb-85cd-9b7fa90c8873_story.html

Improving engagement groups' impact on the G20

An assessment of the Think 20's influence on the 2020 Riyadh Summit

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Seven independent engagement groups work throughout the year to address the subjects on the G20 agenda, culminating in recommendations presented to the G20 leaders to consider in their summit deliberations: the Business 20, Civil 20, Labour 20, Science 20, Think 20 (T20), Urban 20, Women 20 and Youth 20. In particular, the T20 draws on the expertise and evidence produced by think tanks to provide advice for G20 policy making.

The G20 Research Group has been assessing the impact of the T20's recommendations since the 2016 Hangzhou Summit. This article assesses the T20's advice to the G20 for the Riyadh Summit hosted by Saudi Arabia on 21–22 November 2020. It also evaluates the impact of those recommendations as well as a synthesis of the solutions offered by all the engagement groups, and the return on the investment of the T20's efforts in influencing G20 deliberations. It then reviews the relationship between the T20's 2019 recommendations and G20's compliance with its 2019 Osaka Summit commitments before offering suggestions for further research into improving the effectiveness of the T20 and, by extension, the G20.

T20 RECOMMENDATIONS REALIZED AT RIYADH

The T20 delivered 134 recommendations, covering 18 subjects, to G20 leaders before the Riyadh Summit (T20 2020). At Riyadh, G20 leaders made 107 collective, precise, future-oriented, politically binding commitments (G20 Research Group 2020).

Of these 134 T20 recommendations, 50 (37%) were either partially or fully realized in the Riyadh commitments, with 26 (19%) fully realized and 24 (18%) partially realized (see Appendix A). This 37% match is a drop from the 46% match for the 2019 Osaka Summit, but a substantial increase from the 24% match at the 2018 Buenos Aires Summit and the 25% match at the 2017 Hamburg Summit (Tops and Hou 2020; Warren and Kirton 2019; Kirton and Warren 2017).

Most 2020 T20 recommendations – 20 – were made on information communications and technologies (ICT) and digitalization (see Appendix A). Then came climate change with 18 recommendations, environment with 15, trade with 13, development with 11 and health with 10, followed by international cooperation with nine, labor and employment with eight, infrastructure with six, macroeconomic policy and energy both with five, education with four, migration and refugees with three, financial regulation and food and agriculture each with two, and reform of international financial institutions (IFIs), gender and international taxation with one each.

For this assessment, each recommendation receives a score on a three-point scale to track the degree of match with the Riyadh commitments: –1 indicates no match, 0 indicates a partial match, and +1 indicates a full match with one or more Riyadh commitments, which is then converted to a percentage.

Across the four themes established by the 2020 Saudi Presidency, the highest match came on Theme 1, Global Preparedness for Shared Emergencies, with 40%. Theme 3, Sustainable Resources, had a 30% match. Theme 2, Social Cohesion and the State, had a 28% match. Theme 4, Harnessing the Potential of Digital Technologies, had only a 22% match.

The fullest matches with the Riyadh commitments were on health, food and ag-

riculture, and infrastructure with 50%, followed by labor and employment with 38%, development with 27%, macroeconomic policy and ICT/digitalization with 20%, climate change with 17%, trade with 15%, and the environment with 14%. No recommendations matched on international taxation, energy, financial regulation, gender, IFI reform, education, international cooperation, or migration and refugees.

The highest proportion of matched recommendations came on international taxation at 100%, which had one recommendation that was partially matched (see Appendix B). It was followed by infrastructure (83%), health (70%), financial regulation (67%), labor and employment (63%), food and agriculture (50%), environment (43%), macroeconomic policy (40%) and trade (38%). A smaller proportion of recommendations realized came on the remaining issues of climate change (33%), ICT and digitalization (30%), energy (20%), development (18%), international cooperation (11%), and gender, IFI reform, education and migration and refugees (each with 0%).

THE T20'S IMPACT IN 2020

These T20 recommendations have little value, even if reflected in G20 commitments, if they do not lead to implementation when G20 leaders return home. A comparison of the matched commitments with the historic levels of G20 compliance for each subject indicates the possible impact (see Appendix B). The G20's strongest compliance on commitments made from the 2008 Washington Summit up to the 2019 Osaka Summit has been on infrastructure, at 91%, followed by macroeconomic policy at 81%, financial regulation and labor and employment at 76%, migration and refugees at 74%, and food and agriculture at 73%. Nine subjects fall below the G20 overall compliance of 71%: energy (70%), climate change (69%), IFI reform (68%), development and health (67%), trade (66%), ICT/digitalization (62%), gender (61%), international cooperation (58%) and the environment (57%).

»T20 recommendations have little value if they do not lead to implementation by the G20 leaders.«

The subjects with the highest match at Riyadh do not correspond well with overall G20 compliance. Compliance on health averages 67%, food and agriculture 73%, and infrastructure 91%. The highly matched subject of infrastructure has high compliance, yet the highly matched issue of health falls below the G20's 71% average compliance. Compliance with food and agriculture is slightly above the 71% overall average and compliance on labor and employment averages 76%. But compliance on development averages 67%, ICT/digitalization 62%, climate change 69%, trade 66% and the environment 57%.

For a more detailed analysis, an Investment Impact Index has been created to weigh the percentage of T20 recommendations partially or fully realized in G20 commitments by their inherited compliance score, to estimate the implementation impact by the time of the next G20 summit

(see Appendix C). The estimated investment impact is highest on labor and employment at 47.9, followed by macroeconomic policy at 32.4, trade at 25.1, environment at 24.5 and climate change at 22.8. However, the T20 made few recommendations on economic recovery through jobs-rich fiscal and monetary policy and trade, although these subjects had the highest estimated impact. Moreover, these subjects have long been at the core of G20 governance and remain so as 2021 unfolds. In contrast, the T20 made many recommendations on the environment and climate change, to good effect.

»Evidence suggests the T20 influences the G20 summit's work.«

A second new refinement calculates the estimated investment impact by determining what portion of the T20's time and other resources were invested in producing recommendations on each subject, and the likely return on this investment (see Appendix C). Here, climate change comes first with 3.05, digitalization second with 2.79, and the environment third with 2.54. There are good grounds for the 2021 T20 to invest more in producing recommendations on climate change and the environment, rather than arbitrarily deciding that each of its many task forces will produce roughly the same number of recommendations. Climate change and the environment also stand out as genuinely global existential threats.

In all, 2020, the top six subjects with the most T20 recommendations, with each in double digits and totalling 64% of the 134 recommendations, had an estimated investment-implementation impact of only 12.5%. Thus, 87.5% of the T20's intense investment in producing recommendations was likely wasted, having little impact on the G20's Riyadh Summit outcome.

A more favorable view could come from those who think that "this time it's different," in ways that will increase compliance on the six top-matched commitments compared to the 14 previous summits. This claim requires systematic, evidence-based knowledge of what causes G20 compliance and whether the compliance-inducing causes will appear at a high level before the Rome Summit on October 30-31, 2021.

The best available evidence shows that G20 compliance on all subjects increases when the commitment uses highly politically binding language (+6%) and when a ministerial meeting on the same subject is held during the summit year (+3%) (Rapson 2020). Compliance is lowered when the commitment identifies a specific date (–10%) or refers to developing countries (–7%).

Thus, it is worth assessing whether the G20's commitments that fully, partially or do not match T20 recommendations contain proven compliance catalysts. It is promising that the 2021 Italian Presidency has planned 14 ministerial meetings, which should provide a small boost to compliance with Riyadh's T20-enriched commitments. This applies specifically to the T20's investment on climate change, the environment, trade, health and, especially, development (on which two meetings are scheduled). However, there is no scheduled ministerial

meeting dedicated to digitalization, unless the one for innovation and research will focus fully on this subject. Nevertheless, these six subjects, which historically have below-average compliance, need much more than the 3% boost a ministerial could give.

ENGAGEMENT GROUP RECOMMENDATIONS

The Global Solutions Initiative and G20 Research Group (2020) evaluated 20 of the 357 recommendations produced by all seven engagement groups in 2020. Special emphasis was placed on the trilogy of COVID-19, climate and connectivity, comprehensive coverage of most of the issues on the Riyadh Summit agenda, and a balance across the engagement groups.

Of the top 20 "synthesis solutions" emerging from this evaluation, seven (35%) were fully realized, none were partially realized and 13 were not realized at all in the Riyadh commitments. International taxation, gender, health, crime and corruption, and food and agriculture all had a 100% match. Next came development with only 20%. No other issue matched at all. The overall degree of full match is 37% – considerably higher than the 19% full match for the 134 recommendations from the T20 alone.

Both the synthesis solutions' 37% match and the T20 recommendations' 37% are lower than the 46% found during the 2019 Osaka Presidency but higher than the 2018 Buenos Aires (24%) and 2017 Hamburg (25%) Presidencies. Because the synthesis solutions were often backed by more than one engagement group, they might have been more influential than the T20-only recommendations, which appears to be the case with the fully matched recommendations. This suggests the value of the T20's close cooperation with other engagement groups from the start to increase its investment impact. The positive contributions of expert knowledge to the G20 might also be enhanced by producing fewer, more targeted recommendations that are widely supported by engagement groups.

COMPLIANCE WITH OSAKA COMMITMENTS

A look at the G20's compliance with commitments that realize the T20's recommendations for the 2019 Osaka Summit offers another indication of how influential the T20's 2020 recommendations will be. Of the 2019 T20's 108 recommendations, 50 (46%) partially or fully matched the leaders' commitments (Tops and Hou 2020). Across various subjects, 18 recommendations matched fully, and 32 recommendations matched partially.

G20 compliance with the assessed commitments that fully matched the 2019 T20 recommendations was slightly higher than commitments without a match. Eight of the 19 assessed commitments fully matched one or more of the 2019 T20 recommendations. These were on trade, labor and employment, gender, development, health, climate change, and the environment, with a weighted average of 77% compliance (Tops and Hou 2020; Lopez and Popova 2020).

Five commitments – on trade, infrastructure, development, climate change and terrorism – matched partially and averaged 72% compliance. The six commitments with no match – on macroeconomic policy (two commitments), digitalization, financial regulation, crime and corruption, and health – also averaged 72% compliance.

NEXT STEPS

The G20 Research Group's assessment of the G20's compliance with 20 priority commitments made at the Riyadh Summit is in progress, so it is not yet possible to assess the actual impact of the T20's recommendations. As in previous years, an analysis of compliance produced just before the G20's Rome Summit in October 2021 will show whether priority G20 commitments backed by T20 recommendations result in higher compliance (Tops and Hou 2020; Warren 2018; Kirton and Warren 2017).

»Of the T20's 134 G20 recommendations, 50 were realized in the Riyadh Summit commitments.«

Of the 20 Riyadh commitments being assessed for compliance, nine fully match at least one 2020 T20 recommendation and synthesis solution. These commitments are on macroeconomic policy, trade, labor and employment, development, environment, climate change, digital economy, and health. The next task is to see if the weighted average of compliance of those commitments exceeds the six partly matched ones and whether either exceeds the three non-matched commitments. If this is the case, it will suggest that the T20 is influential, as its recommendations are realized in commitments that G20 members comply with more than those not backed by the T20.

This article offers promising evidence to suggest that the T20 does influence the G20 summit's work and thus that the heavy investment by think tanks in and through the T20 has an impact on this important centre of global governance. This article helps build an analytical and empirical foundation to improve the T20 process and enhance that influence. It also contributes to a growing data set to identify how G20 governors can improve their compliance with their commitments through the selective use of proven, low-cost accountability measures.

One key factor worth further research is assessing the quality or ambition of the recommendations made by the T20 and other engagement groups and the commitments made by the G20 leaders, the extent to which they listen to engagement group recommendations, and whether recommendations that find purchase have high or low ambition. But even if less ambitious T20 recommendations are more readily realized in G20 commitments, are they still worth the effort to produce them?

The T20 made an unprecedented 134 recommendations to the leaders to adopt at Riyadh. Many referred to specific multilateral mechanisms with multi-stakeholder arrangements. Further research would signal to the G20 that aligning its commitments more closely with non-state actors could improve compliance, ensuring that the G20 is governing in ways that mobilize the expertise of those working on these issues daily. Such research could confirm the view that the engagement groups, if given access to appropriate information, provide credible and informed independent evaluation of G20 policies, given the T20's constructive role in informing policy implementation (Hilbrich and Schwab 2018). The

T20, with its analytical capacity and diversity, can also provide accountability, support for G20 decision-making processes, ability to identify governance gaps and suggest new policy solutions (Lombardi and St. Amand 2015). Thus, the T20 and other engagement groups could play a more central and supportive role in magnifying the G20's strengths and impact as a plurilateral summit institution. At the international level, leaders at their G20 summits have their own executive branch in the form of the International Monetary Fund, World Bank, Financial Stability Board and G20 Infrastructure Hub, with constant informal help from the United Nations and the Organisation for Economic Co-operation and Development. But to meet the needs of legislatures and judiciaries back home, the engagement groups are the only equivalents.

[1] The methodology is set out by Julia Tops and Angela Min Yi Hou (2020, Appendix A). It draws on work by Kirton et al. (2019) and Kirton and Warren (2021).

[2] The G20 Research Group and Center for International Institutions Research have been monitoring G20 compliance since the 2008 Washington Summit. Reports are available at http://www.g20.utoronto.ca/compliance

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APPENDIX A: 2020 T20 RECOMMENDATIONS BY ISSUE AND THEME

		Fully realized (26)				Partially realized (24)				Not realized (84)			
		Theme				Theme				Theme			
Issue	Total	1	2	3	4	1	2	3	4	1	2	3	4
ICT/Digitalization	20	1			3				2				14
Climate change	18		3				3			1	11		
Environment	15		2				4				5	3	1
Trade	13			1	1	2			1	5		2	1
Development	11	2								4	4	1	
Health	10	5				2				3			
International cooperation	9							1		8			
Labor and employment	8	1	2			2				3			
Infrastructure	6	3				1	1			1			
Energy	5						1				4		
Macroeconomic policy	5	1				1				1	2		
Education	4									4			
Migration and refugees	3									3			
Financial regulation	2					2							
Food and agriculture	2			1								1	
Gender	1									1			
IFI reform	1									1			
International taxation	1						1						
Total per theme	134	13	7	2	4	10	10	1	3	35	26	7	16

Note: ICT = information and communications technologies; IFI = international financial institutions.

Themes refer to the 2020 Riyadh Summit themes of 1) Global Preparedness for Shared Emergencies, 2) Social Cohesion and the State, 3) Sustainable Resources and 4) Harnessing the Potential of Digital Technologies.

APPENDIX B: T20 2020 RECOMMENDATIONS MADE AND REALIZED

Issue	Number of T20 recommendations	Number of recommendations realized in G20 commitments (proportion)	Degree of match (average)	G20 overall compliance with similar commitments 2008–2019
Climate change	18	6 (33%)	–0.56 (22%)	69%
Development	11	2 (18%)	–0.81 (10%)	67%
Education	4	0 (0%)	–1.00 (0%)	––
Energy	5	1 (20%)	–0.80 (10%)	70%
Environment	15	6 (43%)	–0.43 (29%)	57%
Financial regulation	2	2 (67%)	–0.44 (28%)	76%
Food and agriculture	2	1 (50%)	+0.50 (75%)	73%
Gender	1	0 (0%)	0 (50%)	61%
Health	10	7 (70%)	–0.60 (20%)	67%
ICT/digitalization	20	6 (30%)	–0.33 (34%)	62%
IFI reform	1	0 (0%)	+0.20 (60%	68%
Infrastructure	6	5 (83%)	+0.33 (67%)	91%
International cooperation	9	1 (11%)	–0.89 (6%)	58%
International taxation	1	1 (100%)	0 (50%)	–
Labor and employment	8	5 (63%)	0 (50%)	76%
Macroeconomic policy	5	2 (40%)	+0.40 (70%)	81%
Migration and refugees	3	0 (0%)	–1.00 (0%)	74%
Trade	13	5 (38%)	–0.45 (28%)	66%
Total/Average	134	50 (37%)	–0.31 (19%)	–

Notes:

ICT = information and communications technologies; IFI = international financial institutions.

This table shows the recommendations made by the T20 in 2020 to the G20 in the lead-up to their Riyadh Summit, by thematic area. It shows the number and percentage of recommendations realized in the official documents produced in the leaders' name at the Riyadh Summit. It also shows the average score for the degree of match or the average score of the recommendations realized assessed on a three-point scale of +1, 0 or –1.

For example, five (38%) of the 13 recommendations on trade were fully or partially realized in the G20's commitments. Three were partially realized (0), two were fully realized (+1) and eight were not realized (–1), for an average of –0.45 (28%). The score is converted to a percentage by adding 1 to the average, dividing by 2 and multiplying by 100.

Degree of match: If all components of the recommendation were realized in one or more commitments, the recommendation received a score of +1 for a full match. If at least one but not all components of the commitment matched with one or more commitments, the recommendation received a score of 0 for a partial match. If no components of the recommendation matched any commitment, the recommendation received a score of –1 for no match.

APPENDIX C: THINK 20 INVESTMENT IMPACT INDEX 2020

Subject	Number of recommendations	Percentage of recommendations	Commitment match (partial/full)	Inherited compliance	Impact index	Investment impact
Digitization	20	15.0	30%	62%	18.6	2.79
Climate	18	13.4	33%	69%	22.8	3.05
Environment	14	10.4	43%	57%	24.5	2.54
Trade	13	9.7	38%	66%	25.1	2.33
Development	11	8.2	17%	67%	11.4	0.22
Health	10	7.5	20%	67%	13.4	1.01
Top 6 Total	86	64%	30%	65%	19.5	12.5
International cooperation	9	6.7	11%	58%	06.4	0.43
Labor and employment	8	5.9	63%	76%	47.9	2.82
Macroeconomics	5	3.7	40%	81%	32.4	1.20
Energy	5	3.7	10%	70%	7.0	0.26

We need a global vaccination strategy

Recent debates are too one-sided. Immunization strategies can't stop at borders.

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Institution:

FRIEDRICH EBERT STIFTUNG

The Friedrich-Ebert-Stiftung (FES) is the oldest political foundation in Germany, with a rich tradition in social democracy that dates back to its founding in 1925. Our work is devoted to the core ideas and values of social democracy – freedom, justice, and solidarity. This is the mandate the foundation has adopted in its programmes for political education, international cooperation as well as scholarship programmes and research. And this connects us to social democrats and free trade unions. The Friedrich-Ebert-Stiftung maintains its own representations in over 100 countries of Africa, Asia, the Middle East, Latin America, Europe and North America

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Keywords:
relaxation of patent protection, public health, privileges

COVID-19 is a global problem, and therefore can only be solved at the global level. While the recent debates in Germany and the European Union have mainly focused on local vaccine distribution, an essential element in defeating the pandemic has been overlooked: We need a global immunization strategy.

At the moment, we are still far from having an efficient and comprehensive global vaccination strategy. The world is in danger of splitting into two vaccination camps. One is the camp of industrialized countries in which a small portion of the world's population has secured the bulk of the vaccine. A camp in which – despite all difficulties – the economy is showing signs of recovery, travel corridors are being created and the social recovery of exhausted societies can begin. And another camp lacking a sufficient amount of vaccines. Here, the pandemic weakens already fragile health systems even further in their fight against other diseases while the pandemic's indirect consequences are particularly threatening, since many people work and live without any social security.

Health is a global public good and a human right. Once again, however, it is clear that the task of securing public health cannot be entrusted to the unequal power relations of the market. It is not only inhuman but also dysfunctional when money and power decide who gets vaccinated first and who gets vaccinated last. The mantra that has been circulating since the border closures last year is as true as ever: Viruses do not respect borders. If certain countries and regions do not receive vaccines, mutations will spread, undermining existing vaccine protection and further restricting the lives of all.

The COVID-19 Vaccine Global Access Initiative (COVAX) launched by the WHO aims to ensure access to vaccines to low- and middle-income countries that cannot afford them on their own. This is a correct and important initiative, but it has gotten off to a very slow start. At the G7 meeting in February, additional funding for COVAX was pledged once again by the EU and Germany, among others. Nevertheless, a funding gap of USD 22 billion remains. The member states did not move swiftly enough to support the initiative with adequate funding, while individual countries had already signed contracts with pharmaceutical companies. Almost all of the OECD countries have procured more doses than their populations need. Now, the massive production bottlenecks mean that COVAX, like other latecomer countries, is finding it difficult to mobilize vaccines.

»Health is a global public good and a human right.«

At the same time, the geopolitical implications are becoming apparent. Russia and China, in particular, have already begun to engage in "vaccine diplomacy." Both countries already began to produce and export vaccines before the final test results of the crucial phase 3 trials became available. Since then, China, itself a member of COVAX, has entered into bilateral agreements with countries in Latin America, Africa and Southeast Asia, offering loans for the purchase of vaccines. Even the EU state Hungary, bypassing the

approval procedure of the European Medicines Agency (EMA), has recently joined Serbia in approving Russian and Chinese vaccines. These arrangements ensure that the countries in question get the necessary vaccines, while China and Russia enhance their reputations and political influence. Therefore, the European Union has an urgent geopolitical interest in finally implementing a functioning global vaccination strategy.

For this to work, it must address financing, production and distribution.

COVAX's funding gap must be closed so that the initiative can distribute the missing two billion vaccine doses to 92 low- and middle-income countries.

At the same time, we must work with these countries to rapidly build infrastructure that will enable that the vaccine is distributed promptly.

Finally, whether pharmaceutical companies should waive patent protection, at least temporarily, and pass on the technical knowledge required to produce vaccines must be opened up to discussion.

The relaxation of patent protection for HIV drugs twenty years ago has saved many lives in the fight against AIDS. If patent protection is removed, prices will fall and COVAX will need less money to fund vaccines on the scale required. Whether the voluntary licensing system favored by the industrialized countries is adequate must be carefully examined as a matter of urgency. Priority can be given to voluntariness, but if this is not sufficient, temporary relaxations of patent protection must be considered.

At a time when fundamental rights of individual citizens are being restricted worldwide, patent protection cannot be treated as sacrosanct, especially in view of the fact that the development of the vaccines has also been supported with billions in public funds. Germany's constitution, the Basic Law, states under Article 14, paragraph 2: "Property entails obligations. Its use shall also serve the public good." This appeal to the primacy of the public good not only applies to us in Germany, but certainly throughout the world in this pandemic.

The pandemic has already taught us that health must not be a privilege.

Access to high quality healthcare for all human beings is a key element in the sustainable improvement of health worldwide. This calls for a well-trained and well-paid healthcare workforce, a comprehensive basic social safety net and a strong system of public funding and organization of research and production. Countries that lack sufficient resources to build a healthcare system on their own must receive support through funds to establish basic health protection. Furthermore, good development cooperation can enable both state and civil society actors to guarantee adequate healthcare.

The new geopolitics of global health

The two types of vaccine diplomacy

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WORLD HEALTH SUMMIT

The World Health Summit is one of the world's most important strategic forums for global health. Held annually in Berlin, it brings together leaders from politics, science and medicine, the private sector, and civil society to set the agenda for a healthier future. The World Health Summit was founded in 2009, on the occasion of the 300th anniversary of Charité.

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Keywords:
global health, vaccine diplomacy, geopolitics

The discussion on how well democracies are dealing with COVID-19 now has a new dimension: The cracks that the pandemic has revealed in some Western democracies could well have more serious geopolitical consequences, as this combines with vaccine nationalism. At present we can watch the decoupling of global health in real time as we experience two types of vaccine diplomacy: one with the aim to establish solidarity and equity and the other to gain geopolitical advantage.

The multilateral system – especially the World Health Organization – worked quickly in early 2020 with other key actors. It brought together organizations involved in global vaccine programs, such as GAVI, CEPI, the Bill & Melinda Gates Foundation, the GFATM and others, with strong political support from the European Union, to establish the ACT Accelerator and within that the COVAX facility. The aim was to bring vaccines to the poorest countries and to pool procurement. While the exact modalities were being negotiated, the first vaccines became available at the end of 2020, much sooner than expected. This opened a race for vaccines and a situation where vaccine nationalism and then geopolitics eclipsed global solidarity. Not only has vaccination become highly politicized,

so have the vaccines themselves, as Western vaccines have been juxtaposed against vaccines developed in Russia, China, India, and soon also other places.

»At present we can watch the decoupling of global health in real time as we experience two types of vaccine diplomacy: one with the aim to establish solidarity and equity and the other to gain geopolitical advantage.«

Former US President Donald Trump's exit from multilateralism put dynamics in motion that weighed on COVAX, as the US had refused to join the initiative. To this day, COVAX has not received the full funding required to fulfil its mission, even though the US has now joined and will contribute USD 4 billion. It has also been hampered by the delivery deals made directly between companies and countries (some of them COVAX members), so that it faces shortages of supply. While WHO called for solidarity to embark on the largest vaccine roll-out in history, we face a situation where 16% of the world's population has secured 70% of the available doses. The aim of COVAX is to immunize 20% of people in each country – giving priority to health workers and the most vulnerable.

As we watch the vaccine nationalism of many Western democracies, an approach driven by domestic concerns and pending elections, we see a parallel rise in geopolitically driven vaccine diplomacy by countries such as China, India, and Russia. Israel's prime minister, in a unilateral move, prepared to send surplus vaccines to "allied nations" while the neighboring Palestinian territories struggled to secure vaccine supplies. The move to share vaccines for political gain overshadows the approach of many rich countries to provide money to COVAX to supply vaccines, because it provides high visibility in the receiving countries. Before COVAX could deliver the first vaccines to Ghana at the end of February, India had delivered nearly 6.8 million free vaccines around the world.

India, China and Russia are framing their bilateral geopolitical gifts as "global public goods," which they are willing to share or sell at reasonable prices in comparison to others. There is much talk of the new cold war being played out over vaccine diplomacy – who has access to vaccines and who does not, who shares and provides vaccines and who does not, who shares patents and supports production and who does not. India's foreign minister describes his country's vaccine diplomacy as "Acting East. Acting fast." China is redirecting its action along its "Health Silk Road" to fit with the pandemic, and at the

multilateral level is calling for a "community of common health."

»As we watch the vaccine nationalism of many Western democracies, an approach driven by domestic concerns and pending elections, we see a parallel rise in geopolitically driven vaccine diplomacy by countries such as China, India, and Russia.«

Geopolitical visibility is clearly better achieved by this type of information systems management of geopolitical vaccine diplomacy. COVID has given India the opportunity to pursue its geopolitical aspirations by engaging in a "soft power" vaccine race with China. India targeted Myanmar and Sri Lanka, where China also has a strong interest, but India was able to deliver the vaccines first. India also positioned itself as a solidaric global actor by joining COVAX and putting forward a joint proposal with South Africa at the WTO for a TRIPS waiver on intellectual property during the pandemic for COVID vaccines, drugs, and diagnostics. There was strong opposition to such a move from Western countries, leading the WHO Director General Dr. Tedros Adhanom Ghebreyesus to state: If not now, when? Indeed, if the world does not act together in the face of a major pandemic, what hope remains for multilateralism?

But geopolitical approaches have also faced problems. There are increasing signs that the Chinese Sinovac and Sinopharm vaccines are less effective than hoped. In late March, the growing infection rates led India to change track and prioritize the vaccination of its own citizens. It has severely curtailed exports of COVID-19 vaccines, which means a setback for vaccination – also through COVAX – in many other countries. Domestic pressures have also made it difficult for Western democracies to balance domestic and geopolitical goals as their vaccination rates are compared to other countries in a global "vaccination race." The question that requires exploration is how these constraints play out short and long term in foreign policy. For the EU or countries like Germany, support for the "global public good" takes the form of providing significant funding to COVAX – the G7 again pledging high amounts – but not sharing vaccines. Countries might have bought many more vaccines than they need for their populations – for instance, Canada, seven-fold – but some are finding it difficult to obtain enough doses and then distribute them at home. Worldwide production and delivery constraints translate into political constraints. Germany, for

example, needs to respond to high expectations "at home," including the refusal of citizens to be inoculated with vaccines that they consider second best or dangerous.

But the impact on regional geopolitics can be significant if domestic and foreign strategies are not aligned. The US has promised to first inoculate 80% of its population (in early April 35.3 percent of the US population had received at least one dose of the vaccine, and 21.3 percent had been fully vaccinated) before sending any doses abroad, even though the South American neighbors in their own backyard need them desperately. Mexico started vaccinating early, but since it does not have enough Pfizer-BioNTech vaccine, it has reached out to Russia for the Sputnik V vaccine. Mexico has also made a plea at the UN Security Council for countries to stop hoarding vaccines. Only recently has the US indicated it would "lend" 4 million doses to its neighbors Canada and Mexico. The gift to the latter is linked to controlling migrants at the US-Mexico border. In contrast, Canadians in Toronto have put up billboards thanking India and its Prime Minister Narendra Modi after receiving COVID-19 vaccines, hailing "Long live India-Canada friendship."

Argentina and Bolivia are also vaccinating with Russia's Sputnik V; Chile began inoculating in February with 4 million doses of China's Sinovac vaccine and Peruvians and Brazilians will have access to millions of doses of Sinovac's CoronaVac. Both Russia and China talk the language of global solidarity, speaking of a "vaccine for all humankind," or "people's vaccines," although denying any geopolitical intent. Their vaccines also use more traditional methods, which allows them to rapidly share technology and for the vaccines to be applied more easily. Brazil will be producing China's Sinovac, as well as Sputnik V.

What has not been discussed sufficiently with regard to the "vaccine cold war" is that systems competition – democracy vs autocracy – is being played out geopolitically using vaccines. In this new game, democracies must show they function at home and abroad – and many of the largest Western economies are not delivering on either front. Their domestic problems are hampering their foreign policies. Their contradictions in ordering large amounts of vaccines on the one hand and supporting multilateralism and COVAX on the other does not play out well in the global arena, especially if no vaccines are seen on the ground in the world's poorest countries. The EU has declared that it is lagging in combating the virus at home and that it was "too optimistic" about the mass production of the vaccine – so they see no option to share. Even so, over 40% of the vaccines produced in the EU have been exported, but mainly to other high income countries.

Asian democracies, such as Taiwan and South Korea, have dealt well with the pandemic at home, but aside from India and Japan, none of them have large geopolitical aspirations or the ability – through production facilities – to share vaccines. Japan has voiced its concerns over growing vaccine nationalism because it is on the receiving end. Like Europe, it has neglected to build production capacity and relied on global supply chains. As a consequence, vaccine diplomacy became the centerpiece of the so-called Quad Summit in March 2021, which brought together India, the US, Japan and Australia to expand

global vaccine manufacturing capacity. They agreed to provide India with the financial support to produce 1 billion doses of coronavirus vaccines by the end of 2022. The focus of vaccine diplomacy in an Indo-Pacific framework is clearly a pushback against China and a test of the UK's stated intention for its G7 Presidency in 2021 to build a major alliance between the world's key democracies, and subsequent invitation to India to join the G7 meeting.

»The world's democracies have a unique chance now to show that democracies can deliver global solidarity through vaccine diplomacy.«

Europe, which had initially during the Trump years been a great supporter of global health initiatives, has not done well recently "at home." Indeed, many European countries are close to fighting a third wave and the European Union is having great difficulties ensuring a joint approach to vaccines. Despite having invested significantly into vaccine research, it too is faced with a lack of production capacity and, according to some, bad deals with the manufacturers. Political considerations make it difficult to seek contracts for Chinese or Russian vaccines, reflecting the tragedy that even solutions have become politicized. Some European countries have announced donations of vaccines once their own population is well-covered. But the slow distribution within Europe (and to its neighbors) is also providing inroads for others: China has provided vaccines for Serbia and – a first in the European Union – for Hungary. French President Emmanuel Macron has recognized the geopolitical dimensions of this development and has called on Europe and the US to urgently allocate up to 5% of their current vaccine supplies to developing countries.

Yet it not does not end there. Many countries around the world have been amazed at how badly most Western democracies have handled the pandemic at home. In their hubris, Western democracies were not even willing to learn from Asian democracies. Standard public health strategies were decried as belonging to the arsenal of autocratic regimes, implying that if such measures were applied, democracy would suffer and freedom would come to an end. Indeed, some politicians, media and populist movements in Western democracies were quick to speak of a "corona dictatorship." Democratic countries like Australia, New Zealand and Taiwan had to rub their eyes at such statements. Even a serious think tank like the Economist Intelligence Unit was, in its "Index of Democracies," quick to equate a temporary reduction of individual freedoms of movement with a decline in democracy. It did not give much space to other measures that are considered a strength of Western democracies, such as universal health coverage and significant financial support through welfare state measures.

So, in the present political climate Western democracies are facing trouble on two counts in terms of world-wide system competition. First, their response to the pandemic at home does not yet show any systems advantage. There is no way at this stage, over one year after the declaration of a PHEIC by the WHO, that we can say that democracies generally handled the pandemic better than autocratic states. The factors for success lie elsewhere – next to public health measures, "community spirit" increasingly seems to be a catalyst for success, meaning showing responsibility for one another. It is mentioned by New Zealand, Vietnam, Singapore, Taiwan, and others. In some Western democracies, this was derided as a "collectivist" way of thinking more typical of Asia than Europe. The extreme individualism that has developed in some Western democracies is probably not the right mindset to prepare for the pandemic decade that lies ahead. And the arrogance towards Asian countries will surely be remembered.

Secondly, the lack of concern for other parts of the world will be remembered – especially if it continues. A greater commitment to COVAX from the start might have been able to tip the balance for a vaccine diplomacy committed to solidarity rather than geopolitical interest. But the signal by Western democracies – despite the funding they provided to COVAX and the WHO – to the rest of the world was and remains: "us first". Our lives are worth more than yours. There was no major attempt to explain to the populations in Western democracies why a different type of sharing globally was necessary and what a miracle it was to already have a range of vaccines in such a short period of time. The self-destructive bashing of the EU and individual countries because they were not as speedy as the outlier Israel in providing their own populations with vaccines has not helped at home and abroad. This sense of entitlement has reached new heights, with citizens declining to be vaccinated if the vaccine of their choice is not available.

Is a turn-around possible? The calls for an urgent and massive global solidarity effort are getting louder. The "geopolitical" European Union has not fulfilled its promise as a global leader and the UN system is starved of funds. Could there be a chance here for the United States to apply lessons from a past initiative PEPFAR in 2003 when it helped (also for geopolitical reasons following the Iraq war) to address another global pandemic: HIV/AIDS? Some US commentators* are urging the Biden administration to embark on an "all out mobilization" and lead a multi-lateral, whole-of-society effort to help COVAX and WHO vaccinate the world. In doing so it would invigorate a new pragmatic multilateralism. Indeed the US President has now appointed a coordinator for global vaccine diplomacy. The European Union – true to its regulatory DNA – is calling for a global pandemic treaty; this is now supported by 23 heads of state in a recent letter. A treaty is indeed important for the long term. But the political trust must be built now. The world's democracies have a unique chance now to show that democracies can deliver global solidarity through vaccine diplomacy.

GAVI: the global Vaccine Alliance

CEPI: the Coalition for Epidemic Preparedness Innovations

BMGF: The Bill and Melinda Gates Foundation

GFATM: The Global Fund to Fight AIDS, Tuberculosis and Malaria

ACT Accelerator : The Access to COVID-19 Tools (ACT) Accelerator

COVAX: the COVAX Facility, a global risk-sharing mechanism for pooled procurement and equitable distribution of COVID-19 vaccines.

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The G20's climate, health and science synergies

Climate and health are the most critical issues for the global community and G20 this year and beyond.

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G20 RESEARCH GROUP

The G20 Research Group is a global network of scholars, students and professionals in the academic, research, business, non-governmental and other communities who follow the work of the G20 leaders, finance ministers and central bank governors, and other G20 institutions. Its mission is to serve as the world's leading independent source of information and analysis on the G20. As scholars, we accurately describe, explain and interpret what the G20 and its members do.

INTRODUCTION: THE CENTRAL CONNECTED CLIMATE-HEALTH CHALLENGES

Climate change and human health amid COVID-19 are the most critical issues for the global community and for the Group of 20 (G20) governors this year and beyond. The two subjects are integrally linked (Kickbusch and Kirton 2020). A shared respect for science is necessary to solve them in the political world.

G20 summits have increasingly acted on both climate and health, but have rarely done so in a synergistic way. They have relied increasingly on science to guide them in their work, but only contextually in their communiqué conclusions and not in the commitments themselves. Still, invoking science correlates with higher compliance with the G20's climate and health commitments. The Think 20 (T20) engagement group has mostly shared this siloed approach and scientific silence in its work on climate and health.

In 2021, Italy's G20 Summit priorities of "People, Planet and Prosperity" present a promising pathway to forge the needed scientifically based climate-health synergies. To help, the T20's task force on climate change, clean energy and the environment should work continuously with its task force on health, and with the Science 20 (S20) and Urban 20 (U20). They should explicitly ground their recommendations in science and emphasize climate-health co-benefits. By engaging with the scientific and academic community directly and through the T20, the G20 can improve its compliance.

G20 SUMMIT GOVERNANCE OF CLIMATE CHANGE, 2008–2020

Since 2008, the G20's attention to climate change has risen in both the number of words on the subject in its communiqués and in its commitments. Yet overall attention to climate change relative to other subjects puts it in 12th place in both communiqué conclusions and commitments. The G20 has dedicated 11,083 words to climate change and has made 94 such commitments (Warren 2020). Within the

»The major challenge to the G20's success on climate change is thus bridging the North-South divide and coming to a common but ambitious agreement for climate action. Here conclusions and commitments with clear, scientifically supported climate-health co-benefits can help.«

communiqué conclusions the G20 has made one climate-health link, at the 2015 Antalya Summit. It recognized the impact of climate change on nutrition and food insecurities and the need to increase agricultural productivity while building sustainable food systems. In its commitments, the G20 made no climate-health link or reference to science.

Still, the G20's compliance with its climate commitments has indirect health benefits, such as reducing air pollution and minimizing the spread of infectious diseases by preventing further global heating.

Compliance with the 37 assessed climate commitments averages 69%, slightly below the subject average of 71%. In consideration of the growing need to reverse climate change to avoid the worst outcomes that science predicts, this is alarmingly low. An analysis by subject and synergies reveals the G20's priorities, areas of easier consensus between the group's North and South countries, and gaps where synergies can be enhanced to secure co-benefits for climate and health.

Commitments referencing the principle of common but differentiated responsibilities (CBDR) or to sustainable development have the highest compliance, of 91% and 88%, respectively. Those on technological solutions to climate change average 79%. Those on economic or green growth average 73%. Those on adaptation or resilience average 72%. Those on extreme weather and natural disasters, smart cities, and international law average 70% each.

Coming below the overall average of 69%, are commitments on mitigation, and financing and green investments at 67% each. This is followed by those promoting democratic values, i.e. transparency, and those on forests, at 65% each. Next are those on promoting globalization for all, such as inclusion and poverty, with 55%. And last are those that reference low-emissions energy and jobs, with 46% and 13%, respectively.

Thus, the G20's synergistic priorities lie in its BRICS members' (Brazil, Russia, India, China and South Africa) priorities of differentiated responsibilities, development and adaptation, as well as a preference for technical solutions to the climate crisis and the collective club's foundational priority of economic growth. Almost absent are nature-based solutions, which readily provide many co-benefits.

G20 GOVERNANCE OF HEALTH, 2008–2020

On health, the G20's deliberations and decisions also rank low, coming 13th right behind climate change. Health has 10,606 words and 89 commitments (Byrd 2020). It shares the same communiqué-recognized link between climate and nutrition. It adds a general environmental link between antimicrobial resistance (AMR) and public health. This first appeared at the 2017 Hamburg Summit led by German Chancellor Angela Merkel, a host with an education in physics and chemistry. At Riyadh in 2020, the G20 stated it would safeguard the planet and build a more environmentally sustainable and inclusive future for all, as the world recovered from the pandemic. It made no direct link to a green or low-emissions recovery. There were a few references to science.

The 15 health commitments assessed for compliance average 61%. Five made links to other issues. One was to "improv[e]…understanding of the issue of

antimicrobials in the environment" with 35%. Three linked the G20's "globalization for all" mission with references to the affordability of antimicrobials and to inclusive societies, with 58%. The last was to the G20's mission to promote economic growth. It sought to reduce global health risks, such as AMR, infectious disease threats and weak health systems and their adverse impacts on the global economy, with 70%. The weighted average of these three scores is 54%.

»A synergistic sweet spot of cooperation between the industrialized and non-industrialized members of the G20 is promoting a combination of over-represented technology and underrepresented nature.«

These findings are consistent with those on climate change that show the G20's compliance is higher with its commitments that link to the economy and lower with those that link to equity or inclusion. It reveals a gap on climate-health synergies.

The average of the remaining, all siloed commitments, on Ebola, AMR, active ageing, universal healthcare and public health preparedness, is 71%. The siloed health commitments thus had higher compliance than the synergistic ones.

SCIENCE SILENCED

A wealth of authoritative evidence from leading scientific sources confirms the escalating threat of climate change, biodiversity loss and human disease, and the many co-benefits from addressing them in a synergistic way (IPCC 2018; IPBES 2019; Kirton and Warren 2020). However, G20 leaders have been silent on science in their climate commitments and have only recently done better contextually in their broader climate conclusions (see Appendix A). In these conclusions they have made 20 science references, but none at six of their 15 summits.

These communiqué references to climate-relevant science[1] seem to have a powerful effect in increasing members' subsequent compliance with their climate commitments. The nine summits with communiqué science references averaged 78% compliance with their climate commitments, compared to only 55% compliance for those without a science reference. Thus, invoking science correlates with a strong increase in compliance of 23%. A reference to the Intergovernmental Panel on Climate Change seems to have the most consistent compliance-increasing effect.

In the field of health, there are also 20 science references at six summits (see Appendix B). They started with research on Ebola in 2014, adding AMR research from 2016 to 2019 and then COVID-19 research in 2020. Thus, science has been

on the G20 agenda since the start of its health governance in 2014, and for every year after, with the exception of the 2015 Antalya Summit. Compliance with health commitments from Antalya average 65% compared with the remaining summits' commitments with a science reference at 60%. However, the three summits with the most communiqué references to science, those from 2017 to 2019 with four each, also averaged compliance with their health commitments of 65%. Moreover, the G20's virtual emergency summit on March 26, 2020, had interim compliance of 65%, a mere two months after the summit, and where there were three references to science in the communiqué.

Many things can cause compliance, such as the hosting effect, surrounding summit support or failure, and ministerial meetings. Yet in the majority of cases the direction is fairly consistent and at first glance shows an intriguingly suggestive correlative pattern between science references and compliance.

THINK 20 2020 CLIMATE-HEALTH RECOMMENDATIONS: SILOS, SYNERGIES, SCIENCE

The G20 engagement groups do little better on forging climate-health synergies and invoking science. As an analytic rather than advocacy group, covering all subjects, the Think 20 should do best. But it largely shares this siloed, silent science approach of the G20 leaders themselves. However, the data revealed a key area of potential collaboration to promote climate-health synergies.

In 2020, the T20 presented to the G20 leaders at their Riyadh Summit 134 recommendations across several subjects. Of these, only three referenced science. One was a recommendation to increase women's participation in science. It made no climate or health link. One made an environment-climate-science link by calling on the G20 leaders to "provide stewardship for ocean science…by…creating a standalone G20 working group on the blue carbon economy." It thus linked to the economy too. And one made a climate-health link with a recommendation to increase financial support for research on climate-resilient seed development for nutrient rich food.

On climate change the T20 made 18 recommendations. On health it made 10.

Three of the 18 climate recommendations, or 17%, linked to other subjects. These were to economic growth, environmental education, biodiversity and the 2030 Agenda Sustainable Development Goals (SDGs). Four of the 10 health recommendations, or 40%, linked to other subjects. Two were to the familiar economic growth and one was to the SDGs. The other was to health as a "fundamental human right."

Three other recommendations came under subjects that are sources of climate change and were explicitly linked to health. The first, on energy, the T20 recommended establishing a task force on post-COVID-19 sustainable energy transitions whose mandate should include reducing in G20 countries ambient air pollution to levels "deemed by the World Health Organization (WHO) to be safe for human health and reduce deaths associated with COVID-19." The second, on biodiversity, was to establish an oceans fund to "preserve marine biodiversity and ocean and associated human health." The third, on food and agriculture, was the one referenced above on

science that called for more research on climate-resilience seed development for the production of nutrient-rich foods.

Thus, the one T20 recommendation that linked science and health (in the form of nutrition) and climate change was anchored in the agriculture and food systems sector. This has also appeared on the G20's agenda, starting in 2015. This suggests climate-health-agriculture is a key nexus point for the T20 to influence the G20's agenda.

RECOMMENDATIONS

Based on this study, there are several key recommendations the T20 and G20 can take up.

The T20 task forces on climate change and health should immediately start working together and secure the needed natural science expertise to produce their recommendations in the smartest, most persuasive, broadly beneficial way. They should also partner with the S20 and U20 to forge joint scientifically based, synergistic climate-health recommendations that specify their co-benefits for the G20 Rome Summit and beyond.

The G20 should make more references to science in its climate and health deliberations and extend such references to their commitments, including linking the two subjects to maximize their co-benefits.

The G20 should bridge the North-South divide by promoting nature-based solutions, including the science behind them, to meet global climate goals and the Sustainable Development Goals.

The G20 should advance and deepen its work on the climate-agriculture-health nexus, recognizing the role of industrialized agriculture in creating non-communicable diseases and infectious disease outbreaks and as a leading source of emissions and deforestation. This should include mobilizing international organizations to provide science-based research for an agriculture transition akin to the energy transition. This would add to the existing climate and health science on whole food plant-based diets and chemical-free and diversified crops.

»Together, the T20 and G20 can foster the creation of a dedicated Climate-Environment 20, a Health 20 and a Future Food Systems 20, to work together to integrate and promote the climate-agriculture-health nexus.«

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and promote the climate-agriculture-health nexus.

CONCLUSION

The Paris Agreement (2015) commits Parties to aim "to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production" with the Agreement's preamble affirming that when taking action to address climate change "Parties should consider…the right to health." The 2030 Agenda includes SDG 3 on health and well-being and SDG 13 on climate action. By promoting synergies and the science behind climate change and health the G20 can improve its compliance, to help meet these critical global goals faster by creating co-benefits for all.

[1] Science is defined as natural or physical science, not economic or social science. Inclusions are research and development (R&D), researchers, research institutions, science, science-based, scientific analysis and scientific community. Exclusions are innovation, technology, knowledge, expertise and understanding. Research includes R& D, research development and demonstration (RD&D), and research institutions

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APPENDIX A: G20 CONCLUSIONS ON CLIMATE SCIENCE

Summit	Total	Research	Study	Science	International Organization Report	Intergovernmental Panel on Climate Change	Intergovernmental Panel on Biodiversity and Ecosystem Services	Commitments		Compliance
								Number made	Number assessed	
2008 Washington										
2009 London								3	1	45%
2009 Pittsburgh	1	1						3	1	93%
2010 Toronto	1	1						3	3	72%
2010 Seoul	2	1	1					8	4	64%
2011 Cannes								8	3	58%
2012 Los Cabos	1			1				5	3	79%
2013 St. Petersburg								11	3	42%
2014 Brisbane								7	5	76%
2015 Antalya	1	1						3	1	85%
2016 Hangzhou	1	1						2	2	83%
2017 Hamburg	6	4		1	1			22	5	71%
2018 Buenos Aires	2			1		1		3	2	79%
2019 Osaka	5	1		2		1	1	13	4	74%
2020 Riyadh								3		
Total/ Average	20	10	1	5	1	2	1	94	37	71%

Notes: Blank cells = no data

2020 Riyadh March 26 = no climate commitments were made at the emergency summit

APPENDIX B: G20 CONCLUSIONS ON HEALTH SCIENCE

Summit	Total	Research	Study	Science	International Organization Report	Intergovernmental Panel on Climate Change	Intergovernmental Panel on Biodiversity and Ecosystem Services	Commitments		Compliance
								Number made	Number assessed	
2008 Washington										
2009 London										
2009 Pittsburgh										
2010 Toronto										
2010 Seoul										
2011 Cannes										
2012 Los Cabos										
2013 St. Petersburg										
2014 Brisbane	1	1						33	4	72%
2015 Antalya								2	2	65%
2016 Hangzhou	2	2						3	1	30%
2017 Hamburg	4	4						19	3	66%
2018 Buenos Aires	4	3		1				4	2	64%
2019 Osaka	4	4						14	3	66%
2020 Riyadh	2	2						14		
Total/ Average	17	16		1				89	15	61%
2020 Riyadh March 26	3	1		2				20	7	65%
Total/ Average	20	16		3				119	22	61%

Notes: Blank cells = no data

2020 Riyadh March 26 Compliance = interim score

The Italian Presidency of Urban20

Why it is a great chance for greener and more sustainable cities

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Keywords:
U20, sustainability, big chance for cities, green and just recovery, mutual work

Nowadays, it is no exaggeration to say that we are at a turning point in the history of mankind. The constant menace of climate change, maybe the most extraordinary challenge for the future of man on Earth, is being increased and deepened by the present pandemic.

COVID-19 represents a crisis unprecedented in scale, magnitude and reach, and has exposed the vulnerability of our societies, economy and environment, hitting the hardest the most marginalized. Together with climate change, COVID has unequivocally exposed the interconnected nature of the challenges we face, and the inextricable link between our health and the health of the planet.

Under these dramatically threatening circumstances, 2021 will be a pivotal year, in which the international community will have to show courage and ambition. Present challenges need to be addressed and transformed into an opportunity to build back better and greener, and pave the way for a more sustainable and just future. A sustainable energy transition will be crucial to achieving our climate change objectives and protecting our planet. Seizing the opportunities offered by innovative technological solutions and the alignment of

global financial flows towards a green and sustainable recovery will be key to ensuring prosperity and environmental sustainability, while providing more energy.

We need an equitable health system and environmental justice; one won't be possible without the other.

Cities are on the front line in this ongoing process. In the framework of important international cities fora, in response to the present emergencies, mayors have taken unprecedented measures to protect the well-being of city residents and called upon national and regional governments and financial institutions to further strengthen this process. Mayors worldwide have collectively identified key actions that are critical to achieving our vision of a healthy recovery:

• investing in a green and just recovery by conditioning all the stimulus packages, corporate aid and recovery funds to support low-carbon transition;

• taking action for jobs and an inclusive economy, supporting workers;

• providing fundamental public services for all, investing, subsidizing and supporting affordable zero-emissions mass transit;

• taking action for health and well-being, delivering a safe and resilient post-Covid mass transit system;

• an extended use of digitization which can improve healthcare provision, support green urban development and the intelligent and effective management of energy demand. Digitization will impact decarbonization through several channels, increasing energy efficiency and lowering emissions. It is paramount to discuss how climate policies can be designed to account for and capitalize on the impacts of digitalization on energy use, in an effort to decarbonize while leaving no one behind.

It is necessary to invest in a sustainable, resilient, equitable recovery. Cities shall seize this moment, remembering that the risk of inaction far outweighs the risk of taking action. Mayors are committed to providing the swiftest and strongest recovery for their citizens, reaffirming their adherence to the principles of the Global Green New Deal.

»We are at a turning point in the history of mankind. 2021 will be a pivotal year, in which the international community will have to show courage and ambition.«

This year, in its capacity as G20 Chair, Italy has an unique chance to promote the concept of health as a global public good. Italy will maintain a high level of international commitment to responding to the pandemic and to strengthening health systems, looking at the multiple global challenges that mankind must face with urgency and a sense of responsibility. The Italian

G20 Presidency will focus on the trinomial: People, Planet, Prosperity.

The first pillar – People – indicates that policies should be people-centered. This means addressing the issue of inequalities with determination and protecting the most vulnerable parts of our societies.

In the second pillar, attention to the Planet, Italy will relaunch ambitious commitments to improve energy efficiency, reduce emissions and protect the environment. This implies working effectively at the international level, together with a systemic effort at the national level.

In the third pillar, Prosperity, Italy will examine mainly the challenges posed by the technological revolution, focusing in particular on digitalization.

The message Italy wants to convey is simple: We need to take care of the planet and people with a holistic approach, pursuing the goal of an effective economic recovery that is at the same time inclusive and truly resilient and sustainable.

In 2021, Italy will also be co-chair of COP 26, leading negotiations for a further enforcement of the Paris Agreement, which will especially impact on cities, and re-orienting the global financial flows in the direction of carbon neutrality and the promotion of renewable energy. Moreover, Rome and Milan will co-chair the U20 summit, which will deal with green and just recovery and the possible financing of local initiatives to mend the damage left by the pandemic.

Italy will then be at the core of the fight against climate change. It will carry out these events enhancing the cross-cutting links between climate change and the energy transition, with a special focus on cities, conscious that the collective actions taken in 2021 will very likely shape at least the next decade of climate and energy transition actions.

In this framework, the Presidency of the Urban 20 opens a very wide window of opportunity. The mayors of the U20 want to forge a strategic alliance with national governments to bring about a COVID-19 recovery that is green, just, and runs through cities.

Cities must maintain a high level of international commitment to responding to the pandemic and strengthening health systems. We shall make strong investments in health, economic recovery, environmental sustainability, transport. It is paramount that these investments are made in a forward-looking, strategic way that not only dramatically reduces emissions, but also creates sustainable jobs and improves resilience and equity.

»The presidency of the U20 opens a very wide window of opportunity.«

The Italian Presidency will focus on a strategy for the U20 to ensure a safe, resilient and sustainable recovery from COVID. Together with the conveners and the cities parts of the U20, Italy will focus on a Presidency based on three pillars:

• Recovery must be green: To meet the goals of the Paris Agreement, we need all recovery funding to contribute to delivering ambitious and equitable climate action, investing in public transportation and

reducing our carbon footprint. Cities have ready-made ambitious and equitable climate action plans and, if adequately supported in rolling out bold city-level recovery measures, they can build back better and become states' key allies in achieving their climate and equity goals.

• Recovery must be just: Plans and investments for the recovery should contribute to rebalancing these economic inequalities and creating more equitable and inclusive societies and communities.

• Recovery must be city-centered: Cities are where most people in our countries live, and urban centers have been hit hard by COVID. Cities are also centers of innovation and are charged with directly caring for their people. Despite all this, cities have not been adequately engaged in the development of the recovery packages and most of them won't benefit from them. Our countries, the richest and most powerful economies of the world, are at the very heart of a painful conjuncture: Not only are we some of those most impacted by the COVID-19 pandemic, but we are also those with the most financial means to address it, both domestically and abroad. We are also the biggest emitters of carbon emissions, so our responsibility to tackle the climate emergency is huge.

A prime and urgent example of the responsibilities and challenges we face is public transportation, which is central to all three concerns of a green, just and city-centered recovery. A resilient, well-resourced mass transit system not only underpins all ambitious climate action, it is also a source of jobs and economic growth in cities, and is absolutely essential to reducing social inequality. Yet recent research demonstrates that mass transit systems in several cities globally are under significant financial threat and facing a level of service cuts and job losses that would significantly hamper a green and just recovery. Investing in urban mass transit as a priority measure in all COVID-19 recovery plans is a central tool to ensure our living spaces are greener and that resources are used efficiently. That is why we specifically consider the issue of public transportation as a core priority one in all COVID-19 recovery plans.

But we are also focusing our attention on several other aspects that are connected with the priorities of the Italian G20 Presidency and, in particular, with the protection of the environment. I would like to mention a few, among many:

• The first, and the most momentous, is health: The U20 will work on the concept of vaccines as a public good, and on the need to guarantee fair and equitable access to vaccines for all the nations of the world.

• Another important aspect is culture: Cultural life for cities is a key pillar to sustainable development and human dignity, and an important tool to help the recovery from the pandemic. Links between the U20 and culture will be advanced by the Italian U20 Presidency.

• The U20 Presidency will also explore the role of intermediary cities for territorial cohesion, especially with the perspective of aid for development.

• Building on the experience of EXPO 2015 in Milan, the U20 Presidency will support cities as key actors in sustainable food systems, and examine the possibility of lowering emissions through nature-based solutions.

• Fiscal autonomy: We will ask that cities be direct recipients of stimulus pack-

ages to be included in the national recovery plans currently under discussion in many G20 countries. Moreover, the U20 Presidency will ask to rebuild cities' fiscal autonomy to secure revenue streams for better planning.

»The Italian Presidency will focus on a strategy for the U20 ensuring a safe, resilient and sustainable recovery from COVID.«

Italy, in the framework of the G20, will also promote close cooperation between the several ministerial tracks and the G20 engagement groups. The U20 will seek a special partnership with the joint ministerial meeting on climate and energy. This ministerial meeting will be held for the first time under the Italian Presidency, to mean that energy usage and safeguarding the environment are closely linked, and there must be a common approach to those challenges.

The U20 will also partner with the ministries of culture track. Climate change represents one of the greatest threats facing culture and cultural heritage, since extreme weather events are destroying important sites, most of them located in cities. In addition, the U20 will cooperate in the development ministries track, in regard to enhancing the role of intermediary cities in achieving SDG objectives. In this framework, we will ensure reciprocal participation in the U20 and the ministerial meetings, in order to mutually strengthen all and deliver a strong and joint message to the Heads of State and Government.

The many events that Italy will chair in 2021 demonstrate the high attention the Italian G20 Presidency is paying to cities. Cities are the hardest hit by COVID, due to the concentration of people and of affected businesses. At the same time, local administrators are the most accountable to citizens. That is why Italy is focusing so on the problems of cities, providing them with solutions and opportunities for a recovery from the pandemic.

We have many opportunities this year, and Italy intends to deal with all the different issues in a holistic approach, exploring cross-cutting issues and creating synergies between the different, but inter-related aspects of protecting the environment and the need for a prompt economic recovery. National and regional governments, central banks, international financial institutions and academia must make a joint effort to help provide cities with concrete measures to achieve their objectives of a greener and more just society.

A pre-condition to adopting effective measures is the strong engagement of the entire international community, at a local and national level, in all international and national fora. We are constantly working on that, while also convinced of the enormous help our partners will offer us. We have a big opportunity ahead of us, and we shall not waste it.

Reinventing smart livable cities in the post-COVID era

Three narratives for globally coordinated actions

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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 intend to help in the deliberation of the annaual summit leaders and ministerial dilaogues.

Keywords:
climate change, digital technologies, pandemic reovery, smart urbanisation, network governance

Cities are home to most of the world population and are where global problems and solutions meet. They are centers of economic growth and innovation. However, the high concentration of people and economic activities in cities make them most vulnerable to various disasters, epidemics, and pandemics. In several countries, the COVID-19 pandemic emerged from the cities and spread to rural areas via peri-urban and transport corridors. Globally, around 70% of all reported infections are in urban areas. Further, cities consume much of the national electricity and account for more than 60% of global carbon emissions. National efforts to successfully limit global warming hinges on cities. A report by the Coalition for urban transitions (2021), finds that implementing a bundle of currently available low-carbon technologies and digital practices across six G20 countries – China, India, Indonesia, Brazil, Mexico, and South Africa – could collectively cut annual emissions from key urban sectors by 80-90% by 2050 beyond their initial commitments to the Paris Climate Agreement. As a result, the decisions made by the city mayors can have direct and immediate impact on the health of people, planet and prosperity – perhaps more than national or international policies.

Around the world, smart cities have already demonstrated how a pro-active, coordinated response to the pandemic yields immediate results in terms of containing the virus and laying the foundations for long-term resilience and sustainability. A 'smart city' is often defined as an innovative city that uses information and communication technologies (ICT) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, and environmental aspects (Anbumozhi, Kumar and Adhityan, 2020). Globally, there are several smart city initiatives such as ASEAN's Smart Cities Network (ASCN), the European Commission's Smart Cities Marketplace, the private sector-driven Smart Cities Council, etc, which also act as a platform for cities to collaborate with the private sector to apply the use of technology across public infrastructures. The pandemic has brought about opportunities for smart cities worldwide to adopt an agile approach.

»While evidence of sustained impacts of national policies on economic resilience during the pandemic remain elusive, the role of smart cities in pandemic response has been threefold.«

PANDEMIC RECOVERY AND RESILIENCE OF SMART CITIES

While evidence of sustained impacts of national policies on economic resilience during the pandemic remain elusive, the role

of smart cities in the pandemic response has been threefold. First, smart cities have been actively deploying a host of digital technological solutions and innovative bottom-up approaches to drive greater economic resilience. For example, in Singapore, the government has recognized the importance of speeding up national-level digitalization. Smart facility management, the internet of things, and surveillance have become the symbols of smart nations, as they create advanced, safe, and liveable urban environments despite the pandemic. These smart city solutions have also doubled as preventive efforts to curb viral contagion. The Republic of Korea provided one of the most successful demonstrations of the power of smart city technologies. The country's smart city data hub system allowed health officials to conduct advanced contact tracing using data from cameras and other sensors (Kim and Castro, 2020). As a result, the Republic of Korea was one of the few countries that rapidly reduced infection rates without a full lockdown.

Second, several cities in the Global South have acted as effective implementation channels of nationwide economic relief packages. As large-scale social assistance programs take time to design and deliver, cities equipped with better digital infrastructure were found to be relatively efficient in the targeted delivery of relief to intended beneficiaries. For example, several state governments in India have used a smart city network platform to deliver essential commodities and conduct alert responses, as many city centers are equipped with the digital identity of citizens, aerial surveillance, and Global Positioning Systems (Fatewar and Vaishali, 2021).

Third, the steep digital technology adoption by cities represents a step forward in fortifying urban climate action that will have far-reaching impacts for them coming out of the COVID-19 pandemic. The Jakarta Smart City has deployed a wide array of smart applications in its transport curtailment efforts during lockdown (Gayatri, Manola and Duarte, 2020). Having previously developed a system that tracks mobile phone pings to cell towers to monitor crowds during festival celebrations, the city was able to use this innovation to help monitor the movement of polluting vehicles. Parallel to this, Artificial Intelligence coupled with a surveillance and early warning system in Sydney, Australia, establishes resilience to the urban population against heavy flooding, even as COVID-19 cases continue to bubble up (OECD, 2020).

In fact, navigating the new normal – lockdown, tele-work and travel restrictions – during the pandemic has prompted the acceleration of partnerships between city governments and the private sector to co-create innovative solutions powered by digital technologies for climate-smart, resilient growth. By rapidly adopting digital platforms, some mega cities like Tokyo, New York and Buenos Aires continue to stay one step ahead of the virus.

INNOVATION, INCLUSION AND EFFICIENCY NARRATIVES FOR SMART CITIES

With or without a vaccine, cities will get through the COVID-19 pandemic in the coming months. But when they do, city leaders should not simply return to business as usual. They should harness the full potential of digital solutions. Despite

widespread enthusiasm, most city leaders struggle to understand how best to invest in digital infrastructure to deliver long-term value to their citizens. Below is a three-point program based on the analysis of emerging experiences on smart city novelties.

»During the pandemic recovery, decisions made by city leaders can have direct and immediate impact on the health of people and the planet – perhaps more than national or international policies.«

First, innovation through collaboration. Most of the smart city innovations have their origin in the private sector. For individual smart technologies to add up to smart city, innovations must be on a citywide scale. That requires contributions from not only commercial ICT firms, but also from social entrepreneurs and citizens.

Second, inclusion. City leaders should focus smart city efforts on the needs of all residents. Using data to target the most vulnerable citizens, opening data up to promote accountability, and tapping mobile connectivity to expand participatory governance and budgeting will offer systemic access to city services for all citizens.

Third, efficiency in service delivery. By digitalization and the collection of large amounts of data, followed by the translation of these data into strategic infrastructure investments, cities can support climate-resilient, low-carbon growth. Evidence-based decision-making and continuous monitoring of energy use and emission reduction targets with the aid of dashboards means a genuine revolution in city management.

COORDINATED SMART CITY POLICY ASPECTS IN THE POST-COVID ERA

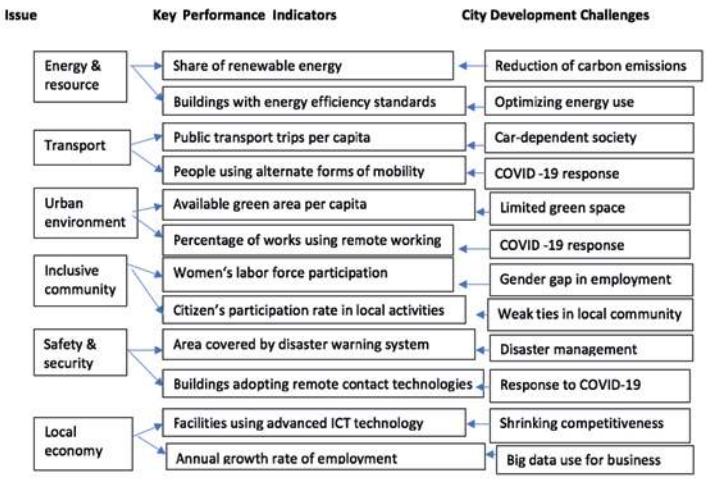
Greater collaboration between higher levels of government and financers can help overcome these obstacles. Funding sustainable and resilient smart cities offers the potential for enormous economic returns to national governments as of result of energy and material savings. For instance, in Southeast Asia, urban emissions from 26 designated smart cities could be reduced by 50% by 2030 and 98% by 2050 using proven low-carbon measures in energy, water, transport and water sectors (ERIA, 2020). Decarbonizing cities has the potential to create millions of new jobs and could catalyse a just transition. Recent analysis from the consultancy Vivid Economics for the Coalition for Urban Transitions estimated that about 31 million new jobs could be created in China, India, Indonesia, Brazil, Mexico, and South Africa by adopting low carbon resilient measures. Smart city measures such as retrofitting buildings, could create an estimated 8-21

jobs per USD 1 million spent on energy efficiency measures, in comparison to three jobs in the fossil fuel sector. Governments need to support cities so that informal workers and other vulnerable groups impacted by the pandemic get to share in the benefits of the low-carbon transition in the post-COVID era.

However, the transformation of smart cities into liveable, sustainable cities will not be easy after COVID-19, as governments are facing severe budget cuts. A smart city's ability to make digital and green investments often relies on the reallocation of budgets and the ability to raise new revenue streams. The investment barriers faced by cities, such as creditworthiness, bankability and the lack of viable project lines, limit what they can do on their own.

The G20 has a central role in unlocking the vast potential of smart cities, by paying attention to the following three policy actions in a coordinated way. First, G20 governments should create an enabling environment that empowers city leaders and mayors to push through climate action and build resilience through collaboration and cooperation. Measuring a smart city's performace is a complex task, but is crtically required to advance decoupling and recoupling agendas. All projects for smart cities should be required to have a robust monitoring protocol thatwithclear standards and specifications for planning, implementation and operation. This includes providing a common and reliable set of key

Figure 1: Key Performance Indicators for Smart City Projects



Source: Anbumozhi (2021)

performance indicators (KPIs) as illustrated below.

Second, improving access to investment capital or lack thereof is major issue for smart cities in the pandemic recovery stage. G20 governments can offer financial backing through establishing structural funds, which could be combined with the national development bank's debt and equity instruments. Guidelines on how to combine the instruments in favor of smart city investments are to be established.

Third, strengthening policy coherence for smart city projects is an imperative. Generally, there is a policy alignment between the objectives of smart city initiatives and those of climate policy, as well as the Sustainable Development Goals (SDGs). G20 countries should provide a stable regulatory framework and reforms to attract investment in order to augment those policy objectives and ensure that next generation reforms do not disrupt the synergic benefits. Even though the identification of such integrated policy strategies remains a responsibility of national governments, it is essential that city administrations are given a more prominent role in deploying smart solutions. Without their involvement, sustainability and liveability cannot be achieved. The key is flexibility and agility in policy making.

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Regionalism, multilateralism, and economic integration in ASEAN and East Asia

Transforming and deepening necessary ambitions

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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 analyticially sound ecidence 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 organises seminars and symposia which nurture a sense of community in the region. The policy recommendations are intend to help in the deliberation of the annaual summit leaders and ministerial dilaogues.

From the perspective of international economic cooperation and integration, the last three decades have been characterized by three developments of major importance. In those years, the world has witnessed the successful conclusion of the most ambitious round of multilateral trade negotiations – the World Trade Organization – in the history of humankind, the formation of the European Union and the ASEAN Economic Community (AEC), as well as the emergence of as many as 40 preferential regional free trade agreements. The cornerstone of regional trade agreements, such as the recently concluded Regional Comprehensive Economic Partnership, is preferential treatment for some members of the multilateral system and discrimination for others. As evidenced by the Trans-Pacific Partnership, the growth in regional trade agreements has taken place for good economic and political reasons, which owed much to the past success of multilateral systems embodied in the General Agreement on Tariffs and Trade (GATT). Parties to the agreements have not only been firmly committed to multilateral trade liberalization, but were also prepared to liberalize their markets in phases on a regional basis. Given this apparent anomaly, the question is whether regionalism hinders or contributes to well-functioning multilateralism. To address this question, the unfolding renaissance of the Association of Southeast Asian Nations (ASEAN) and East Asia is examined by observing how they responded to globalization by increasing regional economic integration.

»Regional trade agreements have led to deeper integration in a number of fields in Southeast Asia, and are generally effective in facilitating trade, investment and social inclusion.«

THE UNFOLDING RENAISSANCE OF ASEAN AND EAST ASIAN REGIONALISM

ASEAN was created in 1967 to address mainly political and security issues. Using flexibility and consensus – known as the ASEAN Way – it helped to move the region from conflict to cooperation. Over time, economic integration has taken a leading role, as the hub of global economic gravity and trade has shifted towards Asia. An open regionalism strategy reached center stage in 2016, when ASEAN's 10 member states (Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Lao People's Democratic Republic, the Philippines, Singapore, Thailand, and Viet Nam) launched the AEC. The AEC was conceived to keep pace with the growth of neighboring East Asian economies such as Australia, China, India, Japan, the Republic of Korea, and New Zealand, as market size matters to competitiveness and interna-

tional demand. The AEC initiative is part of a broader ASEAN community including political-security and socio-cultural pillars. The growth record of ASEAN and East Asia during 1998–2019 was remarkable: Gross domestic product (GDP) almost doubled, rising more than 5%–8% on average per year. Other performance indicators are equally impressive. Exports increased to one-fifth of the world's total in 2018, making ASEAN and East Asia one of the most open trading regions in the world. Since 2000, the region has remained the largest destination for foreign direct investment. It has 300 million fewer people living in poverty now than in 1997, when the Asian economic crisis hit the region. A huge educated middle-class population has emerged, contributing to the skilled labor force. In a world in which trade and economic growth seem so ephemeral, how is it that 16 countries have all been successful in building agile economic integration? Common characteristics of economic integration cannot be the whole explanation since these East Asian countries are extremely diverse and their development status differs strikingly. Is there something special about East Asian economic integration?

GLOBALIZATION AND INTERNATIONAL PRODUCTION NETWORKS IN ASEAN AND EAST ASIA

The key element of the success of East Asia's open regionalism approach is its willingness to experiment and adapt economic policies for changing circumstances. The ASEAN Rising report of the Economic Research Institute for ASEAN and East Asia (ERIA, 2014) sought to explain this economic accomplishment of high-performing Asian economies. As the economic center of gravity – production, trade and resource use – has shifted towards Asia, regionalism within ASEAN and East Asia has risen sharply in the guise of formal economic trade agreements between two or more economies. Since 1997, more than 50 new agreements have been concluded or are being negotiated. Regional trade agreements have led to deeper integration in a number of fields and are generally effective in facilitating trade, investment, and social inclusion. In part, ASEAN and East Asia's regional economic integration has its roots in the 1997 Asian financial crisis, a determining moment when many policymakers saw for the first time the risk that comes with the benefits of multilateralism or globalization. The significant characteristics of regional economic integration during that period were that it is a market-driven process which has seen trade, finance, innovation, and infrastructure investments accelerating while globalization is also taking hold. This regional integration has occurred in addition to, not at the expense of, multilateralism. While indigenous regional free trade agreements are driving industrial development, efforts have been made to set them in the context of global megatrends. In many aspects, the 2008 financial crisis increased the pace of this regional integration process, as can be seen from the number of international and regional free trade agreements that have been concluded. ASEAN and East Asian economies learned the lessons of these two economic crises and have fortified themselves for continued integration. Collectively, these countries have sought regional economic integration to stay globally competitive.

This drive for competitiveness across the economies has also seen pioneers utilizing the international division of labor and the formation of international production networks (IPNs). Taking advantage of open trade policies, technology transfer, and knowledge spillovers that reduced service link costs, local firms in Southeast and East Asia quickly became part of the industrial agglomeration and were able to participate in the IPNs (ERIA, 2015). Global supply chains originating in this region have expanded at different rates, with the apparel and automobile sectors growing in the 1980s; the electronics industry leading the way in the 1990s; and the service sector, especially business process outsourcing, being the most dynamic in the 2000s. In terms of dispersion and complexity, IPNs should be differentiated from global supply chains. While global supply chains include all sorts of international industrial linkages, IPNs (e.g., in the automobile and electronics industries) are based on the task-wise international division of labor connected by tight service links (Kimura, 2020). Because of the interconnectedness of the participating firms and in-built technical and financial assistance programmes mentored by lead firms, IPNs are known to be more resilient against short-term supply or demand shocks. Production networks and industrial agglomeration in ASEAN member states are quite different from the cases typical of the world's advanced economies.

DIGITAL CHALLENGES, NEW REGIONAL PRIORITIES, AND GLOBAL AMBITIONS

The successful conclusion of the Regional Comprehensive Economic Partnership and the establishment of the AEC embody the region's commitment to build cohesive, competitive, resilient, and sustainable economies. There is a clear understanding among the individual member states that regional economic integration must be set in the context of multilateralism and global megatrends. A question remains, however, as to whether the region can be proactive in its response to multilateral initiatives, the global geo-economic landscape, and the revolution in digital technology, including the emerging Fourth Industrial Revolution, and their potential impact on the local community. The biggest threat to such market-driven regionalism is change in the rules-based economic order. The ongoing trade wars, adoption of a carbon border adjustment mechanism, and unilateral standards for digital ecosystems have highlighted the deficiencies of multilateralism. The geopolitical landscape is also chang-

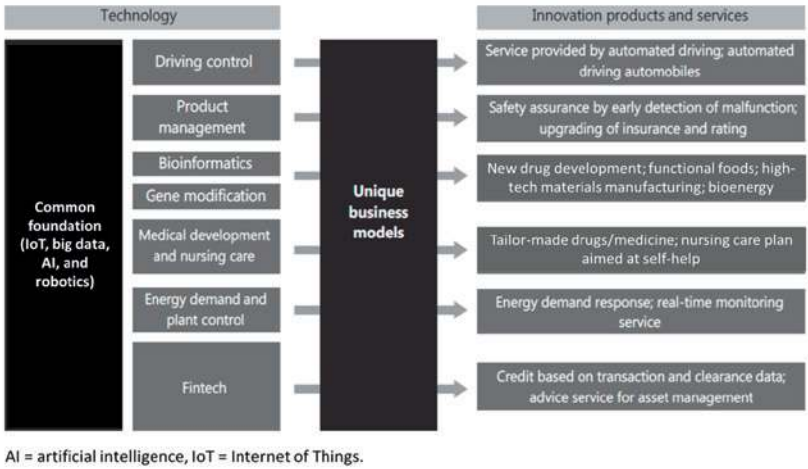
»In the context of deepened economic integration aided by the digital economy, the question for the countries in the region and their development partners is: What are the costs?«

ing rapidly across the globe. The multilateral world that ASEAN and East Asia must deal with over the next two decades will be vastly different from the world in which its open regionalism evolved over the past five decades. The next two decades will see the acceleration of the digital transformation, which has been quickened by the coronavirus disease (COVID-19) pandemic.

Given the scale and impact of COVID-19, the region recognized that addressing the pandemic crisis requires coordinated action not only within the region but also through international cooperation. The ASEAN Comprehensive Recovery Framework was articulated as a consolidated, collective, and long-term socio-economic recovery strategy. The broader recovery strategies include maximizing the potential of intra-ASEAN economic integration and accelerating inclusive digital transformation (ASEAN, 2020a).

A widespread digital transformation seems just around the corner. In the context of deepened economic integration, aided by the digital economy, the question for the countries in the region and their development partners is: What are the costs? Sustainable and inclusive global trade is closely associated with developing common principles for the adoption of new technologies, products and services. To bridge the gap between using new emerging technologies and producing innovative products and services – based on the common digital foundations such as the Internet of Things, big data, artificial intelligence, and robotics – unique business

Figure 1: A Common Foundation for Digital Transformation in ASEAN and East Asia



AI = artificial intelligence, IoT = Internet of Things.

Source: Nishimura et al. (2019).

models and policy responses are needed, as illustrated in the figure.

»One of the most important tasks to be tackled in the post-pandemic, post-ASEAN Economic Community era is to foster a new regional identity -ASEANity.«

Many of the digital innovations hold great promise for the third unbundling – a new type of globalization, in which the person-wise division of labor and resultant services can move freely from developed to developing countries (Kimura, 2018). Nevertheless, they may also pose boundless risks if not implemented with the support of an appropriate governance system. New multilateralism will be particularly important to enable the development of (i) common and agile governance systems, including the championing of common principles for managing the new digital technologies; (ii) specific standards and certification mechanisms for data flow; and (iii) equity-related regulatory checks to avoid negative externalities.

The speed of digital transformation means that trade protocols and governance systems need to be developed early in conjunction with the digital technologies themselves, rather than as a reactive afterthought. ASEAN and East Asia must build their unique brand of digital integration – one that is able to close intra-regional gaps and maintains a national identity within emerging multilateral global frameworks. One of the most important tasks to be tackled in the post-pandemic world is to foster a new regional identity, recognizing that the whole is greater than the sum of its parts. The new ASEAN identity could be called ASEANity, and the citizens of ASEAN member states would be ASEANians. The integrated entity of the ASEAN community would be of ASEANians, by ASEANians, for ASEANians (Nishimura et al., 2019).

CONCLUSION

The economic performance of ASEAN and East Asia in the context of regionalism within multilateralism has been remarkable and unique. The region has responded to the call for globalization by increasing regional economic cooperation and integration. The establishment of the AEC and the emergence of international production networks may help to explain the causes and consequences of the open regionalism that has made the region predominantly middle-income. A rapid digital transformation is under way, which displays the same gravity forces of innovation but requires very different stages to manage it in a regionally coordinated way. In the post-COVID-19 era, the AEC could be more proactive in responding to global megatrends – going beyond addressing the challenges that arise, and then fostering opportunities to lead globalization with a regional identity.

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Governance realignment in the Global South

From policy-centric to network governance: A closer look into COVID-19 response governance in Bangladesh, India and Pakistan

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The Institute for Policy, Advocacy, and Governance (IPAG) is an independent, international think tank with presence in four continents – South Asia (Dhaka & Delhi), Asia-Pacific (Melbourne), Europe (Vienna), Middle East & North Africa (Dubai). IPAG undertakes research & analysis, engagement & outreach activities, promotes dialogue among various stakeholders, conducts training & capacity building, and supports advocacy towards socio-economic justice. IPAG works with well-respected international organizations, institutions, and individuals in making positive contribution towards achieving sustainable development and inclusive societies – nationally, regionally, and globally. IPAG is a Member of the Council for Global Probelm Solving (CGP), based in Germany, which is an exclusive consortium of world-class think tanks and research institutions who provide policy advice to the G20 and associated international organizations and it's Chairman. Prof. Syed Munir Khasru is the Co-chair of the Task force for Digital Transformation under the G20 2021 Italian Presidency.

The World Congress of Muslim Philanthropists is a global network of donors, striving to build an equitable and sustainable world, generously endowed by ethical, inclusive, and effective philanthropy. As a catalyst of collaborative relationships, WCMP mobilizes financial and intellectual resources for the benefit of people and the planet.

The Open Society Foundations, founded by George Soros, are the world's largest private funder of independent groups working for justice, democratic governance, and human rights. Open Society provides thousands of grants every year through a network of national and regional foundations and offices, funding a vast array of projects – many of them now shaped by the challenges of the COVID-19 pandemic.

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The COVID-19 pandemic required both preventive and prescriptive health directives, whereby the state and its various agencies imposed strict behavioral restrictions on citizens without leaving much room for public disapproval or resistance based on the science. Enforcement of lockdowns, hygiene directives, hospital isolation, quarantining, and the quick procurement of health and hygiene materials and distribution of nationwide relief support required top-down interventions, ideally from a central or group of central authorities. The need for collective action by various stakeholders with multiple motivations and ideologies required interventions from strong authorities, institutions or figures holding massive powers to build consensus or enforce directives.

Under such circumstances, governance was expected by many to be vertical and top down. But as has been seen during the pandemic, in our ever-complex world with multiple stakeholders, institutions, governing bodies, cultures and conflicts, no single state has the capacity to take a completely vertical approach to emergency governance, particularly when the emergency is a global pandemic affecting the lives of billions. In our piece, we assess how a networked governance has helped governments tackle the pandemic, both nationally and transnationally, taking South Asia as a case study. We then assess if there is room for improvements within the network governance structure to handle a non-political emergency, such as a health or environmental emergency, of global proportions and the way forward for such arrangements.

Governance traditions and practices all over the world have been shifting from a

'top down' to a 'bottom up' approach for quite some time, abetted largely by the complex nature of our politics and societies today. Governments working across multiple actors to enact and implement public policies have become normal in almost all modern nation states (Lim, 2011). Network governance is often justified by the fact that modern society with its complexities and web of actors cannot be served by a single, central governance mechanism (Torfing 2007). However, even within a networked governance, it is important to recognize one entity as having the central political role that can override competing decision-making and maintain a chain of command (Jessop, 2002). Emergencies that require prolonged, collective action from large portions of the population need policy interventions from strong, central authoritative governments. Network governance facilitates pooling of resources and expertise. But such governance, according to many, may also create trust deficits and resource drainage due to time wasted on bargaining, reaching consensus, and the low capacity of partners (Lim, 2011).

Even countries like Germany with resourceful central governments have enabled a network governance structure to manage the pandemic. Municipalities in Germany carry the right to local self-governance, and states are independent from the federal government with regard to disaster management (Hattke & Martin, 2020). Taiwan's successful management of the pandemic can also be attributed to a network governance approach among the local government, community institutions and traditional state-centric responses (Schwartz & Yen, 2017). Overly vertical management of health services during COVID-19, on the other hand, has proven to be less than efficient, particularly in states with limited capacity and resources, like that of Nigeria (Ilesanmi & Afolabi, 2020). In countries like Brazil and South Africa, where leaders failed to effectively respond to the crisis and dismissed the pandemic's impact, community actors often took matters in hand. Grassroots organizations in Brazil and South Africa organized to mobilize resources, dispel disinformation, communicate hygiene guidelines, enforce health measures and address racism in health action.

»Governance traditions and practices all over the world have been shifting from a ›top down‹ to a ›bottom up‹ approach.«

In the US, which also suffered from a leader downplaying the seriousness of the virus, civil society groups stepped up to disseminate correct information on the virus and counter misinformation and rumors. (Cohen, 2020). President Joe Biden's National Strategy for the pandemic response also reiterates how the pandemic cannot be tackled by the federal government alone, and hence engagement from state

and local leaders, the private sector, unions and community volunteers is required for both policy formation and implementation (White House, 2021). Network governance is also highly important for Global South countries where non-government entities like NGOs, INGOs and community groups intrinsically assist the local and state governments in carrying out their activities, particularly those pertaining to disaster management.

In the beginning, given the novelty of the virus and the nationwide application of directives to citizens' behavior, the pandemic was managed completely by central governments in most countries in association with the World Health Organization (WHO). Over time however, central governments, particularly of developing nations, were no longer able maintain lockdowns and compensate for lost livelihoods, and they gradually moved from a central to an integrated governance approach. In addition to local government structures, there is a vast array of actors in the complex web of network governance. This web is comprised of NGOs, international organizations, international regulatory organizations, media, scientific and other specialized bodies, rights-based outfits, charity organizations, religious institutions and the private sector. These organizations often have competing interests and opposing ideological viewpoints among each other and with the state government, making coordination and collaboration difficult.

When the COVID-19 pandemic hit, states scrambled to meet ever-increasing demands for health action while simultaneously maintaining and enforcing strict public orders on social distancing and lockdowns. While Northern governments, many with higher infection rates, somehow coped by comparison, poorer Southern nations and their governments, with limited resources and capacity, struggled to keep their citizens safe and their economies afloat. Even countries more prone to following top-down, strict enforcement measures and oversight, like China, had to rely on local governments and communities to confront the pandemic. Pandemic measures in China were local in nature, enacted differently by different provinces and cities. One-size-fits-all policies were not undertaken for all its provinces (Philipp Renninger, 2020) proving that even in countries with highly tiered and controlled governance structures and robust top-down frameworks, local level intervention is essential.

In South Asia, labor force participation in the economy is highly informal, with 80% of the region's workers engaging in informal activities. Informal workers in the region were hardest and most immediately hit, with millions losing their livelihoods a month into the lockdown (Bussolo et al., 2020). The poor in South Asia were forced to choose between buying masks or food. Social distancing became an issue of affordability. Not everyone could afford the price of social distancing.

In Western nations and highly resourceful Eastern nations like China or Singapore, the cost of social distancing was borne in part by governments through relief and stimulus packages. South Asian governments, with their poor revenue infrastructure, were unable to even remotely bear the costs of prolonged lockdown, as they could not reach most of their unbanked citizens living in remote areas and under the jurisdictions of local governments. By

June 2020, most South Asian states were relaxing lockdowns. This indicated a serious lack of government capacity in South Asia to singlehandedly respond to the pandemic through a vertical approach. While in the beginning, only central governments in South Asia and around the globe took the control of the situation without much involvement of the private sector or the NGO community, low hospital and testing capacity and the reduced ability to reach remote regions eventually induced governments to bring non-governmental actors into the emergency response (Hatch, 2020). Small-scale, often student-run foundations undertook massive efforts to provide food relief and improve hygiene conditions. However these were seen only in the major cities and could not be scaled up (Bakhtiar, 2020).

»The poor in South Asia were forced to choose between buying masks or food.«

In South Asia, the role of central/state governments in managing low-income, rural and urban communities has been mixed. Both top-down and community governance was seen at work in the slums. Slums in South Asian cities are congested, informal settlements housing migrant workers whoe come from rural areas to work in big cities. Their work is almost entirely informal and does not fall under essential services. Most of the slum dwellers are street vendors and are involved in trade that serves commuters and cannot be conducted in a lockdown. In India, both top-down and community governance was activated to contain COVID-19 spread in one of its biggest slums. In Dharavi, Mumbai, one of India's biggest slums, with a population of about a million, the municipality in association with community workers worked deftly to stem the spread. Immediately after the first case, the municipal corporation barricaded the entrances, carried out disinfection, undertook door-to-door screening and surveillance. These activities were carried out with private doctors and local NGOs. As per WHO, the Dharavi model of swift government action in association with NGOs and the private sector stands out as a role model of COVID-19 management (Golechha, 2020).

Where governments could not extend their services, a strong community governance to contain COVID-19 emerged. The example of the Korail slum in Dhaka shows the importance of community governance during emergencies. Slum workers almost immediately lost their jobs but found mechanisms to cope in their own ways. The health safety of the slum population was ensured through community level response, where through the leadership and initiative of community groups, food relief from both public and private sources was evenly distributed. The community groups in the slums organized virus-prevention activities and made arrangements to provide basic hygiene services like hand-washing and wearing of masks. Community leaders, using their local knowledge, helped create lists of the most vulnerable residents for government relief. Community leaders

helped government officials distribute important health messages, maintain lockdowns, and educate about hand-washing and wearing face masks and setting up hand-washing stations (Taylor, 2020). It has been observed that such efforts are also applicable to economically marginalized communities in even the wealthiest countries (Cohen, 2020).

In Pakistan, the federal-provincial health services were supported by the private sector and NGOs. In Pakistan's Sindh province, which recorded the highest number of cases in the beginning, the pandemic spurred inclusive relationships with the private sector through federal and Sindh-based task forces for joint operations response. Digitalized data-sharing of cases and hospital capacity across private and public providers guided evidence-based procurement of medical supplies by the federal and provincial governments. Private laboratories took on 50% of testing. A provincial COVID-19 relief fund in Sindh, jointly managed by government and private philanthropies, pooled private-public funding and procured medical supplies (Zaidi, 2020). But in some places, like in Kerala, where a strong state-centric health infrastructure already existed, a centralized, top-down approach worked. State run active surveillance, district-wise control rooms, risk communication, and a competent health force were key to the state's success in curbing COVID-19 infection and death rates (WHO, 2020). Early preparedness and the ability to scale helped the government of Kerala manage spread effectively, proving that centralized approaches, when done right, are able to manage disasters quickly, at scale and in a planned manner. The network governance approach has proven its irreplaceability by its use in most countries during the pandemic – a nationwide emergency that traditionally has been expected to be managed entirely by a central system, given the strict implementation of nationwide public health directives. The network governance approach and implementation for emergency response and preparedness could be further strengthened if central governments and other state and non-state structures would take specific actions.

The functioning of an efficient network governance requires the building of trust among actors within the network. Effective collaboration and cooperation cannot exist when there is trust deficit, as that undermines efficient and complete communication, which is required for effective cooperation. Transparency and accountability mechanisms between actors are also valuable resources, and time can be lost if the processes for collaboration and cooperation are not transparent. Transparency in collaborative activities also helps in building trust among actors, which eventually creates effective cooperation strategies. Improving public trust in government institutions is paramount, as central governments are still expected to hold the most power and make the urgent decisions within the network. In addition to trust, the state government must be capable of activating an integrated governance during an emergency. This would require state governments to establish functioning modes of communication, developing coordinated policymaking, and adopting multi-level planning.

COVID-19 has demonstrated to us that citizens in a state, in addition to being service recipients, are also active actors and

service providers. The pandemic has demonstrated that collective action is required, even in the most individualistic of societies, if a community and state is to ward off certain disasters. A network approach to governance is essentially a means for citizens (by forming groups and organizations) to work with central governments to enact and implement policies. As there is no alternative to integrated governance in today's world, it is imperative for central governments to find innovative means to assimilate multiple actors in a society, which could be further abetted through use of digitization.

»Social distancing became an issue of affordability. Not everyone could afford distancing as it entailed a price to be borne.«

Scaling up of small, local innovations that have been activated during the COVID-19 pandemic management, such as the community governance seen in the slums of South Asian nations, could be seriously considered by local and state governments. COVID-19 has demonstrated the role local communities could take in emergency preparedness. The role of communities during emergency response is indispensable. For effective horizontal management and community participation, governments should find platforms for these community actors and organizations to become a part of emergency governance. Governments can find better ways to quickly source non-government assistance during emergency. The means of collaboration could be strengthened through more mutual sharing, further digitization and the building of digital information sharing platforms between state and non-state actors.

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Healing the international trading system

The WTO plays a key role in guaranteeing a healthy international trading system.

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CARI / CONSEJO ARGENTINO PARA LAS RELACIONES INTERNACIONALES

The Argentine Council for International Relations (CARI) is a non-profit academic institution created on June 15 of 1978 to promote the study and debate of international affairs from a national perspective. The Council assesses the political, economic, cultural, and social dimensions of international relations and seeks to foster cooperation and peace through its diverse activities.

INTRODUCTION

Multilateralism and the role of the World Trade Organization (WTO) was fundamental for the construction of a strong and healthy international trading system. The creation of the WTO in 1995 gave rise to new disciplines, including services, intellectual property and new rules for a more credible settlement of disputes. A trustworthy dispute settlement body contributed to maintaining peace between countries that were now able to solve trade disputes in an agreed framework. These reforms, together with the removal of all economic barriers, so far as possible, changed international economic relations, generating a more predictable set of rules and market conditions that were essential for the creation of a sustainable international trading system.

However, the first twenty years of the new century have witnessed a transformation of multilateralism. Changes in terms of trade and production, a surge in technological advances, global governance and geopolitics transformed multilateralism. At the same time, some symptoms of an ailing international trading system appeared. Several nations chose alternative mechanisms of cooperation outside the established institutional network. If these types of cooperation reinforced the multilateral system, it would not be a problem (Ethier,1998). Nevertheless, the increasing alternatives outside of an institutional multilateral framework like the WTO, which serves as the overseer of international economic relations and aims to guarantee just and equitable trade for all, should be observed in order to avoid rising imbalances between trading nations. To ensure a healthy and comprehensive international trading system, we need to reinforce the international power of the WTO and expand the benefits of international trade for all countries.

»It is also critical to incorporate new comprehensive disciplines that include the new challenges of the century, such as digital trade, without compromising inclusive economic development.«

EVOLUTION OF TRADE

If we consider the evolution of international trade compared to global income, there has been a clear deceleration of global trade in the last years. In the graph below, we can observe the growth rate of international trade flows and gross domestic product (GDP) in the world in three different periods from 1989 to 2019.[1]

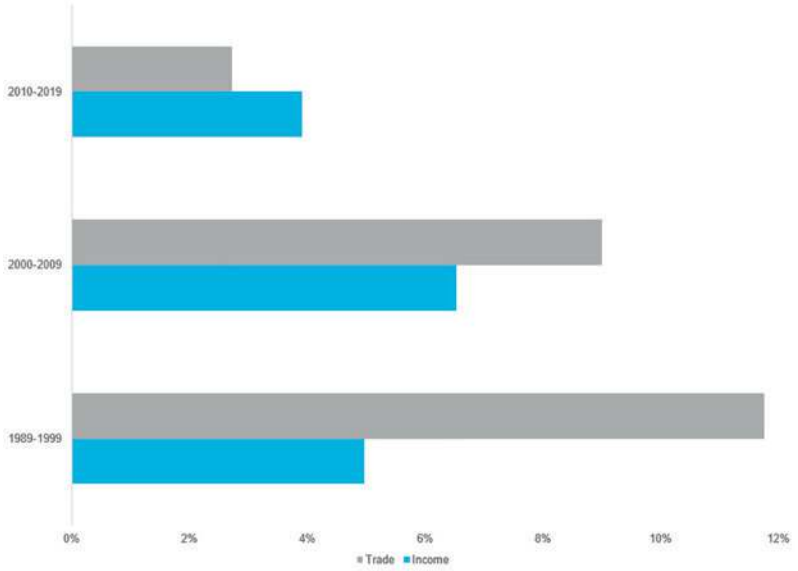
The first period reflects the context in which the WTO was created – one in which trade growth more than doubled growth in global output, and in which regionalism through free trade agreements played a key role in international trade. The Asso-

ciation of Southeast Asian Nations (ASEAN), the Common Market for Eastern and Southern Africa (COMESA), the Southern Common Market (Mercosur) and North American Free Trade Agreement (NAFTA) are some examples. Nevertheless, average growth rates in international trade declined from 12% in the period 1989-1999 to 3% in the period 2010-2019. Interestingly, the average growth rate of world income increased from 1989-1999 to 2000-2009 but decreased in 2010-2019 to around 4%. Thus, this graph shows two general patterns: a faster decrease in the rate of international trade growth compared to world income, and in the last period –for the first time in thirty years – the growth rate of international trade was slower than that of world income.

The aforementioned indicates that, after the Great Recession in 2008-2009, the decline of international trade flows was much more pronounced than the decline of global output.

There are some hypothetical situations that could explain these patterns. Some of them are related to the supply side and demand side. Constantinescu et al. (2016) find that the reduction of Global Value Chains (GVC) could explain the decline of productivity and their impact on trade and GDP growth. On the demand side, the same authors exposed the idea that lower trade growth may impact GDP growth, and

Figure 1: Average growth rates in trade and GDP, percent



Source: World Bank data. The variables are in terms of current values.

that this effect could generate negative expectations of export opportunities.

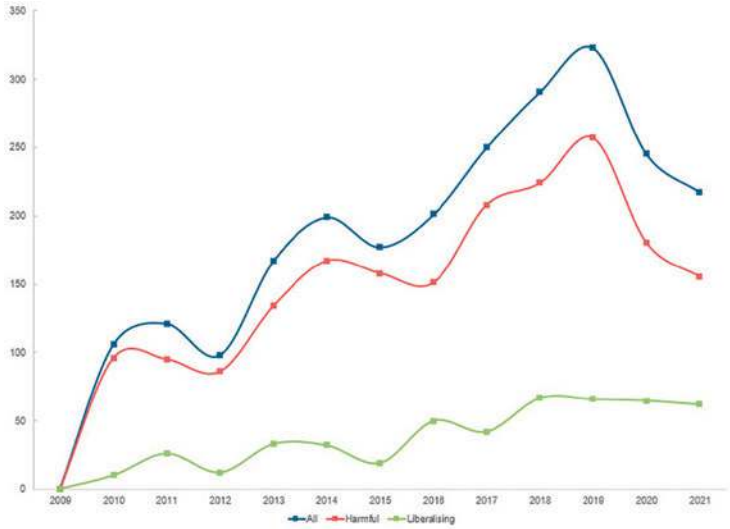
EROSION OF THE MULTILATERAL AUTHORITY

It is also worth mentioning the evolution of new harmful interventions since the global financial crisis. Harmful interventions that discriminate against foreign commercial interests were proportionally higher than liberalizing interventions. Some examples of harmful interventions were import tariffs, export subsidies, anti-dumping, quotas, among others.

The erosion of the confidence and credibility of the WTO as a strong multilateral authority has given rise to more protectionism. The increase in harmful interventions erodes the predictability that the WTO aims to guarantee. The decline in commitment to the agreed international rules shows that the system needs to strengthen certainty and trust among its members.

To reinvigorate multilateral space, it is necessary to improve the transparency of the notification system and the legitimacy of the decision-making structure. It is also critical to incorporate new comprehensive disciplines that include the new challenges of the century, such as digital trade, without compromising inclusive economic development. These measures will help boost international trade flows and enhance access to environmentally sustainable goods and services.

Figure 2: New trade interventions per year



Source: Global Trade Alert. As of March 2021, Available at: https://www.globaltradealert.org/

DEMAND FOR A STRONGER SYSTEM

Since 1996, developing country members of the WTO have called for certain reforms to the WTO to reduce asymmetries in the balance of power between developed and developing countries (Kao, 2019). Furthermore, developing countries want the WTO agreements to include the promotion of economic development (Bluth and Hoekman, 2018). These are some of the indications that reforms are necessary if the international community wants to tackle inequality and sustainable development in developing countries, sharing the opportunities of global trade with every WTO member. As Alqadhafi (2007) notes, the decision-making process is flawed. Developing countries are at a disadvantage compared to developed countries in regard to participation, prioritization and resolution of topics that are fundamental for their growth and development. Developing countries found some mechanisms for spearheading and taking a defensive position in regard to the agenda of developed countries in the Doha Round. But this is not an ideal solution if we want to heal the international trading system.

Moreover, plurilateral trade agreements such as the Trans-Pacific Partnership (TPP) or the Treaty on a Free Trade Area between members of the Commonwealth of Independent States expose the demand for clearer and more modern rules. These agreements include new disciplines such as rules about new types of services and goods aligned with the Sustainable Development Goals of the United Nations, showcasing the demand to include new disciplines and the relevance of monitoring the implementation of new rules. This should be a priority to revitalize the role of the WTO and trade flows among countries. A healthy administration of trade agreements is key to reducing policy distortions in world markets and the use of disciplines to regulate and remove barriers to trade, mainly in environmental products (Kao, 2019).

»Technological advances require new cross-border rules that encompass the digital economy.«

REINVIGORATING INTERNATIONAL TRADE ACROSS THE WTO

For these reasons, the construction of a healthy environment to facilitate trade negotiations in a multilateral system is critical to reduce distortions across regional trade agreements (RTA). It is fundamental to addressing the new challenges at the multilateral level in order to ensure predictable and clear market conditions for every member. The COVID-19 crisis revealed the importance of tackling distortions that can affect the supply of medical and food products. Moreover, technological advances require new cross-border rules that encompass the digital economy. These are topics that must be tackled in a well-balanced and adequate discussion that takes into account all the actors involved.

In the case of the digital economy, not only the speed of technological advances has generated an important disruption in

the last decades but the COVID-19 crisis has also pushed the use of more digital tools and enhanced services trade. The New Industrial Revolution has created new dilemmas in terms of the digital economy and e-commerce that need to be addressed multilaterally. Cross-border data flows, the use of the internet, electronic commerce and treatment of new products that include services such as 3D printing are some relevant dimensions of digital trade and regulatory cooperation between nations. These new types of trade challenge the current order and demand a reformulation of the current dichotomy between goods and services (Janow and Mavroidis, 2019). The digital economy has a relevant space in the patterns of production and trade and the WTO must debate and set up comprehensive rules that encompass all members. Developed countries have started to negotiate trade agreements that include chapters about e-commerce or how to regulate these types of services. TTIP, Japan – European Union and Canada – European Union Comprehensive Economic and Trade Agreement (CETA) are some cases that reflect new priorities in trade agreements. Ensuring a framework about digital economy in a multilateral sphere would allow a discussion of how to design new rules and could potentially improve mutual recognition between countries (Janow and Mavroidis, 2019). A secure framework will also allow countries to define what digital trade encompasses and therefore delineate predictable market conditions for services so that every nation can embrace the benefits of digital services trade.

Besides the challenges related to the digital economy, the COVID-19 crisis showed how fragile supply chains of products for global health can be. Many countries imposed temporary export restrictions on certain medical and food products in efforts to prevent domestic shortages.[2] Moreover, the development of vaccines exhibited the relevance of clear rules for intellectual property and their impact on global public health. These measures have uneven effects for developing countries, particularly on those relying on food and medical imports. Espitia et al. (2020) estimate that in the first quarter after the pandemic, the global supply of food could decline 20% and global prices increase 6% on average. These conclusions are related mainly to two things: 1) labor-intensive products suffer through sick workers and lockdowns and 2) export restrictions in the supply of food amplify the shock.

Although there were positive signs of cooperation, such as the decision of the Ottawa Group[3] to strengthen the resilience of supply chains of medical products and the response to a public health emergency (Schneider-Petsinger, 2020). The use of trade restrictive measures has led to questions about the compatibility with WTO obligations, considering the duration of these restrictions. Ensuring food security and securing medical products requires a profound and exhaustive discussion that guarantees the access of every citizen to essential products that ensure global public health. A strong WTO is vital to addressing global crises without compromising the supply of essential goods in developing countries. Revitalizing the role of a balanced decision-making structure across the WTO can offer a framework to solve uncooperative trade policies that undermine public health.

CONCLUDING REMARKS AND PROPOSALS

To conclude, the WTO plays a key role in guaranteeing a solid international trading system with strong and relevant commitments and clear, balanced rules that consider every member. Policymakers should encourage the rebirth of a relevant WTO that enables every member to benefit from equitable, open, global trade.

»Policymakers should encourage the rebirth of a relevant WTO that enables every member to benefit from equitable open global trade.«

The COVID-19 crisis has highlighted the importance of ensuring clear commitments in multilateral governance to guarantee a healthy international trading system. It has also shown the relevance of cooperation and transparency between nations to avoid disruptions in the supply of essential products for global public health and negative consequences for sustainable and inclusive development.

Moreover, to reinforce the international power of the WTO, it is critical to agree on new disciplines that consider the digital economy in order to avoid imbalances between nations. In this way, the promotion of development for poor and middle-income countries into the WTO is a key for narrowing the gap. There is a need for a special focus on including small- and medium-sized enterprises and enhancing women-owned businesses, to guarantee that opportunities in the global trade market are accessible to all.

Furthermore, it is necessary to discuss and agree on how members can solve the asymmetries across the WTO. The world is calling for faster changes, and policymakers should ensure that the WTO provides the platform to unleash the potential of trade and progress with the negotiations that the new century demands. It is essential to do so by reinforcing and expanding the benefits of global trade to every member.

Also, developments on our planet call for new types of cooperation between countries. The inclusion of sustainable products and processes in international trade must improve in terms of quality and quantity. In fact, multilateral trade institutions could play a key role in creating a budget directed to specific harmonized nomenclatures, provide resources and encourage less-developed countries to strengthen environmental regulations.

These commitments and new agreements need to be addressed comprehensively. The decision-making structure needs to make room for balanced discussions that consider development and build a new, strong set of rules that ensures more open trade and benefits for all. In other words, for a healthy international trading system, we need to address every symptom.

[1] This data is related to international trade in goods. If we aggregate services the trend is similar.

[2] The report April 2020 WTO report revealed that tariffs on medical protective supplies averaged 11.5%, and were as high as 27% in some countries. For more details see: https://www.wto.org/english/news_e/news20_e/rese_03apr20_e.pdf

[3] The Ottawa Group is integrated for Australia, Brazil, Canada, Chile, European Union, Japan, Kenya, South Korea, Mexico, New Zealand, Norway, Singapore and Switzerland. This group gave the impulse for short term reforms to facilitate trade in healthcare products among WTO members.

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Economic realignment

Connecting narrative and numbers

How to reach a milestone for recoupling business to society and the environment

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The Value Balancing Alliance's objectives are to create a global impact measurement and valuation (IMV) standard for monetizing and disclosing positive and negative impacts of corporate activity. The alliance represents large international companies, including Anglo American, BASF, BMW, Bosch, Deutsche Bank, DPDHL, Kering, LafargeHolcim, Mitsubishi Chemical, Otto, Porsche, Novartis, SAP, Schaeffler, Shinhan Financial Group and SK. The VBA is supported by Deloitte, EY, KPMG, PwC, the OECD as a policy advisor and leading academic institutions, such as the University of Oxford.

The Global Solutions Initiative (GSI) is a global collaborative enterprise to envision, propose and evaluate policy responses to major global problems, addressed by the G20, through ongoing exchange and dialogue with the Think20 (T20) engagement group. The GSI is a stepping stone to the T20 Summits and supports various other G20 groups. The policy recommendations and strategic visions are generated through a disciplined research program by leading research organizations, elaborated in policy dialogues between researchers, policymakers, business leaders and civil society representatives.

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Keywords:
impact valuation, sustainability reporting, global accounting policy, sustainable finance

ABSTRACT

Our article presents three shifts in narrative, valuation, and standardization that converge to an important milestone. We demonstrate what these shifts mean for the post-pandemic "Great Realignment" and why standardizing impact measurement and valuation is key to the G20's policy agenda. Recoupling business performance to society and the environment requires us to connect narrative and numbers. Finally, we propose to the global policy community how the G20 governments can facilitate global convergence.

»Standardizing impact measurement and valuation is key to the G20's policy agenda.«

INTRODUCTION

Climate change, biodiversity loss and fractured societies are among the multiple and interconnected crises at the beginning of the 21st century. Simultaneously, both the COVID-19 pandemic and the digital revolution upend the way we live, work and communicate. And it dawns on us that we would need to organize ourselves differently if we were to address those multiple challenges while recovering from this global public health crisis. We need a systemic "recoupling": the sustainable balancing and measurement of wealth as the core element of the "Great Realignment" –

the "new normal" after the recovery from the pandemic.

The Global Solutions Summit in 2021 focuses on new measurements at the macro and micro levels. Historically, fundamental economic changes in modern times are reflected in and shaped by accounting systems.[1] For example, double-entry bookkeeping accompanied the development of the mercantile and industrial capitalist system. The US Generally Accepted Accounting Principles emerged after the 1929 stock market crash, followed by a national system of accounts and Gross Domestic Product (GDP) in the wake of the Great Depression and World War II.[2] Today, the current global sustainability reporting landscape is changing rapidly in three concurrent shifts of narrative, valuation, and standardization. The need for new performance measurement is well-documented and widely shared among academics and practitioners.[3] Cross-sector partnerships[4] to establish impact valuation standards contribute directly to the G20's priorities around "people, planet and prosperity."[5]

THE NARRATIVE SHIFT

It has become increasingly clear that the power of unity among societies is the only path towards global problem-solving, irrespective of political preferences. Mega-crises require all relevant stakeholders to work together. While the pandemic proved the fragility and the interconnectivity of our world, the research community successfully developed effective vaccines in a dizzyingly short time. Cross-sector collaboration must become the new narrative for policy-making. "Me first" strategies have proven ineffective in the fight against global crises such as pandemics or climate change. The demand for a new narrative focusing on recoupling has been put to the G20 and other international institutions in recent years. It has underpinned all Global Solutions Summits in Berlin.[6]

»Systems change is about moving from profit maximization to value optimization.«

The Recoupling Dashboard

This narrative shift matches a vision for the continent of Africa described by Felwine Sarr, Senegalese author and professor at Duke University. He demands radical new thinking about wealth, progress and development. He reminds us of society's purpose, such as solidarity and the quality of social relations. A myth of Western wealth ideology has displaced these values, Sarr argues.[7] The Recoupling Dashboard proposed by Dennis Snower and Katharina Lima de Miranda takes a similar approach and offers an alternative to GDP for measuring societal well-being. The dashboard illustrates the interrelation between economic prosperity, social prosperity and environmental sustainability.[8]

The trend towards a more holistic approach, which considers our actions' long-lasting effects, can increasingly be seen in politics and social movements. The last three years were replete with extraordinary

statements in many business networks: The Business Roundtable, represented by 181 CEOs, moved away from shareholder primacy[9]; the World Business Council for Sustainable Development (WBCSD), with a membership of over 200 global companies, demanded "systems transformation" to realize the Sustainable Development Goals[10]; and Larry Fink, Chairman and CEO of Blackrock, the world's largest asset management firm, proclaimed in an open letter to CEOs a commitment to "supporting the goal of net zero greenhouse gas emissions by 2050 or sooner."[11]

In 2019, the Value Balancing Alliance (VBA) embarked on a cross-industry and business-driven journey to measure impacts and improve business steering. For decades, businesses have focused on profit as the standard metric for success. Today, the focus on long-term value creation requires additional and different types of key performance indicators, for example, to understand the climate footprint of a company. New measurement standards will enable decision-makers to deal with complexity, trade-offs, and potentially conflicting targets across social, environmental, and economic dimensions.

The narrative shift influences corporate incentive structures, as systems change is about moving from profit maximization to value optimization. Businesses operate within social and economic systems and depend on collaboration and stable frameworks that cannot be built by corporate leaders alone: a healthy environment, public infrastructure, education, public health, political stability, legal certainty, and an enabling public administration. Building such a resilient political and economic framework is the task of the entire society in which the business community plays a critical role in establishing and protecting public goods.

THE VALUATION SHIFT

Recent publications and initiatives such as the Natural Capital Protocol and ISO 14008, Harvard's Impact Weighted Accounts, and Oxford's Rethinking Performance indicate the broader movement towards new valuation approaches. A shift in valuation enables businesses to turn their policies into sustainable decisions. As an alliance of global companies, the VBA's purpose is to develop a feasible and comparable system for assessing and evaluating the impact of their activities on society, nature, and the economy. Monetization of social and environmental impacts is at the heart of this approach to develop a standardized methodology that translates sustainability into the language of businesses, investors, and policymakers. The VBA methodology expresses the different impacts on society across various dimensions and topics (e.g., carbon emissions, water, waste, training) in conventional financial units (e.g., USD). With this methodology, companies can compare apples to apples and better align their activities with public policies.

The VBA Impact Statement: Decision-focused and science-based

The VBA recently published the first version of its methodology papers on the VBA Impact Statement after a year-long engagement and piloting by its member companies.[12] Rather than starting from scratch, the methodology builds on existing and tested ESG frameworks, peer-reviewed scientific studies, and widely accepted methods for impact measurement and

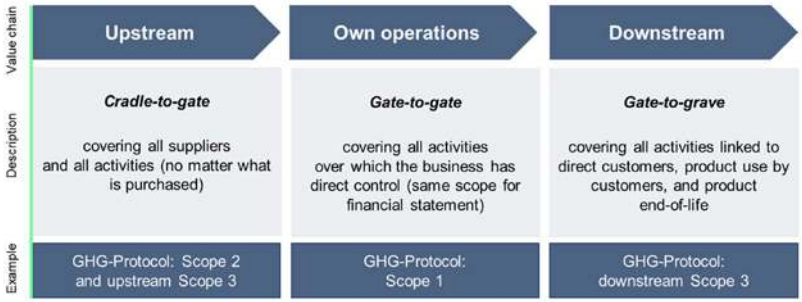
valuation. The VBA Impact Statement consists of nine indicators and 183 sub-indicators in the environmental, societal, and economic dimensions to assess the impacts of business activities as comprehensively as possible. As shown in Figure 1, each indicator is logically derived from the impact pathways and mapped onto the value chain.

In a hyper-connected society, companies' activities and performance need to be considered in the bigger picture. By covering the impact across the boundaries of the value chain, the VBA supports companies to develop a new framework that includes a more accurate account of the positive and negative impacts of their business models. In turn, the VBA methodology enables companies to obtain a clearer picture of their strengths, weaknesses, business opportunities, and risk exposures.

Impact valuation: Pilot testing and continuous learning

In 2020, the Value Balancing Alliance conducted the world's first pilot testing of its kind. A global standard for impact measurement and valuation needs to be widely accepted across various industries, geographies and firm sizes. The VBA methodology is tested against several criteria: feasibility, scalability, robustness, comparability, connectivity, and relevance. It needs to be continuously adjusted according to the member companies' feedback. Eleven member companies from seven industries ran an extensive pilot testing program across nine regions globally, ultimately linking impact valuation to corporate decisions (Figure 2). The VBA builds a unique knowledge base through continuous feedback from various industries and business units (e.g., finance, strategy, sustainability, HR, EHS) to inform

Figure 1: The VBA Impact Valuation Methodology across the boundaries of the value chain



Source: Value Balancing Alliance (2021), General Methodology Paper (Version 0.1), February 2021, https://www.value-balancing.com/en/downloads.html.

subsequent methodology versions over the next years.

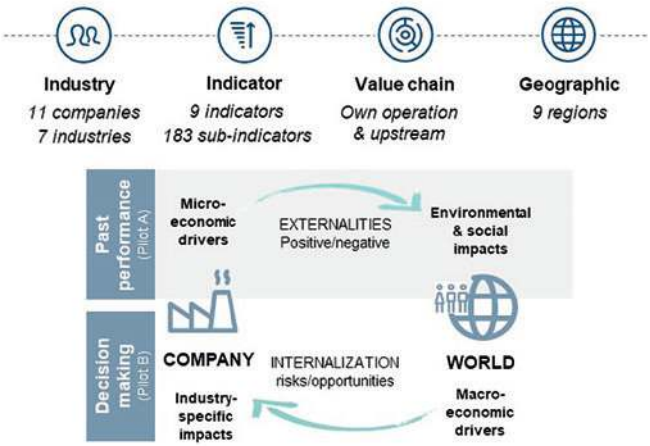
The development of the methodology is an ongoing process and will be made available to the public. The first pilot test result provided a picture of where and how the companies stand and showed their financial and non-financial performance. After several further iterations, the VBA will cease to exist as an organization when it has fulfilled its mission.

THE STANDARDIZATION SHIFT

The shifts in narrative and valuation are mutually reinforcing. However, this does not mean that standardizing new forms of measurement and accounting has become more comfortable. As the VBA's initial pilot testing has shown, the development and application of valuation models are complex due to different definitions, scopes, and uncertainties in designing and applying indicators and calculating coefficients.

As shown in Figure 3, the current convergence of global reporting standard-setters and initiatives is a promising sign towards clarification and harmonization.[13] In the past decades, organizations engaged in sustainability reporting – the GRI, the CDSB, the CDP, the IIRC, and SASB – have been essential in pushing businesses to operationalize high-level commitments. In 2020, the IIRC and SASB announced that they would join forces in the new Value Reporting Foundation.[14] Policymakers and

Figure 2: Overview of the piloting of the VBA General Methodology Version 0.1 in the year 2020



Source: Value Balancing Alliance (2021), Position Paper on the Standardization of Disclosure Requirements, April 2021, https://www.value-balancing.com/en/downloads.html.

regulators have stepped up as well: The European Union plays a vital role, with legislative projects such as the revision of the Non-Financial Reporting Directive (NFRD), the Sustainable Finance Disclosure Regulation (SFDR), the EU Taxonomy for Sustainable Activities, and Sustainable Corporate Governance. Global initiatives such as the UNPRI or the Impact Management Project are essential to facilitate this convergence by building a common language, keeping up investor pressure, and engaging financial market players to transform their practices.

Those developments have led to a pivotal moment that could represent a fundamental shift in standardization. In early 2019, the IFRS set in motion and has since re-enforced a process that eventually leads to creating a Sustainability Standards Board mandated to develop global standards for sustainability reporting.[15] The Value Reporting Foundation will play an essential part in this process. If this development proves successful and durable, we will have reached a necessary milestone of recoupling business performance to society and the environment.[16] Undoubtedly, reaching this milestone will open a set of further challenges in the future. Global standards may be incompatible with local institutional and social contexts. Differences in governance systems and

Figure 3: Organizations and initiatives involved in the standardization of sustainability reporting and impact valuation in the year 2021

Source: Value Balancing Alliance (2021).

diverging economic and political interests may resurface in the technical implementation. Those potential stumbling blocks demonstrate the critical role of the G20 in this global convergence.

»A shift in valuation enables businesses to turn their policies into sustainable decisions.«

Even if new standard-setters emerge from the current standardization shift, they will likely focus on disclosure, not business steering. Policymakers need to match sustainability reporting standards with another critical but hitherto missing component: managerial accounting and the standardization of measuring performance for decision-making. Unlike other organizations, the VBA focuses on the monetization of impacts to combine the current business language with the future kind of business steering. We can only create a pragmatic solution based on pilot testing, continuous learning, and scientific and professional expertise. Ultimately, the standardization of impact valuation and sustainability reporting are mutually reinforcing.

CONCLUSION: A KEY MOMENT FOR THE G20 POLICYMAKERS

While the three shifts in narrative, valuation, and standardization are approaching at full speed, the G20 can underpin those changes with a robust institutional framework. As we demonstrated above, it is evident that businesses and policymakers are moving in this direction. The Recoupling Dashboard and the VBA's Impact Valuation Methodology can be indispensable tools on this journey. While those projects build on existing frameworks and complement each other in their macro-economic and company-level perspective, they also aim to be science-based and decision-focused.

Following several attempts since the Rio+20 conference in 2012,[17] we have arrived at a pivotal moment for the G20 to put sustainability reporting and impact valuation on the global policy agenda. This approach of recoupling makes it far more likely to achieve tangible and timely change. The new thinking – beyond profit maximization and towards value optimization – opens the door to alternative concepts based on community and solidarity. Consequently, recoupling can inspire a new vision for the G20, international institutions, and societies worldwide. Humans cannot negotiate with either climate change or a pandemic. Yet, we can connect narratives and numbers to overcome those grand challenges with a global solution.

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The great realignment fuelled by impact

A call for new notions of success, progress and corporate performance

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Institution:

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. In 2020, Novartis reached 769 million patients in 155 countries. 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.

Keywords:
stakeholder capitalism, impact valuation, purpose, recoupling, realignment

The need for a great realignment in how value is defined, created and reported is paramount. The context is worrying. In 11 countries included in the January 2021 Edelman Trust Barometer,[1] citizens have grown more distrustful of their governments compared to last year. Only 8 out of 27 governments in the scope of the report have the trust of their citizens. It goes on to state that the COVID-19 pandemic added to persistent personal and societal fears, as it – not surprisingly – inequitably burdened those with less education, less money and fewer resources. The report reveals that business is now the only institution that is perceived as both ethical and competent enough to solve the world's problems.

So we see growing expectations that business leaders will step up and tackle the challenges that used to be exclusively the preserve of governments to address. Public opinion has shifted, and 68% of the Edelman Trust Barometer respondents agreed to the statement that "CEOs should step in when the government does not fix societal problems." Remarkably, too, expectations do not stop there. The statements, "CEOs should take the lead on change rather than waiting for governments to impose change on them" and

"CEOs should hold themselves accountable to the public and not just to the board of directors and stockholders," received 66% and 65% of agreement, respectively. Clearly, the role of business in society has considerably changed in 2020.[2]

In view of the size, extent and complexity of the world's problems – among them climate change, increasing inequality, digitalization, the rapid evolution of artificial intelligence, and the still ongoing pandemic crisis to list but a few – it is apparent that business cannot resolve these issues alone. Far from it. Indeed, no single group of economic players can make the necessary shifts in isolation: not business, not investors, not governments. Only by combining forces in a profound realignment can the multilayered and increasingly interconnected challenges be overcome.

Trust will be central to all of this. It derives from the credibility of what is said and the reliability of what is done. By summarizing its findings as, "Declaring Information Bankruptcy," the January 2021 Edelman Trust Barometer forcefully demonstrates that the multiple trust crises are also a crisis of information. Trust requires accountability and accountability requires both transparency and the use of relevant metrics. The next question is then: How can our metrics be improved for the economy to re-align with societal needs?

This article will explore this question with a focus on business, investors and governments. Let us start by taking a closer look at business today. The expectations outlined above can be paraphrased as an invitation to business to find profitable solutions to societal challenges. This can make good business sense in the long-run – and used to be the fabric of business.[3] Currently, however, businesses are incentivized to maximize profits in the short-term, driven to satisfy shareholder demands for profitability quarter over quarter.

»No single group of economic players can make the necessary shifts in isolation: not business, not investors, not governments.«

As long as corporate performance is judged mostly by profits, with little regard for long-term value creation, business cannot play its role as a catalyst of the necessary transformations. Other ways of measuring performance are urgently needed, expressing value creation not only for shareholders but for all stakeholders – customers, vendors, employees, the communities in which the business operates. Such metrics would provide the transparency to build trust and thus also serve as a vehicle to calibrate conflicting requirements.

The need for metrics in support of a new capitalism, of stakeholder capitalism,[4] is now widely recognized. In September 2020, the World Economic Forum issued a recommendation for a complementary set of metrics[5] expressing long-term value creation in pursuit of economic,

environmental and social impact. Although it is rather recent, the proposal is far from theoretical. Here is a concrete example: Novartis embarked on measuring and valuing its impacts[6] in 2015. Since 2018, the results have been published in the Novartis in Society Environmental, Social, Governance (ESG) report,[7] showing the company´s positive and negative social, environmental and economic impacts in its own operations, the entire supply chain and through enabled consumption. The approach has resulted in numerous use cases carried out mainly by the Novartis country organizations.

However, we should ask: "What is impact?" Traditional metrics are typically input metrics that track the resources needed for a business activity or output metrics that measure what a company produces. Outcome metrics take things a step further and measure changes brought about by a company's business activity itself. Impact metrics finally measure the consequential effects of a business activity on the well-being of others, of customers, employees, suppliers, societies and the environment.[8]

Novartis is by far not alone in defining and applying impact metrics. In 2017, the Impact Valuation Roundtable published the white paper,[9] "Operationalizing Impact Valuation." According to a 2019 publication by the Impact Weighted Accounts Initiative[10] at Harvard Business School, 56 corporations disclosed their environmental and social impacts, and for nine of these, the impacts were related to their products. This is testimony to the practicality of using impact valuation metrics in different business sectors, and a robust road-test at the same time. The full benefits for companies would include the ability to compare their impact with their sector and other peers. A clear prerequisite for tapping into such benefits is standardization. Happily, there is visible progress also in this regard. Founded in 2019, the Value Balancing Alliance[11] published a proposal for impact valuation metrics in early 2021.

Standardization and wide adoption of impact metrics would be relevant for investors as well, as it would enable them to conduct impact performance comparisons across large portfolios of companies. Let us first have a closer look at how social trends affect the dynamics on the investor side. A strong influencing factor is demographics. More wealth than ever before – USD 30 trillion in the US alone – will be transferred from the baby boomers to their heirs,[12] who have a different attitude towards investing. They would like their investments to be profitable and a force for the good at the same time.[13] The increased interest in sustainable investments is already tangible.

ESG criteria have evolved from a differentiating factor of niche investors to a must-have for the mainstream. The CEO of the world's largest investor, BlackRock, articulates very clearly his increasing expectations regarding the ESG disclosures of the companies that BlackRock invests in.[14] Moreover, according to the MSCI Institutional Investor Survey 2021, 57% of investors already favor impact metrics in their ESG activities.[15] Evidently, the Investor Revolution is well under way.[16] The market for impact investing itself is growing rapidly, from USD 500 billion in 2019 to over USD 700 billion in 2020, according to the Global Impact Investor Network.[17] From its early start as an attempt to commercialize social issues through the crea-

tion and spread of Social Impact Bonds, impact thinking in investing has evolved to now being seen as a looming quantum leap to a new paradigm of risk-return impact.

»Measuring what matters to society should be an imperative for governments.«

Just as risk-return considerations gave rise to new investment approaches like portfolio diversification and new asset classes like venture capital, which enabled start-ups that have become today's tech giants, the addition of impact investing to risk-return considerations is expected to give birth to new approaches, new asset classes and new industries. The comparability of impacts is accelerating the impact revolution,[18] and in view of the tremendous opportunity and need, the investor community has come together in the Impact Management Project[19] to collaborate on standards for assessing impact investments. Founded in 2016, the Impact Management Project combines the insights from 2000 practitioners in a structured network.

Where do governments stand with respect to metrics of success, performance and progress in alignment with societal needs? Measuring what matters to society should be an imperative for governments. The impetus to look "Beyond GDP" to inform policy makers gained traction globally after the financial crisis.[20] Since then, the concept of national accounts for well-being has been further developed. Concretely, the governments of the UK and Portugal calculated and published the cost of social issues.[21,22] This is a pivotal step to support businesses in proposing social impact bonds or other profitable mechanisms to resolve societal challenges. Australia has gone one step further and screens its major policies for their impact on all affected stakeholders,[23] ensuring transparency in the policy development process and effective government spending. Now, with its Non-Financial Reporting Directive,[24] the EU has started to require companies to disclose ESG information. This latter role of governments is possibly the strongest lever they have in the great realignment: encouraging companies to measure and disclose their impact.

So what would the world look like if governments required companies to disclose a statement of social, environmental and economic impact next to their financial statements? Picture this: A new economy – an impact economy – is established to address the needs of all stakeholders – communities, vendors, customers, employees and owners of companies.

In this scenario, impact capitalism is enabled by assessing the performance of companies based on impact valuation, a change in which both policy makers and standard setters have played a crucial role. Governments, stock markets and businesses now fully embrace the new order that has given rise to a thriving new type of entrepreneur – impact entrepreneurs – and to new types of public-private partnerships. Capital allocation moves towards companies most relevant to society

and away from business models that are harmful to the planet or humanity. The combination of strongly supported impactful companies, impact entrepreneurship and new types of public-private partnerships allows our species to effectively and remarkably quickly address major challenges and resolve some of them: Extreme poverty belongs to the past, as do increasing CO_2 emissions levels and plastic pollution of the seas and oceans.

Behind all of this is a revolution in business valuation and accounting. The new way of assessing business performance is based on standardized, comprehensive and simple impact valuation metrics. These enhance conventional financial statements with environmental and social dimensions, accounting and reporting on "total impact" that will now be used by company management and investors alike. Governments come to appreciate total impact as key information to understanding the relevance of a sector or individual business, beyond GDP and employment, which were the formerly dominant measures of wealth and progress. Ultimately, total impact is a relatively simple way of assessing how much a sector or a business contributes to social coherence, citizen well-being and environmental protection. Once established broadly, consumers will also come to appreciate the transparency that total impact provides at the product level.

We are not there yet, indeed far from it. But the voices calling for change are getting louder. Impact valuation can serve not only as a measure of success in the coming transformations, but also as a driver. If it were applied by a critical number of governments, businesses and investors, the required pivotal shifts could occur in a timely and cost-effective way. Impact valuation has already demonstrated its effectiveness in business, for investors and governments. Market-led impact valuation standardization efforts like the Impact Management Project and the Value Balancing Alliance represent useful starting points for policy makers and for standard setters. The pieces of the impact economy puzzle are ready to be put in place. Our challenge now is to use it for the imminent realignment on which our collective future, quite literally, depends.

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Well-being in the US and around the world during COVID-19

A lens into the human costs of the pandemic

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THE ISSUE

The high costs of COVID-19 are evident in lost jobs, dramatic falls in GDP growth, compromised schooling, shuttered restaurants, and much more. Some of these losses will be recovered over time, some will not. The human costs of the pandemic – above and beyond the gruesome death toll – are much more difficult to assess.

Our analyses suggest that the emotional costs of the pandemic are much higher for the poor and vulnerable than they are for the rich, heightening deep pre-existing inequities in well-being in the US and many other countries.[1] Before COVID-19, our data discovered remarkable progress paradoxes in rapidly growing middle-income countries.[2] In the late 1990s in China, life satisfaction fell more than 20 percent and mental health reports and suicides increased sharply at the height of the country's rapid growth, due to increases in inequality and uncertainty associated with change, as well as increasing gaps between the winners and losers. In the past decade in India – in which both growth and poverty reduction have been exceptionally high – both life satisfaction

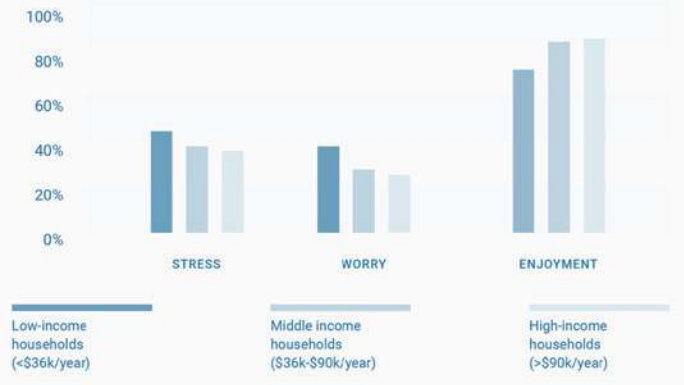
and reported optimism fell over 10 percent, for similar reasons.

In the US, pre-COVID-19, when stock markets were booming and the official unemployment was at record lows, deaths of despair – due to opioids and suicides – took over 1 million lives in just over a decade. These were concentrated among less than college-educated, middle-aged whites – a privileged group when manufacturing jobs were plentiful, but one that experienced declines in income and social cohesion as those jobs disappeared. Pockets of deep vulnerability – and ill-being – persisted and even deepened in the decade of steady growth following the financial crisis.

Since COVID-19, these trends and other pre-existing inequities have been exacerbated and are reflected in deep declines in reported well-being.[3] A survey in March highlights the differences in the costs to well-being across the rich and poor.[4] Low-income respondents significantly reported more negative emotions than did high income ones, including more worry, sadness, loneliness and anger.

There were also significant increases in negative emotions relative to earlier years for all income groups. Our comparisons are imperfect, given that they are based on similar but not the same samples: the Gallup panel for March 2020 versus the 2017 Gallup daily poll, although for the same income groups. The differences are stark. The average in 2017 for reported stress and worry for the low-income respondents was greater than for high income ones (Figure 1). There is a clear increase in March 2020 for both groups (for example, 64 percent worry for low-income groups versus 41 percent in 2017).

Figure 1: Well-being across income groups



Source: Graham and Pinto (2020) calculations based on Gallup 2017 data; 2013–16 patterns are very similar.

There is evidence of spillover effects of COVID-19 among populations already vulnerable to deaths of despair. While most of these populations tend to be rural and less likely to have high COVID-19 incidence than metropolitan ones, the economic costs and uncertainty associated with the pandemic still affect them. Incidence in rural areas, meanwhile, has spiked significantly in the fall of 2020.

The National EMS Information System (NEMSIS) provides first responder data for 46 million respondents from 2017–2020.[5] In March-July of 2020 compared to the same period for 2019 and 2018, there was a sharp increase in calls activated by drug overdoses and deaths, mental and behavioral issues, and the need for naloxone (a drug used to treat opioid overdoses), and in refusals to go to the hospitals by overdose victims.[6] While the NEMSIS data only covers a fraction of actual deaths, it is collected in real time, allowing us to follow changing trends. EMS calls for opioid-related activities, for example, increased from roughly 2,000 per week in February and March 2019 to almost 5,000 per week in the same time period for 2020. Calls for mental and behavioral problems increased from just under 35,000 per week in the same time period for 2019 to almost 45,000 per week in 2020.

Other kinds of EMS calls, such as for traffic and other accidents, decreased in 2020 due to the lower volume of activity during lockdown, while cardiac arrest and respiratory problem calls increased. Suicide calls are only slightly higher than earlier years, but there are worrisome signs, such as sharp increases in gun sales (guns are responsible for most successful suicides). Before the crisis, a 2017 study estimated that a 1 percent increase in county level unemployment resulted in a 3 percent increase in drug-related deaths.[7] While an employment shock of this magnitude makes it impossible to impose a similar projection, it is hard to imagine a positive scenario.

»The high costs of the COVID pandemic are evident in lost jobs, dramatic falls in GDP growth, compromised schooling, shuttered restaurants, and much more....The human costs of the pandemic – above and beyond the gruesome death toll – are much more difficult to assess.«

The impact of COVID-19 was similar across many rich countries. Yet the char-

acteristics of vulnerable groups differ, and the trends were less likely to be associated with deaths of despair than in the US. In the UK, for example, Asians, Muslims, and other minorities report disproportionately high levels of anxiety[8] compared to whites during COVID-19. The same study found that mental health and loneliness appear to have worsened, with these same minorities – and young adults and people with low incomes – disproportionately at risk. Those who are particularly vulnerable, due to losing a job, having difficulty accessing food, or being unable to pay bills, not only have the worst objective experiences, but suffer additional negative effects on mental health due to high levels of worry. Poor mental health has been negatively related to compliance with government guidelines during the pandemic.

The death toll in poor countries – and among the poor within them – is typically much higher than in rich countries. Yet we do not have recent data to assess COVID-19-related declines in well-being and mental health in poor countries. Given extensive poverty and greater difficulty associated with social distancing, it is difficult to imagine an absence of negative effects.

Anecdotal evidence for India, meanwhile, suggests increases in rural suicides. India instituted one of the world's strictest lockdowns amidst high rates of poverty. Perhaps because of that, it still had one of the worst results worldwide in controlling the virus. Lockdowns resulted in millions of more Indians entering poverty and exacerbated one of the highest suicide rates in the world.[9] The additional numbers of suicides are estimated to be well into the thousands. Farmers, unable to take their products to market and to employ rural labor to field their crops during lockdown, were particularly vulnerable. A country with already low levels of well-being and high levels of vulnerability now displays the worst manifestations of the virus on public health and the economy, as on mental health.

THE IDEAS

Well-being measurement gives us a lens into the emotional and mental health costs associated with the pandemic and some strategies to resolve it. It allows us to assess how trends in life satisfaction, hope, anxiety, and depression compare for the same population groups pre- and post-COVID-19.

Well-being data reflect actual trends and can be predictive of future behaviors. We find that ill-being markers – such as despair and stress – are strongly associated with the probability of dying from deaths of despair (both for individuals and places).[10] The increases in despair preceded the increase in deaths by two decades, suggesting a possible predictive role.[11] We are now using the metrics as warning indicators of overdoses, suicides, and other despair-related deaths.[12] As such, they provide us with a means to take societies' temperature during good times and bad, and certainly during this public health crisis.

A recent study of the well-being effects of lockdowns in Australia, New Zealand, and South Africa used Twitter data[13] to find that reported average daily happiness fell on average by 16 percent compared to the previous year. The daily happiness measure was strongly and negatively correlated with reported depression and anxiety. The

drops were starkest in South Africa, which has much more poverty and implemented the most severe lockdown of the three, including a ban on sales of alcohol and outdoor exercise. While the average pre- to post-lockdown happiness drop was a full point on the 0-10 happiness scale in New Zealand and Australia, it was 1.5 points in South Africa, suggesting that the nature and details of lockdown policies also matter a great deal.

»The emotional costs of the pandemic are much higher for the poor and vulnerable than they are for the rich, heightening deep pre-existing inequities in well-being in the US and many other countries.«

The UK government's efforts to combat loneliness, led by Lord Richard Layard, as well as the OECD guidelines on using well-being to inform recovery efforts, highlight the need to identify pre-existing vulnerabilities to target support, to emphasize new areas not previously on governments' radar screens, such as isolation, and to work to build resilience within systems, such as supporting social capital and public trust. The 2010 Marmot Review has also been updated to include investing in early childhood development to combat the costs of not being in school, improving working conditions for front-line workers, supporting better job training efforts and a living wage, and re-thinking healthy and sustainable places for people to live and work, not least as the pandemic has changed the nature of work for so many. Well-being data show that autonomy and purpose at work matter more to workers' well-being and productivity, for example, than do salary increases, an insight which can inform future labor market policies.

THE WAY FORWARD

Despite these high levels of human suffering, there are also some surprisingly positive trends. Surveys find that, on average, humans are remarkably resilient and can face a wide range of challenges – from poverty to crime to health problems – and return to their initial high levels of well-being. As such, it is no surprise that in the countries for which we do have data, such as the US, the UK, Ireland, and Sweden, average levels of well-being trended back upward to near pre-COVID-19 trends as soon as the lockdowns and the uncertainty surrounding them subsided.[14] Within the US, groups that have been traditionally resilient in well-being terms, such as poor Blacks and Hispanics, have displayed this during the pandemic. While these same groups are much more likely to contract and/or die from COVID-19,[15] they also report better mental health and more op-

timism for the future than whites during the pandemic. Low-income Blacks have higher levels of optimism than other low-income groups, and they also experienced less of a decline during COVID-19.

Still, the pandemic has highlighted how economic growth alone is not enough to sustain economies and societies. In the absence of a more comprehensive approach, which supports societies' health and well-being in addition to growth, we will remain very vulnerable to the next pandemic, as well as future waves of this one. It has also emphasized how infectious diseases cross borders within and across countries, and that ignoring the well-being of the poor and the vulnerable has broad costs within and beyond national borders. Well-being metrics give policymakers a tool to attach relative values to things like lost jobs, lack of health insurance, and insecurity. Many countries have adopted a well-being approach in their policies, most notably New Zealand, which is also one of the world's leaders in virtually eliminating COVID-19. And, as we have written earlier,[16] New Zealand also has exceptionally high levels of public trust compared to those countries that have fared poorly in controlling the pandemic—such as the US and India. Incorporating well-being into economic models and policy priorities would surely leave many other countries better prepared to handle crises in which the solutions hinge on public health systems and norms of public trust and cooperation.

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Agricultural trade and food security

Food security in developing countries and the G20 role in agricultural trade

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INTRODUCTION

In 2020, many government policies enacted to safeguard the health of the population facing the pandemic, such as lockdowns, travel and cargo constraints or export restrictions, have negatively affected international economy and trade.

Least-developed countries (LDCs) have been the most vulnerable to the shocks of the "Great Lockdown," which have intensified pre-existing food supply vulnerabilities. Consequently, United Nations agencies have warned that food insecurity has increased worldwide, and hotspots have already been identified, mostly in Africa.

The G20 could address this issue through agricultural trade. This policy brief explores recommendations for the G20, which include the implementation of a common strategy on agricultural trade in the post-pandemic world and enhanced coordination with Africa.

CHALLENGE

COVID-19 has posed an almost unprecedented challenge for governments around the globe. Moreover, the policies enacted to fight an unknown illness with no specific treatment or vaccine have negatively

impacted the international economy and global trade. Indeed, lockdowns, travel and freight constraints, as well as export restrictions, have disrupted international supply chains. Therefore, apart from the human loss of life and overrun health systems, the measures introduced to contain the coronavirus have led to global economic recession and a rise in extreme poverty and food insecurity, undoing many of the achievements of previous years. According to the IMF, the global GDP contraction in 2020 is estimated at -3.5%, with a year-on-year fall of -4.9% in advanced economies and -2.4% in emerging and developing economies. Agricultural trade was not exempted from the shock of COVID-19, as several channels of transmission affected markets. These included, among others, a temporary shortage of labor and inputs availability, losses of highly perishable products due to disruptions both in air and sea freight, as well as export bans or quotas.

»Disruptions in markets hit harder in those LDCs where agricultural commodities are crucial for exports and smallholder farmers' income.«

On the supply side, the introduction of export restrictions by food-exporting countries implied a serious threat to global food security, particularly for net food-importing LDCs. According to the WTO, there were at least 11 measures that potentially restricted or prohibited exports of cereals, processed vegetables, fruits and agricultural produce in general. These restrictive policies were taken both by G20 countries, such as Romania in the European Union, the Russian Federation and Turkey, as well others, such as Cambodia, Egypt, El Salvador, Honduras, Kazakhstan, Myanmar, Tajikistan and Vietnam.

Although food export restrictions could in the short term increase the domestic stock of food by reducing the global supply, these policies posed a major threat to the food security of food import-dependent countries, which are mostly developing and least-developed countries. Concurrently, on the demand side of agricultural markets, concerns over a contraction in global demand due to the pandemic laid bare the structural fragility of agricultural commodity-dependent countries, which are extremely vulnerable to negative price shocks and market volatility. Today, 42 Sub-Saharan states account for most of the commodity-dependent countries of the world, relying either on agricultural, energy or mineral exports. For many LDCs, cotton exports are an example of this dependency, as they are an irreplaceable source of income for both states and smallholder farmers. But in times of global GDP contraction, dependence on cotton trade can quickly turn into a drawback, as consumption is directly correlated with GDP performance. Perhaps the most extreme example of this dependency are Cotton-4 countries (Benin, Burkina Faso, Chad, and Mali), where cotton export revenue is as

high as nearly 40% of their total export revenue, accounting for 8 to 12% of their GDP and employing 33% of the national workforce.

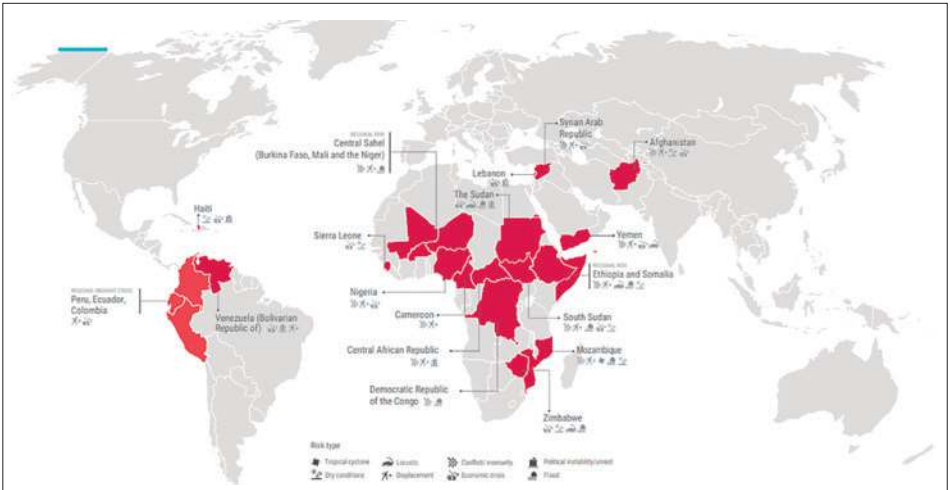
Consequently, disruptions in agricultural international markets hit harder in those LDCs where agricultural commodities are crucial for exports and smallholder farmers' income, affecting their food security.

Although prices of agricultural commodities at the end of 2020 were relatively unaffected by the pandemic, the number of people at risk of food insecurity had increased because of the effects of the global recession, local problems with food availability and limited labor supply due to border restrictions. In fact, UN agencies have reported that, given the COVID-19 containment measures, global food insecurity is estimated to have increased by 130 million people in 2020, adding to the more than 820 million already affected in 2019.

In fact, the pandemic intensified pre-existing vulnerabilities that threaten the food supply in many developing economies, such as armed conflict, weather extremes, macroeconomic instability and plagues and pests. Facing this worsening situation in global food security, both the UN Food and Agriculture Organization (FAO) and the World Food Programme (WFP) identified 23 food insecurity hotspots around the world, including Haiti, Venezuela and the Venezuelan migrants in Colombia, Ecuador, and Peru, as well as Syria, Afghanistan, Yemen, Lebanon and 14 countries in Sub-Saharan Africa.

Indeed, the proliferation of food insecurity hotspots in developing countries,

Figure 1: Map of acute food insecurity hotspots (October 2020)



Source: FAO and WFP, October 2020.

particularly in Sub-Saharan Africa, could trigger armed conflicts and migration in the post-pandemic. Food insecurity together with armed violence are at the core of the great refugee outflows of our time.

Since the G20 took up food security as a priority in 2011, it has reaffirmed its commitment to end hunger and malnutrition, recognizing the impact they have on migration. In the aftermath of the pandemic, the G20 should lead in addressing this issue through agricultural trade.

To deal efficiently with food insecurity, closer coordination with Africa will be imperative. After 2010, the G20 increased its engagement with the continent's development challenges, launching specific actions, such as the G20 Africa Partnership and the Compact with Africa. Therefore, enhanced dialogue between the G20 and Africa in matters of agricultural trade will be vital.

SOLUTIONS

A common G20 strategy on agricultural trade in the post-pandemic era.

Efficient agricultural trade is a crucial tool to address the pressing issue of global food insecurity, and the G20 constitutes an unmatched forum to discuss adequate policy solutions.

To implement a common strategy on agricultural trade in the post-pandemic era, the G20 should:

• Prioritize emergency multilateral coordination on agricultural trade policies, with the clear aim of dealing with food insecurity. The G20 should commit to support the proper functioning of the Agricultural Market Information System (AMIS), the Global Information and Early Warning System (GIEWS) and the WTO Committee on Agriculture. These instances of multilateral dialogue constitute an already existing and ideal platform for policy transparency and coordination in matters of agricultural trade. Addressing food insecurity hotspots and preventing crisis in the post pandemic must be a priority in these dialogues.

• Commit to share policy information in matters of agricultural trade. The pandemic highlighted the importance of transparency, information-sharing and compliance with WTO norms when it comes to the adoption of emergency regulations on agricultural trade. Targeted, temporary, transparent and proportionate are the main characteristics for policies not to create disturbances on global markets.

COVID-19 has shown how vital transparency and information-sharing are. In that sense, in 2020, nine members of the WTO Committee on Agriculture submitted ad hoc reports listing the measures adopted by their governments in the wake of the pandemic. It is worth noting that Canada, Brazil, the EU, Japan, and the United States were the only G20 members that submitted these reports. Therefore, large G20 food exporting and importing countries should commit to the early notification of their emergency policies on agricultural trade, as well as of their levels of production, stocks, consumption, and prices of food products to the WTO. Information-sharing reduces uncertainty and allows better decision-making.

• Expand the monitoring scope of AMIS to include strategic agricultural commodities for LDCs' exports. Since its launch in 2011, AMIS seeks to enhance food market transparency and contribute to policy responses to deal with food insecurity. Until today, it monitors global food supplies

with a particular focus on wheat, maize, rice and soybeans. However, many agricultural commodity-dependent LDCs rely on exports, such as cocoa, coffee, tobacco and sugar, which exceed the four crops surveyed by AMIS, and some are non-food products, such as cotton. Given the importance that these products have for the exports of LDCs, smallholder farmers' revenues, employment and food security, the G20 should work to expand the monitoring scope of AMIS, to have a full picture of global food security and anticipate potential food crises.

»UN agencies have reported that global food insecurity is estimated to have increased by 130 million people in 2020.«

• Refrain from introducing new export restrictions on food products, which can compromise food security, so as not to hinder the non-commercial exports of foodstuffs by UN humanitarian agencies. The introduction of export restrictions and further disruptions in agricultural trade in 2020 have affected global food security and humanitarian assistance provided by the WFP in regions and among populations living through food crises. As the pandemic is not yet overcome, G20 countries must commit to always comply with WTO regulations and to honor the agreements reached at the G20 Extraordinary Agriculture Ministers Meeting in April 2020.

In this regard, it is worth mentioning the initiative of 80 WTO members to acknowledge the critical humanitarian support provided by the WFP to confront food insecurity and their commitment not to impose export prohibitions or restrictions on foodstuffs purchased for non-commercial humanitarian purposes by the WFP. All members of the G20 should join this initiative in 2021.

Enhance coordination with Africa

As described previously, today most food insecurity hotspots can be found in Sub-Saharan Africa, therefore, closer coordination between the G20 and Africa will be imperative.

To this end it is advised to:

• Expand African participation in AMIS. Today only South Africa, as a G20 member, and Egypt and Nigeria, as invited countries, take part in this inter-agency platform. More African participation could not only improve AMIS data-gathering on both agricultural markets and policies, but it would also strengthen the capacity of its Rapid Response Forum in dealing with critical market conditions. This could be done either by the incorporation of individual African countries into AMIS, or by having the African Union work as a partner agency, through the AU Commissioner for Rural Economy and Agriculture.

Similar actions could be taken to include more African representation on the G20's working groups, particularly in those

dealing with agriculture, development, trade and investment.

• Implement a new regulatory framework on agricultural trade that contributes to the growth of African economies. Agricultural commerce can be a factor of development for African economies, reducing the population exposed to food insecurity. For that, G20 countries should agree on a common set of norms for agricultural trade to promote growth in Africa. This could be done by granting duty-free import quotas of agricultural products from African countries, adjusting non-taxation barriers, and providing assistance to improve African producers' capacity to reach phytosanitary and sustainability standards.

• Support economic diversification on key agricultural exports in Africa. To reduce the impacts market disruptions have in agricultural commodity-dependent countries of Africa, the G20 should work in coordination with the African Union to promote economic diversification into agricultural by-products, which would create new income and work opportunities for local populations. This could be achieved through technical assistance as well as development cooperation, within the framework of the 2030 Agenda, addressing also issues like adequate management of pests, incorporation of good agricultural practices and digital technologies in agriculture.

Supporting ongoing locally designed policy solutions, such as the Cotton Roadmap Project, proposed by Cotton-4 countries to improve local processing capacity and developing cotton-to-textile value chains, or the Comprehensive Africa Agriculture Development Programme, could be an example for closer coordination with the G20.

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Moving forward: A sustainable green transition amid the pandemic

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It is almost a year since COVID-19 gripped the world, but there is no end in sight. With the virus set to persist into the near future, the United Nations has announced Guiding Principles for the rollout of the UN framework "Building Back Better" – an immediate country-level socio-economic response to COVID-19. The focus, understandably, is on near-term economic recovery, but it is also on turning the crisis into an opening to steer economies towards more sustainable pathways.[1] Agendas such as the 2030 Sustainable Development Goals (SDGs) may not have anticipated pandemics, but may be still relevant as guiding principles in the transition to a green economy.

The key aspects of the UN's Building Back Better (BBB) entail delivering new jobs and businesses through a clean, green transition to sustainable growth, minimizing risks through a shift from the grey to green economy, and generating appropriate public policy to forge cooperation within and among nations. In the long run, this would entail investing in sustainable technological solutions and incorporating the disruptive influence of climate and disease risks into the financial system, For now, the UN framework for the immediate socio-economic response to COVID-19 states that "to support on strategies to green fiscal stimulus packages, the United Nations Development System will mobilize the Partnership for Action on Green Economy (PAGE) that provides integrated support on green jobs, economic and environmental issues to plan early response and recovery phase of the crisis".[2] Accordingly, "the collective knowhow of the UN is being mobilized to implement this framework over the next 12 to 18 months." PAGE is a joint initiative of the five UN agencies to support nations and regions in reframing economic policies and practices around sustainability to foster a greener and more inclusive economic recovery, and to promote resource efficiency and the creation of green jobs that can form the basis for crisis recovery and resilience.[3]

There is an opportunity to use economic measures to promote renewables, improve waste management, and create efficient delivery of goods and services.[4] The challenge is to achieve quick and coordinated action of the many stakeholders: national and local government leaders, financial institutions, and a wide range of utilities and service providers. The short-term response of governments around the world was to inject liquidity into markets, provide support in cash and kind (e.g., food packets) for the unemployed and to boost health systems with specific resources to tackle the pandemic.[5] These were necessary humanitarian assistance in a natural calamity, but we cannot lose sight of long-term economic sustainability.

With the disease returning back in waves over a year, governments have had no choice but to introduce large-scale direct stimulus packages to revive their economies. As against the USD 11 trillion or more that have been pumped in so far, only USD 600 billion or so per year is being allocated to climate investments by governments, multilateral agencies, and the private sector around the world. The scale of current stimulus funding provides a critical opportunity to design stimulus programs that can accelerate progress toward net zero carbon emissions by 2050.[6] The European Green Deal is "a new growth strategy that aims to transform the EU into a fair and prosperous society, with a

modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from intensive resource use."[7] Similarly, the US government has proposed a green recovery plan with a federal investment of USD 2 trillion over four years.[8] The UK government has set out a 10-point green recovery plan that is expected to create 250,000 new jobs and is likely to mobilize significant private sector investments in support of its 2050 net-zero goal.[9] France and Germany have emphasized a push for low-carbon economic growth, prioritizing renewable energy, green transport, nature restoration and other environmentally beneficial projects.[10] China has committed to adopt net zero targets for 2060, and ensured its emissions peak before 2030.[11] Japan and South Korea, the world's two main coal financers, have recently set 2050 zero carbon goals.[12] Additionally, the International Monetary Fund (IMF), the World Bank[13] and the International Energy Agency (IEA) have proposed green recovery initiatives and measures.[14]

However, there are seemingly difficult tradeoffs that governments need to manage. On the one hand, as job losses increase in many countries, governments feel the pressure to continue with the existing industries, many of which could be fossil fuel intensive. While at the same time, some governments and businesses are pushing for a rollback of environmental protections, including climate-related regulations, compelled by the need for economic recovery.[15] For instance, in the US, China and South Korea the green element of the national economic recovery package has been outweighed by the high-carbon elements, including bailouts for fossil fuel industry[16] despite stated objectives of carbon neutrality. The US is planning nearly USD 3 trillion in spending with few environmental safeguards attached, with scarcely any money going to low-carbon efforts, and all this while rolling back regulations that protect the environment. Of this total US stimulus only about USD 39 billion is allocated to green projects,[17] while China has allocated as little as around 0.3% of its stimulus for renewables and other sustainable projects.[18] Increasing fossil fuel use may not pull nations out of crisis mode as has happened in the case of Southeast Asia, which is mainly a fossil fuel-dependent economy. Decarbonization, decentralization and digitization are suggested as key elements for a clean energy transition in the region along with creating jobs, and addressing environmental and public health concerns.[19]

»Building Back Better by investing in the green transition that promises to be inclusive, resilient and sustainable.«

The question for governments around the world is how to align their USD 12 trillion worth of economic recovery packages for addressing the social and economic concerns brought about by the pandemic along with their environmental obligations.

There may be many possible approaches to a green recovery, but what we need is a shift of national economies away from fossil fuels on to a low-carbon footing and to generate new jobs quickly.[20] Investing in renewable energy can generate 2.5 times more jobs than fossil fuels, while a dollar investment in restoring ecosystems can generate nine dollars by way of return on ecosystem services and livelihoods.[21] The International Energy Agency has estimated that 9 million new jobs could potentially be created globally in the coming year if countries follow a green recovery path that entails achieving at least some of the stated goals, such as being energy efficient, shifting to electric-powered transportation and infrastructure, improving broadband infrastructure, restoring nature, building infrastructure that is resilient to climate variability, reshaping cities, modifying the electricity grid for renewable energy, adopting recycling techniques, waste management, investing in hydrogen power, and carbon capture and storage.[22]

The pandemic may have rolled back decades of progress on poverty, gender and health, but it has also opened the doors for investing in a green economic recovery.[23] Building back better by investing in the green transition that promises to be inclusive, resilient and sustainable.

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Gender and children effects of COVID-19

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Strengthening democratic principles in public discourse

German and European measures to combat hate speech in social networks

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One of the greatest challenges currently facing the field of digital consumer protection is that of creating an appropriate regulatory framework for social networks. Social networks are an enriching element in society across the globe. They have great potential to strengthen individuals in expressing themselves and participating in democratic life. They open up whole new opportunities for collaborating and communicating with others. Indeed, during the current coronavirus crisis – where our encounters with others are so limited – we have become acutely aware of just how valuable that is.

However, the reality is often that not everyone benefits equally from the many opportunities offered by social networks. And all too often social networks are exploited to spread hatred and disinformation. The result is a toxic culture in public discourse online. This comes at the expense of users who merely wish to use social networks for information and communication – without fear of encountering hate speech online. This toxic culture in public discourse is also a threat to our

democracy. Democracy cannot exist without a free and open exchange of views. Ensuring that public discourse can take place in an open environment is therefore of paramount importance for our peaceful coexistence.

»Social networks have great potential to strengthen individuals in expressing themselves and participating in democratic life.«

Hate speech often affects women, especially those who are actively involved in societal issues. Equally, people working in journalism are regularly targeted. Hate speech is also directed in particular at people from marginalized groups, such as those who have fled their home countries and for whom social integration and participation may already be a considerable struggle. Hate speech attempts to exclude all of these people from the discourse, and to diminish and ultimately drown out their voices. It is therefore important that we perceive hate speech not only as an attack on these individuals or groups – but as an attack on us all. Democracies thrive on the multiplicity of voices in public discourse. Yet hate speech robs societal groups of a safe, free and civilized space for public communication, and thereby destroys the foundations of our coexistence and of our democracy.

Social network operators have a particular responsibility in this development. After all, they are the ones who provide the platforms where users exchange views on the internet. It is their algorithms that determine which content is focussed in their users' feeds. And they are the ones in a position to quickly detect potentially harmful content posted on their platforms.

However, the fact that social networks have a special responsibility here does not relieve society of all duty. Nor, more importantly, does it relieve the legislature of its responsibility. The idea that the state should ideally refrain from regulating social networks has persisted for a long time now – not only on the other side of the Atlantic, but also in Europe. However, this laissez-faire approach has proven to be misguided. That is why we in Germany began some time ago to define clear requirements for social networks.

In 2017, Germany introduced its first clear and differentiated requirements in this area with the Network Enforcement Act. This Act obliges the major providers of social networks – i.e. those with more than two million users in Germany – to establish a procedure whereby users can report illegal content to the networks. Providers must review these reports promptly, and are obliged to remove illegal content quickly. This was an important initial step in the right direction.

An evaluation of the Network Enforcement Act was completed in September 2020. This evaluation has shown that the provisions are having a positive impact.

Providers have, for example, revised their reporting mechanisms and expanded their moderator teams. The transparency reports required by the Network Enforcement Act offer an insight into the providers' reviewing and deletion practices, shedding light for the first time on what had previously been a black box. The Act also made it easier for individuals to seek legal action against illegal content, by requiring social networks to designate a person in Germany who is authorized to receive documents served in legal actions or provide information to law enforcement. Previously, a user would often have to seek mutual legal assistance in the provider's country of domicile. That made the procedure very drawn out and uncertain.

However, it has also become clear that adjustments still need to be made in certain areas, such as improving criminal prosecution of the perpetrators. This prompted us to draft a comprehensive legal act against hate crimes, which is expected to enter into force shortly. The new act will introduce a requirement for social network providers to report certain complaints to the Federal Criminal Police Office (BKA). If a user issues a complaint regarding a post containing particularly serious illegal content, then the provider must not only remove that content, but is also obliged to report it to a newly established central office at the BKA. It is the task of this central office to identify the perpetrator as quickly as possible and to thereby determine the competent local law enforcement authority, which then initiates further criminal prosecution.

In a second bill, we have also taken action to strengthen the rights of users. This act introduces a remonstrance procedure, enabling both the complainant and the author of the content to have the platform provider review a decision on the removal or non-removal of content.

»Ensuring that public discourse can take place in an open environment is of paramount importance for our peaceful coexistence.«

However, when it comes to safeguarding a constructive atmosphere in public discourse online, we cannot simply stop at national legislation. In a united Europe, when democracy comes under pressure in one Member State, it is a concern for us all. We therefore need fair, up-to-date and effective platform regulation at the European level. We therefore welcome the European Commission's recent proposal for a Digital Services Act. This draft contains many helpful approaches. These include rules on standardized reporting procedures, an obligation to publish transparency reports, and requirements for the proportionate and non-arbitrary application of the platform's own community standards.

We also welcome that the Digital Services Act addresses the issue of account blocking. Such bans should only be con-

sidered as a last resort to tackle notorious cases of hate speech. Considering the importance of freedom of expression, any such bans must be based on clear legal grounds. The proposal for the Digital Services Act lays down criteria for this: for example, regarding the proportion of illegal content in relation to all content posted by a user, or the severity and consequences of the post. These are criteria that, in the event of a dispute, would have to be assessed by independent courts.

Under the proposal for the Digital Services Act, platforms must adopt clear, unambiguous communication rules and apply them objectively and proportionately. This is a significant step forward compared to the community standards currently in place, which are often not applied in any transparent way. Transparency obligations should provide an insight into whether the algorithms used by the networks actually reward hatred and aggression with increasing attention, or whether social networks manage in future to effectively counter them. The operators should also give users the possibility to contest blocking or deletion by the networks, or to demand deletion if threats or defamation are not removed.

But it is also clear that legislation alone will not be enough to drastically improve the atmosphere of public discourse on the internet. Rather, to achieve that will take committed efforts right across society. Strong civil society initiatives make a major contribution in this regard. Indeed, the civil society perspective must play a central role in debates on measures to regulate social networks. If we wish to know how to strengthen media skills or reduce social barriers to access and improve participation, then we need to listen to civil society.

I am convinced that social networks can be an enriching element in our societies. However, a clear requirement for this is a regulatory framework that puts a stop to the negative developments that are becoming increasingly apparent. Work on this framework is currently underway. Ensuring an appropriate and effective response will take a broad debate involving a wide range of perspectives.

Digitalization as a common good

Contribution to an inclusive recovery

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INTRODUCTION

The outbreak of COVID-19, and the way it has been confronted, has not only accelerated the digitalizaton of large parts of societies and economies and the process of transformation into digital societies, but has also highlighted that connectivity and other essential digital services are cross-cutting technologies that have become common goods (which could also be described as public or collective). Connectivity, which most of the time is provided by private companies, should be global and therefore produced in sufficient amount and at the right price.

It is a phenomenon comparable to that of electricity or running water and sewage, as well as cable telephony, which were once luxury services for the few, and are now necessary for all. Even more so in this case, as digitalizaton affects the very meaning of modern democracy in our societies, as far as inclusiveness is regarded. A lack of internet access with sufficient capacity to cope with new needs and the demands imposed by the COVID-19 pandemic leads to people being cut off from society, education and the economy. Digitalizaton and connectivity are an integral part of the plans and policies for economic, social and health recovery from the current crisis. Already, digital wireless connectivity has allowed entire territories to save huge investments in telephone networks, and 5G can be another leap in this direction. But while 93% of the world's population lives in areas that are within the physical radius of coverage of broadband services for mobile devices or the internet, only 53.6% of the world's population currently uses the internet, meaning that 4.1 billion people are deprived of access. The least developed countries, where only 19% of the population has access to the internet, are the least connected, reinforcing digital gaps within and between regions.[1]

»The pandemic and the way of coping with it has emphasized and aggravated different types of digital and connectivity gaps and divides.«

The pandemic has accelerated the urgency of a new social contract for this era at national, regional and global levels, and such a pact clearly requires a digital dimension. The Spanish government,[2] for example, proposes that by 2025, 100 megabits per second should be achieved for 100% of the population. A company like Telefónica, for its part, proposes a "Digital Deal to build back better our societies and economies" to achieve a "fair and inclusive digital transition," both for Spain[3] and Latin America.[4]

The pandemic and the way of coping with and overcoming it has also emphasized and aggravated the significance of different types of digital and connectivity gaps and divides, between countries and regions of the world, between rural and urban areas, between social groups,

including income and gender-related gaps, and between companies (large and small), which need to be addressed and bridged in these new social digital contracts. For the combination of digital divides and the pandemic amplify social disparities and inequalities in various spheres of life. Digitalizaton can contribute to enlarge those divides, but also to overcome them.

COMMON GOOD

In 2016, the UN, through its Human Rights Council and General Assembly, qualified access to the internet as a basic fundamental human right, from which all human rights can also be defended.[5] In 2021, the Italian Presidency of the G20 has set universal access to the internet as a goal of the group.

We use the concept of common good, in a non-legal but economic sense, following Nobel Laureate Elinor Ostrom[6] who refers to the nature of use and not of ownership. In line with Ostrom, digitalizaton and connectivity as a common good responds to three characteristics[7]:

• It is non-rivalrous: Its consumption by anyone does not reduce the amount available to others (which in digitalizaton and connectivity is true to a certain extent, since it also relies on huge but limited storage and processing centers, and also on network capacity, both in the access and backbone network. It is the definition of service, where a distinction has to be made between the content of what is transmitted and the medium used.)

• It is non-excludable: It is almost impossible to prevent anyone from consuming it.

• It is available, more or less, all over the world.

The UN Secretary General has produced a "roadmap for digital cooperation."[8] This speaks of a "digital public good." However, we prefer the term "common good," although it is not about collectivizing ownership, but about ensuring services for the community, which, as we have said, are often provided by private entities, for the community as a whole, for the community or communities, in pursuit of common interests. The way to work for the common good is in line with the awareness of the sense of community advocated by the economist Raghuram Rajan.

In its communication, Shaping Europe's digital future,[9] the European Commission does not speak of a common global good but bases its policy on three pillars: 1) a technology that works for the people; 2) a fair and competitive digital economy; and 3) a democratic and sustainable open society. It goes along the idea of the "mission" recommended by the economist Mariana Mazzucato.[10] All this can be useful for other parts of the world.

Digitalizaton as a common good, in our era, has several components: networks, services, software, hardware – including devices – and content. Often they live off other private (such as connectivity) or public goods. In this sense, the economist Dani Rodrik[11] points out that "large, productive firms have a critical role to play," but they must recognize that their success depends on the public goods that their national and sub-national governments provide everything from law and order and intellectual property rules to infrastructure and public investment in skills, research and development. If there is a common good in the age of digital communication, it is the internet (and it is in our interest to maintain a sin-

gle, neutral internet, despite the geopolitical rivalries between the great powers).

»The idea of common good should be approached in a non-legal but economic sense. It is non-rivalrous, non-excludable, and generally available.«

Thus, the idea of common good cannot be sustained in a vacuum. It requires a multi-stakeholder approach, a multi-dimensional, multi-actor, multi-level, polycentric governance, which will necessarily be not just top-down but bottom-up.[12] Microsoft's CEO, Satya Nadella,[13] believes that "neither the public nor the private sector alone can provide the answers" to the digitalizaton that has come with the pandemic and the one that is on its way out. "The challenges we face require an unprecedented partnership between business and the state," she says.

The contribution of business to the common good must be strengthened. But these goods require large investments, and it is legitimate for the companies that have made them to want to recoup them in profits. The economist Jean Tirole[14] addresses the question of when these profits are excessive: Must high profits be the cost of providing these valuable services (as the culture of Silicon Valley claims)?

There is an issue of price. In 19 of the least developed countries, the price of a 4 GB fixed broadband connection exceeds 20% of monthly per capita gross national income. Yet, there are solutions to this. Myanmar, before the recent coup that cut connectivity, is one example. The creation of a competitive market cut the cost of SIM cards for subscribers from USD 150 in 2013 to USD 1.50 in 2015 and brought millions of new subscribers into the market.

The idea of the common good does not necessarily imply more public regulation, but it does imply the need for public interest oversight, something that has even been raised in the United States.[15] There must be public participation in the establishment of rules and standards beyond purely corporate interests, albeit with input of the latter. There needs to be a strong public-private relationship in some areas of ICT. Business must be involved in regulation and have a seat at the table, in what must be an agile regulation.

FINANCING THIS COMMON GOOD

Some estimates suggest that to achieve universal, affordable, quality internet access across Africa by 2030 could cost as much as USD 100 billion. To connect the 4.1 billion people in the world who are currently deprived of access, the cost would be much higher. How can we meet these needs? Private investments are essential, but public funding could also act as a mission-oriented catalyzer.

One way is to use the funds that states, groups of states (such as the EU), inter-

national organizations, NGOs and foundations are devoting to digitalizaton as part of the recovery from the economic consequences of the pandemic. For instance, the EU is proposing that 20% of its Next-Generation recovery package goes toward digitalizaton.

Also, if progress is made in collecting taxes from digital platforms, as some countries are already doing and the OECD is going to propose globally, dedicating part of these revenues to digitalizaton would help. The OECD estimates that tax avoidance by these companies to states in the world amounted to USD 240 billion in 2019.

»Digital skills must be part of the consideration of digitalization as a global good.«

Digitalizaton needs to be further mainstreamed into the development agenda. It is being done in the Ibero-American Summit system. A digital connectivity and digitalizaton agenda should be introduced in the Official Development Assistance of the EU (the European Commission has committed to present a "comprehensive digital cooperation strategy" by 2021), and in other countries and organizations as proposed in a report by the Clingendael Institute.[16] Revolution will drive inclusive growth in the recipient countries too, including control over their own data, and, in terms of digital infrastructure and cybersecurity, will make it easier for them to adapt to European standards, rather than those of other economies, especially China. For in this issue of the digital commons, there is also a question of competition between norms and standards.

DIGITALIZATON AND SDGS

Connectivity and the idea of digitalizaton as a global common good has a lot to do with the Sustainable Development Goals, and with the idea of "technological justice."[17] The SDG agenda mentions "ensuring inclusive, equitable and quality education and promoting lifelong learning opportunities for all" (Goal 4), access to innovation (Goal 9), but does not establish a gateway to justice and equality (Goal 10). However, they have to be connected. The G20 and the UN can push this forward.

In this regard, a broader understanding on how best to use artificial intelligence and other horizontal technologies to support the achievement of these Sustainable Development Goals would also be useful. The ongoing Global Summit on Artificial Intelligence for the Good of Humanity,[18] convened by ITU in collaboration with other UN entities, aims to fill this gap. It is estimated that digital technologies can contribute to 103 of the 169 SDG targets.[19]

Digital skills must be part of the consideration of digitalizaton as a global good. Digital education and skills – basic for citizens and advanced for experts – should be a centerpiece of the digital dimension of recovery, including cybersecurity skills.

CONCLUSIONS: POLICY PROPOSALS

The consideration of digitalizaton and connectivity as a common good:

• Should be part of the new social contract.

• Has to guarantee universal and quality internet coverage and access.

• A Global Charter of Digital Rights should be designed to ensure, among other things, that digitalizaton does not leave the most vulnerable unprotected.

• The dimension of digitalizaton and connectivity in the Sustainable Development Goals should be strengthened as an end in itself in terms of access and an instrument for the fulfilment of the other goals.

• Digitalizaton should be integrated into development policies.

• Digitalization should go hand in hand with programs of digital skilling and reskilling.

• Important parts of the public, national and international funding should be directed to these aims, to complete and push for private investments.

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[4] https://www.telefonica.com/documents/341171/145919232/Pacto-Digital-Telefonica-HISPAM.pdf/3c07a827-12ed-f4ca-7531-f5c822baf54b

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Human-centric digital governance

Managing AI and other technological disruptions to the benefit of civil society

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Even before COVID-19 pandemic struck, governments already faced manifold challenges of the digital transformation. Despite the benefits of technology, we have seen states quarrel over questions such as taxing big tech, increasing market power, the digital divide and growing inequality due to the rise of automation. Moreover, consumers and civil society have become increasingly vulnerable: Data sovereignty has become ever more challenging in the data economy and the world of apps. And sophisticated technologies such as artificial intelligence and deep learning have contributed to making disinformation and manipulation not only an issue on the internet, but also a significant threat to democracies around the world.

Recently, governments and multilateral organizations have been rightly pursuing better governance regimes by regulating firms and services. Initiatives such as those on Base Erosion and Profit Shifting (BEPS) or the fight against global money laundering are a case in point. In the same vein, commitments like the Sustainable Development Goals (SDGs) cater to the idea that governance of (natural) resources is paramount to ensuring sustainability and long-term prosperity in virtually all countries.

However, in addition to managing firms, services and resources at the global level, we also require a stronger effort in governing another force of change: disruptive technologies. Governance is needed here so that these technologies serve consumers and civil society – which will eventually benefit the economy as a whole. Governance of technology, however, is tricky. It requires managing the risks of a certain technology, while at the same time preserving the benefits of that same technology – ideally, in a way that everyone in society, not just a few, gets their fair share. In fact, economic research suggests that institutions and governance have been pivotal in providing prosperity – and thus can provide persistent prosperity.[1]

»AI is certainly one of the most disruptive technologies and already has a far-reaching influence on our daily lives and our society.«

ARTIFICIAL INTELLIGENCE: A CASE IN POINT

A case in point is artificial intelligence (AI). It is certainly one of the most disruptive technologies and already has a far-reaching influence on our daily lives and our society. Sometimes we notice it, sometimes we do not. Applications range from the sorting of news in our search engines, to the selection of employees via recruiting software, to the diagnosis and treatment of diseases or the monitoring of opposition activists. No corner of private or business life remains untouched. Recently, a DeepMind algorithm was even reported to have solved the problem of protein folding – a potential breakthrough for drug develop-

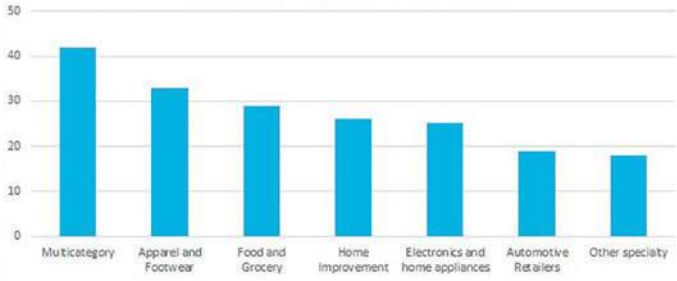
ment and a veritable sensation, as this is a core biological question scientists have been grappling with for decades. Figure 1 suggests that in the retail sector alone AI is on a path to becoming almost ubiquitous. Penetration is at around 1/3 among retailers in subsectors such as apparel and footwear or food and grocery – affecting not just the workforce in these organizations, but also the consumer experience and, inevitably, consumer protection.

Figure 2 indicates that AI holds some significant economic benefits for the short and mid-term prospects of the world economy in terms of economic growth. AI will have the capability of providing an additional source of growth – and thus an increase in living standards. Growth effects due to AI will be particularly strong in the public sector (about 20%), but also in retail sectors and even in services (e.g., 10% in financial and professional services). As indicated, this will roughly come from two sources: innovative products and productivity growth, i.e. a more efficient interplay between capital and the labor force.

Without doubt, this is good news – but AI also comes with severe risks, some of which are already apparent. The COVID-19 pandemic has shown both of these faces to us. On the one hand, AI is being used to identify risk groups, develop drugs and predict the spread of the virus. For example, on December 31, 2019, an AI system called "Bluedot" warned of a virus outbreak in Wuhan, China. As such, the algorithm was a full nine days ahead of the WHO and might even have been able to prevent the global pandemic. These examples illustrate the unrivalled potential of AI technology, which we absolutely must promote for the benefit of society.

On the other hand, the same AI that saves human lives exhibits a darker side. Consider, for instance, that China's so-called health code – which is generated by a phone app – is now an omnipresent feature of daily life for the Chinese population.

Figure 1: Worldwide penetration of AI in retail organizations



Source: Statista

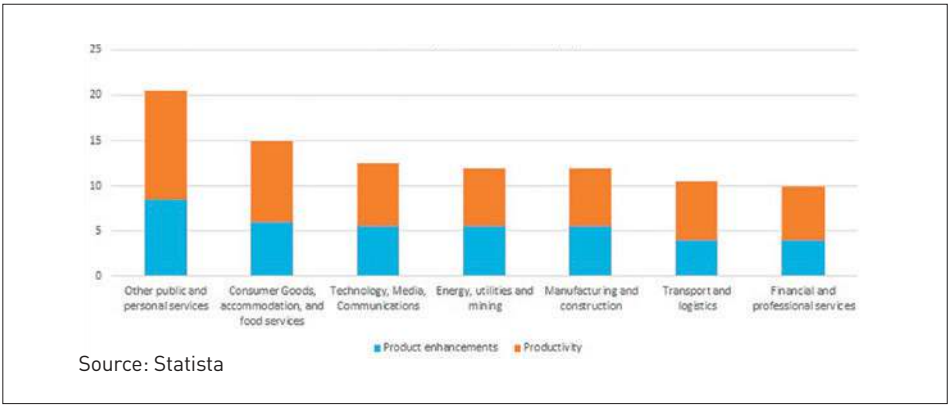
It is an algorithm that calculates an individual's personal risk after analyzing numerous location and mobile network data. It is now practically impossible for people to go anywhere without showing a green code on their phone. This – even more than before – enables the authorities to keep track of a person's movements – the "where", the "when" and the "with whom." Millions of facial recognition cameras that monitor the population at every turn also play their part.

It should be noted that these phenomena are not confined to Asia. In Western democracies, AI-based analysis and prediction tools have also been influencing our daily lives for some time now. It may happen in subtler and more discreet ways, but it is no less far-reaching. As people interact more and more with virtual agents, individuals potentially can be permanently monitored and deliberately manipulated in even the most sensitive areas of their lives. AI has thus arrived in everyone's reality. Google's Pokémon Go is just one extreme example of a seemingly playful but potentially manipulative surveillance app.

HUMAN-CENTRIC DIGITAL GOVERNANCE TO MANAGE RISKS OF TECHNOLOGY

The pandemic reminds us every day about the value of individual human rights, about solidarity in the community, and about the importance of living in a democratic state under the rule of law. It is therefore more urgent than ever that we ask ourselves the following questions: Are we willing to accept that every movement, every reaction, every expression and every wish can be recorded, catalogued and even manipulated – often without us noticing? How does this affect our right to privacy, exercising our human rights and our democratic freedoms? What are the long-term implications for our democracy if the algorithms of a few profit-driven companies decide what information we, the voters, are shown

Figure 2: Projected economic impact of AI across sectors worldwide



Source: Statista

before an election? To what extent is our right to freedom of information impaired if our human senses can no longer distinguish between real media content on the one hand, and synthetic, AI-manipulated content on the other (deepfakes, for example)? Not to mention the much-discussed risk of existing inequalities and discrimination being reproduced in AI applications and then hugely multiplied due to the AI system's reach. Again, this happens without us noticing – especially in cases of proxy discrimination.

We are not, however, at the mercy of technology. Behind AI and its applications are human decisions – decisions made by developers, programmers, and the companies and public authorities that use AI. These decisions need a regulatory environment. This is why we must be committed – both nationally and internationally – to creating and complying with appropriate, risk-adequate framework conditions for AI. Framework conditions that not only allow, but actively promote, the revolutionary progress being made by AI, although not at any price. Innovation should never be an end in itself. It should always serve the people and the common good though sustainable economic growth and thus higher living standards. In short, we need a particular form of governance – a human-centric one – to tackle the challenges that come with AI. We highlight two examples of how we could develop and monitor human-centric digital governance.

One example relates to a legal framework. In order to effectively counteract the risk of discrimination, we need to set concrete requirements for the data used by AI systems – especially training data. Human autonomy must be ensured at all times – for example through human supervision, the possibility of intervention, and final decision-making. In cases involving decisions influenced by AI, the person concerned must have the same appeal possibilities and legal remedies as in cases involving purely human decisions.

»We need a particular form of governance – a human-centric one – to tackle the challenges that come with AI.«

The German government and its Ministry of Justice and Consumer Protection have joined forces with other governments in the European Council in the Ad hoc Committee on Artificial Intelligence (CAHAI). The Committee has examined the feasibility and potential elements, on the basis of broad multi-stakeholder consultations, of a legal framework for the development, design and application of artificial intelligence, based on the Council of Europe's standards on human rights, democracy and the rule of law. These efforts have culminated in a feasibility study that outlines possible elements of a specific legal framework on AI. The European Union has a strong lever to shape this debate. The Digital Services/Markets Act, presented in December 2020, as well as the legislative

act on artificial intelligence, presented in April this year, will definitely provide ample opportunities to shape the legal (and governance) framework on AI.

A second example of how human-centric digital governance can be built is linked to creating an eco-system of AI actors. After all, managing the risks and benefits of AI is about understanding the incentives of at least three groups: those who are developing code, those implementing it into products and those affected in civil society. Like many other countries, Germany, too, is attempting to create these kinds of ecosystems. The German Federal Ministry of Justice and Consumer Protection, for instance, is planning to build a network for consumer-centric AI, where the abovementioned groups come together to deliberate about fair and adequate use of AI. Developers and implementers should be exposed to the concerns of civil society – and vice versa – so that there is mutual exchange of concerns among stakeholders involved.

CONCLUSION: CIVIL SOCIETY IS KEY TO HUMAN-CENTRIC DIGITAL GOVERNANCE

Regulating AI is a case in point for why human-centric digital governance is key. It is the only way technological disruption can be managed such that the benefits are accessible to everyone in society – while at the same time risks such as discrimination and disinformation can be effectively managed. Two pillars appear to be key to human-centric digital governance. First, we require a legal framework that sets limits and rules for a technology such as AI. Second, we are in need of broad deliberation across stakeholders in society to discuss the merits and risks of a particular technology – this process in itself can be key to creating legitimacy in the use of a technological disruption like AI.

Clearly, the ideas in this article can be used in other areas of digital policy besides AI. For example, the question of data accessibility and data protection is one that also requires us to carefully assess the risks and benefits of the use of data. Again, the COVID-19 pandemic has demonstrated that these assessments can be anything but easy: Is there a tradeoff between data protection and the smart use of data to fight pandemics? What kind of data should be used to make decisions on lockdowns? What kind of data intermediaries are the right ones to protect consumer and company data? Questions of this type also require clear frameworks for the use of data and deliberation in society about how far we want data use to go in shaping big societal decisions.

What should become clear in pondering these questions is that civil society must be at the foundation of any such deliberation. We thus propose not only to foster digital civic rights vis-à-vis platforms, but also to give civil society a strong institutional voice in shaping digital rights in society. In our view, decent human-centric digital governance thus requires strong NGOs, ethics councils and other civil society organizations that are as involved in digital policy as companies and the state.

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From scale to purpose?

The EU's support for startups in the global race for tech dominance

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Keywords:
EU policy, technology, purpose, startups

The race for global technological dominance has long left the world of business and entered the political fray, as decision-makers recognize the long-term strategic relevance of global tech companies, whose products and services impact our lives with unprecedented immediacy. Against this backdrop, EU policy-makers have over the last few years stepped up their efforts to boost the underdeveloped European startup sector – from where disruptive tech is most likely to enter the market. Policy-makers are in particular focusing their efforts on two areas, which are generally considered to be a prerequisite to supporting the European startup sector: the ability to attract and retain human talent and to tap into large-scale growth capital.

A closer look at the reasoning behind European policy-makers' new interest in tech suggests that such ambitions are powered not just by a sense of unease regarding dependency on powerful American and Chinese companies but increasingly by the realization that disruptive innovation is required to solve both short- and long-term social and environmental challenges faced by Europe and beyond. The COVID-19 pandemic has intensified

this focus, with funds strategically channeled into the biotech sector to create a vaccine being the most obvious example of such a "purpose-driven" approach to fostering innovation.

So what are European policy-makers actually doing to support the startup sector and what are the chances that European startups can play in the global super league sometime soon? We find that there are numerous initiatives at the European level, which represents a step change from previous activities. But we also find that these efforts are probably not enough yet to help European startups to challenge US and Chinese competitors. Much of this has to do with financing: A persistent gap relating to late-stage funding for successful European startups risks rendering support for early-stage tech innovation obsolete unless the EU thinks and acts on a much grander scale when it comes to meaningful finance.

With that in mind, we suggest that Europe could take an alternative route, playing to its true strength by linking the power of innovation to purpose-orientated objectives, thus setting norms to make the best, rather than the most, of technology made in Europe.

EUROPE'S DEFICIT IN DISRUPTIVE INNOVATION

Innovation is universally acknowledged as a key prerequisite for economies to remain competitive, drive growth and create jobs. At first glance, Europe as an innovator seems to be doing well, particularly in terms of innovation capabilities. However, a closer look shows a less rosy picture. For example, despite offering a strong environment for innovation, Germany – Europe's most active country in terms of international patent applications – is dwarfed by China, the United States and Japan when it comes to these applications.[1]

Moreover, Europe appears to be doing relatively well in those types of innovations that optimize existing structures, processes, and products, but less well when it comes to disruptive innovation. It is these that help create new markets and as such play a key role in establishing new industries, technologies, or standards.[2] Europe's scope for shaping the future – technologically as much as culturally in the global information age – will ultimately depend on its ability to generate disruptive innovation.

EUROPEAN STARTUPS NEED TALENT AND MONEY

If bringing disruptive innovation to the market is what Europe needs, the startup sector is an obvious place to look to. The last decade has seen an explosion of startups across Europe, but most of the global success stories still appear to be American. A lack of funding is still holding back European startups, though Europe is catching up in some areas, with more than a third of global seed stage capital now raised by European startups. Where Europe continues to trail behind is in the funding raised by scaleups, with less than a tenth of so-called "mega-rounds plus" going to European scaleups.[3]

Unsurprisingly, the issue of funding, alongside that of the recruitment and retention of talent, is central in the recent demands formulated by European startup associations, restated succinctly in light of the COVID-19 pandemic and – for the first time – aimed directly at European policymakers.

THE EU'S MAJOR INITIATIVES TO SUPPORT ITS TECH STARTUPS

The EU is responding to increasing demands for action with, broadly, three targeted initiatives: first, the Startup Europe initiative; second, the newly created European Innovation Council (EIC); and third, the newly designed InvestEU Programme.

»Europe's scope for shaping the future – technologically as much as culturally in the global information age – will ultimately depend on its ability to generate disruptive innovation.«

Startup Europe to connect ecosystems and share best practices

The European Commission's main policy-oriented, non-financial support structure is the Startup Europe initiative, focused on connecting European startup ecosystems while at the same time pushing for policy change. Startup Europe is designed to recognize the specific needs of startups as opposed to other SMEs, particularly regarding their ambitious growth aims. Its stated aim is to "connect high tech startups, scaleups, investors, accelerators, corporate networks, universities and the media."[4] In practice, this means funding programs that lead to collaboration between European startup ecosystems. With a budget of around EUR 10m in 2020-21, the Commission is seeking to bring about "one European startup community rather than individual hubs."Regarding policy, the most prominent feature of Startup Europe was launched in March 2020: The Startup Nations Standard is a set of best practices in EU countries for building growth-friendly innovation ecosystems across Europe. The Startup Nations Standard focuses explicitly on policies that are implemented at member state level.

A European Innovation Council to help fund startups

On the funding side, the most recent initiative is the creation of the European Innovation Council, designed to become Europe's "new home for deep tech research and innovation" and, notably, a new investment agency for European tech startups. Formerly known as the SME-instrument, a grant-making body for European SMEs, the EIC will – among other types of support – provide direct equity investments into high-risk, but potentially game-changing innovations.

The Commission will allocate EUR 10bn to the EIC for the period 2021-27, which in turn hopes to crowd-in a further EUR 30-50bn in private investment. This will make the EIC a permanent fixture of Horizon Europe, the EU's projected EUR 81.4bn R&D program for the period 2021–27.[5]

InvestEU to leverage private investment

Finally, the Commission is set to launch a newly designed flagship investment support program named InvestEU, which will succeed the previous "Juncker Plan." InvestEU is basically a EUR 26.2bn guarantee system, aimed at European SMEs and other types of entities at large, through which the Commission hopes to crowd-in a further EUR 370bn of private investment for European companies. While overall demand-driven, InvestEU operates under four specific policy windows – sustainable infrastructure; research, innovation and digitization; small and medium-sized businesses; as well as social investment and skills.

THE EU'S STEPS ARE BOLD BUT NOT BOLD ENOUGH

The EU is a global player when it comes to innovation at the research and development level, and is increasingly getting better at shifting ideas from laboratories into markets via promising tech startups. Bringing these companies to scale remains a challenge though.

As far as the creation of a favorable policy environment for tech startups is concerned, the Startup Europe initiative represents valuable steps in the right direction, signalling an increasingly strategic approach to fostering favorable conditions for startups by acknowledging their specific needs and putting pressure on national governments to conform with European best practice.

The newly created EIC, with its specific focus on direct equity investments, can be considered groundbreaking in the short term but raises questions regarding the long-term effectiveness of such a use of public funding. A strategy that is designed to crowd-in private capital is plausible and sorely needed from the perspectives of a

Table 1: Key structures and aspects of the EU's startup initiatives

	Startup Europe	Horizon Europe	InvestEU
Main players	Commission, startup community and Member States	European Innovation Council (EIC)	European Investment Fund (EIF), National Promotional Banks
Purpose	Addresses policy and barriers to startups and scaleups, connects ecosystems	Provides blended finance (equity + grants) directly to startups	Uses EU funds as guarantees to leverage private-sector investment for SMEs, incl. startups
Budget (2021–27)	Approx. €75 m	Approx. € 10 bn	€ 38 bn (guarantees, aimed at leveraging a further € 630 bn in private capital)
Main programmes	Startup Nations Standard	EIC Accelerator	Sustainable infrastructure
	Startup Europe One Stop Shop	EIC Pathfinder	Research, innovation and digitization
	Innovation Radar	Fast-track to innovation	Small and Medium-sized Businesses
	Digital Innovation and Scaleup initiative	EIC Prizes	Social Investment and Skills
			Strategic European investment

Source: BertelsmannStiftung

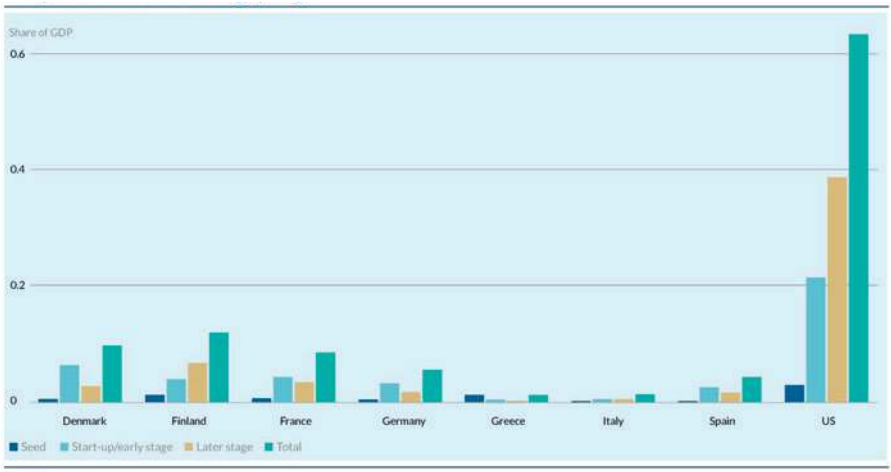
substantial number of European startups in an early growth-stage. With its new equity program, the EIC wants to "grow the pipeline, thus enabling more tech startups to attract VC-funding in larger funding series, rather than funding VCs, that in turn chase the same, small number of startups." [6]

But the initiative's long-term effectiveness remains to be seen. The lack of large-scale financing in Europe means that the probability of European-bred companies being bought by – most likely – American VCs will remain as high as ever. One of the key differences between the US and European capital markets is the fact that institutional investors such as pension funds play a much larger role in providing VC in the former than in the latter: More than half of the nearly USD 160bn fund raising in the US between 2012–16 came from institutional investors compared with just over a quarter of the nearly USD 50bn raised in Europe over the same period.[7]

A EUROPEAN SOVEREIGN WEALTH FUND MIGHT BE REQUIRED TO COMPETE SUCCESSFULLY AGAINST US INSTITUTIONAL INVESTORS BUT IS A POLITICAL NO-GO

Even the achievement of more modest goals, such as a degree of control over strategically relevant tech industries, would require much larger funding structures at European level – for instance, the creation of a European Sovereign Wealth

Figure 2: European and US VC financing by stage



Source: Bertelsmann Stiftung

Fund. Indeed, plans for such an entity are reported to circulate within the European Commission under the title "European Future Fund," with a view to investing European public money into sectors deemed strategically important. But it is unlikely that we will see a European SWF anytime soon: the political and economic challenges to establish such an entity are just too large.

»Public funds strategically channeled into the biotech sector to create a COVID-19 vaccine are an example of a ›purpose-driven‹ approach to innovation.«

IF SCALE IS OUT OF REACH, WHAT ABOUT PURPOSE?

If achieving digital sovereignty remains out of reach, could the EU use its powers to push innovation in the direction of strategic and mission-driven objectives? Could it encourage European entrepreneurs and capital to address social and ecological challenges instead?

With respect to Startup Europe, the extent to which mission-oriented policy guidelines will be contained in the collection of best practices remains to be seen. Regarding the demand for a purpose-driven outlook on the ground, officials point to anecdotal evidence of a growing number of entrepreneurs active in the various networking schemes, "wanting to be part of the solution." This is backed up by research at member-state level suggesting that interest in solving societal problems constitutes an increasingly large motivational factor for new entrepreneurs.[8] So far it is too early to tell, however, whether this will really make a difference.

As regards the EIC, the Commission stresses that it is "a bottom-up instrument, that can nevertheless adopt a top-down approach through its strategic challenges and in that sense will follow the approach of the recovery package and the Commission's priorities: the Green Deal and the digital strategy." In particular, the "EIC Accelerator will aim at funding transformative green innovations, which contribute to the goals enshrined in the European Green Deal strategy and the Recovery Plan for Europe." Purpose-orientation, then, seems to have found its way into this new instrument, at least to an extent.

The structure of the InvestEU Programme also points to an increasingly mission-oriented focus. The Commission justified revamping the former Juncker Plan into a new flagship investment program by arguing that "…[a]n enhanced InvestEU programme … will be able to provide crucial support to companies and to ensure a strong focus of investors on the Union's medium- and long-term policy priorities, such as the European Green Deal and the digitalization transition and greater resilience." An example of the InvestEU Programme leading to new fund-

ing opportunities for European startups – albeit under the existing scheme – is the European Social Innovation and Impact Fund (ESIIF), created in 2019. The fund is managed by a financial intermediary and is structured so as to be able to invest alongside other direct investors such as business angels or foundations, or – given the focus on social entrepreneurship – social impact funds.[9]

IN SEARCH OF GREATER TRANSPARENCY

The shift towards a purpose-orientated framework for innovation raises bigger questions regarding public sector involvement in directing market activities. These questions concern matters of both principle and technique.

For example, with its new equity-investment program, the EU is proactively pushing markets in strategic, purpose-oriented directions. This, however, remains highly controversial in many quarters and a genuine strategic push towards purpose would require a paradigm shift. Is the EU really ready to take account of mission- and impact-orientation at all levels of both policy formation as well as when it comes to financial assessment and reporting frameworks?

At least the methodologies and approaches to do that appear to be there. "Impact-weighted accounts," for instance, constitute an advanced technique for shedding light on the entire performance of companies. These enable investors to apply traditional methods of analysis to a broader set of comparable data which, crucially, includes a company's ability to achieve its stated mission.

Going down this road would also be in line with a more general shift towards transparency and purpose seen elsewhere, in particular in the financial markets. With governments getting ever more serious about reaching "net zero" by 2050, the need for financial transparency related to climate risk has increased significantly over the recent past. The current boom in ESG investment – guided by environmental, social and governance principles – is also driving the development of new reporting frameworks.

From an EU perspective then, pushing for purpose rather than searching for scale in developing the European startup ecosystem could make a virtue out of necessity. Lacking the financial clout to support a truly global startup ecosystem, perhaps Europe should play to its strength by linking the power of innovation to purpose-oriented objectives, thus setting norms to make the best, rather than the most, of technology made in Europe. Tools and instruments to do that are increasingly available. But does the EU have the political will to go in that direction?

[1] International patent applications by origin, World Intellectual Property Organization, 2020.

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[3] Dealsource.com, presented at the Not Optional Conference, 29-30th October 2020.

[4] For more details on Startup Europe, see https://ec.europa.eu/digital-single-market/en/startup-europe

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[6] Representative DP Research and Innovation, European Innovation Council, at the Not Optional Conference, 29-30th October 2020.

[7] Participation of Institutional Investors in European Venture Capital, Axon, 2019.

[8] See for instance: Social Entrepreneurs in Deutschland - Raus aus der Nische, KfW Research, Nr. 238, January 2019.

[9] The fund was initiated by the Financing Agency for Social Entrepreneurships, a German organization that supports impact ventures in attracting investment, notably from impact investors. ESIIF was set up during the previous MFF (2014-20) under the Employment and Social Innovation program. See https://esiif.de/en for more information.

A data economy for people and prosperity

What needs to be done to bring our digital governance to the next level

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In the 2020 science fiction novel, Ministry for the Future, the bestselling author Kim Stanley Robinson paints his vision of the world in 2050, hypothesizing that our internet will evolve as follows:

"Then people began to share the news that you could transfer everything going on in the rest of your internet life into a single account on YourLock, which was organized as a co-op owned by its users, after which you had secured your data in a quantum-encrypted cage and could use it as a negotiable asset in the global data economy."

This might seem utopian, but some people are already working on making this vision reality. But how are they doing this, and what can be done to accelerate the process?

This article will provide policy guidance on how to advance our data economy – in other words, how the collection, processing, and exchange of data-driven business can better contribute to prosperity while also serving people and planet. Finally, we will learn why we need an international alliance to create a technology standard and governance mechanism for a decentralized data economy.

TODAY, OUR DATA ECONOMY IS CENTRALIZED. WHY DO WE NEED TO CHANGE THIS?

Every day, new data generated by users around the world moves into the direction of existing data, as if subject to the law of gravity. However, the majority of this data wealth – the data of billions – is held by only a few companies, most of which operate their data centers in either the US or China: Google, Amazon, Facebook, Apple, Microsoft, and the Chinese giants Tencent and Alibaba. This American oligopoly and the Chinese duopoly dominate the virtual sphere and undermine market mechanisms, having adverse effects on competition, innovation, taxation, prosperity, and data privacy.

How did this concentration of power come to be? Tech companies have made it their goal to accumulate as many users and as much personal data as possible for two reasons. First, social networks profit from the so-called network effect. This means that a service, such as WhatsApp, becomes exponentially more attractive the more friends, family members, or colleagues are using it. Once a platform has attracted a critical mass of users, it is very difficult for other services to compete, even if they offer better features. Second, platforms with a high number of users can collect and analyze more user data, which allows them to improve their services at a much faster pace.

These two factors make the gravitational effect of data self-reinforcing. They create growing black holes that attract ever increasing amounts of data, often leaving users in the dark about where their data goes and for what purposes it is used. Instead of data being centralized in the server farms of a few monopolizing companies, data should remain decentralized and under user control. For example, one should be able to decide whether their 'home' address used for navigation is shared with Google Maps, or simply stored on one's phone. This article's last two sections will further expand on why and how a decentralized data economy needs to be put into practice.

If data would be more equally distributed and less centralized, i.e. not shared between only 10 companies but maybe 1,000, this would enhance collective decision-making, innovation, and prosperity. It is imperative that users can make informed decisions about what personal data they want to share with whom and when, and that they receive a fair share of the financial profits resulting from their data being processed.

DATA CENTRALIZATION IS INCREASINGLY CHALLENGED. HOW ARE POLICYMAKERS FIGHTING THE 'GRAVITY'?

Over the last years, governments and civil society organizations have increasingly tried to counteract data centralization, but it's nonetheless been a struggle to shape tech giants' conduct.

Let's look at some examples regarding Facebook in particular. When the UK parliamentary committee investigated the impact of disinformation on the UK democracy, especially in the context of the Cambridge Analytica affair, Mark Zuckerberg repeatedly refused to speak to the situation[1]. When Australia introduced novel legislation requesting social networks to pay for news content shared on their platforms, Facebook blocked all news content

of Australian outlets from its platform, and Google threatened to cut its search engine in the country.[2] At the time of this writing, the US Federal Trade Commission (FTC) is suing Facebook, pressing the company to sell WhatsApp and Instagram on account of illegal monopolization[3] – but the result is yet to be determined.

The German Chancellery published a data strategy in fall 2020 that has been very well-received and could help change the status quo. It shifts the government's focus away from a paradigm of exploiting consumer data for business purposes and instead aims to establish a legal framework that enables increased privacy for personal data and more transparency for public data (for the latter, see also the EU's Open Data Directive and Data Governance Act).[4]

Following this, Angela Merkel, together with the prime ministers of Finland, Denmark and Estonia, made a collective bid in March of this year to strengthen Europe's digital sovereignty. In their letter to the president of the European Commission, they called for "a new global initiative on platform regulation," and, "to strengthen cooperation across the digital sphere," concluding that, "now is the time for Europe to be digitally sovereign."[5]

THE GDPR WAS A GREAT SUCCESS. WHICH CRITICAL DECISIONS ARE NEXT?

This letter is one of the more recent indicators of how the EU has become a leader in governing data privacy, seeking to balance the interests of businesses, states, and citizens. This is shown by one piece of legislation in particular: the General Data Protection Regulation (GDPR). While critically eyed by some when it launched in 2018, the GDPR has since become the most widely acknowledged success for data privacy, as well as being the first policy that had a substantial effect on tech giants' operations.

»We need an international alliance to create a technology standard and governance mechanism for a decentralized data economy.«

Simply put, the GDPR limits the way companies can make use of your personal data, such as your birthday. Following its introduction, the European Court of Justice ruled last summer that US regulations, in comparison, do not provide sufficient protection for personal user data and that US firms such as Facebook can no longer transfer data of EU citizens to US data centers.[6] The lax data privacy regulations in the US are also increasingly being addressed within the US. For example, a local civil society organization collected 900,000 signatures and initiated a successful state-wide vote on the California Privacy Rights Act (CPRA), mainly to align Californian data privacy rights closer with the higher GDPR standard.[7] At least

15 additional US states are about to follow the Californian example by passing similar legislation.[8]

While this legislative push for data privacy was a very good start, many more such efforts are needed to transform our data economy into one that is more equitable. The EU seeks to expand its leadership in this area through its forthcoming ePrivacy Regulation (ePR). It will add more detail to the GDPR, for example by extending its mandates into messenger services such as WhatsApp.

The ePR was first drafted in 2017 but had until recently been at a standstill. This February, a counterdraft was published that attracted substantial criticism in regard to numerous issues. To not dilute existing digital rights and to make the ePR a success, these proposals of the latest draft need to be reversed: a data retention policy must not be introduced, users need to keep their right to revoke any permission for data sharing, processing of personal data must not be possible without user permission, and invasive tracking that could be enforced through so-called "cookie walls" should not be allowed. These critical points have been prominently made by the German Federal Commissioner for Data Protection and Freedom of Information.[9] Another element included in an earlier draft and missing now, is the requirement for web services to make data privacy settings the preselected standard ("privacy by default").[10] This is important as many service providers are nudging users into sharing extensive personal data through intricate menus.

Beyond the ePR, the EU is working on another two legislative initiatives that go even farther: the Digital Services Act that aims to introduce transparency and liability for content, especially in social networks, as well as the Digital Markets Act that will seek to curb market dominance of powerful players and re-establish a level-playing field. Efficacy in finalizing these policies could play a big role in solving some of the challenges of the current data economy, setting another strong example in the European context. Testament to the potential effectiveness of the proposed measures is the US tech companies' growing budget for lobby activities in Brussels, which has tripled in the past six years.[11]

»To not dilute existing digital rights and to make the ePR a success, these proposals of the latest draft need to be reversed.«

A DECENTRALIZED DATA ECONOMY FOR PROSPERITY. HOW DOES THIS NEW PARADIGM WORK?

Keeping in mind the practical policy work underway, there is also a growing number of organizations working toward an even more equitable and prosperous data economy – one that is organized decentrally.

If our data is no longer drawn into the black holes of the big players' server farms, but is processed on the end users'

devices, this will open new avenues for taxation and law enforcement, bring back collective and individual data sovereignty, and substantially increase our resource efficiency.

To better grasp how this all fits together, it is helpful to understand that a truly decentralized data economy would entail that algorithms come to where the user data is, onto the end-users' devices, rather than the user data being moved to the enormous data centers where the algorithms operate. This means that the personal data physically remains in the hands of the user, and thus under her or his control. This is then also where the algorithms of the service provider operate, making them subject to the regulation and taxation of the country in which the user resides.

In addition, data leaks exposing millions of users at a time will become a thing of the past, as personal data of many individuals is no longer stored together. And, by shifting the computation power from server farms to the end-users' devices, energy consumption of our digital infrastructure will drastically change and decline.

Another advantageous side-effect will be a partial but increased transparency of algorithms, bettering society's understanding of their workings and creating space for public discourse that could influence the decision-making of powerful service providers.

An initiative called Data Sovereignty Now proposes a three-step approach towards the decentralization of our data economy. It suggests to first "make data sovereignty a legal prerequisite for every data initiative in Europe," second, to "implement a 'soft infrastructure' of functional, legal, technical and operational agreements which will support decentralized data sharing," and third, to "focus on the adoption of Data Sovereignty principles by organizations and end users."[12]

One group following a decentralized approach is a team of entrepreneurs that developed an innovative search engine. At first glance, this search engine, Xayn, seems to work just like Google – but it doesn't. Your search results are not personalized based on a behavioral profile of you, like the one Google has successively built in its data center. Instead, the personalization happens on your device. An algorithm on your smartphone learns what is relevant for you as you swipe away results that do not fit your expectations. No private data leaves the device. The founders emphasize that this requires a tiny fraction of the energy otherwise needed to process the search requests in large data centers.[13]

Another pioneer in the growing field of a decentralized data economy is polypoly.[14] This user-owned cooperative developed the polyPod, in which individuals can record and own their personal data – on their personal smartphone, tablet, or IoT-device. The polyPod allows third parties to offer features and mini-apps to run decentrally on the users' devices. Such mini-apps can be downloaded from its internal app store.

The users can then pick and choose what personal data they want to share with each of the online services they use. When installing a mini-app, for example a movie recommendation app, users can decide whether this mini-app can use the "Netflix data," the "Amazon data" or maybe even the data on "cinema tickets." Those services can then only process the selected data when it runs its algorithms on a user's

device. This way, again, no personal data needs to leave the device. This is particularly relevant for users when it concerns health or financial data. Besides, this decentralization of calculations also benefits the service provider, as it minimizes its server costs and legal risks.

»A truly decentralized data economy would entail that algorithms come to where the user data is.«

A BROAD ALLIANCE FOR A NEW STANDARD. WHAT CAN WE LEARN FROM THE LAST SUCCESS STORY?

Entrepreneurs and civil society actors who innovate for a more prosperous digital future, need to be consulted more and funded more generously. Building on that, to create the decentralized data economy we need, we must have a broad alliance of policymakers and businesses that agree on a uniform and secure technological standard and a common governance mechanism. This should be a key objective of Europe's Digital Decade, which starts this year.

The EU can draw inspiration for this from a previous success story. In the 1970s and 1980s digital cellular networks were fragmented and did not allow for seamless interoperability. Therefore, European states created a taskforce to develop a coherent pan-European standard for mobile telephony. This taskforce not only included policymakers but also service providers and technology manufacturers. It, too, was open for non-European states. This inclusive process created a dynamic culminating in the introduction of the GSM standard for mobile communication in 1992, fostering further innovation and competition. Today, it is operated in virtually every country on the planet with a market share of around 90 percent.[15]

If we do it right, we might be able to repeat this success. The story might then progress just as Kim Stanley Robinson anticipates in Ministry for the Future:

"People began to make the shift, and one day that tipping point arrived where a non-linear shear occurred, like an earthquake, and suddenly everyone had a YourLock account and would henceforth be conducting their internet life by way of it."

Let us make the changes necessary to create a decentralized data economy – and let us be curious whether we will soon all download and use a YourLock equivalent. It would be for the greater benefit of the people, our planet, and prosperity.

[1] https://www.theguardian.com/technology/2018/mar/27/facebook-mark-zuckerberg-declines-to-appear-before-uk-fake-news-inquiry-mps

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The gender and children effects of COVID-19

Mitigating equity, safety and ethical risks linked to digital transformation

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FRAMING THE PROBLEM

The COVID-19 pandemic has been as much a health crisis as it has been a social and economic crisis, upending the fabric and norms of social structures in developed and developing countries alike. Among its many impacts spanning all layers and sectors of society, the impact on women and children is expected to be the highest, as these groups have historically disproportionately suffered from inequality and disparity.

»The global nature of internet connectivity means that data privacy and safety measures, as well as policies related to ethical obligations need to be implemented and enforced by all nations.«

The pandemic undoing progress towards gender equality

Before the pandemic struck, the World Economic Forum's 2020 report on the Global Gender Gap[1] identified the greatest progress in mitigating gender inequality in recent decades. Between 2018 and 2020, 101 of 149 countries reduced the gender gap, but still had a long way to go for full elimination – for example, 163 years in East Asia and the Pacific based on current trends.

Globally, women are tackling the crisis head-on, as women make up 70% of all global healthcare and social workers.[2] As seen in case of the Ebola and Zika viruses, the reallocation of health resources can have adverse effects on sexual and reproductive health services for women.[3] In developing countries, women are overrepresented in the informal sector, which usually translates to lower earnings, job security and savings, all of which are being adversely impacted during the COVID-19 pandemic. Over 70% of women in developing economies are engaged in informal employment, and the uncertain nature of this work disproportionately exposes them to abrupt dismissals, abuses of worker rights, and violations of other rights. For low-income countries, the total share (women+men) of informal employment is even higher – over 80-90% in many countries and in Sub-Saharan Africa and Asia, and there are significantly more women workers in informal jobs than men.[4]

Beyond employment, past evidence has also shown a rise in sexual abuse and teenage pregnancy due to school closures.[5] On one hand, working women have seen an increase in responsibility in the household, while on the other, the pandemic may limit their decision-making power in the households for many women who have lost their jobs, ultimately widening the gender gap.

In some countries, there is also a significant gender gap in relation to digital skills, which is associated with gender norms and a lower parental acceptance to

let daughters access computers and the internet when they are available at home. A UNICEF study covering eight Sub-Saharan African countries found that, on average, only 6% of adolescent girls have basic digital skills compared to 9% of adolescent boys. In Ghana, only 7% of adolescent girls have basic digital skills compared to 16% of adolescent boys.[6] Evidence from past pandemics and epidemics also show that young girls and women disproportionately suffer during such crisis. Among many others, factors impacting adolescent girls include being orphaned, stigmatization and discrimination, early or adolescent pregnancy, abuse and maltreatment, and intimate partner violence.[7]

Impact of the pandemic on children

For children, the impact of the pandemic has been acute, as school closures have significantly disrupted the progress of their education by more than a year in most developing countries. And even before the pandemic, the world was already facing a learning crisis, with 48% of all children considered to be "learning poor" – unable to read and understand a simple text by the age of 10, with a significantly higher learning poverty rate in low-income countries (90%).[8] Globally, it is estimated that the pandemic will add an additional 10% to the world's children in learning poverty.

In addition, children's mental health and development has suffered in many places, as they were confined to their homes for months, while they would have benefited from access to sports, outdoor and social activities in person. With increased responsibilities and uncertainties, in many households parents have been unable to provide due attention to their children.

Digital technology is impeding inequality risks

In the wealthiest countries and households with internet connectivity, technology has been a boon during the pandemic, with digital platforms providing various online learning mediums and work-from-home facilities for women. For global stakeholders, these platforms have opened the possibilities for potential support even in a post-pandemic world, if the digital divide is resolved. However, many inherent barriers must still be overcome before we can rely on digital technologies for the most vulnerable populations.

The most vulnerable countries and households are significantly lacking in terms of electricity, connectivity and accessibility to digital devices. In fact, in low-income countries, only 42% of the population has access to electricity.[9] Among children and young people aged 25 years or less, only 6% in low-income countries have fixed internet access at home, compared to 87% in high-income countries. During lockdowns, less than one third of children had the connectivity necessary for potentially being reached by digital learning solutions.[10]

These hard barriers are compounded by soft barriers, as many parents and teachers lack the required digital skills to support children as they go online, and there is still reluctance from many parents to let their children, in particular girls, access the internet. In addition, diminished privacy, increased collection of personal data, and risks of encountering online violence and abuse, bullying, or inappropriate content, are some of the key risks that children face as they get greater exposure to the digital world.

In order to deliver on their potential, digital technologies, big data and Artificial Intelligence need to be applied cautiously with a focus on being inclusive, and designed from the start to benefit the most marginalized and not to further entrench inequities.

Against this backdrop, the following recommendations provide a pathway for policymakers to focus and prioritize actions to mitigate the impact of the pandemic on women and children and the inequity risks associated with the digital divide.

RECOMMENDATIONS

1. Develop infrastructure to make electricity and internet connectivity accessible and affordable

Lack of electricity and infrastructure is one of the largest inequality factors. An estimated 2.2 billion (two-thirds) children and young people lack access to a fixed internet connection at home.[11] Even in high-income countries like Italy, one-third of families with internet access were unable to fully engage in digital learning due to a lack of sufficient connectivity or devices.[12] And globally, the proportion of women using the internet is 12% lower than men, with 200 million fewer women than men owning a mobile phone.[13]

At a very core level, policymakers and donors need to ramp up efforts to develop hard infrastructure like access to electricity, connectivity and good quality digital devices, in particular for the most vulnerable populations. This should be adequately complemented by online resources made available by technology companies. For example, educational materials should be made available in documents, sizes and formats that are easily and cheaply accessible through low-speed internet and integrated with existing devices. At the same time, these resources should also be accessible offline to ensure use in setting with low/no connectivity. Governments need also to work with telecommunication companies to subsidize costs of data, devices and digital platforms.

»Policies need to provide ›meaningful connectivity‹ through content ›that is safe, trusted, and user-empowering‹.«

2. Address online safety and data privacy measures

Ensuring privacy in the online sphere is also a challenge. For women and children, who are disproportionately likely to suffer from abuse due to prevailing social norms, this is a significant threat for both physical and mental well-being. COVID-19 has resulted in a significant surge in the use of digital platforms, with crimes committed through the use of digital technology increasing in tandem. The pandemic saw a 400% rise in cyberattacks, compared to the pre-pandemic era, with approximately 4,000 attacks taking place every day.[14] As

predators and online offenders spent more time on the internet, abuse against women and children also rose[15]. The Philippine government saw a 260% rise in increase in reports of online child abuse.[16] In Indonesia, a group was recently discovered through a popular messaging app that purported to offer live nude shows of minors.[17] Developed economies such as Australia weren't left behind either, with the country experiencing a significant rise in reports of child sex abuse in 2020.[18]

The global nature of internet connectivity means that data privacy and safety measures, as well as policies related to ethical obligations need to be implemented and enforced by all nations. Banning or restricting access for children to websites showcasing child abuse materials in one single country is not always sufficient as Virtual Private Networks are in abundance today to provide easy access to the same websites from another country. Hence, policymakers need to combine their efforts to enact data safety and privacy policies that can be applied across borders.

For women and children, such measures need to be complemented with information about the safest ways to use the digital platforms, recognizing that they may be more likely to experience some forms of abuse online. Technology companies should do their utmost to make sure women (and children) are not subjected to abuse on their platforms. Guidelines should be available for parents and children alike to help them identify the early signs of sexual abuse and bullying through online platforms. In addition, children should be supported to find the right balance between screen-based and outdoor activities, especially when remote learning is done online and forces them to spend significant time with screens. This should not come at the expense of their digital entertainment and socializing however, as these are important and valuable activities for children.

3. Support increase of digital use by removing cultural barriers

Among the key barriers to increased digital use are cultural perceptions and gender and social norms that consider internet access a waste of time or unsafe. Even when the required infrastructure and connectivity is available, such cultural norms and perceptions have impacted internet access for women and children, how much time they spend on it, and when they do, whether they are using it for their own benefit. This calls for a need to design programs and policies that provide "meaningful connectivity" to women and children, including content "that is safe, trusted, user-empowering and leads to positive impact."[19] Policymakers need to conduct awareness campaigns that target information and education towards parents, teachers, community leaders, religious leaders and other influential figures in order to enhance meaningful and safe digital engagement. And digital learning content should be relevant to age, culture and societal contexts.

4. Conduct further research on the safe and effective use of digital that removes biases against women and children

Evidence has shown that digital use can be associated with risks of discrimination.[20] For example, when it relates to Artificial Intelligence applications, there are significant risks in terms of ethical, gender and social concerns due to the lack of stand-

ards for evaluation and international coordination, and the issues of data selection and curation for training of systems.[21]

It is then crucial for policymakers and other stakeholders to research and assess the gender and social impact of digital solutions from the onset, and to design or correct their course based on evidence gathered, with the goal of mitigating ethical and gender biases when implemented.

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Mitigating the digital divide in e-learning

The case for policy reform through capacity building

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The Institute for Policy, Advocacy, and Governance (IPAG) is an independent, international think tank with presence in four continents – South Asia (Dhaka & Delhi), Asia-Pacific (Melbourne), Europe (Vienna), Middle East & North Africa (Dubai). IPAG undertakes research & analysis, engagement & outreach activities, promotes dialogue among various stakeholders, conducts training & capacity building, and supports advocacy towards socio-economic justice. IPAG works with well-respected international organizations, institutions, and individuals in making positive contribution towards achieving sustainable development and inclusive societies – nationally, regionally, and globally. IPAG is a Member of the Council for Global Probelm Solving (CGP), based in Germany, which is an exclusive consortium of world-class think tanks and research institutions who provide policy advice to the G20 and associated international organizations and it's Chairman. Prof. Syed Munir Khasru is the Co-chair of the Task force for Digital Transformation under the G20 2021 Italian Presidency.

The Asian Development Bank (ADB) envisions a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty in the region. Despite the region's many successes, it remains home to a large share of the world's poor: 263 million living on less than $1.90 a day and 1.1 billion on less than $3.20 a day. ADB assists its members, and partners, by providing loans, technical assistance, grants, and equity investments to promote social and economic development. ADB maximizes the development impact of its assistance by facilitating policy dialogues, providing advisory services, and mobilizing financial resources through cofinancing operations that tap official, commercial, and export credit sources.

The Mastercard Foundation seeks a world where everyone has the opportunity to learn and prosper. The Foundation's work is guided by its mission to advance learning and promote financial inclusion for people living in poverty. One of the largest foundations in the world, it works almost exclusively in Africa. It was created in 2006 by Mastercard International and operates independently under the governance of its own Board of Directors.

THE PANDEMIC'S IMPACT ON SCHOOLCHILDREN

The overnight shift to online learning forced by the COVID-19 pandemic confined schoolchildren to their homes at an age where outdoor social and sports activities are a staple of their physical and mental development. The lockdowns have put significant strain on the mental health of these children, with the anxiety and stress of the pandemic taking a toll on their young minds. The pandemic has disproportionately impacted many children in rural areas and urban slums, forcing some to take jobs to support their families during the crisis, which has been as much an economic as a health crisis.

The pandemic has exacerbated the pre-existing learning crisis and inequities, and has threatened to reverse the world's hard-earned progression toward quality education for all. Over 258 million children were unable to go to school before the crisis.[1] In low- and middle-income countries, more than half of all 10-year-old children were unable to read or write a simple text, while in Sub-Saharan Africa, the rate climbed to almost 90%.[2] The pandemic only worsened these figures. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), at the peak of the pandemic during April 2020, 1.6 billion students (94%) were out of school.[3] A considerable portion is still unable to return to face-to-face learning. Today, around 700 million students globally are still studying from home using hybrid or remote learning options amid continued uncertainty.[4] The situation is much worse for girls, as they are more likely to drop out of school and/or be subjected to early marriage when parents, particularly in developing coun-

tries, face financial constraints. With the pandemic still raging in different parts of the world and school disruptions expected to be protracted due to the long time needed to vaccinate the population in developing countries, the urgent priority is how to continue learning of children to "avert the crisis from becoming a catastrophe," as emphasized by the Save Our Future campaign.[5] According to World Bank figures, this generation of students may lose up to USD 10 trillion in future earnings.[6]

As the world slowly recovers from the pandemic, the necessity of online learning, or at least the hybrid of online and face-to-face learning, is becoming clearer. It is therefore critical that no segment of the population is left behind. To this end, it is important to ensure that infrastructure and qualified and trained teachers are available both in rural and urban settings alike.

»The COVID-19 pandemic has exacerbated the learning crisis and inequities that existed prior to the crisis.«

ISSUES FACING DIGITAL LEARNING TODAY

Digital tools today, aided by advanced telecommunications and internet connectivity, has been a major catalyst in cushioning the impacts of the pandemic. For many children with access to digital learning mediums, online education and digital learning tools have been a savior for learning amid lockdowns. However, the existing digital divide means that leveraging the fruits of today's technologies has uneven benefits, which in many cases worsens inequality. Around two-thirds of the world's school-age children (1.3 billion) do not have internet connection in their homes.[7] The difference is stark between high income and low-income countries with nearly 90% of school-age children from high income countries having internet connection in their home, compared to less than 5% in low-income countries.

The disparity in such figures stems from different issues that have hampered the progress of learning through digital mediums for children in poorer regions. Chief among these challenges are those related to infrastructure – access to electricity, connectivity, devices, and affordability of data where connectivity exists. The importance of access to connectivity and to digital devices has become evident during the pandemic when most services, including education, moved online. The surge in e-commerce, online learning, and affiliated jobs during the pandemic has demonstrated the criticality of broadband internet for all sectors. However, over 4 billion people globally lack access to a stable internet connection, and only 35% of the population in developing countries have access to the internet.[8] Even when broadband connections are available, the speed can be poor in underdeveloped regions. Countries with the slowest internet speeds have download speeds that are 40 times slower than the fastest countries.[9]

For students that rely on videoconferencing tools and other learning software and applications that require fast internet speeds, such disparity often equates to a prolonged inability to access the required learning. When internet access and speed are ensured, access to electricity becomes another major concern. For instance, it was reported that in the villages of India only 16% of households received 1–8 hours of electricity daily, 33% received 9–12 hours, and only 47% received more than 12 hours a day.[10] Even when the children somehow manage to overcome these hurdles, high poverty rates in developing countries mean that they often lack access to the relatively expensive computers and other digital devices.

Infrastructure challenges are significant but are not the only ones impacting eLearning or education's progress. The shortage of and the lack of quality teachers are equally as significant. Seventy percent of Sub-Saharan African countries face shortages of teachers at the primary school level and 90% face shortages at the secondary level.[11] Available teachers also still need training in core pedagogy skills, instructional design, and classroom management skills – both in an online and offline classroom setting. This requires, among others, training on digital schools, to enable teachers to continuously educate themselves (professional development) and to better teach their students. Investing in teachers' development, both in pre-service and in-service, will have a significant return in the quality of education that students receive. Blended learning and the use of new generation adaptive learning tools provide an opportunity to incentivize teachers to remain updated with proven digital tools to enhance their pedagogical practices.

Existing literature has often focused on the need to invest in faster internet connections, access to electricity, subsidization of internet rates, and devices like computers, tablets, and smartphones. However, research shows that such investments will work only if digital tools are used to improve pedagogical practices, to continuously monitor students' progress on learning and to target those who are lagging behind, and to enhance the efficiency of the learning system. For example, the experience of the People's Republic of China in using the "double teacher" teaching model by pairing high-quality urban teachers with rural teachers through remote teaching or live-streaming can help propel teaching and learning in rural areas.

»This generation of students may lose up to USD 10 trillion in future earnings.«

RECOMMENDATIONS FOR SUSTAINABLE DIGITAL LEARNING SOLUTIONS

Promote an ecosystem approach to scale up learning and equity by leveraging education technology (EdTech). While the COVID-19 pandemic has exacerbated the learning crisis and inequities, its lessons underscore the importance of strengthening the most critical pillars within a holis-

tic framework to optimize synergies and ensure learning for all. We want to highlight five pillars to leverage EdTech. First, the infrastructure pillar includes country readiness in terms of access to electricity, internet, devices, digital content and delivery channels like TV and radio to upgrade a country or region from low-tech to medium-tech or high-tech. Second, the government policy pillar is crucial for education ministries to enhance systematic and data-driven decision-making to target improvements in learning and equity. Third, the school and teacher pillar is important to enhance the digital readiness of teachers and schools to integrate appropriate EdTech solutions to optimize blended learning. Fourth, the shift to home-based learning shows the urgency of developing the digital readiness of both students and caregivers to reduce existing inequities. Fifth, the mainstreaming of online learning in public and private educational institutions provides new opportunities for public–private partnerships in promoting innovative EdTech solutions in teaching and learning.

Smart learning systems can be developed through various formats such as mobile learning initiatives, gamification of learning tools, curation of content, or community learning portals. The goal is to not just make the learning process "digital" for the students, but make it "smart," so students drive their own learning using digital tools. Such collaborative learning would help students exchange experiences, expose them to a diverse set of ideas, and improve their social and cognitive skills. Similarly, teachers are empowered and supported to adapt blended learning systems by enhancing their professional development through the use of EdTech solutions. This will also motivate parents to support their children's learning.

Rethink and enhance training and capacity-building programs for teachers. It is a great opportunity for policymakers to ramp up their efforts on teacher training and capacity-building programs that not only help develop digital skills, but also help shape attitudes towards information and communication technology in transforming teaching and learning. Consider using technology-enabled teacher training with blended learning modalities that enable anytime anywhere teacher training to improve pedagogical practices that promote personalized learning. A forthcoming multi-country study from the Asian Development Bank shows that 70%–90% of teachers reported smartphone ownership, which indicates the opportunity for blended teacher professional development. Another opportunity is to develop an online teachers' community of practice that can allow sharing of experiences, best practices, and lessons learned for teachers. This could be developed using existing social media platforms.

Such programs need to be expanded for parents too, since in many rural areas misperceptions exist regarding digital devices – where parents consider computers and smartphones as means to waste time and hence limit their children's access. Efforts need to be provided in effectively designing these capacity-building programs, where teachers are encouraged to consider digital mediums as an extension of their teaching methods, not an alternative. Engagement and feedback from the learners and teachers are critical during the implementation of these programs. In addition,

teachers need to be encouraged to make use of open-source solutions, and the vast array of free resources that are available online to complement their teaching efforts. Capacity-building programs need to consider the local sensitivities and the needs of the educators and learners based on cultural contexts that vary between regions.

»The shortage of and the lack of quality teachers are significant, requiring training in core pedagogy skills, instructional design, and classroom management skills.«

Develop content and assessment tools customized by regional languages and cultures. Research have time and again showed that one of the key barriers to digital learning for educators and students in rural areas is their inability to comprehend the resources, which are often developed in English. For instance in India, among the 12.5% population that read their daily newspapers, only 1.6% read them in English.[12] Policymakers need to channel investments toward the development of educational content and software based on regional languages to make them easily comprehensible and usable and drive their adoption even after the capacity building training periods are completed. This will require drawing on international good practices and aligning them with the national curriculum, and integrating them into the local context and culture. Another critical element is embedding continuous formative assessment in such content to allow teachers to monitor progress of students' learning and target improvements.

Promote government policies that recognize and reward effective teaching practices to motivate teachers. For educators in rural areas, most of whom do not use digital tools as part of their daily activities, initial efforts need to involve a "push" system where they are motivated by appropriate rewards. Teachers need to be aptly rewarded for their time spent on digital skills and EdTech solutions, as well as their innovative use of such tools to improve their teaching practices, leading to improvements in student learning outcomes. Incentives could involve the provision of devices like tablets, laptops, subsidies to internet access, or increased compensation and opportunities for career progression. In addition, they should be provided with flexibility in terms of designing their content and continuous assessment as part of lesson plans. For instance, online support may be provided to teachers to apply different forms of online assessment to test students' hard and soft skills. At the same time, students also need to be encouraged through the provision of subsidized internet in partnership with telecoms. They should be encour-

aged to use the internet as a tool to seek academic information and be allowed the flexibility to use such information as appropriate.

CONCLUSION

An increasingly digitalizing world offers an opportunity to systematically develop an evidence base to integrate technology to transform teaching and learning. COVID-19 forced an overnight shift to online learning globally and demonstrated that the transition to blended learning is inevitable. This is a wake-up call for policymakers and development partners in developing economies to take concerted measures to adopt digital tools to prepare self-directed lifelong learners. This requires increased investment in improving access to affordable electricity, internet, and devices from infrastructure budget to avoid squeezing education budgets. More importantly, this should be balanced with greater investments in software such as quality digital content, continuous assessment, learning management systems, and blending proven pedagogical skills with educators' digital skills to build a sustainable learning ecosystem. This will not only facilitate the integration of digital tools, it will also motivate governments, school management, teachers, students and parents to proactively embrace and use them for transforming teaching and learning.

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Ecological realignment

International carbon pricing coalitions

Their potential for saving costs, ratcheting up NDCs and reaching climate targets

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The Kiel Institute for the World Economy sees itself as the research institute in Germany for globalization issues. It investigates drivers and effects of international economic activity, the integration and disintegration of global markets as well as opportunities and limits of political action in open economies. It thus thrives to develop practical solutions for global economic challenges that are compatible with open markets and competition while taking account of everyone's standard of living.

Keywords:
carbon pricing, paris agreement, international cooperation, NDC, emission trading

Global top-down policies have widely failed to halt global warming. This is partly due to the UNFCCC´s postulate of Common but Differentiated Responsibilities (CBDR): Under the Kyoto Protocol all countries shared the obligation to address the threat of climate change, but the main responsibility of greenhouse gas emission (GHG) reduction was put on industrialized countries. This led to concerns regarding free-riders taking (comparative) advantage of the Kyoto deal. Several countries including the USA and Canada withdrew from the treaty, and the necessity for a new approach in global efforts to mitigate climate change became obvious.

This new approach was manifested as the Paris Agreement in 2015. It has two major differences compared to the Kyoto Protocol: First, it requests contributions by all countries to mitigate global warming – not only by industrialized countries. As of December 2020, all 196 members of the UNFCCC have signed the agreement, and 189 have become party to it. Second, the Paris Agreement marks a shift from a top-down system towards a bottom-up strategy, where individual countries pledge Nationally Determined Contributions (NDCs). The overarching goal is to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels.

While the Paris Agreement has been celebrated as an international breakthrough in fighting global warming, the currently submitted NDCs fall far short of being in line with the overarching targets. That is why their revision is required every five years until the collective pledges are sufficient to achieve the objective. It is obvious that more stringent climate policy actions up to 2030, which are in line with the Paris temperature goal, will cause substantially higher economic adjustment costs, impeding the political acceptability of ratcheting up national GHG reduction pledges. Economic theory proposes that harmonized carbon pricing at the international level lowers the economic costs of reaching climate targets. Thus, international cooperation can lead to the strengthening of global mitigation efforts by offsetting the threat of infeasibly high costs of only domestic actions.

»Cost savings through where-flexibility can pay the bill for a more ambitious international climate policy.«

The Energy Modeling Forum study on "Carbon Pricing after Paris" (EMF36) explores the boundaries of these measures against the background of the Paris Agreement. Its primary objective is to sketch climate policy designs that lower the economic costs of emission reductions at the international and domestic level and thereby help to increase the likelihood that individual countries together can achieve the ambitious Paris temperature targets. Within the project, 17 climate-economy models from different leading international research institutions analyze a number of core scenarios, which are constructed

along two dimensions: alternative NDC ambition levels, and different degrees of international cooperation.

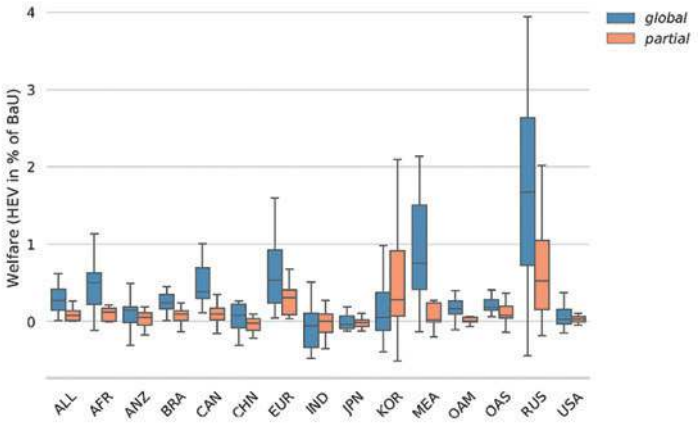
»Multiregional emissions trading systems consisting of only a few key participants can generate substantial welfare gains.«

Internationally harmonized carbon pricing, for example in the form of emissions trading, plays a decisive role for cost-effective emission reductions. With purely domestic compliance to NDCs, there can be large differences in regional prices. In the EMF36 study, these range from 5 USD/tCO_2[1] in China to 195 USD/tCO_2 in South Korea for the NDC target (from 23 USD/tCO_2 in China to 375 USD/tCO_2 in South Korea for the 2°C target, and from 60 USD/tCO_2 in India to 765 USD/tCO_2 in South Korea for the 1.5°C target). These differences indicate a huge potential for cost savings through international harmonization. International emissions trading exploits these cost savings by letting markets identify where it is cheapest worldwide to reduce emissions. In a best-case scenario assuming a globally uniform price on CO_2 emissions in all sectors, EMF36 shows that a price of on average 13 USD/tCO_2 would suffice to reach the global emissions level implied by the current NDCs. 50 USD/tCO_2 are needed for the 2°C target, and 130 USD/tCO_2 for the 1.5°C target. Thus, while a global price would have to increase by an order of magnitude if NDCs were raised to meet the most ambitious Paris target, for each target it is still much lower than the prices some nations would face if only domestic mitigation efforts were made. In consequence, stricter targets are no longer out of reach: One key message from the EMF36 project is that – from a global welfare perspective – reaching climate targets in line with the 2°C target comes roughly at the same cost as the current NDCs, if global emissions trading is deployed rather than only regional abatement actions. Thus, the actual reduction pledges under the Paris Agreement can be ratcheted up roughly cost-neutrally towards the 2°C goal, if at the same time international cooperation towards globally uniform CO_2 emission pricing is fostered accordingly. Cost savings through harmonized carbon pricing can pay the bill for a more ambitious international climate policy. Furthermore, the benefits from international cooperation increase with the stringency of emission reduction targets: Global gains from fully international emission trading increase by roughly 2–3 times (depending on the model) when moving from the current NDCs to targets in line with the 2°C target, and they double again when aiming at the 1.5°C target. Consequently, as the NDCs are expected to subsequently be ratcheted up, the role of international cooperation will increase.

While a globally uniform carbon price is hard to establish, smaller climate coalitions can also lead to substantial interna-

tional cost savings. Generally, the potential welfare gains of a joint emissions trading scheme (ETS) increase with the share of emissions it covers. Thus, the more countries participate in a joint carbon market, the better it is in terms of cost saving. But the share of the emissions covered by such a regime is not the only driver of efficiency gains. For example, a link between the carbon markets of the EU and China seems more promising than could be expected from the coalition´s share in global emissions (around one third). It could materialize already more than two thirds of the global cost savings of a globally linked market under the current NDC pledges. Aspects such as the difference of (unilateral) carbon prices of the participating re-

Figure 1: Global welfare gains compared to REF in all model regions under global emissions trading covering all sectors (labelled "global") and only EITE sectors (labelled "partial")



Notes: REF denotes the scenario where all regions reach their NDC targets with domestic action only. The difference between REF and "global" and "partial", respectively, is expressed in %-change of the welfare in a business as usual (BaU) scenario without NDCs. Box-Whisker plots show the heterogeneity between the 17 models participating in the EMF study. They show the median (line), the first and third quartile (box), and whiskers the last datapoints within 1.5 times the interquartile range (IQR). Outliers are omitted. Region keys: ALL – Global average; AFR – Africa; ANZ – Australia and New Zealand; BRA – Brazil; CAN – Canada; CHN – China; EUR – Europe; IND – India; JPN – Japan; KOR – South Korea; MEA – Middle East; OAM – Other Americas; OAS – Other Asia; RUS – Russia; USA – United States.

Source: Böhringer, Peterson, Rutherford, Schneider and Winkler (2021)

gions, the weight of each participating region in terms of emissions, and the global energy market effects are also important drivers of the welfare gains generated by joint emissions trading. These drivers must be kept in mind when international linkages are pursued, so that the most efficient options can be found. Furthermore, it is a promising result also in terms of political practicability: Multiregional emissions trading systems consisting of only a few key participants can generate substantial welfare gains compared to domestic actions only.

When carbon markets of two or more regions are linked, welfare gains are typically not distributed evenly between the participating regions, as can be seen from Figure 1. It shows welfare gains generated by joint climate action compared to only domestic action. On the y-axis, the welfare gains of a global ETS covering all sectors (labelled "global", blue boxes), and of a global ETS covering only the power sector and energy intensive and trade exposed (EITE) sectors (labelled "partial"; orange boxes) are compared to a situation where all regions reach their NDC targets with domestic action only. Model regions of the EMF 36 study are plotted on the x-axis, including the aggregate world region "ALL". The heterogeneity of results from the 17 models partaking in the study is indicated by the boxes/whiskers.

Figure 1 shows that there is large heterogeneity among regions in terms of welfare gains, resulting from two effects. First, global cooperation leads to a shift of global abatement to China and India, which exploit cheap abatement options via reduced coal consumption. This leads to increasing demand and, thus, increasing prices for oil and gas. The Middle East and Russia, who are major oil and gas producers, benefit from this development, while other regions, e.g., Japan and South Korea, are negatively affected. Second, regions with a low carbon price before the linking sell allowances to regions with initially higher prices, and the prices in all participating regions converge. While allowance buyers benefit from the now lower carbon price, and allowance sellers generate revenues from selling allowances, the latter lose some of their competitive advantage of lower carbon prices. This so-called terms of trade (ToT) effect can even out or even surpass the generated revenues. China and India, the main allowance sellers, gain relatively little from global emissions trading. Measures to even out such distribution inequalities can include a restriction of the amount of traded allowances or transfer payments.

Within the EMF project, we investigated these measures for the case of a link between the EU and Chinese ETS. In this coalition, China faces much lower carbon prices than the EU before the linking, and is therefore selling allowances to the EU. Consequently, China faces the negative ToT effect outlined above. It has the highest welfare gains (0.17% welfare gain for the NDC target, compared to a situation without the link to the EU), when the number of traded allowances is restricted to about half of the number traded in the scenario without restrictions. In contrast, the EU benefits most (0.5%) from unrestricted access to the cheap Chinese allowances. But even in the case of restricted trading, welfare gains are higher for the EU (0.23%) than for China. (For more ambitious mitigation targets in line with the 2°C target,

gains from trading roughly double in both regions.)

»Both the EU and China would benefit from linking their emissions trading systems in nearly all scenarios.«

Transfer payments from the EU to China to address the uneven gains obviously benefit China, and are costly for the EU. Nonetheless, gains from an unrestricted linking more than compensate these EU losses, even if (politically unlikely) high transfers are paid. In contrast, China always favors restricted allowance trading over at least realistic transfer payments. Hence, the trading partners prefer different linking scenarios: While the EU benefits more from full trading and would possibly pursue transfer payments as a measure to make linking more attractive for China, China will aim for a restriction of trading volume. The EU, should it aspire to linking its ETS to the Chinese one, will have to take measures to make such a link more beneficial for China, especially since such linking is becoming more popular, and other regions will compete for the cheap Chinese allowances.

Furthermore, dissent between the individual EU member states could make it hard for the EU to find a univocal position: Not all member states benefit from a joint EU-China-ETS. Mainly, those member states serving as allowance sellers in the current EU ETS lose the opportunity to generate revenues when the cheaper Chinese allowances are available to all EU member states. Consequently, inner-European transfer mechanisms might also be necessary to generate consensus within the EU. Nonetheless, it should be kept in mind that both the EU and China would benefit from linking their emissions trading systems in nearly all scenarios, even though finding consensus in hypothetical negotiations might prove challenging.

So far, we have discussed the effects of regional participation in international cooperation. But the volume of emissions regulated under an international ETS depends not only on participating regions, but also on the covered sectors. To date, mainly electricity production and energy intensive industries (EITE) face carbon prices, e.g., the EU and Chinese ETS. Compared to a situation where emissions of all sectors are subject to a carbon price, the global welfare gains are much smaller when only EITE sectors are regulated via carbon pricing, due to the limited (sectoral) where-flexibility. Thus, a broader sectoral coverage of carbon pricing schemes is valuable also in terms of international cooperation. This is displayed in Figure 1, where the global welfare gains are displayed on the left side of the x-axis: Globally, the welfare gains from a global ETS covering all sectors are about twice as high as that from a system covering only EITE emissions (0.2% increase vs. 0.1% increase relative to REF[2]). Thus, a broad sectoral coverage is also important when reaping the gains from where-flexibility.

Summing up, the results from EMF 36 on "Carbon Pricing after Paris" show that international emissions trading can play a major role in decreasing the costs of emission abatement, opening up the opportunity for more stringent NDC pledges in line with the overarching Paris targets. The more sectors and regions covered by such a scheme, the larger the collective benefits. However, there are also large efficiency gains possible from smaller and more realistic coalitions, like a linkage of the EU and Chinese ETSs. An important issue here is that benefits are typically not distributed evenly in climate coalitions. Especially allowance sellers can be negatively affected by trade effects resulting from joining a climate coalition. In negotiating possible designs of international carbon pricing schemes, mechanisms must be found to compensate regions that benefit less, in order to motivate their much-needed participation. Promising mechanisms for evening out the gains are compensation payments and, even more so, a restriction of traded allowance volume.

[1] These numbers are the median values from a sub-group of seven models also calculating the 1.5°C target.

[2] REF is the scenario where all regions reach their NDC targets with domestic action only.

Circular economy: Opportunities for business and well-being

Transformation potential of the circular economy

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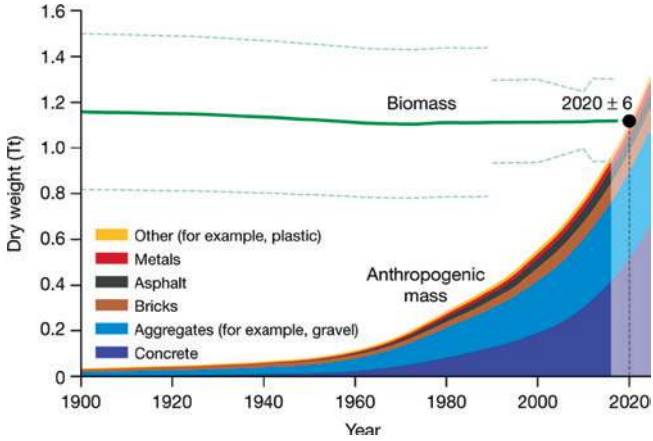
The Deutsche Bundesstiftung Umwelt DBU (German Federal Environmental Foundation) funds innovative, exemplary and solution-oriented projects for the protection of the environment, with special consideration of small and medium-sized enterprises. The funding activities focus on environmental technology and research, nature conservation, environmental communication and protection of cultural assets.

Keywords:
resource efficiency, business model, sharing economy, startup, circular society

The management of the earth's natural resources is a key issue for humanity. Whether it is energy, land or raw materials, the use of natural resources already exceeds the earth's ability to regenerate. It will be necessary to de-link well-being from the environmental impacts of raw material consumption. For several decades, two de-linking goals have been followed simultaneously: a) the de-linking of prosperity from raw material consumption and b) the de-linking of environmental impacts from raw material consumption.

Thus, the careful and efficient use of resources is a core task for present and future generations – all the more so because the global consumption of raw materials raises global issues of social justice: For example, many raw materials are extracted under very problematic social and ecological conditions, often in countries that profit little from the value added. It is true that it is possible to increase raw material productivity considerably in some regions. Raw material productivity reflects the price-adjusted gross domestic product in euros per ton of abiotic primary material. This includes all raw materials extracted as well as imported raw materials. And raw material productivity has increased, e.g. in Germany by almost 50 percent over the last fifteen years. At the same time, imports of raw materials in terms of volume have fallen by almost 20 percent and gross domestic product has risen. Even if positive trends are measured here, re-

Figure 1: Biomass and anthropogenic mass estimates since the beginning of the twentieth century on a dry-mass basis



Source: Elhacham, E, Ben-Uri L, Grozovski J, Bar-On Y, Milo R (2020): Nature volume 588, pages 442–444)

source consumption per capita in Germany still remains far above a sustainable level.[1]

»The energy transition, digitization, e-mobility and other future fields go hand in hand with rising demand for raw materials.«

On the other hand, we are observing contrary developments at the global level. The growing demand for raw materials by mankind has many causes, which are only mentioned here in keywords and without claiming to be complete: increase in the world population, higher standard of living in emerging countries, urbanization, technical progress and mass production, globalization, changed lifestyles (throwaway society) or the planned reduction of the life period of products (obsolescence).

Humanity has become a dominant force in shaping the face of earth. Elhacham et al[2] compared the overall material output of human activities to the overall natural biomass. They quantified that the "anthropogenic mass" has doubled within the last two decades and currently equals approximately 1.1 teratons. Currently, the anthropogenic mass exceeds the global living mass for the first time. (fig. 1)

Human use of natural resources has exceeded the earth's regenerative capacity now for several decades. At the same time, technological trends such as digitalization and miniaturization are rapidly increasing the diversity of elements and substances in products, making it more difficult to "recycle" and reuse them. Moreover, important future fields such as the energy sector ("Energiewende," German for "energy transformation/energy transition"), mobility and the internet of things (IoT) will lead to a significant increase in the demand for raw materials, in particular specific and rare elements.

One phenomenon deserves special attention here: the increase in element diversity in the semiconductor and electronics industry, as documented by Intel Corporation (National Research Council, 2007). Whereas in the 1980s about 12 elements were sufficient for the production of semiconductors, in the current decade of the 21st century there are more than 60 different elements in a smartphone. The extraction of many of these chemical elements, such as silver, gold, platinum and palladium or the metals of rare earths, is associated with a considerable impact on the environment and a high expenditure of raw materials, energy and water. An important aspect here is whether and to what extent the use of materials abroad is adequately reflected in national raw material productivity. Indeed, if we consider only the physical quantities, imports and domestically extracted raw materials, we end up at 1,601 million tons in Germany. If, on the other hand, the material input of the upstream chains abroad is also included, the amount doubles to 3,141 million tons.[3] This shows how important the life cycle

view is when accounting for raw materials. If only domestic raw material withdrawals and imports are considered, the material input is significantly underestimated. Today more than ever, global markets, globally active companies and global supply chains require a life cycle assessment, as we have known for many years from the life cycle assessment of products. The fact that one ton of imported iron does not have the same environmental impact as one ton of silver, platinum or indium is not surprising. The greenhouse gas potential of one ton of iron is 1.5 t CO_2-eq/t, while the greenhouse gas potential of some rare elements exceeds it by several entities: gold: 17,903, palladium: 10,277, platinum 13,892 CO_2-eq/t.

»The EU is 75 to 100% import-dependent for most metals. The path to a resilient and sustainable economy requires a circular economy.«

Achieving the above goals will require dramatic increases in resource productivity. Despite diverse and decades-long efforts, doubts are increasing that the de-linking policies will be successful on a global scale. Haberl et al[4] conclude that large rapid absolute reductions of resource use and greenhouse gas emissions cannot be achieved simply by observed de-linking rates. De-linking policies need to be complemented by sufficiency-oriented strategies and absolute reduction.

CIRCULAR INSTEAD OF LINEAR

What is needed, therefore, is an alternative to the conventional linear "take – make – waste" approach. Instead of extracting valuable and limited raw materials, manufacturing products from them and then disposing them at the end of their useful life, a circular economy is needed that takes into account all stages of a product's life cycle. The circular economy is being discussed as such a comprehensive solution. Here, the concept behind it goes beyond the conventional resource efficiency. Instead of waste recycling, the circular economy represents a paradigm shift toward an environmentally compatible design of economic systems. It encompasses not only resource efficiency and productivity, but also sustainable product design and long and efficient use, as well as concepts for "using instead of owning" – as in the case of car sharing, for example. Ideally, waste will be minimized drastically and rebound effects will be avoided. Digitalization plays a crucial role in this transformation process from a linear to a circular economy. It offers solutions for networking, optimization and tracking, supports sustainable product design, enables transparency and replaces material. The circular economy can therefore be an important instrument to achieve sustainable solutions worldwide. The G20 has already identified and named the circular economy as an important lever for achiev-

ing the Sustainable Development Goals, e.g. in the G20 Osaka Leaders Declaration. The circular economy was also explicitly part of the German T20 agenda in 2017 and is mentioned in the T20 Italy 2021 agenda as a one of the priority issues in Task Force 2 - Climate Change, Sustainable Energy & Environment.

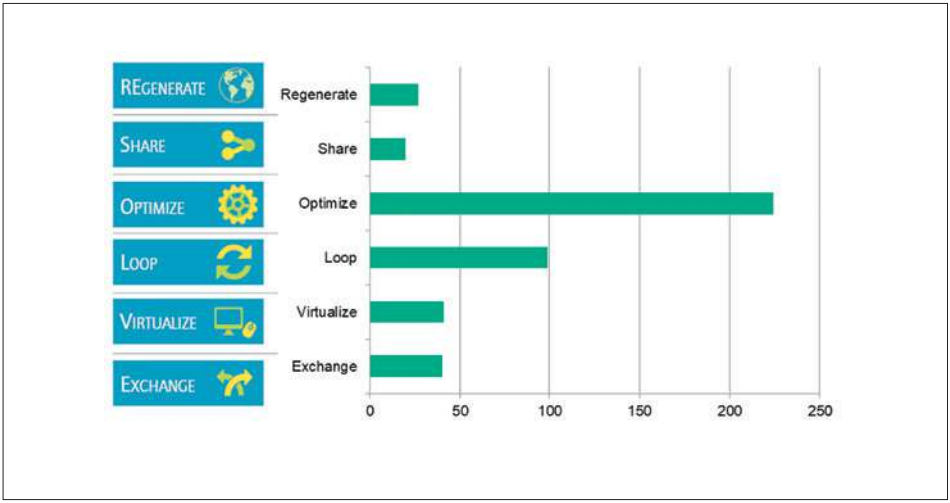
The RESOLVE approach identifies six sub-aspects of the circular economy: REgenerate (using renewable resources), Share (expand user groups), Optimize (minimize waste, enhance energy and material efficiency), Loop (recycle und reuse), Virtualize (replace by digitization/ virtualization) and Exchange (replace by resource-saving alternatives).[1]

The transformation to a circular economy requires changes at different levels, such as politics, technology, the market, but also in regulations and standards, and even in culture and psychology. It is especially essential for important future fields such as digitalization, energy transition and e-mobility.

The DBU recognizes enormous potential in the circular economy and has been supporting projects in this area for more than 20 years. The focus here is on saving energy and resources by optimizing products and processes, improving recycling technologies and replacing materials and technologies with resource-conserving alternatives.

An analysis of the projects funded at the DBU over the last 10 years (2010–2020) showed that 14% of the funded projects can be assigned to the circular economy topic area. When allocating the funded projects to the RESOLVE approach, it becomes apparent that the majority of projects can be found in the OPTIMIZE segment, followed

Figure 2: Analysis of 370 circular economy projects, funded by DBU from 2010 to 2020, characterized according to the RESOLVE concept



by LOOP, where, on the other hand, Sharing and Virtualize approaches were rarely funded. The most represented industries were construction, metal industry, plastic industry and chemical industry.

Recycling and optimization are "classic" solutions that are mostly realized in-house. They usually lead to short- to medium-term benefits for the economy and ecology, and much has been achieved in the highly industrialized regions of the world in recent decades. In the future, inter-company, cross-industry and networking approaches will gain in importance. This is associated with an enormous potential for saving resources.

The majority of the funded projects are practice-oriented and with the participation of SMEs (Small and medium-sized enterprises). In the qualitative study of these circular economy projects, SMEs are facing particular challenges, which are summarized briefly here:

• Technical approaches such as a product design that are suitable for circularity (able to be repaired or separated) do not lead automatically to economic benefits for the company.

• The demand for recycled products is fluctuating or low. This leads to a lack of necessary investments in the development of processes and recycling technologies.

• The benefits of circular products (good recyclability, durability) often do not translate into profits for the producer.

• Regulations, both governmental and corporate, prevent the implementation and application of CE.

• While company-internal CE approaches can usually be implemented quickly, corporate CE solutions with several companies are almost impossible to implement without help. It requires collaboration along the supply chain or in specific networks.

• Many CE approaches are incompatible with traditional business models.

• Many CE approaches require strategic decisions by the CEO, such as implementing a new business model (leasing instead of selling).

• The role of consumers is important and underestimated significantly, but little studied. This is relevant particularly for resource-intensive sectors such as textiles or consumer-electronics.

FROM THE CIRCULAR ECONOMY TO THE CIRCULAR SOCIETY

Most existing approaches to the circular economy do not consider the required societal shift. There will be no circular economy without an integrated society. Consumer behavior plays a central role in achieving the goal of a circular economy. The best technical solution is only successful if it is also understood, accepted and made accessible. In addition to technical innovations, alternative concepts and solutions are needed that focus on people as actors and take consumer and citizen behavior into account. Examples are the reuse and recycling of products, sharing solutions, but also the avoidance of products, e.g. packaging.

Achieving a circular economy is therefore a task for society as a whole, in which socio-economic aspects are becoming more important and social practices need to be established in the sense of a circular society.[5] But in a globalized world, a circular society is not limited to the borders of one state nor can it be achieved on a national level alone. What is needed is

multilateral cooperation and governance. The G20 can play a decisive role in creating the necessary framework conditions for a global circular economy. Current research focuses on scientific questions in the field of material science, recycling technology, on macroeconomic aspects, on process engineering and IT-based solutions. Research gaps have been identified in the area of the overall societal significance

»Production and consumption patterns must be made more sustainable and social practices must be established in the sense of a ›circular society‹.«

of the circular economy. There is a lack of work on microeconomic aspects and indicators, on questions of organizational development from a linear to a circular economy, on cultural change towards a circular society, on the role of civil society and social innovations in the transformation process, and on the acceptance of circular consumption practices by consumers. Furthermore, there is a need for research on legal and regulatory issues as well as the political framework and the role of international cooperation for a transformation towards a circular economy.

STARTUPS AND COOPERATION ARE MAIN DRIVER

Green startups have a key function as a driver of structural change. While established companies are strong in improving existing products, startups introduce fundamental innovations as pioneers on the market. 21% of all German startups can be classified as green because their products and services contribute to environmental and climate protection. Olteanu & Fichter[6] analyzed the distribution of German startups across the different sustainability areas. They found that the most important sustainability areas are nutrition (23%), emissions reduction (12%) and energy efficiency (12%), followed by circular economy (11%) and resource efficiency (11%)[6].

Startups are changing entire industries and markets by founding platforms on which recycling products can be traded (e.g. Cirplus[7]) or by developing software solutions that enable the design of recyclable fashion products, including the integration of appropriate recycling companies (e.g.circular.fashion[8]).

No company can implement circular economy solutions on its own, rather, it must rely on a network of suppliers, competitors and customers. Often, completely new economic systems are needed to make successful circular business models become reality. Therefore, a way is needed to enable cooperation between established, "old" companies and startups and social entrepreneurs.

Linear structures as well as linear ways of thinking and acting have signifi-

cantly contributed to current social and ecological crises. Circular alternatives and concepts are slowly beginning to develop. A sustainable use of resources goes hand in hand with changes in society. Participatory co-creation processes can be an important catalyst. In these processes, ways to a circular society can be tested, established and broadened. A transformation towards a circular economy is not conceivable without corresponding social processes towards a circular society.

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[7] https://www.cirplus.com/de

[8] https://circular.fashion/

Clean-IT: Policies to support sustainable digital technologies

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People-Centered Internet (PCI) is a 501(c)3 nonprofit organization working to ensure that the Internet is a positive force for good that improves the lives and well-being of people around the world. This includes promoting connectivity, fighting disinformation, contributing to the discussion about technology ethics, supporting the development of people-centered applications and initiatives, advising policymakers, and leveraging technology to help communities be more resilient.

The Hasso Plattner Institute (HPI) in Potsdam is Germany's university center of excellence for digital engineering (https://hpi.de). With its Bachelor's and Master's degree programs in "IT Systems Engineering", the Digital Engineering faculty at the University of Potsdam offers a unique and particularly practical engineering computer science degree program throughout Germany. In the CHE university rankings, HPI consistently occupies top positions. The HPI School of Design Thinking, Europe's first innovation school for students modeled on the Stanford d.school and research schools on all continents.

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Keywords:
sustainability, digitization, energy

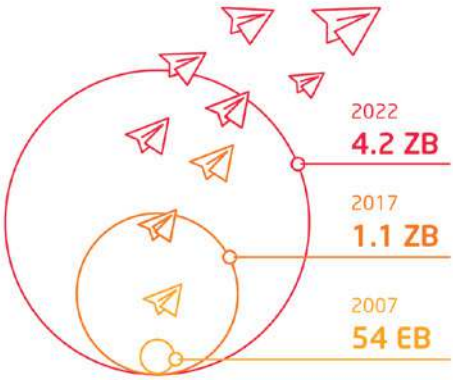
ABSTRACT

Digital technologies are indispensable to achieving sustainable development goals and reducing carbon emissions in many sectors. Yet, computer systems themselves have an immense energy requirement for their countless devices, data centers, applications and global networks. With COVID-19, the shift to digital in living, learning and earning is bringing us closer to the time when digitization will become the climate hazard No. 1. Since digitization has many important benefits, we must prioritize research policy to: design digitization processes that consume less energy; increase algorithmic efficiency and effectiveness so that people and the planet thrive; and make "Sustainability by Design" the new paradigm in digital engineering worldwide.

CARBON FOOTPRINT OF DIGITAL TECHNOLOGIES RISES RAPIDLY

During the last decades, digital technologies were celebrated as the clean counterpart to old-fashioned "dirty" manufacturing, agriculture and energy production industries. It was believed that digital devices, products and services, due to their immaterial nature, do not contribute (or contribute very little) to global pollution by wasteful consumption of material resources and the emission of greenhouse gases. This belief is flawed. All digital devices and applications contribute significantly to the global carbon footprint. Even though neither computers, tablets and smartphones – nor even data centers – have chimneys, the amount of carbon emissions caused by digital technologies has become a threatening climate issue.

Figure 1: Global Internet Traffic on the Rise



Source: Hasso Plattner Institute

GLOBAL INTERNET TRAFFIC ON THE RISE

All data traffic requires energy. The total amount of annual internet traffic has risen exponentially during the last few years and continues to rise steeply. The International Energy Agency calculates that while in 2007 only 54 exabytes (54 billion gigabytes) of data were transferred over the internet, this amount increased by a factor of 20 in 2017 to 1.1 zettabytes (1.100 billion gigabytes). This organization estimates that the annual data traffic will quadruple by 2022, reaching 4.2 zettabytes.[1]

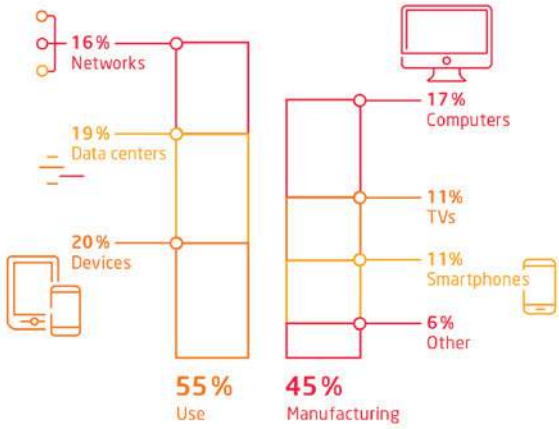
RAPIDLY INCREASING SOFTWARE USE

A study of "The Shift Project"[2] shows another interesting trend. Already in 2017, energy consumption in the use of digital technologies surpassed that of the production of digital devices by more than 5%, with a continuously rising share. This suggests that measures to decrease the carbon footprint of IT must focus on making digital technologies more energy efficient. We must pay attention to making IT usage more energy efficient as well as the resource-efficient production of digital devices.

ENERGY CONSUMPTION OF THE LATEST DIGITAL INNOVATIONS

Researchers at the University of Massachusetts Amherst have studied the life cycles of training several common AI models and found that the energy consumption, and therefore the carbon emissions, of developing advanced neural networks are significant. The training of one specific AI

Figure 2: Energy Consumption of Manufacturing vs. Use of Computer Systems



Source: Hasso Plattner Institute

model required about 300 tons of carbon dioxide equivalents, which equals the carbon emissions of the life cycle of five cars including fuel or 300 round-trip flights from New York City to San Francisco.[3]

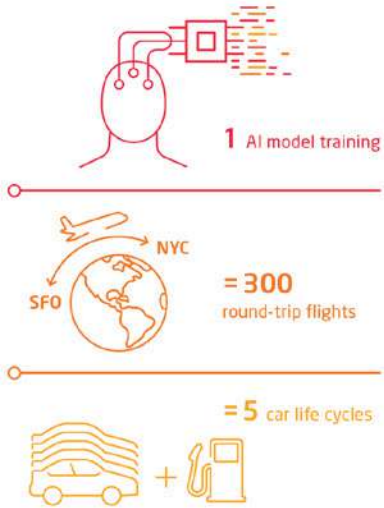
INEFFICIENT DIGITIZATION IS ABOUT TO BECOME THE NO. 1 CLIMATE HAZARD

Already today, the total carbon emissions of digital technologies surpass those of global air traffic by a factor of two. In 2019 all air traffic combined accounted for about one billion tons of carbon emissions and 2% of overall emissions.[4] In the same year, digital technologies emitted about 2 billion tons, or about 4%, of all human-induced carbon dioxide.[5] Humanity is at the beginning of a massive acceleration of digitization on a global scale. We must quickly teach energy-efficient digitization, reducing, not increasing carbon emissions. Otherwise, digital technologies will become the most significant contributor of greenhouse gases and therefore the No. 1 climate hazard in the near future.

GREEN IT IS NOT ENOUGH

The issue of the increasing carbon footprint of IT has been recognized for some time now and has led to various initiatives that can be summed up under the label "Green IT." The primary focus of this movement is to reduce the waste of natural resources during the production and use of digital devices,[6] to use renewable energy sources, and to call for "digital so-

Figure 3: Carbon Equivalent of Training a Specific AI Model

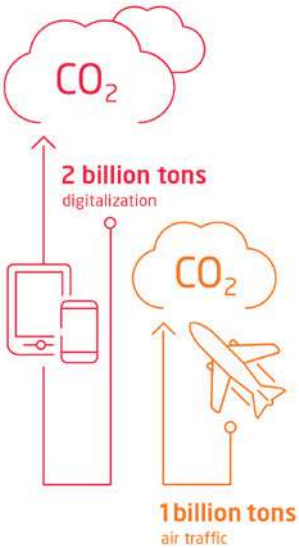


Source: Hasso Plattner Institute

briety."[7] Already in 1992, the US Environmental Protection Agency (EPA) and the EU Commission (in 2003) introduced the "Energy Star" label for energy-efficient ICT devices. Despite this, the energy consumption of digital technologies continues to rise steeply. The testing schemes of the Energy Star label are neither rigorous nor thorough enough. The increasing share of carbon emissions caused by the use of software and digital applications is not accounted for. Algorithmic efficiency is a major blind spot in most of the Green IT initiatives, which focus on the physical production of the device, not the daily emissions occurring over the life of the device and the software it runs.

Digital sobriety is also not likely to support the quest for a carbon-free planet. Digital technologies and their various innovative applications, such as big data, AI, blockchain, etc., are essential to decreasing carbon emissions in other sectors like energy production, manufacturing and agriculture. Reducing the use of digital technologies in those sectors would increase total carbon emissions across all sectors. Digital technologies can achieve important goals, such as accelerating the recovery from pandemics such as COVID-19 and promoting lifelong learning and lifelong earning on a global scale. Digitization is the answer to many sustainability challenges. We must invest in research and policy to

Figure 4: Global Carbon Emissions - Digitization vs. Air Traffic



Source: Hasso Plattner Institute

achieve digitization with less energy. This can only be done if digital engineering follows a novel paradigm, which we call "Sustainability by Design." Design it right upfront: Increase public and engineering awareness of the digital carbon footprint, especially the impact of wasteful algorithms. Since the use of digital technologies already represents the biggest share of the digital carbon footprint – and will continue to rise steeply – it is necessary to design algorithms more efficiently. The trade-off between precision/speed/data throughput and energy consumption must be brought into balance by becoming a core principle of computer systems design.

WHAT IS "CLEAN-IT" AND "SUSTAINABILITY BY DESIGN"?

With the introduction of digital applications to almost every imaginable aspect of human life, we expect a significantly dramatic increase in the use of digital technologies. At the beginning of the massive roll-out of such innovations, the repercussions of their use are barely tangible. However, examples from the past can guide us to not repeat our mistakes in applying new technologies.

When plastics were invented, they were a groundbreaking innovation in the field of new materials. A world without plastics would be less prosperous, and innovations in many other areas would not have been possible. However, the increased use of plastics poses a threat to life on earth today because of the high level of difficulty in recycling this material. Since the inception of an awareness campaign, less plastic has been used and more importantly, more environmentally friendly and recyclable plastics have been invented. However, had the scientists and designers behind plastic development been mindful of its potential environmental impact from the onset, we would not be facing the massive (and very expensive) crisis of today.

Another example outlines the case for water waste in fountain systems. Early fountains used water without recycling, requiring a large reservoir at a high place to allow water to flow with sufficient pressure. This led to the creation of gorgeous fountains such as those in Versailles or the Summer Palace of Peter the Great near St. Petersburg. When electricity became available, with pumps and filters, the same water could be reused, and water waste brought under control.

These two cases demonstrate the importance of design-led approaches that promote spending more time exploring potential problems before rushing in with solutions. The same applies to digital systems and software: Both are currently being designed in a manner that does not consider their environmental impact. Today, especially during the COVID-19 crisis, we are designing digital technology with a mindset that prevailed when the first fountains were designed – in this case, not water but energy is used wastefully, or the object itself is wasteful just like plastics. Ignorance of better methods unnecessarily increases our carbon footprint.

However, this is avoidable. Computer systems, which are based on the interrelationship of hardware and software, organized by algorithms, can be designed in many ways to produce the same outcome. Often unnecessarily complicated programming or computer systems design causes higher energy consumption when compared to algorithms that are more efficient. Innovative software architectures

can achieve the same or slightly lower precision or data throughput, while saving enormous amounts of energy. It matters how algorithms and computer systems are designed, because every algorithmic operation consumes energy.

To solve the paradox of more from less, new algorithmic paradigms must be put into practice. The principle of „Sustainability by Design" needs to become the very foundation of the teaching and practice of digital engineering.

»All data traffic requires energy.«

THE PRINCIPLES OF ALGORITHMIC EFFICIENCY AND SUSTAINABILITY BY DESIGN ARE BEST EXPLAINED BY TANGIBLE EXAMPLES FROM CURRENT RESEARCH IN COMPUTER SCIENCE[8]:

Clean Data Profiling

Digital applications such as many new "smart" technologies require perfectly organized mass data sets. But the larger the data sets, the more time and thus energy is consumed for data profiling to make the data usable. To reduce the runtime of data profiling, researchers at HPI have developed the HPI-Valid algorithm. It reduces the runtime for a specific data profiling task from many weeks to a couple of seconds. Thus saving an immense amount of energy.[9]

Energy-Aware Computing

Data centers are at the heart of digitization. Cloud applications, streaming, complex simulations – everything runs in data centers. The ever-increasing energy consumption that results is a significant contributor to the global carbon footprint. Current research suggests that data centers can use heterogeneous computing resources to decrease the energy consumption of a computation task by a factor of 10, if the right computation problem is routed to the right computation resource.[10]

Energy-efficient Deep Neural Networks

Deep Learning Neural Networks are a game changer in the field of Artificial Intelligence. However, deep learning algorithms consume a constantly growing vast amount of energy during training and execution. Energy can be saved by lowering the complexity of AI models. By setting rounding data values in AI models, it is possible to sacrifice only 5% of precision, but to achieve about 95% of energy saving required for an AI computation.[11]

HOW CAN THE G20 IMPLEMENT POLICIES TO REDUCE THE CARBON FOOTPRINT OF DIGITIZATION?

Climate change is a threat that cannot be tackled by the efforts of single countries and single companies alone. It is a global phenomenon. In addition, the fact that digital technologies and services impact societies all over the world without regard for physical borders underscores the necessity for coordinated action. Standards for sustainable computer systems need to be discussed and implemented globally. Therefore, the G20 need to take a coordinated effort to engage in policies to improve the energy-efficiency of computer systems, in order to contribute to the long-term low greenhouse development strategies as agreed upon at previous COPs.

Specifically, we make 4 propositions for policies to reduce the global carbon footprint of computer systems:

»The training of one specific AI model requires the same carbon dioxide equivalents as 300 round-trip flights from New York City to San Francisco.«

• G20 member states should form an international working group and operate regional networks of community digitization labs to assess the current state and implementation of sustainable digital technologies. The permanent working group within the G20 summits should gather information on the topic as well as produce policy recommendations on how to reduce the carbon footprint of computer systems design and usage.

• G20 member states should establish and coordinate incentives for research and public education in the field of algorithmic efficiency and performance/energy consumption trade-offs in digital engineering. To this end, international research centers for the assessment of the digital carbon footprint should be established to make informed decisions on economic and environmental policy.

• G20 member states should update their software procurement guidelines towards energy-efficient software solutions in a coordinated manner. The adoption of innovative technologies and novel societal paradigms against the status quo need to be supported by politics and public administration.

• G20 member states should establish an internationally recognized clean-IT label for sustainable computer systems. For widespread awareness and penetration of sustainable software in public and private enterprises, internationally recognized quality labels and standardization can play a major role. Especially in computer systems, it is hard to distinguish whether products and services are sustainable due to heterogeneous hardware infrastructures, a mix of different software solutions and individual use of IT – therefore common standards need to be put in place.

[1] IEA 2017.

[2] The Shift Project 2019.

[3] Strubell et al. 2019.

[4] ATAG 2019.

[5] The Shift Project 2019.

[6] OECD 2009.

[7] The Shift Project 2019.

[8] A large collection of examples of clean-IT solutions in different domains of digitization can be found at the clean-IT Forum. open.hpi.de/channels/clean-it-forum

[9] Birnick et al., 2020.

[10] Plauth et al., 2020.

[11] Bethge et al 2019.

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Ecology as new Enlightenment

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THE REVERSAL OF REASON INTO IRRATIONALITY AND THE SCHEME OF DOMINATION

The COVID-19 pandemic and the threat of collapse due to climate change and the erosion of biodiversity point to the aberrations of a development model that is based on the unlimited exploitation of natural resources and other living beings. More than ever, it appears necessary to reorient the economy in order to put it at the service of people and the preservation of the common world.

To understand why ecological transition is a chance for re-initiating a civilizational process, we must explain the reversal of progress into regression, of rationalism into irrationality. A double amputation of reason explains its degradation. First, during late modernity, that is, after the eighteenth century, rationalism became instrumental and gave rise to the era of quantification. Whereas reason in Kant or Rousseau was viewed as the most appropriate way to develop a common project, it gradually became an instrument at the service of individual desires. By being cut off from truth, reason was reduced to calculation. It lost its moral dimension as well as its capacity to distinguish the just and the unjust and could support the most barbaric and disproportionate enterprises. The second amputation of reason is more ancient, since it is a consequence of the

radical separation between civilization and nature that is specific to the Western world. It underpins the will to master inherited from the Enlightenment, and we realize today that it could lead to the ruin of our civilization.

»To understand why ecological transition is a chance for re-initiating a civilizational process, we must explain the reversal of progress into regression, of rationalism into irrationality.«

The global crisis with which we are confronted is a crisis of reason. The latter is trapped in the net of domination, which is exercised over others and nature, but is also rooted in the rejection of our vulnerability and in the repression of our carnal condition. This largely explains our obsession for control and our contempt for other living beings.

This process of self-destruction of reason and civilization is not a fatality. However, to interrupt it, we need to identify its mechanisms and characterize what we call the Scheme of Domination. A scheme is the organizing principle of a society. It is made up of all the conscious and unconscious representations that guide our economic, social and political choices and also determines our values and desires as well as our behavior. (Pelluchon, 2021: 98-100). The Scheme of Domination transforms everything (agriculture, husbandry, politics) into war. It elicits an attitude of predation towards nature and other living creatures and turns techniques into ends that are disconnected from any civilizational purposes. When we are aware of the Scheme of Domination, we understand the connections between apparently distinct phenomena, such as totalitarianism and capitalism, the destruction of nature and the exploitation of other human beings, animal abuse and our inability to coexist with people who are different from us. This awareness prevents us from limiting ourselves to the mere denunciation of a single economic or political system and helps us to decolonize our imaginary.

It therefore becomes clear that positioning ecology at the centre of public policies not only implies combatting global warming and the erosion of biodiversity. The required changes in our modes of production and lifestyles depend on a radical questioning of our representations and our relationship with other living beings. So, what makes ecology an emancipation project and the translation, in terms of public policy, of a new Enlightenment? What enables the latter to lay the foundations of a common project which, while being radically ecological and avoiding the pitfalls of

the hegemonic universalism of the past, also strengthens the fundamental principles of the Enlightenment, namely autonomy, democracy and the idea that there is one humanity and one planet?

»The Scheme of Domination transforms everything (agriculture, husbandry, politics) into war. It elicits an attitude of predation towards nature and other living creatures.«

ECO-PHENOMENOLOGY AS THE FOUNDATION FOR A NEW SOCIAL CONTRACT

Ecology cannot be reduced to its environmental dimension, which is mostly associated with the fight against global warming. It entails a social dimension linked to the organization of work and the fair allocation of resources and has a subjective meaning (Guattari, 2000). More precisely, ecology is the wisdom or the rationality of our habitation of the Earth and our cohabitation with others, human and non-human. Thus, it is part of our existence.

An inquiry into human existence that takes our carnal and earthly condition seriously highlights our dependence on nature and other human and non-human beings. As a consequence, ecology is a major component of ethics and politics. We can no longer ground the political association upon an atomistic and abstract subject, considered only in light of freedom conceived as the ability to makes choices and to change them. The phenomenological description of eating, dwelling, living in a place and being co-residents with other humans and animals, leads to an eco-phenomenology which shows that the subject is always relational and dependent on natural and cultural things that nourish his or her life, giving it meaning and flavor. This philosophy of corporeality provides the foundation for a new political theory. The goals of the state are not only security between people and the reduction of unfair inequalities. The protection of the finite biosphere, the alleviation of animal suffering, the concern for future generations and the consideration of all the dimensions that enable us to flourish frame a new social contract (Pelluchon, 2019 :254-262).

Ethics defines my ability to make room for others, be they human or non-human, present and future. Additionally, justice supposes that my right to use whatever is good for my own preservation is not only limited by my fellow citizens. The impact of our lifestyles and activities on future generations and other cultures, the respect of the ethological norms and the subjectivity of animals and the attention to the irreversible nature of certain technologies are to be taken into account by laws and public policies. Thus, the declaration of human rights which is based upon the in-

dividual moral agent is no longer sufficient to guarantee equity, justice and peace in the present ecological, technological and demographical context. Moreover, globalization and our ecological footprint have changed the structure of our responsibility because we may unintentionally inflict damage on unborn beings and on people we never encounter. This is why the Universal Declaration of Humankind Rights proposed at the Paris Climate Summit in 2015 complements the former philosophy of human rights by proclaiming the right of humanity and of all living species to exist and live in a healthy environment and describes our duties to preserve the common goods. (http://droitshumanite.fr/)

These criteria of justice can provide guidance both at the individual and collective level. They are not values, but structures of existence that proceed from the phenomenological description of the human being considered in his geographical, social and technological environment and in his interactions with other forms of life. Phenomenology then offers an alternative to relativism, but also to the abstract and hegemonic universalism of the past Enlightenment, which has been accused by postmodernism of hiding behind so-called general principles to impose a model of civilization. Thinking about our carnal and earthly condition restores the ideal unity of humanity while recognizing the diversity of cultures. Everyone can admit the validity of these principles, which stress the centrality of ecology. However, even if they are universalizable, their application must be contextualized and put to a debate. Public policies cannot be the product of arrogant reasoning that seeks to impose fixed conceptions of good and evil, just and unjust, in a vertical and homogeneous manner. The universalism constructed here is in context and lateral: It is not the result of an overarching reason, but is nourished by multiple perspectives on the world. (Pelluchon, 2021: 72 ; Merleau-Ponty, 1964).

However, acknowledging that the duties of the state entail an extension of the common good to other generations, other cultures and other species is still insufficient. We are only halfway there. In fact, everyone knows what is wrong, and numerous reports and discourses explain how to concretely execute the ecological transition. Yet, few people are changing their lifestyles and most governments still opt for an extractivist and productivist model or support intensive livestock farming. In addition, the ecological transition appears as a burden from which everyone tries to escape. The current challenge is therefore to bridge the gap between theory and practice, awareness and action, and to make the ecological transition a stimulating project. Does the current pandemic, by highlighting the counterproductive nature of our development model in environmental, health, economic and social terms, provide an opportunity for a profound reshaping of our representations and a change of scheme that could lead to an ecological realignment?

THE EMANCIPATORY STRENGTH OF ECOLOGY AND THE SCHEME OF CONSIDERATION

In order to respect planetary limits and other living beings, we must overcome the separation between nature and civilization and the narrow anthropocentrism in which we have been brought up. Today, ecology is at the centre of the reflexive attitude that

defines Enlightenment, which is the ability to relate critically to the present in order to define its challenges and to meet them. We need to know what has to be preserved and what has to be abandoned. In other words, we must initiate a civilizational epoché[1]. Admitting the aberrations of our model of development, which testifies to the irrationality of our dwelling on Earth, obliges us to examine our practices in agriculture, trade, urbanism, and health care, one by one. It also implies freeing ourselves from the prejudices and ways of beings that support our predatory attitude towards nature and encourage our addiction to consumption. By combatting the ideas and attitudes responsible for the radical separation between nature and culture and for the denial of the community of vulnerability that unites us with others, human and non-human, we can gradually dismantle the Scheme of Domination and make room for other forms of life and culture.

Ecology is an emancipatory force, because it is impossible to respect nature and other living beings while continuing to conceive oneself as an empire within an empire. Ecology that involves the respect of planetary boundaries in our ways of producing and consuming presupposes the acceptance of our own limits. The latter are primarily related to our carnal and earthly condition, our vulnerability and finitude, but they also refer to our fallibility and to the fact that our knowledge is always limited. Ecology therefore implies humility, without which we cannot cooperate with others or institute the common good. To operate the ecological transition, we ought to carefully formulate what risks not to run and have a cautious response to the unexpected events emerging from the interactions of humans with their environment and technologies. Ecology is the political translation of the Scheme of Consideration, for which individual creativity and the preservation of the common world are the two main criteria of justice. (Pelluchon, 2021:141-148). These criteria impose to invest in specific areas of research and to refuse technologies and products that can degrade the conditions of life of other beings or cause our own extinction.

Consideration means recognizing the own value of things and beings, in order to make good use of them or to treat them with respect. It is based on an experience of something that is incommensurable: the common world (Pelluchon, 2019 :106-115) The latter welcomes me at my birth and will survive my individual death. It is made up of generations and encompasses the living and the cultural and technological heritage. The awareness of belonging to a world which is older and larger than ourselves gives depth to our existence and makes us feel the bond that unites us with other living beings. It transforms our desires to the point that we have pleasure in consuming less – and in a different way. The desire to transmit a habitable world becomes a concrete motivation of our actions. Living means "living from" natural and cultural things, "living with" others, be they human and non-human, and "living for", that is, having the common world as the horizon of one's thoughts and actions. To eat, work, produce, or create a company, having in mind the preservation of the common world and respecting the dignity and creativity of people contributes to a development model based on the Scheme of Consideration.

This scheme corresponds to an enlargement of the self at several levels, ranging from civic-mindedness to a commitment to the protection of other living beings. It actually answers the aspirations of many individuals who are convinced that the current development model is outdated and would like to find meaning and conviviality in all aspects of their lives. The growing interest manifested by numerous people for the environment and the fate of animals are the harbingers of the age of the living. Gradually substituting the Scheme of Domination for the Scheme of Consideration to guide our social, economic and political choices would enable us to build a common project that responds to these aspirations instead of disappointing them and nurturing resentment and racism, hatred of reason and rejection of democracy. Therefore, ecology is at the centre of the new Enlightenment, which goes hand in hand with a form of humanism that is based on the recognition of our carnal and earthly condition upon which our responsibility towards others, human and non-human, is grounded.

[1] E. Husserl defines epoché as the first operation of phenomenology understood as a way to accomplish the Enlightenment, whose spiritual figure is Socrates. Epoché means that we put into brackets the "natural attitude", which is characterized by a certain dogmatism, leading people to believe that their representations are reality and to naively adhere to them.

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Green new deal in the West. What about the rest?

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Keywords:
green transformation, new technologies, developing countries, forced displacement

Announcing Europe's new growth strategy, Ursula von der Leyen, President of the European Commission, stated, "The old growth model that is based on fossil fuels and pollution is out of date, and it is out of touch with our planet." The new model for European growth envisions a cleaner planet based on innovative technologies and greener new jobs by prioritizing "the most vulnerable regions and sectors."[1]

UK Prime Minister Boris Johnson also announced the country's own green industrial revolution: "My Ten Point Plan will create, support and protect hundreds of thousands of green jobs, whilst making strides towards net-zero [emissions] by 2050." The initiative aims to create 250,000 new jobs. Among other things, the Ten Point Plan includes turning London into the global center of green finance, encouraging cycling and walking instead of fossil fuel-based public transportation, and quadrupling the production of wind energy.[2]

Similarly, across the Atlantic, Joe Biden, the new President of the United States, undertook three actions to remedy his predecessor's indifference to the serious challenges associated with climate change. First, Biden ratified the Paris Agreement on climate change. Second, he announced that a Leaders' Climate Summit

will convene in the White House on Earth Day.[3] Lastly, Biden established a Climate Innovation Working Group in the White House as part of the National Climate Task Force, which will support the creation of a new Advanced Research Projects Agency-Climate (ARPA-C), spearheading a generation of new jobs, technologies, and tools to empower the US to innovate and lead the world in dealing with the climate crisis.[4]

»The old growth model that is based on fossil fuels and pollution is out of date, and it is out of touch with our planet.«

Thus far, post-pandemic economic growth strategies on both sides of the Atlantic are climate friendly. However, the green transformation does not solely rely on climate policy; it equally relies on a new industrial policy. In its most basic form, green transformation is about applying new low-carbon technologies to existing economic sectors. This pairing will eventually reduce carbon emissions. In parallel, it will particularly increase the international economic competitiveness of the West. Our planet could witness carbon-free growth, breaking free from traditional pollution-based economic growth and job creation. This appears relatively easier to accomplish in developed economies.[5]

The possibility outlined above could leap forward on the agendas of the developing economies, where tackling climate change trails behind the level of welfare in the West. The catch? Inducing change requires investment. In the case of green transformation, implementing change is dependent on large-scale investments by governments and companies in fixed capital investments. This is where the West and the Rest, the prospects of advanced and developing countries, diverge.

Economic growth generating jobs with smaller carbon footprints bears greater potential where there are negative interest rates in the early post-pandemic period. The aforementioned transformation is therefore much more feasible for advanced economies in the West. The Rest, namely developing economies, still face higher interest rates because of higher risk premiums (CDS) (See Figure 1). This is due in large part to the Rest's "Original Sin," the inability to borrow money in their own currencies.[6] Furthermore, developing countries are highly indebted, making it harder for them to kick-start their economies in the post-pandemic period. Consequently, developing countries risk losing their relative economic competitiveness. Hence, green transformation has the capacity to deepen the digital and technological divide between advanced and developing countries, leading to deeper global inequalities. Lastly, highly indebted companies and troubled banking systems in the Global South would render the implementation of such adjustments impossible. Take Turkey for example: a developing economy with high CDS risk premiums, highly indebted private companies, and troubled bank balance sheets. Kicking off the green trans-

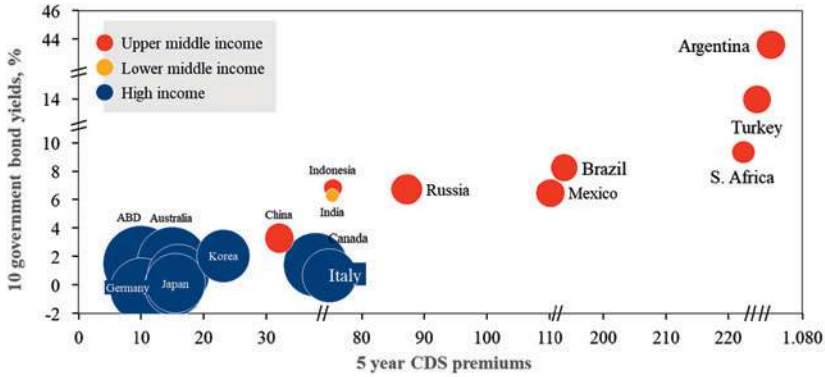
formation in a country like Turkey is similar to shopping at Whole Foods while debt collectors are carting away your fridge. Put differently, Turkey's situation, a model of countries in a greater pool, is merely one example of rising global inequalities.

There is another aspect to tackling climate change. Implementing green transformation in the West will inevitably lower advanced economies' reliance on hydrocarbons. In the long term, oil-producing developing countries would be at the frontline of the hit in demand. In similar countries, lower oil and gas prices mean less growth and fewer new jobs, as experienced during the COVID-19 outbreak. The mobility restrictions and closure of economic facilities imposed a tough reality on oil-producing countries. For example, the economies of net exporters of oil and gas in the Middle East and North Africa (MENA) region are expected to shrink by 6 percent compared to 1 percent for net importers.[7] Therefore, the stakes in fossil-fuel producing countries, predominantly developing countries, are high.[8]

If there are no long-term policies to mitigate the implications of hydrocarbon-based growth strategies, then such economies are likely to suffer from dwindling prospects at home. This, combined with weak institutions, may unleash instability. People living under such circumstances may be forced to emigrate. In Latin America, Venezuela is a telling example.

Needless to say, instability in developing countries around the world, whether due to conflict or severe economic hard-

Figure 1: CDS Risk Premiums and Government Bond Rates in G20, 2021



Source: Thomson Reuters, investing.com, TEPAV visualization
Notes: Saudi Arabia was not included due to lack of data, 7-year government bond interest data is used for Argentina. Bubble size represents per capita (current) GDP in the relevant country.

ship, has led to the displacement of millions. This is the common denominator for the 6.6 million Syrians, 3.7 million Venezuelans, 2.7 million Afghans, 2.3 million South Sudanese, and the one million Rohingya. Their neighbors, which also happen to be developing countries, host the majority of refugees: 3.6 million in Turkey, 1.8 million in Colombia, 1.4 million in Pakistan, and 1.4 million in Uganda.[9] The exception is Germany, Europe's strongest economy, hosting 1.1 million asylum seekers and refugees thanks to Chancellor Angela Merkel's "we can do it" policy in 2015.[10]

»The most vulnerable regions and sectors.«

Here, the problem is twofold. In countries of origin, the key issue is managing makeshift camps for internally displaced persons (IDPs). In hosting countries, it is a matter of effectively integrating refugees into the labor market, a troublesome prospect as tensions rise due to high domestic unemployment rates. In both cases, however, the problems are regional while the solutions are global, which should not be asymmetric. Turkey, the world's largest hosting country of forcibly displaced migrants, has so far received EUR 4 billion from the European Union to care for the 4 million asylum seekers and refugees.[11] On the other hand, the European Union supported Greece with EUR 2.97 billion to look after 120,000 asylum seekers and refugees.[12] The math is straightforward: it costs EUR 1,000 to support a forcibly displaced migrant in Turkey, while it costs EUR 24,750 to do so across the Aegean. This discrepancy is yet another form of inequality.

Pursuing green transformation depends on new climate and industrial policies, along with the generation of new technologies. However, it has geopolitical implications on two fronts. The first is the loss of a business model for oil-producing countries, which will require institution-building reforms, including fiscal and financial systems, together with social security measures. The second is the rising need for rare earth (RE) minerals. These are essential elements to producing many new green transformation technologies, including electric cars, smartphones, wind turbines and military hardware. Globally speaking, China is in a unique position. It is the largest source of rare earth minerals, with 58 percent of mine production and over 37 percent of world reserves.[13] In other words, one could say that China has a monopoly over the rare earth industry. This position has allowed China to incorporate its riches as a foreign policy tool, for example against Japan, and as leverage for attracting foreign direct investment (FDI).[14] Moreover, China supplies the US with 80 percent of its demand for rare minerals[15] – a position that led Donald Trump to sign an executive order to boost domestic production of rare earth minerals and reduce the world's largest economy's dependency on its direct competitor.[16]

Hence, igniting a race with a potential to further widen global inequalities.

Pursuing green transformation has geopolitical implications and could be interpreted as a new foreign policy tool for the

West, especially in the context of a technology race between the West and China. The race has the potential to expand the digital divide between the West and the Rest further to include China. If the West is serious about evening out global inequalities, particularly going into the COVID-19 recovery period, then the impact of the green transformation on developing countries must be considered more carefully. Therefore, the debt and high risk premiums of the Rest should be considered as a global problem. To bring the Rest on board with green transformation, effective financial partnerships must enter into effect so that developing countries can rehabilitate their fiscal situation. This necessitates boosting and integrating the digital economy of the Rest with the West. Equally important is investing in the infrastructure of the Rest to set the stage for the future of work. What is more, incentivizing the Rest to follow the Paris Agreement on climate change entails extending conditional loans and grants in line with the requirements of the green transformation.

To contain global warming, the world needs a truly global and comprehensive plan that brings everyone on par and includes the developing world in the process of green transformation, to avoid further deepening the divide. Environmentalists need to think less about electric cars and more about the balance sheets in the low- and middle-income countries. As global warming and the COVID-19 pandemic indiscriminately affect the whole world, it is up to the G20 in 2021 and beyond to find effective solutions to deal with these issues – by taking the entire world into account.

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Urban greening

The case for ecological realignment in informal neighborhoods

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Keywords:
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INTRODUCTION

Estimates show that more than half of the world's population live in urban areas, this will rise to over 70% within 30 years and is projected to reach more than 90% in less-developed regions (UN, 2018). Approximately 1 billion people live in informal settlements (UN, 2016) on land highly exposed to the effects of climate change. This is in part due to a lack of infrastructure for preventing floods and landslides and mitigating the impact of heavy storms and heat waves.

»Green public spaces play a major role in enhancing the quality of urban life.«

According to UN-Habitat (2020), green public spaces are neither sufficient nor equitably distributed in cities, both in developed and developing economies. Informal settlements are present in around half of the G20 nations, as well as in other rapidly urbanizing areas in the Global South. In this context, quality public spaces and green infrastructure should form an essential part of a wider ecological realignment and policies for building urban resilience in underserved urban areas. The built environment needs not only to be resilient, but to build resilience, and green public spaces are a great way to accomplish this, since they reduce temperatures via evapotranspiration, provide cool shade, sequester CO_2 and retain storm water, among other benefits.

City governments from G20 nations and other countries in the Global South are working to improve informal settlements. However, upgrading programs rarely integrates climate resilience initiatives, even when there is much overlap between their goals in vulnerable urban contexts. Also, international cooperation agencies, usually managed by G20 nations, have a crucial role in financing such interventions with grants and loans. The current investment in urban integration is an opportunity to include urban greening in the political agenda.

INFORMAL SETTLEMENTS IN THE GLOBAL SOUTH

Current levels of urbanization are the highest in the history of mankind. People are choosing to move to cities in order to access jobs, goods and services. This migration creates situations of precariousness and inequity in access to housing and urban land, in the form of informal neighborhoods. This is what UN-Habitat (2003) defines as the "urbanization of poverty."Housing deficits result from the insufficient response of the formal market and public policies to the growth of demand, especially in the lower income segments of society. Informal urbanization and self-construction are the ways that excluded populations have found to provide their own accommodation.

Urban segregation deepens inequalities and excludes the people that cannot access the formal market. Living conditions in informal settlements are characterized by a lack of access to basic services

and unsanitary housing conditions. The informal nature of these settlements also serves to limit access to education and the labor market (Bouillon, 2012).

The phenomenon of urbanization is particularly relevant in developing countries. However, there are no precise data on the total number of people living in informal settlements. According to data from UN-Habitat (2003), in Latin America 80% of the population lives in cities, of which 25% do so in conditions of informal access to basic urban goods and services.

Urban informality is a complex phenomenon which is defined differently around the world. In general, most definitions include groups of dwellings without security of tenure of land or housing and without access to basic services (electricity, drinking water, sewers and sanitation) (UN-Habitat, 2003; Candia, 2005; TECHO, 2013). Other studies also point to overcrowding and poor construction materials as issues that need to be taken into account when establishing a definition of informal neighborhoods.

Due, in a large part, to the way in which the land was occupied, informal settlements suffer from poor planning and lack development permission. This means that public spaces, infrastructure and services are not planned in advance. It is also common that informal settlements are located in areas exposed to greater environmental hazards such as landslides and floods. In addition to this, what should be environmental assets such as streams and open green areas may be converted into sources

Figure 1: Bandra Kurla complex surroundings in Mumbai, India.

Credits: Johnny Miller Photography, Unequal Scenes.

of increased risk by poor drainage, limited waste collection, etc.

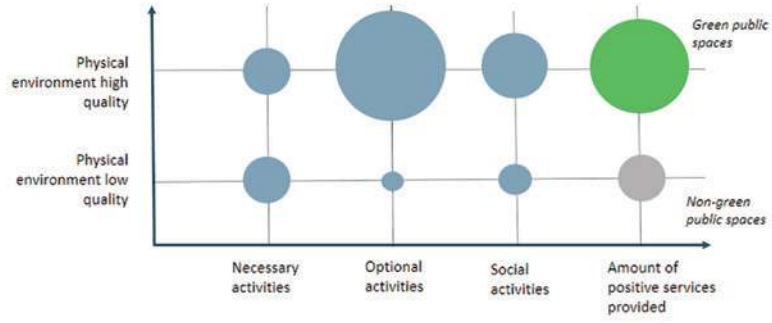
GREEN PUBLIC SPACES: A VITAL URBAN ASSET

Public spaces play a major role in enhancing the quality of urban life thanks to the variety of services that they provide. The most frequent typologies of public space include streets, squares, parks and gardens. Streets tend to be ubiquitous in both formal and informal neighborhoods. Large green public spaces may also be present in formal areas while in informal areas they might not be present at all. Research shows people of a low socioeconomic status have less access to urban green spaces (Rigolon et al., 2018), and that disadvantaged communities in prosperous towns and cities – even in G20 nations – are more exposed to heat-related threats (Chen et al., 2020).

Streets are fundamental to the urban built environment. Not only do they organize the city structure, but they are also the edges where buildings and city meet, and hence, encompass the arena for public urban life (Gehl, 2010). Streets provide invaluable public space where a large part of daily urban life happens and flourishes. How streets are designed has a significant impact on people's behavior, quality of life and sustainability. Streets can provide the physical space for people to walk along, to chat in, to stand in, to shop or sit in, among the many other uses that make a place lively.

In informal settlements, where big open spaces tend to be lacking, streets are often the main, if not the only, type of public space. In such cases, streets-as-places (Project for Public Spaces, 2008) could be a suitable approach to offsetting the lack of larger public areas, improving the qual-

Figure 2: Graphic representation of the connection between the quality of the physical environment and the number of activities and services provided by public spaces. Bigger circles suggest higher intensity usage or quantity of services provided



Source: Adapted from Gehl (2010)

ity and provision of public space as well as adding much-needed greenery.

There is a series of characteristics to bear in mind when planning a public space. According to Project for Public Spaces (2016), four main attributes should be present to make a public space great: (a) it should be accessible and well connected to the city; (b) it should be comfortable and attractive (safe, clean, green, walkable, sittable and charming); (c) it should promote sociability (be friendly, welcoming, interactive, neighborly and diverse) and (d), it should encourage a broad range of uses and activities.

Green infrastructure could be properly provided, even in informal settlements, if it is cleverly planned. Connectivity, human-environmental interactions and multi-functionality are some of its key principles (Mell, 2019), all achievable if the green infrastructure network is properly implemented.

It should be borne in mind that even though public spaces generate social and economic benefits, they need to be properly vegetated in order to have a positive impact in environmental and climate resilience terms. Green public spaces provide urban dwellers with ecosystem services that include, but are not limited to, aesthetic benefits, physical and mental health benefits, recreation and sense of place, flood risk mitigation, air purification, shade provision, heat mitigation and protection in coastal cities, among many others (Stone, 2012) (McDonald, 2015). Trees, particularly, provide an extraordinary series of benefits for cities and urban

Figure 3: Kya Sands – Bloubosrand in Johannesburg, South Africa

Credits: Johnny Miller Photography, Unequal Scenes.

dwellers, including ambient-temperature reduction through evapotranspiration, humidifying the air, cool shade, habitat provision for small animals, sound absorption, mental soothing, property value enhancement, carbon sequestering, soil and water retention, particulate-matter filtering and flood mitigation thanks to runoff rainwater retention (Kelbaugh, 2019).

Planting and maintaining trees in cities costs money, and to drive a profound green change certainly takes time. Nevertheless, evidence shows that doing so has a positive return on investment for each dollar spent (The Nature Conservancy, 2016), as they deliver meaningful and valuable ecosystem services. Despite the fact that results can be seen relatively quickly, the common perception is that trees and greenery take a long time to grow and require a lot of maintenance. This may discourage decision makers from promoting greening. However, green infrastructure strengthening can be a highly cost-effective approach as a result of the benefits that it provides in the long-term, especially in areas where trees are currently lacking. Trees can be incorporated into many typologies of urban areas thanks to the adjustability of varied planting techniques, showcasing a successful manner to integrating green infrastructure into any urban settlement (Mell, 2019).

Tactical urbanism could be key to accomplishing successful increases in green public space. This rapid planning-and-implementing process can be a convenient method, based on short-term actions, to achieve long-term change (Lydon & Garcia, 2015). Tactical urbanism promotes low-cost public space interventions with the intention to produce a positive and lasting impact. Though it encompasses many diverse practices, there are three specific tactics that are suitable for public space upgrading in informal neighborhoods: (a) The Pavement to Parks approach seeks to repurpose asphalt space into green public spaces; (b) Pavement to Plazas, similarly, seeks to transform car space into lively social spaces; and (c) Pocket Parks, which may have the right scale in informal settlements, since ample open spaces are rarely frequent and it provides a tangible and accessible way to add greenery and promote a successful green infrastructure network. These strategies, combined or separately, allow decision makers to convert vacant spaces into vibrant green spaces.

»Planting trees costs money and takes time, but also delivers meaningful and valuable ecosystem services.«

INTEGRATING GREEN SPACES IN PUBLIC POLICIES AIMED AT UPGRADING INFORMAL SETTLEMENTS

In several countries in the Global South, especially in Latin America, government programs are being carried out to redevelop low-income communities by investing in infrastructure, providing basic services, developing public spaces, improving housing

and the security tenure, among other interventions. Some examples of these government programs are the PISU[1] in Argentina, Favela Barrio[2] in Brazil, Chile Barrio[3] in Chile and the Program for the Formalization of Properties[4] in Peru, among others.

Public spaces are important for social actions, demonstrations and community gathering and even more so within vulnerable communities where the existence and quality of public spaces is complementary to the access to urban land and housing.

In informal neighborhoods, public space is both social and political, and it often replaces the needs that housing cannot satisfy (Gehl, 2010). Due to the size of the investment required, redevelopment programs are inevitably linked to political interventions, and so are a unique opportunity to rethink public spaces, both in terms of socio-economic development, as well as in relation to their environmental impact.

However, many upgrading programs focus exclusively on providing infrastructure, and public space is an afterthought. In many cases, for political expediency, new public spaces are little more than paved areas, lacking plants and greenery which require time to grow and increased maintenance.

Upgrading programs are an opportunity to include urban greening within policies that could combine environmental consid-

Figure 4: Barrio Mugica in Buenos Aires, Argentina.

Credits: Secretaría de Integración Social y Urbana, Government of the City of Buenos Aires (2021).

erations and urban resilience, with their fundamental role of providing infrastructure that improves living conditions and neighborhoods. This is fully aligned with the announcement made by U20 mayors in the U20 Communiqué, when they called on the G20 leaders "to commit to our partnership in achieving equitable, carbon-neutral, inclusive and healthy societies."

CONCLUSION

A green transformation of informal neighborhoods would have numerous advantages. Public space and land planning are local skills. This means city mayors and local governments can, by themselves, push forward greening of informal settlements and green infrastructure enhancements.

In informal settlements, civic participation tends to be frequent and, to a certain extent, institutionalized. Public officials' decisions usually need to be discussed in participatory planning civic workshops. This regular practice paves the way for public works promoting greenery, since social demand for more and better public spaces is commonly already present.

Advocating for a green transformation in informal neighborhoods is a great way to boost urban resilience in the face of climate change. Moreover, international funding from multilateral cooperation is becoming widely accessible for informal neighborhood upgrading, resilience improvement and for tackling climate change. Hence, informal neighborhood greening cannot be timelier.

The COVID-19 pandemic has made ever more evident the poor living conditions that informal neighborhood dwellers suffer in terms of poor-quality housing, limited access to public space and to sanitation facilities. Regular handwashing and physical distancing are hardly possible where overcrowding and a lack of proper infrastructure are the norm.

Informal settlements and low-income communities also suffer the impacts of natural disasters and climate change to a greater extent than other high-income and properly planned communities, as all of these impacts substantially depend on the living conditions and the quality of the built environment (UN-Habitat, 2020). The COVID-19 crisis could be an opportunity to prioritize the creation of green public spaces, particularly in informal settlements where they are most needed.

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[3] More information available online at: https://repositorio.cepal.org/bitstream/handle/11362/3721/1/S2005059_es.pdf.

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Extended Producer Responsibility (EPR)

A key catalyst for the transition to a circular economy – the case of Jordan

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Jordan's Ministry of Environment is concerned with protecting the environment and its ecosystems through the development of legal, strategic and policy frameworks, awareness and educational programs and the transition to a green economy. The ministry's EPR project is supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

Keywords:
circular economy, extended producer responsibility (EPR), sustainable waste management, jordan

In 1960, the social critic Vance Packard noted in his book, The Waste Makers, that "the average American family throws away about 750 metal cans each year,"[1] decrying the wasteful nature of our consumerist lifestyle and underlining that natural resources are precious and finite. However, 60 years on, humankind's thirst for ever new material goods, fuelled by an economic system that places growth above everything else, is still seemingly quenchless. As a result, global resource extraction and consumption is expected to further grow and double from now until 2060.[2] The Group of Twenty (G20), generating approximately 90% of the world's economic output,[3] is one of main drivers behind this trend.

Such a development trajectory is set to further accelerate environmental degradation and biodiversity loss while exposing the shortcomings of our linear 'take, make, dispose' model of production and consumption. In this model, a finite amount of raw materials is used to produce goods that are either dumped in landfills, incinerated, or discarded in the environment at the end of their lifespan. The detrimental effects of such linear economies are particularly evident in the oceans, where

the equivalent of a garbage truck of plastic is dumped every minute, and oceanic biomass is estimated to be outweighed by plastic within the next three decades.[4] The remnants of our consumerist lifestyle, household waste, are consequently projected to increase by another 70%[5] until 2050 worldwide, underscoring the urgent need for change.

In Jordan, the increase in municipal waste is expected to develop in an even steeper manner, doubling from three[6] to more than six million tonnes within the next 20 years. Yet, it should be kept in mind that emerging market economies, such as Jordan, still produce significantly less waste per day and capita (Jordan: 1kg[7]) than developed ones, such as Germany (1.7kg[8]) or France (1.5kg[8]). Besides, the waste composition is different in comparison to many European countries, with approximately 50% organic waste and approximately 40% paper, cardboard, metals and glass. In contrast, in Europ the share of organic waste tends to be lower while the share of packaging materials is higher.

»In Jordan, municipal waste is expected to double within the next 20 years.«

CIRCULAR ECONOMY AND EPR: CLOSING THE LOOP

A circular economy addresses the above-mentioned issues by promoting a more efficient use of resources and applying the three guiding principles of 'reduce', 'reuse' and 'recycle' to create a circular value chain. This concept helps keep a maximum of processed resources in the loop while minimizing the impact on the environment. Further dissemination of the circular economy concept could trigger investments into direly needed waste collection infrastructure. Estimates suggest that at least 2 billion people worldwide lack access to waste collection services, and that the waste by some 3 billion people is not treated in an environmentally sound manner.[9] The need to manage waste properly, including packaging waste, is addressed within the circular economy by concepts such as the Extended Producer Responsibility (EPR).

First introduced in a report by the scholar Thomas Lindhqvist to the Swedish Ministry of Environment in 1990, EPR is an environmental policy approach based on obliging producers to assume full responsibility for their products during their useful life cycle and during the end-of-life phase when products and packaging turn into waste. Experience from European and other G20 economies suggests that a mandatory EPR system can have significant impact in achieving a range of policy objectives. These policy objectives encompass changes in both upstream, e.g., design for recycling, and downstream, e.g., increased collection rates and improved technologies for sorting and recycling.

HOW TO ROLL OUT AN EPR SYSTEM: FIVE STEPS TO SUCCESS[11]

Many European and other G20 countries have already gained extensive experience in implementing and managing EPR sys-

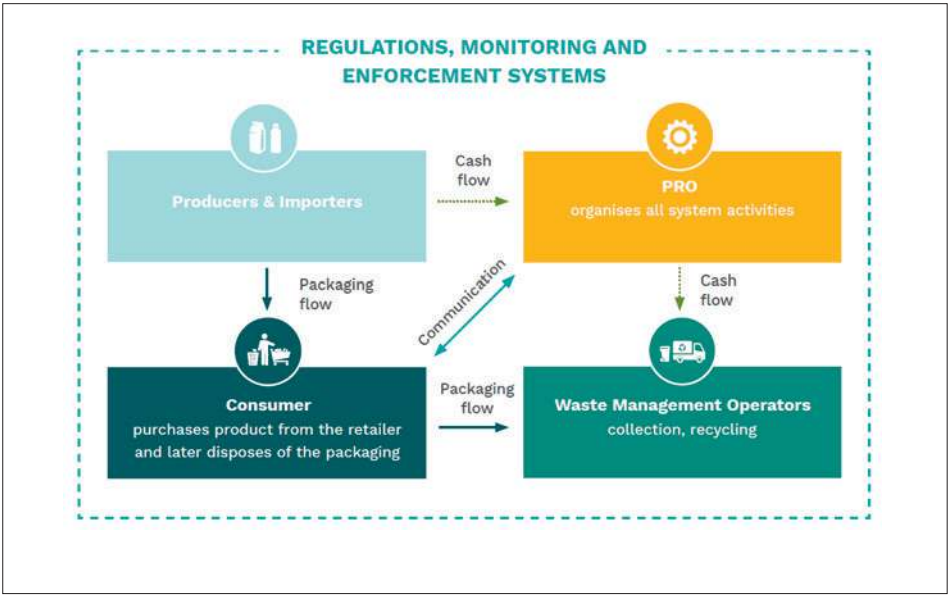
tems for different types of waste during the last 30 years. Jordan seeks to learn from their trajectories and applies the know-how by drafting necessary legislation and implementing pilot projects in order to establish a sound waste management regime and to facilitate the transition to a circular economy. The five steps outlined below illustrate Jordan's guiding principles on its EPR pathway and shall inspire policy makers from the G20 and other countries to introduce their own system or improve an existing one.

(1) Create a policy and legal framework

Public policy plays a key role in providing a legal framework for EPR systems, which are commonly established at a national level. In Jordan, such a waste framework law (No. 16/2020) including EPR regulation was prepared by the Ministry of Environment in a consultative process with relevant authorities and stakeholders and came into effect in September 2020. Such a framework law defines the responsibility of individual companies to either organize the collection and processing of packaging waste on their own (individual responsibility), or to form a group and pay financial contributions to a larger waste management system with several other companies (collective responsibility). A prerequisite is that the amount of packaging put on the market by each company can be precisely measured.

Jordan's household waste recycling rates are currently rather low in comparison to European countries, therefore Jor-

Figure 1: Overview of key actors and interconnections in an EPR system [10]



danian policy makers are aware that mandatory recycling targets provide important tailwind for increasing the recycling share of packaging waste within EPR systems. For instance, the European Union mandates for its member countries that 65% of all packaging waste needs to be recycled by 2025 and 70% by 2030.[12] In Jordan, some stakeholders hope for equally ambitious targets in the future.

(2) Establish a Producer Responsibility Organization (PRO)

In an EPR system, companies either take individual or collective responsibility for their waste. As it is more challenging to monitor and enforce systems based on individual responsibility, collective responsibility models tend to be more common. However, these systems require a central organization or system operator, often known as Producer Responsibility Organization (PRO), to coordinate its complex activity. On the upside, collectivization of responsibilities allows for a reduction of transaction costs and leveraging of economies of scale. In general, a PRO's tasks include the following:

- Registration of all obliged companies
- Collection and management of funding received from participating companies
- Management of tenders and contracts (e.g., for collection and sorting)
- Documentation and monitoring of the collection, sorting and recycling

Table 1: Stakeholders and their roles in an EPR system[14]

Stakeholder	Role
(1) Manufacturers of materials for packaging and manufacturers of packaging	- Not obliged to pay fees to EPR system - Incentivised through pressure from downstream actors within the supply chain to increase use of recycled materials and ensure recyclability
(2) Consumer goods companies (fillers & importers)	- Obliged to pay fees to the EPR system for packaging of products they put on the market - Establish a PRO and promote reduction, reuse and recycling
(3) Distributors / retailers of packaged goods	- Not obliged to pay fees to EPR system - Collect packaging and to ensure its recycling
(4) Consumers	- Not obliged to pay fees to the EPR system but usually bear the costs as they are indirectly passed on to consumers through a non-significant change in the price of the product - Need to be informed about waste reduction strategies and environmentally sound return/ disposal of packaging
(5) Waste management operators	- Receive funds from the EPR system for their services to ensure packaging waste collection and recycling
(6) Governmental institutions	- Legislation & supervision of the EPR system

(3) Define the roles and responsibilities of stakeholders along the packaging value chains

Defining roles and responsibilities of stakeholders along the packaging value chains is essential. Materials and packaging manufacturers, consumer goods companies and importers, retailers and distributors, consumers and governing bodies, such as Jordan's Ministry of Environment, are all to a certain extent responsible for managing packaging waste. An overview of the key stakeholders and their responsibilities can be found in Table 1.

»EPR obliges producers to assume full responsibility for their products after the end of useful life.«

(4) Organize packaging waste collection and treatment

Across the globe, a large variety of operating models for waste collection are in operation. These operating models differ with regards to the range of collected packaging types (such as plastics, glass, aluminium or cardboard) as well as the choice of drop-off system (e.g., curbside collection from households, specific bins at public locations or collection at retailers). The systems also vary in terms of separate or mixed collection of the individual material fractions.

Municipalities are often directly involved in the operative business. In these cases, the PRO remunerates the municipality for its services, such as waste collection or transportation to sorting and recycling plants. In other cases, the collection is contracted to professional waste management companies.

(5) Calculate costs and fees for participating companies in the EPR system

The cost of an EPR system depends on several factors: These include the type of collection system, the waste composition, organizational structures, contractual constellations, financial contributions of the municipalities, recycling quotas, recovery and disposal infrastructure, the existence of deposit-refund systems as well as the distribution of costs across different material fractions.

Companies who bring packaging materials into circulation (i.e. consumer goods companies and importers) pay EPR fees. However, these fees are indirectly passed on and born by end consumers as companies usually price them into their products through a non-significant change of the product price. To illustrate what these EPR fees mean in practice, three examples (based on French prices) have been selected: A glass bottle for vegetable oil, a beverage carton for drinks and a PET water bottle, each holding 0.5 litres. While the fee for a 380g glass bottle is EUR 0.51, a 16g beverage carton is slightly cheaper with EUR 0.40 and the 17g PET bottle costs EUR 0.49. For all packaging types, the costs are below half a euro cent and therefore just a minor factor of the total product price.

ROLLING OUT AN EPR SYSTEM FROM SCRATCH: THE CASE OF JORDAN

In 2017, the Jordanian Ministry of Environment, convinced of the positive ramifications for the transition to a circular economy, decided to establish an EPR system in cooperation with the Export Initiative Green Technologies, implemented by GIZ on behalf of Germany's Ministry of Environment. A first inception meeting involving key stakeholders was held in September 2017 with participants from Jordan's Ministry of Environment, other relevant government entities, international and local firms, NGOs, municipalities, universities, the Jordan Chamber of Industry and the Jordan Chamber of Commerce.

As a result of the initial dialogues, The Jordan Association for Recycling of Consumer Packaging Materials[13] was founded in March 2019 with the intention to facilitate the establishment of a system operator (PRO). After an intensive debate on which organization should become the PRO, stakeholders agreed that an independent unit within the Jordan Chamber of Industry would assume this role. The decision was made in favor of the Chamber of Industry because it is a reputable name in Jordan with established and efficient coordination processes. To ensure compliance with regulation, the unit will be supervised by an advisory committee which includes representatives from relevant stakeholders and is headed by the Ministry of Environment. While some local firms remained reluctant in the beginning of process, international companies were supportive of the EPR endeavor. It should be noted that multinational firms are responsible for the lion's share of packaging waste put into circulation in the country.

The capital Amman and the historic city Petra have been chosen for an envisaged pilot phase. In Amman, the introduction of a recycling bin is planned, while in Petra, a PET bottle collection and recycling system is being contemplated. One of the first steps in Amman is forming an overview of the different packaging materials that could be collected in one bin. Unfortunately, the current pandemic and the con-

Table 2: Exemplary fees per tonne and packaging type for different European countries (2020)[15]

Packaging type	Belgium	France	Netherlands	Spain
Paper packaging	€59.40	€165.30	€22.00	€76.00
Glass	€40.30	€13.50	€56.00	€24.51
Beverage cartons	€574.00	€246.10	€380.00	€355.00
Plastic bottles	€246.10	€288.80	DRS: €20.00 / €0.25 p. bottle / €600.00 / €340.00	€433.00
Recyclable plastics	€357.80	€309.20 – €485.70	€340.00	€377.00
Non-recyclable plastics	€711.20		€600.00	€739.00

sequent distancing rules make progress difficult. The same goes for the city of Petra where a steep drop in tourist numbers brought the initiative to a temporary hold.

»Multilateral agreements can facilitate uptake of circularity and integrate EPR into global value chains.«

THE WAY FORWARD: MORE REDUCE & REUSE, LESS RECYCLE, AND LEVERAGE INTERNATIONAL COOPERATION

While the main aim of EPR systems in general and the one in Jordan in particular is to hold companies accountable for packaging materials they put into circulation and increase recycling rates, the biggest lever is not putting new products on the market in the first place. In the so-called waste hierarchy, prevention, minimization and reuse are favored over recycling, energy recovery and disposal. To give an example: Producing a PET water bottle and making sure it gets recycled afterwards into a new r-PET bottle using recycled material is a crucial step in the direction of a circular economy. Yet, we should ask ourselves whether filling water into disposable PET bottles with a lifespan of sometimes only minutes is really necessary. Instead, we could use reusable and refillable water bottles and refill them at water fountain or dispenser. This idea could be applied to other sectors as well.

The G20, as the premier forum for international cooperation, has the potential to promote uptake of circularity and integrate EPR into value chains across the globe. Representing almost all major economies, it can set global standards, make a difference and multiply positive effects. We should make use of platforms for policy recommendations, such as the Global Solution Summit 2021 or the Think 20 (T20) engagement group, and together leverage our knowledge through local solutions for global issues.

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Social realignment

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Reducing fragmentation and shaping post-pandemic resilience and sustainable development through data-driven decision-making

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Building a better future of work

Creating a more sustainable economy through good jobs and upskilling

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INTRODUCTION

114 million jobs were lost globally in 2020 relative to 2019. Women and young people bore the brunt of the losses, in relative terms, and lower-skilled sectors were hit hard even as some high-skilled sectors demonstrated job growth.[1] What began as a global health crisis has developed into an economic one as well, resulting in widespread business failures and social and political upheaval. While few have been spared at least some impact, poor, marginalized and vulnerable communities, as well as their workforces, have been disproportionately affected.

»Healthy societies help economies grow, and healthy economies help societies thrive.«

Today, vaccine programmes are allowing many countries to begin reopening following months of lockdowns, stringent public health protocols, and remote working. But the good news is tempered by the fact that the emerging economic recovery already is proving unequal. Individuals who were most well-off and suffered least – those who largely work in knowledge jobs and sectors that were able to adapt technologically – are now recovering fastest, increasing the polarization found within societies and labor markets.

Bridging this gap will require governments and businesses to work together toward a shared vision of economies that are stronger and more resilient because they are more sustainable.[2] In other words, sustainable societal progress must be a deliberate design goal rather than the presumptive after-effect of economic growth. If businesses or governments approach the challenge alone, it will almost certainly ensure that we rebuild in the shadows of our current system, which is no longer delivering for the whole of society.

G20 governments and business leaders, therefore, should consider how to work together to design policies and programmes that will help shape sustainable and inclusive societies in a post-COVID-19 world. They should consider what incentives can help businesses prepare their workforces for this future and what can be done to help people to equip themselves with the skills that business needs. To create these opportunities will require deliberately designed and targeted initiatives: upskilling programs that help people work in roles that increasingly use new technology; reskilling programs that allow people to operate in new roles; and even entrepreneurship programs. And as societal progress is a focus, it will also require policy makers and businesses to reimagine the concept of fair work through the lens of good jobs in growing sectors: jobs that are safe, fairly compensated, reasonably secure and motivating, and that leverage the human skills of workers. These good jobs, in turn, will deliver higher levels of productivity.[3]

OVERVIEW AND CONTEXT

For decades before COVID-19, there had been an increased decoupling of economic progress and societal gains.[4] Widening in-

equalities were fomenting growing social discontent and unrest as a result of low wage growth across the world, particularly for low- and middle-income jobs,[5] and a widening skills gap.[6] Even as unemployment across OECD nations stood at a low 5.4% in 2019,[7] many workers increasingly ended up in insecure, low-wage, low-skill jobs, particularly in the gig economy.[8, 9] Indeed, globally the share of national income going to labor has declined[10] while productivity has risen much faster than real wages, creating inequities:[11] the highest earners have captured an increasingly large portion of income, while those at the bottom have seen their portion significantly decline.[12] Measured by the Gini coefficient,[13] income inequality was the highest in the US among G7 countries in 2017[14] despite the fact the US unemployment rate was just 4.1% in December of that year.[15] Indeed, income growth in the U.S. since 2011 has been stronger among the top 5% of families.[16]

COVID-19 further exacerbated this situation. Government mandates that shut down factories, offices, restaurants, hotels, retailers, and entertainment venues disproportionately affected women, minorities, and low-skilled workers unable to work from home.[17, 18] High-income workers hold a disproportionate number of jobs that can be done via telework[19] while lower-income workers are less likely to be able to work from home and more likely to lose their jobs.[20] Current upskilling efforts unwittingly may be reinforcing these disparities: Only 28% of school-leavers, as opposed to 46% of postgraduates, say their employers give them opportunities to improve their digital skills. Likewise, approximately half as many employees in industries most at risk of disruption felt they were likely to get opportunities to improve their digital skills as those in industries least at risk of disruption.[21]

These statistics are even more concerning when placed in the context of overall employment. As of 2019, more than 60% of the world's employed population – two billion people – worked in the informal economy[22] and the pandemic could push as many as 150 million people into poverty by the end of 2021.[23] And it will be the largest economies that are likely to pull further ahead of the developing world post-COVID, given the sheer size of their financial stimulus packages and economic recovery plans. The OECD and G20 countries have deployed an unprecedented USD 11 trillion to kickstart their recoveries and help their populations.[24]

»Sustainable societal progress must be a deliberate design goal rather than the presumptive after-effect of economic growth.«

POST-COVID RECOVERY CHALLENGES EMPLOYERS

Spurred by these government-backed stimulus programs and the prospects of a vaccinated workforce, many forecasters

and business leaders are cautiously optimistic about the future. The World Bank, in its January 2021 Global Economic Prospects report, said it expects the global economy to expand by 4% this year after contracting 4.3% in 2020.[25] Businesses are also optimistic, with 76% of CEOs surveyed in PwC's 24th Annual Global CEO survey report saying that the global economic outlook will improve in 2021 with 36% of them very confident about their companies' revenue growth prospects for the next year.[26]

GDP and other financial measures, however, do not provide the full picture of healthy, thriving societies. Economic measures and job creation policies solely focused on driving productivity and revenue generation can only provide a partial and single-sided view of the overall health and wellness of a society and its people. To better understand the complexity of the situation, governments and businesses need more nuanced indicators of societal well-being which in turn will highlight the need to enact policies and programs that create not only more jobs, but good jobs that ultimately benefit individuals and societies as a whole.

There are several such examples where this is happening. Singapore's SkillsFuture program has employers help identify sector-specific jobs and skills which are then used to create skills frameworks and Industry Transformation Maps, and the government provides financial credits to citizens over 25 to acquire relevant training.[27, 28] In the US, the Metro Atlanta Chamber (Atlanta Chamber of Commerce) announced in February an initiative to leverage the resources and expertise of the area's business community to advance racial equity via measurable action items focused on workforce development, economic development and education.[29] In India, the Government and the IT industry led by the industry's trade association, NASSCOM, have launched FutureSkills PRIME to upskill 1.4 million workers on emerging technologies over the next five years. This "digital skilling ecosystem" includes free courses and subsidized training provided to over 400,000 individuals,[30] all aimed at helping the country become a "global hub of talent in emerging technologies."[31]

THE WAY FORWARD

The challenge now facing governments and the private sector is to work together to create a more sustainable, inclusive society; in part, this can be achieved through the creation of good jobs and by providing people with the requisite education and skills training needed to succeed. The following policy recommendations for governments and businesses offer solutions towards achieving this goal.

1. Create a universal definition of good jobs and a declaration committing organizations to create them: There is currently no global, standardized definition of what a good job is. This makes it harder for governments and businesses to understand and measure whether they are meeting their goal of creating good jobs or falling short. This definition would designate a good job as one that is safe, paid fairly, reasonably secure and motivating, and leverages the human skills of the worker.[32] Good jobs are not limited to a particular industry, geography or demographic but are relevant for all economies, types of labor, and employment (full time, part time, gig, informal). By establishing a working group to develop a formal definition of and guid-

ing principles for what good jobs are (and are not) in collaboration with business and labor leaders – as well as a declaration supporting the importance of creating more good jobs – the G20 can set the groundwork and standards that will be necessary to use upskilling and job creation as a means of helping create more sustainable societal progress.

»Bridging this gap will require governments and businesses to work together toward a shared vision of economies that are stronger and more resilient because they are more sustainable.«

2. Move beyond purely economic measures as a proxy for social progress: Building forward stronger will mean measuring success differently. While GDP is one of the most widely used economic measures today, it does not give a complete picture of economic progress including the extent to which people have good, fulfilling jobs and which parts of the population are excluded. Healthy societies help economies grow, and healthy economies help societies thrive. G20 nations should consider what a balanced approach to measuring economic and social progress looks like, including identifying indicators that, alongside key economic indicators, can present a more accurate picture of economic growth and sustainable social progress; for example, those used in the OECD's Better Life Initiative[33] or using a model such as the Recoupling Dashboard.[34]

3. Incentivize the development of programs that help employers match skills and new jobs: Through incentives, governments can help the business community identify and invest in how and where to create good jobs and skilling programs in a way that helps people participate in the Fourth Industrial Revolution. While certainly beneficial to companies, this is not merely altruistic on the part of governments. By boosting people's earning capacity, those national and local tax bases that have been decimated by lost wages during the pandemic will get stronger; tax revenues and social security collections increase and the cost of social safety nets decline.[35]

4. Develop digital upskilling programs and employment opportunities targeted to meet the needs of underrepresented populations: Poor, marginalized and underrepresented communities, including women and youth, are the ones most affected by the growing asymmetry in our societies; during COVID-19, they disproportionately lost jobs and working hours and were less able to work from home. They often have fewer safety nets to make up for the lost income. In some countries, digital platforms have been used to help create new employment opportunities for the hardest hit and for those unable to ac-

cess other types of employment because of social, mobility, or family reasons.[36] India's National Skills Development Council has implemented a job training program for youth without jobs or degrees, focused on ensuring inclusive and tangible skills development to build employability and self-sustenance through short-term certification courses aligned with industry-specific needs.[37] One consideration, however, is that the needs of vulnerable communities are often complex and inter-related. When creating upskilling programs for these communities, governments should also provide access to social and welfare needs necessary to allow individuals to take part in these programs, including better nutrition, childcare and basic education.

5. Be transparent on reporting on upskilling progress: Robust reporting does not just measure a system; it can drive change within it. By being transparent about the extent of upskilling, companies allow investors and other stakeholders to reward good results and support progress. Governments should encourage business to report transparently on upskilling, with the goal being the adoption of shared global reporting standards. The World Economic Forum, along with other private sector stakeholders, recently defined a set of environmental, social and governance (ESG) metrics that could act as a benchmark for creating transparent and common reporting standards.[38] Companies should be encouraged to provide additional reporting that reflects the issues that are most material to them, their stakeholders and their industry.

6. Establish national skills hubs for specific skills training: The rise of remote work because of COVID-19, coupled with the economic effects of the pandemic, presents governments (in collaboration with their business communities) with an opportunity to create a competitive advantage around a central set of skills or technologies. By promoting national specialty skills centers, or regional skills hubs, countries can develop the backbone of a global skills marketplace, where businesses have access to skilled talent from around the world, and upskilled people would have access to a much broader labor market in need of their skills. G20 nations would have to agree on a standardized proficiency measurement system, as well as on legal frameworks to establish fair tax and employment regimes for people training in one country and working in another, but this approach could lead to distributed value chains for every industry and a more inclusive model of development and skills distribution through expertise sharing.

CONCLUSION

COVID-19 has made it clear that the world's governments, together with businesses and civil society, must reimagine the vision of what thriving economies and societies should be – ones that are defined by the opportunity to engage in quality, meaningful work within a system that is sustainable and humane. It will be challenging to make this vision a reality, and it will require compromise and political will at a time when nations already are having to make difficult decisions. However, COVID-19 has shown us that, when we harness our collective imagination and will, we can create extraordinary things.

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Address "shecession" to reset the post-COVID economy

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GlobeWomen Research & Education Institute is a Washington, DC-based nonprofit organization whose mission is to promote economic equity for women globally. It convenes women business and government leaders globally through the 31-year-old Global Summit of Women; conducts research on women's corporate leadership through Corporate Women Directors International; convenes annual Executive Roundtables on Diversity through the Colloquium on Global Diversity; and features women CEOs to university audiences globally through its Leagacies of Women Forums. GWREI partners with the UN Global Compact, UN Women, W-20, W-7, IFC and other international forums to advance policies benefitting women in the economy.

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Keywords:
shecession, reset economy, carework, gender equity

In a 2017 speech, then-Chair of the US Federal Reserve Bank, Janet Yellen, declared a direct connection between women and economic growth: "From a macroeconomic perspective, women's incorporation into the economy contributed importantly to the rapid rise in economic output and well-being over the 20th century."[1] It was unusual for a Fed Chair to state that America's prosperity from the 1950s to the present was due to women working outside the home. Yellen's assertion surprised the larger business community used to hearing her primarily speak about interest rates' rise and fall.

Her premise was actually based on simple math – two earners generate more income than one, so what was true for the US also applied globally, as more and more women have found employment in the last 50 years. Now 39% of the global workforce is female,[2] 35.1% of SMEs are women-owned (World Bank Gender Databank, 2020), and armed with income, women make 80% of buying decisions in developed economies. A 2015 McKinsey report ("The Power of Parity") indicated that 37% of global GDP was due to women's output. If women were fully integrated to the world economy, a Booz & Co. study estimated their economic clout would be "the Third Billion,"[3] equal to China's and India's economies combined.

Just before the pandemic hit the US, more women than men were employed for the first time.[4] They may not have been bringing home equitable pay or had quality jobs with benefits, but they were employed. Then COVID 19 erupted in 2020, and lockdowns forced businesses to close, resulting in worker lay-offs and furloughs. During the sharpest economic downturn since the Great Depression, women workers have taken an outsized hit. In the height of the pandemic in spring 2020, 20.5 million jobs were lost, according to the US Bureau of Labor Statistics, and women accounted for 55% of those jobs lost. The unemployment rate for women was 15.5% compared to only 3% in February 2020.

»If there is one truism emerging from the pandemic, it is that carework is central to economic growth.«

The same scenario held globally – women's job losses were 1.7 times greater than men's, and in actual numbers that came to a staggering 321 million women out of work compared to 182 million men.[5] Even in New Zealand, the country praised worldwide for its strict health protocols, resulting in one of the lowest COVID infection rates, 90% of 11,000 people who lost their jobs due to the pandemic were women.[6] Hardest hit were women in low- and middle-income countries where more were concentrated in the unstable informal economy.[7]

This "shecession," as this women-driven recession has come to be called, is the result of a perfect storm, wherein business lockdowns negatively impacted the industries where women workers are predominant – retail, travel, lodging, food services, entertainment and personal services. At

the same time, closures of schools and day care centers required women to take on carework, necessitating their being home, whether employed or not, for their families.

Additionally, women-owned enterprises were also disproportionately impacted by the pandemic, largely because these tend to be foot-traffic-based businesses – restaurants, spas, salons and retail. In the US, the National Bureau of Economic Research found that, by April 2020, 25% of small businesses owned by women had closed, compared to 20% of those owned by men.[8] At the global level, the same scenario was in place. In the OECD's latest report (March on Gender 2021), drops in revenues in German women-owned businesses and reduced hours of operation in their Canadian counterparts were cited as examples of the economic pain suffered by women entrepreneurs globally, who provide jobs not only for themselves but also for others they hire. Less financially resilient and less equipped to pivot their enterprises, they are also less likely to anticipate a strong recovery in the year ahead.

For women, the consequences of lost or curtailed employment may outlast the current shecession and affect their future earning opportunities. Michèle Tertilt, Professor of Economics at the University of Mannheim, predicts that catching up to pre-pandemic levels will take women a long time. "The reason is a "scarring effect" – when women do not work for a while, they will likely find worse jobs when they re-enter. Similarly, women who reduce hours will likely miss career opportunities."[9] This means economic gains women made in past decades may be reversed, with a widening pay gap that comes with lower-waged jobs, reduced pension income, less health care and less family income overall.

Beyond gender inequality, this shecession has wider consequences for the global economy. The GDP growth each nation saw as women's employment rose dramatically in prior years will be reduced, if nothing is done to address COVID's impact on women's earning opportunities as workers or small business owners. A McKinsey study estimates GDP growth could be USD 1 trillion lower in 2030, and may be worse if there is a slower recovery and women leave the workforce permanently due to lack of government or private sector initiatives to improve childcare and education services.[10] In other words, nations may face a larger, deeper and more persistent recession. Workplace trends emerging during the pandemic may provide answers to creating a productive but caring reset economy that enables half the world's population to be economically engaged.

THE PRIMACY OF CARE

If there is one truism emerging from the pandemic, it is that carework is central to economic growth. For the first time, a direct line between childcare and employment evinced itself – the invisible work that makes all other work possible. Parents – but primarily women – fortunate enough to continue employment now had to juggle caregiving, teaching, housework and work from work. Some made a choice that this was untenable, and in the US alone, one million women left the labor force by September 2020, the beginning of the school year. Hardest hit were women at the lowest end of the economic ladder, primarily women of color, who had no op-

tions – continue working or leave the children by themselves.[11]

This unpaid work has been economically invisible and unrecognized. During COVID, however, not only spouses and partners discovered that carework is necessary and difficult work, but also government and society at large. A statistics agency in the UK recently quantified 35 hours of childcare and five hours of cooking as valued at 570 pounds ($779) weekly. In the US, unpaid housework was estimated as amounting to USD 1.2 trillion in 2019,[12] and the ILO's gender specialist Emanuela Pozzan stated that unpaid carework comprised 9% of global GDP.[13] Now that childcare has been recognized for its role in the economy, what can be done about making it available?

»The key question for those able to do remote work – does flexibility actually promote gender equity in the workplace?«

The pandemic, ironically, has provided a prime opportunity to "fix" childcare, to create a care infrastructure national in scope in which the public and private sectors have roles to play. Most important – care must be affordable, and this cannot happen in any economy without direct subsidies from governments to help defray costs. If possible, expand government-provided childcare, as Japan's former Prime Minister Shinzo Abe challenged his administration to do to increase the female labor force in his country. Give tax incentives to companies that provide on-site childcare facilities as well as those that rehire and retrain mothers. If not yet in place, mandate paid parental leave, which countries like the US have yet to enact. Ensure quality care through a regulatory framework that is monitored. These initiatives require financial investments but the return in tax revenues from more employed workers who happen to be women, and the foundation of an economy's well-being through healthy, well cared-for children more than offsets the costs.

As for the private sector, employee benefits should now be reviewed to include subsidies for childcare expenses, as some companies have begun to put in place. Some companies are providing paid parental leave for their employees, but more should do so. In recruiting talent, companies should not penalize applicants with pandemic-era pauses. As mentioned previously, rehiring and retraining workers who left for parenting reasons widens the talent pool and promotes employee retention. Provide a route to senior roles that includes part-time schedules as the Big Four accounting firms have successfully implemented pre-pandemic to retain their female talent. Change workplace culture that includes long hours of face time, early breakfast meetings when parents take children to school, or too much evening entertainment with clients.

As for partners or spouses, the best way to support women in their lives – share the carework and housework. Dur-

ing the pandemic, some men did rise to the occasion, understanding for the first time the value of such work for the family's well-being.

»The re-set economy's workplace will be unlike anything pre-pandemic, and requires a greater commitment from those in charge to grow a diverse workforce where women aren't missing. Otherwise, the shecession may not only mean lost workers, but also lost careers.«

THE CHANGED WORK VENUES

Where people work has now been changed by COVID. Remote work was necessitated by closed offices during prolonged lockdowns, and it is here to stay. Employers used technology to remain connected with staff and many have found that productivity was not reduced. Moreover, they were able to reach workers and clients in far-flung locations, hold meetings, conduct training, and even have informal get-togethers through software platforms like Zoom, Teams or Webex. Recruiters have found a wider talent pool, since moving to work locations is no longer required from applicants.

Women have clamored for flexwork for years to integrate work with family life. Since the pandemic brought proof to previously reluctant employers that where people work no longer matters, the key question for those able to do remote work is: does flexibility actually promote gender equity in the workplace? Not necessarily, say human resource experts. They posit that there's something to be gained from informal encounters in cafeterias, elevators, onsite training, the proverbial water cooler exchanges that enable networking, connections, information sharing and mentoring. As Joy Fitzgerald, Chief Diversity and Inclusion Officer at Eli Lilly observed so aptly: "To succeed, 50 percent is performance, 25 percent is perception, and the other 25 percent, which is a force multiplier, is visibility."[14]

Remote work can possibly lead to what's now called "distance bias," exacerbating the broken pipeline in career advancement for women. Workplace flexibility has the unintended consequences of isolation, less advancement, more job losses, and regression from workplace progress around diversity and inclusion. Distance bias is basically the old adage, "out of sight, out of mind" – the natural inclination of people to connect easily with those whom they see regularly. Trapped

in Zoom "boxes" and connecting only with their team members, women may miss the energy of exchanges that physical encounters at the office generate, as well as the visibility for their work to be noticed.

When women envisioned flexwork, it was not with a houseful of all their children, spouse/partner and maybe elderly parents in mind, hence, many are raring to return to actual offices with their own work spaces. This must be kept in mind by employers, many of whom are now contemplating downsizing their office requirements. Most workers are likely to vie for a hybrid workplace: 2-3 days at home away from office politics, and 2-3 days at the office liberated from on-line screens for meetings.[15] This set-up requires enormous logistical and personnel coordination to work, but flexibility going forward must be proactively managed. There must also be aggressive efforts to ensure that managers do not end up favoring in-office employees in evaluations, mentorships and other job opportunities. Virtual meetings must be managed, in turn, to be inclusive of all participants, to enable employees from other functions to sit in on relevant meetings, and to bring in senior executives to such sessions so they can be exposed to high-potential employees they may not see in person.

The re-set economy's workplace will be unlike anything pre-pandemic, and requires a greater commitment from those in charge to grow a diverse workforce where women aren't missing. Otherwise, the shecession may not only mean lost workers, but also lost careers.

THE THREAT OF AUTOMATION

Technology made remote work possible, and future hybrid workplaces will probably entail ongoing automation of office support roles. During COVID, technology not only changed where we work, how we work, but also how we buy and where we buy. Automation and digitalization accelerated as the pandemic raged on because of the need for contact-less encounters with patients, workers and customers. Ecommerce boomed, while less-available workers due to pandemic requirements also led to greater use of robots for work as menial as mopping floors in supermarkets to monitoring and replacing inventory.

Robotics and automation were already in place pre-pandemic, but their breakneck growth propelled by COVID is unprecedented. Executive spin on these new tools is that they benefit everyone in "streamlining operations" while "liberating workers" from repetitive and mundane tasks. They also liberate workers from their jobs. McKinsey projects that between 40 and 160 million women globally will need to transition to different occupations by 2030 given automation's impact on jobs that tend to be held by women.[16] Think of the self-check-out counters at supermarkets and hardware stores, the increased use of self-check-in at hotels, robots replacing store greeters in Japan, robots carrying food trays in hospitals, and you have a window into displacements of just a few low-wage jobs women used to have.

Economists warn that millions of pre-pandemic jobs aren't likely to return, so the clear answer to women workers displaced by automation is retraining, as McKinsey has indicated. Unfortunately, many women, especially after a year of unemployment, may not have the financial resources to get such training, let alone new credentials. Governments' stimulus

packages should clearly include allocations for worker retraining if they want to get workers off unemployment rolls. For women small business owners, providing assistance to help them pivot to ecommerce would be welcomed, not to mention training them to become part of the government supply chain so as to grow their enterprises.

Companies should also provide upskilling and reskilling their own employees since old skills may no longer apply to the reset economy post-COVID. Similarly, they can allocate their corporate responsibility budgets to provide technology training to women in communities where they have a presence. IBM, for instance already has an ongoing program to upskill its own employees in order to maintain competitive advantage. As Walmart automates its stores, it has provided retraining to displaced employees. Cisco has had a longtime program to teach girls and women in different countries to learn how to code, while Apple and Google provide similar training to disadvantaged youths in the US. But given the scale of displacement for women workers locked out of jobs, more such programs are needed sooner rather than later before we lose a whole generation of talent and experience.

THE FUTURE

The OECD's March 2021 Economic Outlook projects 5.6% global GDP growth given vaccine roll-outs, and predicts countries reaching pre-pandemic economic activity by mid-2021. It should not be assumed, however, that economic recovery necessarily means that job losses suffered by women worldwide during COVID will evaporate, and women workers are automatically rehired. If the childcare gap isn't addressed by governments, if remote work further deters women's career growth, and if sped-up automation wipes out even more jobs that mostly women used to hold, and if re-training is not made available quickly, then economies worldwide will be proceeding with one "arm" seriously broken, and the USD 25 trillion GDP increase McKinsey projected IF gender equality in the global economy were implemented, would remain unreachable.

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Developing tools to reduce fragmentation and shape post-pandemic resilience and sustainable development through data-driven decision-making

A demonstration project for the Circular Health approach

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The Global Antibiotic Research and Development Partnership (GARDP) is a not-for-profit organization developing new treatments for drug-resistant infections that pose the greatest threat to health. Established by the World Health Organization (WHO) and the Drugs for Neglected Diseases initiative (DNDi) in 2016, GARDP is a core element of WHO's Global Action Plan on Antimicrobial Resistance. It was created to ensure that everyone who needs antibiotics receives effective and affordable treatment, no matter where they live and aims to develop five new treatments by 2025 to fight drug-resistant infections, focusing on sexually transmitted infections, sepsis in newborns and infections in hospitalized adults and children. GARDP is funded by the governments of Germany, Luxembourg, Monaco, Netherlands, South Africa, Switzerland, United Kingdom, as well as Médecins Sans Frontières and private foundations.

Penta is a global independent scientific network dedicated to paediatric research. Starting out from its work in HIV, today Penta's portfolio includes investigation into HIV and viral infections, severe sepsis and antimicrobial resistance, infection in pregnancy, emerging childhood infection, as well as infrastructure development initiatives and training programmes. Since 2012, Penta has sponsored 35 clinical trials, with more than 50,000 women and children enrolled into its studies. The work of Penta is supported by a network of 110 clinical sites in 31 countries across the world whose expertise are leveraged to transform the prevention and treatment of infection in children.

The One Health Center of Excellence at the University of Florida is an interdisciplinary resource for research and training supported by the Institute of Food and Agricultural Sciences (IFAS), the College of Veterinary Medicine (CVM) and the college of Public Health and Health Professions of the University of Florida. Its goal is to find novel strategies to co-advance the health of humans, animals, plants and the environment by exploiting big data and artificial intelligence.

Keywords:
circular health, transdisciplinary, structural policy, antimicrobial resistance

CIRCULAR HEALTH

Circular health is a concept and initiative promoted by a group of committed scientists to help identify novel approaches to health through interdisciplinary studies, structured policy action and open access science. It is a systemic approach that identifies the co-advancement of the health of humans, animals, plants and the environment as an essential pathway to sustainability. It seeks solutions that promote and manage human health as the result of multiple drivers that require inclusion in a system of convergence.

The ultimate long-term goals of this effort are to:

• create an interdisciplinary repository where research data and results will be uploaded into the dedicated space (housed within the European Organization for Nuclear Research – CERN – infrastructure) and to create, organize, analyze and exploit the immense computational and storage infrastructure of real-world big data to the benefit of future generations;

• and to enable structural policy action that simultaneously respects the universality of the Sustainable Development Goals (SDGs) while recognizing the fragmented nature of endeavors to achieve them.

The Circular Health Initiative is powered in its initial phase by the One Health Center of Excellence at the University of Florida. Several other institutions are committed to enabling the activities and ultimate success of the initiative: The European Organization for Nuclear Research (CERN) provides technological support including both hardware and software, the PENTA Foundation provides administrative and scientific support on grant and proposal writing, and the ISI Foundation provides world-class data and computing know-how required to pursue transformational transdisciplinary research.

»Circular Health is a concept and initiative promoted by a group of committed scientists aimed at helping identify novel approaches to health through interdisciplinary studies, structured policy action and open access science.«

The initiative is a bottom-up effort where researchers pro-actively organize themselves into working groups to pursue research projects. These projects are grouped into seven core areas of research: Ecology and Citizen Science, Agrofood, Life Sciences, Innovation, Behavioral and Social Sciences, Urban Environment, and Governance.

The main principles underpinning circular health are:

• Share data in an open-ended repository that can be easily and quickly accessed by any researcher.

• Develop transdisciplinary research exploiting the power of a new generation of super-computers to allow for more complex and resource-intensive analyses.

• Engage in open research practices that foster cooperation across disciplines, contribute to the academic and policy discourse, and reduce the risk of redundancy and duplication.

• Involve non-academic partners providing data, analysis, and tools to encourage critical analysis of complex issues and encourage citizen-based science.

• Develop open governance frameworks to foster bottom-up participatory collaborations among stakeholders to share data, generate new methodologies, and identify fields of interest.

• Clearly and openly communicate strategies, results, and ethical standards to increase trust in both the process and the findings.

ANTIMICROBIAL RESISTANCE (AMR)

One example of such an issue is antimicrobial resistance (AMR). AMR is the result of a natural process whereby infectious agents develop resistance to the drugs used to treat them. This process is accelerated by overuse and misuse of those drugs in humans, animals and the environment. According to broadly accepted estimations, without coordinated and urgent action, AMR – the so-called "silent pandemic" – will lead to 10 million deaths by 2050, at a cumulative cost to the global economy of USD 100 trillion.[1]

Antibiotics are a cornerstone of modern medicine and have paved the way for unprecedented medical and societal developments, and are indispensable in all health systems. Major surgery, organ transplantation, treatment of preterm babies, and cancer chemotherapy, which we take for granted today, would not be possible without access to effective treatment for bacterial infections. The causes of AMR are complex and include human behavior at many levels of society; the consequences affect everybody in the world. Countless efforts have been made to describe the many different facets of AMR and the interventions needed to meet the challenge. However, coordinated action is largely absent, especially at the political level, both nationally and internationally. Within just a few years, humanity could be faced with dire setbacks, medically, socially, and economically, unless real and unprecedented global coordinated action is immediately taken.[2]

In 2015, governments jointly endorsed the WHO's Global Action Plan on AMR, which calls for an increase in investment in new antibiotics. The subsequent Political Declaration of the High-level Meeting on AMR adopted by Heads of State reaffirmed this. AMR has been a G7 and G20 priority for many years. In 2020, the Joint Statement of the G20 Finance & Health Ministers identified major gaps in global pandemic preparedness and capabilities to respond to future health-related crises, including delivering on G20 commitments to tackle AMR and integrating its economic risks with pandemics. There are many overlapping aspects between an insidious pandemic such as AMR and fast-moving ones like COVID-19. Recognizing the nexus between the two is important and many governments have started to lead on this.

In 2020, the Global Antibiotic Research and Development Partnership (GARDP) produced a policy paper to frame this debate.[3]

The One Health approach is widely recognized as a way to address an issue like AMR, which affects many bacterial pathogens that are routinely transmitted from animals to humans and vice versa. The environment serves as a reservoir of resistant microorganisms and as a link between humans and animals as part of the transmission process. In order to assess the breadth of the AMR issue, we must also take into account the socio-economic and socio-technical drivers of antimicrobial use and resistance. The challenge is that the current research aimed at innovation in the field of AMR addresses human health, animal health, food safety, and the environment in distinct socio-technical fields ("silos") rather than through a holistic approach that incorporates interdisciplinary links between all of these areas.

Despite many efforts to achieve better coordination, fragmentation is an enduring feature of the global health landscape that undermines the effectiveness of health programs.[4] For AMR , the One Health Concept has addressed some of this fragmentation by aligning and connecting policies and institutions related to human, animal and environmental health. However, this concept has its limitations, inciting the need for a more expanded One Health approach in order to effectively bring all of the diverse actors together, shift focus in the field of AMR research towards the integration of the various disciplines, and begin to leverage a range of frontier technologies. Circular health expands the One Health approach to include the social sciences and humanities thereby address-

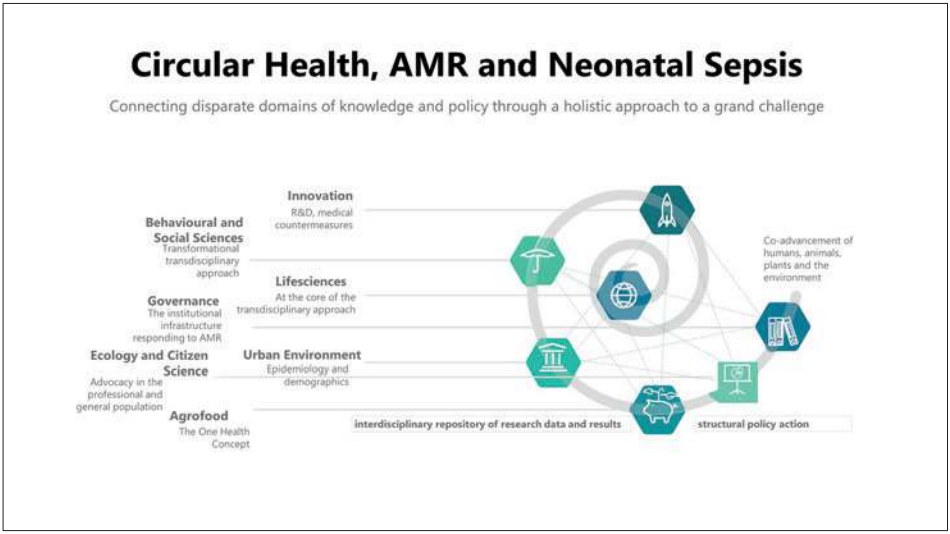
»AMR provides a unique opportunity for policy makers to adopt a demonstration project for the Circular Health Initiative. Linking AMR and viral pandemics, the wider field of infectious diseases and global health, in addition to climate change challenges and a holistic approach to resilience and sustainable development, provides real opportunities for interconnectedness to be a data driven endeavor rather than an abstract idea.«

ing behavioral, social and communication issues that currently hinder the successful implementation of One Health-related policies and practices.

AMR provides a unique opportunity for policy makers to adopt a demonstration project for the Circular Health Initiative. Linking AMR and viral pandemics, the wider field of infectious diseases and global health, in addition to climate change challenges and a holistic approach to resilience and sustainable development, provides real opportunities for interconnectedness to be a data driven endeavor rather than an abstract idea. AMR is a field that traverses the seven core areas of research of the Circular Health Initiative, and that provides both a policy priority and test-case policy challenge. By promoting AMR as the pilot demonstration of the Circular Health Initiative, policymakers would be promoting the federation of data from actors in this area, while simultaneously helping national policy makers to connect normally disparate domains of knowledge, countering the tendency to categorize and compartmentalize, through a convergence solution that promotes the opposite approach.

The problem of AMR in infant mortality is one example of how such an approach could, for example, help achieve SDGs. Globally, 2.4 million children died in their first month of life in 2019. There are approximately 7,000 newborn deaths every day, amounting to 47% of all child deaths under the age of 5-years, up from 40% in 1990.[5] An estimated 15% of all neonatal deaths globally were due to sepsis[6] with an estimated 214,000 neonatal sepsis deaths a year resulting from drug-resistant infections. Neonatal sepsis is a major social

Figure 1



CIRCULAR HEALTH DOMAIN	AMR	NEONATAL SEPSIS
LIFE SCIENCES	Core of the interdisciplinary approach	Significantly increased inter-disciplinary and integrated approach to reduce neonatal mortality and achieve SDG targets
TECHNOLOGICAL INNOVATIONS	R&D, medical countermeasures, innovative IT approaches for collecting, storing and analyzing relevant data	Focus R&D of new tools for education, IPC and improved management to reduce neonatal mortality (e.g. prioritize and incentivize development of vaccines, treatments and diagnostics for neonates)
BEHAVIORAL AND SOCIAL SCIENCES	Transformational trans-disciplinary approach	Stewardship of antimicrobials Mother and Child IPC guidelines
URBAN ENVIRONMENT	Epidemiology and demographics. Increasing urbanization leading to increase in facility-based births	Monitoring population and urban trends with AMR and neonatal sepsis mapping Reducing risk through IPC Improving and investing in facilities with dense population catchments
AGROFOOD	The One Health Concept	Mother and nutritional health
GOVERNANCE	The institutional infrastructure responding to AMR. Promoting policies and structures to encourage voluntary data sharing for medical research.	Mobilization of experts from different disciplines including social sciences to address understanding, prevention, monitoring, epidemiology (e.g. emergence, spread, persistence), treatments and detection of AMR in women and babies.
ECOLOGY AND CITIZEN SCIENCE	Population advocacy. Develop digital tools to educate and engage medical professionals (i.e. family doctors, pharmacists) and the general population to reduce the improper use of antibiotics	Focus communication on policy makers, heath care workers, community and environmental groups on risks of AMR to child survival

and health economic burden, including as a cause of adverse neuro-developmental outcomes. Tackling AMR in neonatal sepsis is critical to achieving several SDGs, but several major challenges persist, amplified through demographic changes and all requiring cross-cutting research and data. There are knowledge gaps, including very little evidence to support the appropriate treatment of serious drug-resistant infections in neonates. The true understanding of the real burden remains a challenge as little population-based data is available from low- and middle-income countries (LMICs) alongside a lack of standardization of diagnostic criteria and sepsis definition. Globally, virtually no antibiotic neonatal sepsis trials are underway in the hospital setting, including in babies where there is the highest risk of multi-drug resistant (MDR) pathogens and mortality. Furthermore, much more research and investment is needed to support infection prevention and control (IPC). All of this needs to be done with an integrated approach.

Demographic data suggests that high birth rates will continue in LMICs with limited newborn facilities. With Increasingly high rates of resistance to current first- and second-line antibiotic regimens, especially in the hospital setting, there is an urgent need for pragmatic trials focusing on strategies to reduce mortality and morbidity of neonatal sepsis in hospital settings, and updates to global and national guidelines and policy interventions.

The Circular Health paradigm can help address these interconnected issues through use of an interdisciplinary repository of research data and results alongside structured policy action. The opportunity for the G20 is to champion an innovative approach to dealing with fragmentation while helping to drive reductions in newborn mortality and morbidity. This includes the integration of key actors for AMR encompassing the field of human, veterinary and environmental disciplines and the broad spectrum of pathogens, including fungi and viruses.

With neonatal sepsis as a core element of the response to AMR, spearheading the circular health approach in an area of high impact will enable both measurable progress towards achieving specific development objectives, including reductions in child mortality and morbidity, while driving a paradigm shift for policymakers who will benefit from systemic and structural policy action.

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Gender mainstreaming in the COVID-19 policy response

Fostering equality during the pandemic and beyond

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THE EFFECTS OF THE COVID-19 PANDEMIC ON GENDER GAPS

The COVID-19 crisis brought to the forefront the prevalence of profound inequalities worldwide. In a context of intermittent lockdowns, economic crisis, and sanitary uncertainty, the pandemic is widening the gaps, as the most underprivileged populations register income declines and increased health and social risks.[1]

Gender inequalities are no exception: While women already faced greater obstacles to their autonomy,[2] the emergency exacerbated disparities. The pandemic worsened the gender-poverty gap amid job losses and weak social protection.[3] In 2021, for every 100 men living in poverty, there will be 118 women in the same position. This gap is even larger for young women and some territories, such as Sub-Saharan Africa and South Asia.[4] In contrast to previous crises, this time, women retreated more frequently from the labor market, which affected their access to resources and well-being. Women are concentrated in sectors that are more threatened by the crisis, such as tourism, food services and domestic work, and they are overrepresented in the informal economy, where incomes decreased 60% during the first outbreak.[5] Consequently, women face higher job loss rates than their male counterparts, with their employment being 19% more at risk.[6] Moreover, the pandemic unveiled how crucial care work is to sustain life, but its recognition did not imply a more equitable distribution of these tasks.[7] Because of the feminization of care, women are on the front line to contain the outbreak and maintain communities' well-being.[8] Inside the household, they became responsible for the increased unpaid care workload that followed lockdowns, remote working, and school closures. While 49% and 37% of women reported an increase in the time spent on cleaning and childcare, respectively, only 33% and 26% of men did.[9] This phenomenon implied a re-familiarisation of care that enforced time restrictions on women, affecting their economic autonomy, access to working and educational opportunities, and mental health.[10] Additionally, stay-at-home policies implied higher risks of gender violence for girls and women, as suggested by the rise in domestic violence calls.[11] Secondly, outside the household, women represent more than 70% of the workforce in healthcare and social services [12] – considered essential during the pandemic, which increased their exposure to infection.

The differential impact of the crisis on women implies a strong deprivation of their rights and an obstacle towards achieving the 2030 Agenda. Therefore, gender must be considered a key variable in the policy response for recovery.

While the pandemic is responsible for increasing the gaps, it also presents an opportunity to promote new approaches to policy. The breakdown of previous patterns creates a sense of exception that is a fertile ground for structural changes that otherwise would be resisted, such as gender mainstreaming. Thus, crises can be windows of opportunity to unleash the transformative potential of these approaches in the long term. The pandemic's socioeconomic consequences call for a comprehensive, intersectional and gender-sensitive policy response that is people-centred, addressing the current crisis, the recovery, and the aftermath.

GENDER MAINSTREAMING IN POLICY RESPONSE

In our societies, men, women and non-binary individuals face diverse opportunities and impediments to developing their full potential. Power relations are based on a system of beliefs, constructions and sociocultural representations that assign different roles, expectations and behaviors to individuals depending on their sex and gender.[13] Therefore, adopting a gender lens in policymaking becomes crucial to achieving gender equality in times of increasing social risks.[14] By mainstreaming gender, institutions value the implications of their actions for men and women. This strategy identifies and considers gendered experiences and outcomes in the design, implementation, monitoring and evaluation of all policies.[15] The systemic efforts involved in gender mainstreaming become a tool for institutions and states to guarantee equality of treatment and opportunity and no discrimination.[16] The goal is to stop reproducing disparities and achieve gender equality.

While gender mainstreaming might be a challenging endeavor, embracing a strategic and targeted approach is critical to bring positive results.[17] During the COVID-19 crisis, holistic and gender-sensitive policy responses have become particularly relevant to rethinking gender norms and leave no one behind.

Many governments have striven to incorporate gender in their COVID-19 policy responses. Such is the case of Spain, where gender equality is one of the four cross-cutting pillars in the Recovery Plan España Puede.[18] In the same vein, at the subnational level, Hawaii became the first place in the world to approve legislation on a feminist recovery plan.[19] These approaches could shape more inclusive and resilient societies, planting the seed for a long-term approach to policy with a gender lens. Yet around the world, most measures and recovery strategies are gender-blind: According to UN Women, only 20% of the labor market and social protection response policies includes a gender perspective.

»While women already faced greater obstacles towards their economic autonomy, the emergency exacerbated disparities.«

The road towards a new normal requires a holistic strategy that reframes traditional policy-making processes and addresses the consequences of the pandemic from a gender lens. In this section, we outline three crucial steps to ensure a gender perspective in the COVID-19 policy response: generating diagnoses with gender-disaggregated data; reviewing existing and prospective policies from a gender perspective; and implementing gender budgeting. Also, we propose a fourth step regarding the political and institutional articulation of the strategy to

ensure a comprehensive programmatic offer.

»The breakdown of previous patterns creates a sense of exception that is a fertile ground for structural changes that otherwise would be resisted, such as gender mainstreaming. Crises can be windows of opportunity to unleash the transformative potential of these approaches in the long term.«

1. Gender disaggregated diagnoses: Opening data to close the gaps

The first year of the pandemic has amplifiedf inequalities. Evidence suggests that women and girls have been severely affected, with direct implications for their autonomy. The full extent of these impacts, however, remains largely unknown due to incomplete or unavailable information. By February 2021, only 50% of countries reported sex-disaggregated data on epidemiological indicators and no country considered the disease's incidence on transgender and non-binary individuals.[20] Also, data collection on socioeconomic indicators was compromised in many countries: Outside Europe, face-to-face interviews are the main survey mode and they experienced pauses due to lockdown measures.[21] Even before the pandemic, on average, countries regularly reported on only 31% of gender-specific SDG indicators.[22] In this context, producing, collecting, using and disseminating gender-disaggregated data is a precondition to designing, implementing and assessing gender-responsive policy strategies. Making quality and updated statistics available will help to better address the effects of the pandemic, foster socioeconomic recovery and build resilient societies. In this sense, collecting gender-disaggregated data is a means towards the end of implementing better policies and assessing their results.

To disentangle the existence of compounding inequalities, data production must adopt an intersectional approach. Intersectionality allows the analysis of socioeconomic and demographic characteristics that overlap and interact with gender, making disparities visible. This lens avoids gender blind interventions that do not cater to the needs of specific groups.

The design of data collection schemes, instruments and processes could benefit from participatory instances that gather relevant stakeholders. This process would contribute to co-creating solutions, unify definitions, and ensure that data is valu-

able to making comprehensive diagnoses and informing inclusive policies. Multilateral institutions can play a crucial role in supporting capacity building in data production and foster standardization.

Globally, UN Women's Rapid Gender Assessment Surveys on the impacts of COVID-19 are a good example of tools used to produce gender-disaggregated diagnoses. These surveys, implemented in partnership with national governments, have proven vital to fill knowledge gaps as a complement to official statistics and informed policy responses in more than 60 countries, such as Thailand, Jordan, Mexico or Ukraine.[23]

2. Policy review: Analyzing laws and regulations from a gender lens

The COVID-19 crisis has had consequences in multiple dimensions affecting people's well-being. Nonetheless, policies have been scattered in terms of responding to the needs of specific populations. According to the COVID-19 Global Gender Response Tracker, by September 2020, less than 40% of the response policies implemented worldwide were gender-sensitive, generally addressing gender-based violence.[24] This context reveals an uneven and insufficient approach to guaranteeing women's rights.

Gender-sensitive diagnoses are critical to identify the most pressing matters and redefine the objectives of a robust policy response. This approach involves determining the priority interventions to tackle challenges and systemic issues from a gender perspective. As such, it is crucial to strengthen policymaking, starting from the design and implementation of new policies to the monitoring and evaluation of existing interventions.

The City of Buenos Aires (Argentina) provides an interesting experience. Based on information from the System of Gender Indicators, the local government analyzed the gendered effects of the pandemic. This diagnosis informed the design of a gender-sensitive and intersectional response and recovery plan. To this end, the strategy revised ongoing policies, filled gaps, and identified potential synergies among interventions to maximize impact.

Mainstreaming gender into ongoing COVID-19 response strategies implies a full analysis of policies, laws and regulations that have been implemented, adapted or scaled up during the pandemic to identify programmatic voids and overlaps, as well as to determine challenges and opportunities to apply a gender lens. One possibility is to employ gender impact assessments tools, which prove valuable in identifying gender impacts throughout the policy cycle and create a baseline for future analysis.[25] To succeed in this endeavor, political support at the highest level of government becomes a sine qua non condition. At the same time, gender expertise is necessary to identify potential gender blindness and unintended effects.

3. Gender budgeting: Ensuring resources to close the gaps

In any given society, resource allocation reveals priorities. Without a gender and rights perspective in budgeting, efforts to foster gender equality during the pandemic would be undermined. Before the COVID-19 outbreak, more than 80 countries had undertaken gender budgeting efforts.[26] This share still leaves more than half of the world behind and, in several

countries, creates challenges in terms of effective implementation.

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Gender budgeting identifies the differentiated effects of all government expenditures and, thus, the progress and setbacks for gender equality.[27] This type of analysis has different approaches and can be applied to objectives, financial allocations, programs, or other stages of the budget cycle, both ex-ante and ex-post. The OECD identifies three core elements for an efficient gender budgeting: (1) a sound strategy for gender equality supported by a strong political commitment and leadership; (2) effective tools of implementation according to the selected approach; and (3) a supportive enabling environment that includes gender-sensitive data and training.[28] In Canada, gender budgeting has been a crucial component of federal budget-making for the last three years, including a Gender Based Analysis (GBA+) for new budget measures. During the pandemic, the government assessed the potential and differential effects of all COVID-19 policies and resource allocations on diverse groups of men and women.[29] In the developing world, Rwanda, a country recognized for the high presence of women in public leadership, has also incorporated gender mainstreaming in budget planning during the current fiscal year. These experiences can provide lessons for other countries to follow.

4. Leveraging political support to foster action

Gender mainstreaming implies governments' systematic, comprehensive, and long-term efforts throughout the policy-making process. While involving diverse public stakeholders, it may be easily sidelined when confronted with other agendas. Thus, it is necessary to count on high-level political support and define a leading authority to supervise the whole gender mainstreaming initiative.[30] Women's participation in this process is crucial; during the first year of the pandemic, however, they represented only 24% of members in 225 COVID-19 taskforces created in 137 countries around the world.[31]

The characteristics of such an entity will depend on each context and can change over time. While some countries have created a specific ministry like Chile and Nicaragua, others have opted for secretariats of state, national institutes or federal departments, like Canada, or institutes based in other ministries, like Uruguay.[32] Additionally, over the last years, many countries have modified their gender institutions, raising their position in the hierarchy; this is the case in Spain, France and Argentina. Despite the bureaucratic organization, it is important for such institutions to be gender diverse and apply a gender-lens while being empowered to enforce and promote gender mainstreaming in other agencies.[33] Besides the coordination of the gender mainstreaming initiative, the institution can be responsible for other tasks. These activities include identifying, communicating and evaluating objectives, targets, and interventions; coordinating with the budgeting authority; and promoting synergies between different areas.[34] Multilateral networks, such as the G20, can play a vital role as platforms for peer learning and sharing best practices.

CONCLUSION

The coronavirus pandemic rapidly transformed the way we interact, work, produce and reproduce. It is still too early to delineate the long-term consequences, but one conclusion is clear: In an unequal world, the crisis is widening disparities and reverting progress in gender equality globally. This is not only detrimental to the exercise of rights of girls and women but also hampers achieving sustainable development and the 2030 Agenda.

The COVID-19 crisis, however, can also become an opportunity. The transformative nature of the pandemic is creating a new normal in which gender should become an imperative variable in policymaking. Adopting this strategy during the pandemic and beyond will be critical to building more resilient societies that are better prepared for future challenges and that leave no one behind.

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A "Global Partnership for Infrastructure Sustainability"

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CARI / CONSEJO ARGENTINO PARA LAS RELACIONES INTERNACIONALES

The Argentine Council for International Relations (CARI) is a nonprofit academic institution that assesses the political, economic, cultural, and social dimensions of international relations, and how they might impact to Argentina. The council also seeks to foster international cooperation and peace through its diverse activities.

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INFRASTRUCTURE IS ONE KEY FOUNDATION OF THE G20 BALANCED, SUSTAINABLE AND INCLUSIVE GROWTH AGENDA

Infrastructure investments have been one key foundation of the balanced, sustainable and inclusive growth agenda of the G20 since the first Leaders' meeting in 2008. In the last three years, the G20 has focused both on quantity (The Road to Infrastructure as an Asset Class, G20 Argentina 2018), quality (G20 Principles for Quality Infrastructure Investment, G20 Japan 2019) and technology (Riyadh Infratech Agenda, G20 Saudi Arabia 2020).

With regards to the sustainability of infrastructure investments, significant progress on policy guidance was advanced by G20 Leaders in 2019 during Japan's G20 Presidency, with the endorsement of the G20 Quality Infrastructure Principles (QII). These principles are aspirational and voluntary. The fruitful policy dialogue with T20 Japan 2019 on this subject was probably one key input into the G20 policymaking process.[1]

Sustainable infrastructure (SI) is a one key and necessary foundation for achieving inclusive and sustainable growth, the Sustainable Development Goals 2030 (SDGs), and the rapid reduction in greenhouse

gas emissions (GHG) – principally, carbon dioxide (CO_2) – mandated by the commitments of the Paris Climate Agreement. In the aftermath of Covid-19, SI is also one key pillar of economic recovery packages and stimulus plans, also because of its investment multiplier effect and job creation capacity. The "build back better" plans constitute, in reality, the great "build forward better" challenge and opportunity for the world.

The OECD has estimated that an annual average of USD 6.9 trillion in sustainable infrastructure investment is required over the next decade. According to the Global Infrastructure Hub (GIH), there is a significant gap between these investment needs and current investment trends, particularly in low- and middle-income countries.[2] There is an emerging consensus among policy makers, and progressively in the private sector, that closing the estimated global infrastructure gap of over USD 3 trillion a year requires going beyond building more (roads, wind and solar farms, water treatment systems, green buildings, digital infrastructure). Changes in the enabling policy and institutional framework would also have to be enacted so as to meet sustainability criteria (economic/financial, environmental, social, governance), throughout the infrastructure project lifecycle (from upstream planning, procurement, finance, construction, operation, maintenance, to decommissioning or refurbishing), so as to increase the quality of infrastructure services while securing natural capital.[3]

The Italian G20 Presidency in 2021 is focusing on three, broad, interconnected pillars of action: People, Planet, and Prosperity. On the Planet pillar, G20 Italy

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intends to pave the way for "rebuilding differently in the aftermath of the crisis. More efficiently, through a better use of renewable energies and with a firm commitment to protecting our climate and our common environment."[4] The T20 Italy 2021 policy research agenda is aligned with these "pillars of action." In Task Force 7, "Infrastructure Investment and Financing," one of the priority policy areas is the integration of environmental criteria into infrastructure investments.

The question we need to ask is whether the G20 QII are sufficient in terms of global policy guidance in the post- pandemic world to assure the sustainability of infrastructure investments for a green recovery, which could also have a healthy, nature-positive impact, and for delivering on the 2030 SDGs and the Paris Agreement. We also need to ask ourselves what the G20 Italy 2021 can do to further to advance effectively this agenda at the speed and scale needed.

THE AFTERMATH OF THE COVID-19 PANDEMIC

The aftermath of the pandemic constitutes a new historic moment. There is increased need and urgency to confront the global health, climate and inequality crises, and exacerbated development problems and constraints. The structural challenges humanity and our planet face in relation to climate change and widening inequality are heightened, while poverty is increasing and biodiversity loss is not being reversed. Also, since government budgets are stressed and public debt burdens are expanding worldwide – to cushion the devastating pandemic health and economic impact – we risk not being able to deliver

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on the 2030 SDGsand the Paris Agreement, particularly, in the case of emerging and developing countries (EM & DVGC) with exacerbated debt burdens as well as limited fiscal space and access to financial markets.[5]

On the other hand, since infrastructure investments are one of the main pillars of stimulus plans globally for a green, fair, inclusive and resilient recovery, it is crucial to promote their sustainability and quality in sufficient quantity worldwide, focusing on nature-based solutions and the restoration of ecosystem services, as well as on the advantages of digitalization for productivity, accessibility, connectivity and governance.[6]

However, given the size of the challenges, the risk of repeating past mistakes or, even "building back worse," cannot be dismissed. Still, a large proportion of fiscal spending in response to COVID-19 is being invested in non-sustainable sectors and in sectors that have a heavy biodiversity footprint .[7] This, notwithstanding that the time available to make SI investments and meet the Paris Agreement and the SDGs is rapidly lapsing.

Governments alone cannot reverse the worsening trajectory of climate change, biodiversity loss, inequality and poverty. The private sector must be part of the solution, but for transformative change to happen, in the aftermath of the pandemic, international policy coordination and realignment are needed, taking into account not just economic efficiency but environmental, social, and governance factors (ESG) as well as technological. The G20, in its role as a sort of the Executive Committee for the global economy, can and must provide further global guidance for this to take place.

THE G20 QII AND TRANSFORMATIVE CHANGE: WHAT ELSE IS NEEDED?

In our view, in the aftermath of the pandemic, the G20 QII, voluntary and aspirational, as important as they are, are not sufficient to assure the sustainability of infrastructure investments for a green, inclusive and resilient recovery, while delivering on the SDGs and the Paris Agreement.

Further G20 policy guidance is necessary to make progress from the voluntary and aspirational QII principles to some mandatory principles, as well as to promote greater international policy coordination, harmonization or consolidation of frameworks, standards and indicators, and/or of multi-stakeholder commitments across the infrastructure value chain (from governments to IFIs and the private sector).

On the other hand, in parallel, for SI investments to be delivered at the scale and speed needed, it is important to focus international policy coordination efforts not only upstream of the infrastructure project cycle, but also to address barriers downstream, specially, barriers to finance SI. This is a key and urgent issue that demands innovative financial solutions to minimize / share risks and upgrade project ratings in EM & DVGC, with public-private partnerships and the support of MDBs and RDBs.[8]

Solid steps are already being undertaken by international institutions, thinks tanks and the private sector in the process of international coordination, harmonization and consolidation of principles, standards and indicators for SI.[9]

The most recent international harmonization initiative is the International Good Practice Principles for Sustainable Infrastructure (GPSI), formulated by the United

Nations Environment Programme (UNEP) in early 2021.[10] The GPSI are intended to provide global guidance for governments on the integration of sustainability throughout the entire infrastructure lifecycle, focusing "upstream" of the project level. The aim is to assist governments in creating the enabling environment for SI that is needed to achieve the SDGs and the Paris Agreement. The GPSI summarize good practices for sustainable infrastructure policies regarding planning, preparation and delivery, and are adaptable to any national context. The focus is on governments since they can create the enabling environment (through public policy, regulation and procurement) and drive SI investment, representing 83% of infrastructure investments in developing countries in 2017.[11]

One second important initiative is the 2020 report, "A common set of aligned sustainable infrastructure indicators," launched by the Multilateral Development Bank (MDB) Infrastructure Cooperation Platform (ICP).[12] The report presents a common set of aligned SI indicators, based on MDB-published SI frameworks and ongoing MDB initiatives, presenting good practices on SI investment and monitoring. It was coordinated by the Inter-American Development Bank (IDB) in cooperation with MDBs and RDBs.[13] This effort is important since MDBs and International Financial Institutions (IFIs) are uniquely positioned to catalyze leading binding principles and practices for SI development.

A third relevant ongoing international initiative is the initiative Finance to Accelerate the Sustainable Transition-Infrastructure (FAST-Infra).[14] It "aims to close the trillion-dollar SI investment gap, with urgency, by transforming SI into a mainstream, liquid asset class." FAST-Infra was launched in early 2020 by the Climate Policy Initiative (CPI), HSBC, IFC, OECD and the Global Infrastructure Facility (GIF) under the auspices of French President Emmanuel Macron's One Planet Lab, with over 50 global entities (governments, the financial sector, investors, DFIs, insurers, rating agencies and NGOs) actively participating.[15] The initiative is finance industry-led and builds upon private-public partnerships.

FAST-Infra proposes to establish a globally applicable and consistent labelling system for SI assets and is also developing financial mechanisms to mobilize private investment at scale for the financing of labelled projects, especially in EM & DVGC. Labelling would allow the market to easily signal the sustainability of the asset. In this way, investors could be confident that their money is funding projects that meet environmental, social, governance, adaptation and resiliency needs and contribute to the SDGs. The aim of the label is to build on existing frameworks and standards and design it in alignment with the SDGs and QII Principles.[16]

There are other ongoing efforts on international harmonization of sustainability criteria, standards and indicators, mostly at the project level (not truly yet at the system scale level for planners, or at the portfolio level for investors) which are an important and welcomed step in the same direction. This should be acknowledged and encouraged, but more is needed.[17]

For the effective integration of environmental criteria into SI investment, it is key to highlight the need to progress from voluntary/aspirational to mandatory/binding

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principles and requirements, addressing areas where there is already implicit consensus or where it can be reached, particularly among G20 members. Therefore, G20 policy guidance is important to facilitate reaching a potential future agreement among MDBs and IFIs on common mandatory lending principles for deforestation, free infrastructure investments, and binding requirements for investments to be compatible with land, water, and forest conservation, the protection of biodiversity and healthy ecosystems.

Similarly, the requirements for upstream spatial planning, the consideration of nature-based solutions and the application of compensatory mitigation should also move from aspirational status to binding lending requirements and regulation. Complementarily, changes in procurement legislation for SI are needed not only for promotional or strategic innovation reasons but also for enacting a clear binding legal obligation in contracts and penalization in case of breach of contracts. Ideally, stakeholder consultation, including with local and indigenous communities, should also be mandatory at least for financing from IFIs, since that will prevent conflicts that lead to delays, higher costs and human rights violations.

The private sector and investors recognize their own role, but to hasten the achievement of SDGs, have called on governments to integrate policies for SI in investment planning, strategy, and infrastructure procurement, as stated in a G20/OECD 2020 report. Particularly, investors demand a common understanding of ESG criteria in infrastructure, since ESG factors have moved from being "nice to have" to being "must have."[18]

The financial sector and investors need clarity and certainty about regulatory policy for SI from governments. Closing the infrastructure gap and delivering on SI in the aftermath of the pandemic 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 SDGs and the Paris Agreement. Major international banks and investors and corporations are pledging to make their portfolios net-zero by 2050. But translating this into real investment in green buildings and social infrastructure, clean transport, renewable energy, digital infrastructure and nature-based solutions remains a critical challenge. Further policy coordination and harmonization for an enabling environment upstream as well identification and elimination of barriers to finance and deliver on SI at the implementation stage, downstream, will be required.

LOOKING FORWARD: A GLOBAL PARTNERSHIP FOR INFRASTRUCTURE SUSTAINABILITY

In conclusion, the aim of the G20 SI policy guidance in 2021 should be to reflect the essence of the G20 QII principles in common binding principles and shared commitments that could provide effective guidance to governments and MDBs and clear market guidance to the private sector. This is required to deliver on SI at the speed and scale needed, to confront the triple crisis of COVID-19, climate change and rising inequality, and to overcome exacerbated development problems and constraints in emerging and developing countries.

Still, a fundamental question is how do we move from key common binding principles, policy coordination and realignment[19] to action for transformative change at the scale and speed required? What is needed? Certainly, a new form of international, mission-oriented collaboration[20] is needed, across the full infrastructure value chain, putting purpose at the heart of superior economic, environmental, and social performance. The three initiatives examined previously, the UN GPSI, the MDB ICP and FAST-Infra are important steps in this direction and should be integral building blocks of the Global Sustainable Infrastructure Partnership we are proposing here.

Building upon these efforts will contribute to the development of a Global Sustainable Infrastructure Partnership that includes governments, international institutions, the private sector, investors, NGOs and research institutions,[21] in order to unleash a green and inclusive recovery and to deliver on the SDGs in the 2030 Agenda and the Paris Agreement, and to help close the infrastructure gap at the scale, speed required and in places that most need it.

It is a difficult and complex mission, but it can be accomplished. It remains a work in progress, but it is becoming more ambitious and achievable. The process has already started and is building upon itself, with multiple key stakeholders and public private partnerships. Clear G20 global policy guidance regarding common binding principles and shared commitments can help gain critical mass towards a Global Partnership for Infrastructure Sustainability, accelerating the "snowball" or investment multiplier effect in a virtuous circle.

[1] See the collection of Policy Briefs submitted to T20 Japan 2019 Task Force 4 on the topic of Infrastructure Sustainability and Resilience published by Asian Development Bank Institute: ADBI (2020). Building the Future of Quality Infrastructure. Available at: https://www.adb.org/publications/building-future-quality-infrastructure. Among the articles published in the book, there are two that I co-authored, and that are aimed at contributing towards a policy framework for sustainable infrastructure and the preservation of natural capital: "Policy and Institutional Framework for Delivering on Sustainable Infrastructure" by Amar Bhattacharya, Beatriz Nofal, Linda Krueger, Minji Jeong, Kevin Gallagher, and Rogerio Studart; and "Sustainable Infrastructure to Secure the Natural Capital of the Amazon" by Ana Cristina Barros, Bruce McKenney, Amar Bhattacharya, Beatriz Nofal, Carlos Nobre, Kevin Gallagher, Linda Krueger, and Thomas Lovejoy. See also in this book the article by Yoshino, N. Hendrietty, N. and Lakhia, S. (2020), "Quality infrastructure investment: Ways to increase the rate of return for infrastructure investments", ADBI (2020), Ibid. , focusing on policy incentives so as to increase the attractiveness for private sector investments.

[2] Organization for Economic Co-operation and Development (2017). "Investing in Climate, Investing in Growth: A Synthesis". Paris, France: OECD. Available at: https://www.oecd.org/environment/cc/g20-climate/synthesis-investing-in-climate-investing-in-growth.pdf; and http://www.oecd.org/finance/Sustainable-Infrastructure-Policy-Initiative.pdf.

[3] Global Infrastructure Hub and Oxford Economics (2017). "Global Infrastructure Outlook". Sydney, Australia: Global Infrastructure Hub. Available at: https://cdn.gihub.org/outlook/live/methodology/Global+Infrastructure+Outlook+-+July+2017.pdf

[4] See United Nations Environment Program/UNEP (2021). International Good Practice Principles for Sustainable Infrastructure. Available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/34853/GPSI.pdf; and Bhattacharya A., Nofal B., Krueger L., Jeong M., Gallagher K., and Studart R.(2020) Ibid. (the artice is referenced on this policy point in note 25 of UNEP (2021); and Barros A.C., McKenney B., Bhattacharya A., Nofal B., Nobre C., Gallagher K., Krueger L., and Lovejoy T (2020), in ADBI (2020) Ibid.

[5] G20 Italy 2021. Available at: https://www.g20.org/italian-g20-presidency/priorities.html.

[6] See Nofal B (2021). "Infraestructura sostenible: pilar para la pos-pandemia", El Cronista Comercial, March 12, 2021.Available at: https://www.cronista.com/columnistas/infraestructura-sostenible-pilar-para-la-pospandemia/

[7] See Nofal B (2021). Ibid. The huge investments in infrastructure contemplated in economic recovery packages of trillions of dollars in developed countries are a great opportunity to reduce fossil fuel dependency, protect and restore natural capital, and strengthen resilience to future crises. It can also contribute to close the global infrastructure gap, particularly, if additional funding for SI investments is made available to emerging and developing countries at the time most needed it.

[8] Organization for Economic Co-operation and Development (2020). "Biodiversity and the economic response to COVID-19: Ensuring a green and resilient recovery." OECD Policy Brief; 28 September 2020. Available from: https://www.oecd.org/coronavirus/policy-responses/biodiversity-and-the-economic-response-tocovid-19-ensuring-a-green-and-resilient-recovery-d98b5a09/; International Institute for Sustainable Development. "Energy Policy Tracker". Available from: https://www.energypolicytracker.org/about/

[9] See FAST-Infra, Climate Policy Initiative (CPI) (2020 & 2021). Ongoing and available at: https://www.climatepolicyinitiative.org/fast-infra/; and also Mark Carney (2020)." Building a private finance system for net zero: Priorities for private finance for COP26", available at: https://ukcop26.org/wp-content/uploads/2020/11/COP26-Private-Finance-Hub-Strategy_Nov-2020v4.1.pdf

[10] The groundwork has been laid down previously by the accumulation of collective knowledge due to a multiplicity of efforts, among which it is worth acknowledging, indicatively (not exhaustively), the sustainability standards of IFC and the Multilateral and Regional Development Banks (RDBs), the SI policy initiative and guidelines of OECD and the Global Infrastructure Hub (GIH), the contribution of the Global Infrastructure Facility (GIF) hosted at the WBG, and of research institutions worldwide, including NGOs (such as TNC and WWF) , the online SOURCE platform and the Sustainable Infrastructure Tool Navigator .

[11] UNEP (2021). Ibid. Available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/34853/GPSI.pdf. These principles were developed as part of the implementation of UN Environment Assembly (UNEA) Resolution 4/5 on SI (UNEP/EA.4/ Res.5).

[12] UNEP (2021). Ibid. The main topic guidelines of the GPSI are the following: 1. strategic planning; 2. responsive, resilient, and flexible service provision; 3. comprehensive lifecycle assessment of sustainability; 4. avoiding environmental impacts and investing in nature; 5. resource efficiency and circularity; 6. equity, inclusiveness, and empowerment; 7. enhancing economic benefits; 8. fiscal sustainability and innovative financing; 9. transparent, inclusive, and participatory decision-making; 10. evidence-based decision-making (UNEP 2021).

[13] Inter-American Development Bank (2020). " Multilateral Development Bank Infrastructure Cooperation Platform (MDB ICP): A Common Set of Aligned Sustainable Infrastructure Indicators / Available at https://publications.iadb.org/publications/english/document/MDB-Infrastructure-Cooperation-Platform-A-Common-Set-of-Aligned-Sustainable-Infrastructure-Indicators-SII.pdf. The main outcome of the MDB ICP is the identification of 16 key sustainable infrastructure indicators and their corresponding unit of measure. The indicators address four categories that define SI: (i) Environmental sustainability and resilience; (ii) social sustainability; (iii) institutional sustainability; and (iv) economic-financial sustainability. For a summary, see in the Report Figure 2, in Page 13, which provides a short list of Sustainability Infrastructure Indicators (SII).

[14] The Report was coordinated by the Inter-American Development Bank (IDB), in cooperation with the European Bank for Reconstruction and Development, World Bank, International Financial Corporation, Asian Development Bank, New Development Bank, European Investment Bank, Islamic Development Bank, and African Development Bank.

[15] FAST-Infra, Climate Policy Initiative (CPI) (2020, 2021). "Finance to Accelerate the Sustainable Transition-Infrastructure". Ongoing and available at: https://www.climatepolicyinitiative.org/fast-infra/

[16] FAST-Infra (CPI) (2020 & 2021). Ibid.

[17] FAST-Infra (CPI) (2020 & 2021). Ibid. An indicative, not exhaustive, list of eligible SI assets for investment purposes is provided: renewable energy, clean transport, solid waste management, green buildings and social infrastructure, electricity transmission and distribution and nature based solutions

[18] GIB Foundation (2020 & ongoing). "Sustainable Infrastructure Standards Collaboration (ASSI)". Available at: https://gib-foundation.org/sustainable-infrastructure-standards-collaboration/?utm_source=rss&utm_medium=rss&utm_campaign=sustainable-infrastructure-standards-collaboration: and also DFC: BLUE DOT NETWORK, https://www.dfc.gov/our-work/blue-dot-network and US Department of State https://www.state.gov/blue-dot-network/#:~:text=The%20Blue%20Dot%20Network%20aims,standards%2C%20laws%2C%20and%20regulations.

[19] OECD (2020). "Collaboration with Institutional Investors and Asset Managers on Infrastructure: investor proposals and the way forward"

http://www.oecd.org/daf/fin/private-pensions/Collaboration-with-Institutional-Investors-and-Asset-Managers-on-Infrastructure.pdf

[20] Dennis Snower, Head of Global Solutions Initiative has made and explicit call for policy realignment in a Post-COVID World. The title of the Global Solutions Summit in 2021 is precisely "The Great Realignment in a Post-COVID World". May 27 & 28, 2021 https://www.facebook.com/pg/globalsolutionsinitiative/posts/, and https://www.global-solutions-initiative.org/

[21] For the concept of "mission oriented" see Mazzucato Mariana (2021) Mission Economy: A Moonshot Guide To Changing Capitalism. Allen Lane, ISBN: 9780241419731; and World Economic Forum (2021)."Mission Possible Partnership". Available at: https://www.weforum.org/projects/mission-possible-platform, and https://missionpossiblepartnership.org/.

[22] See Global Solutions Initiative (2021). Intersecting. Edited by Nicolas Buchoud with an extensive list of contributors. Available at: https://www.global-solutions-initiative.org/wp-content/uploads/2021/03/GSI_E-Book-series_Intersecting_ND_2021.pdf

The Global Solutions Initiative

The Global Solutions Initiative (GSI) is a global collaborative enterprise to envision, propose and evaluate policy responses to major global problems addressed by the G20, through ongoing exchange and dialogue with the Think 20 engagement group. The GSI is a stepping stone to the T20 and G20 Summits and supports various other G20 groups. The policy recommendations and strategic visions are generated through a disciplined research program by leading research organizations, elaborated in policy dialogues between researchers, policymakers, business leaders and civil society representatives.

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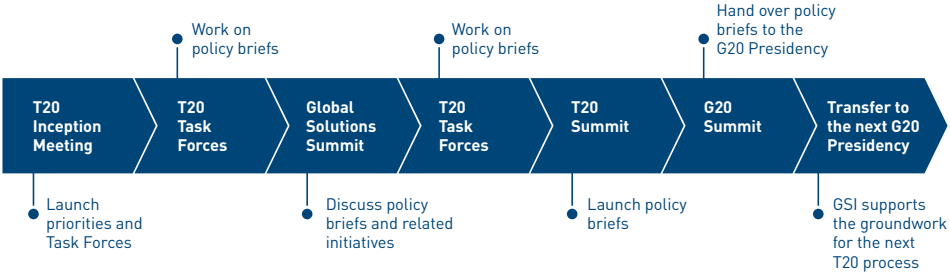
European Commission's Frans Timmermans, German Minister for Environment Svenja Schulze, Global Solutions President Dennis J. Snower, then-OECD Chief of Staff Gabriela Ramos, German Vice Chancellor and Finance Minister Olaf Scholz, Saudi G20 Sherpa H.E. Fahad Almubarak, G20 Sherpa Argentina Pedro Villagra Delgado, and T20 Chair Japan Naoyuki Yoshino at the 2019 Global Solutions Summit.

The Global Solutions Initiative's Involvement in the T20/G20 Timeline



Contributions

- **Research contribution**
  The GSI is comprised of a truly global network of research institutions, connecting national and international expertise in the service of global citizenship.

- **Organizational continuity**
  The GSI offers a permanent yet versatile structure across institutions and countries. It provides continuity and coherence in policy advice.

- **Policy-oriented contribution**
  The GSI is inherently solution driven. It generates cutting edge Policy Briefs for the policy leaders of the G20 and other international associations.

- **Narrative contribution**
  The GSI puts strong emphasis on the co-creation of a joint narrative around the 'recoupling' of social, economic and environmental prosperity by stakeholders from research, policymaking, business and civil society.

Activities

- **Global Solutions Summit**
  The Summit is an annual conference in Berlin, providing an opportunity to present and discuss policy recommendations and visions in advance of the T20 and G20 Summits.

- **The Recoupling Dashboard**
  A country-specific research tool to measure the well-being of societies beyond GDP, which illustrates the correlation of economic, social and environmental prosperity.

- **Ongoing workshops and conferences**
  Our ongoing activities are deep dives into particular policy areas with the objective to develop solutions that strengthen multilateralism and recoupling.

- **Revisiting Digital Governance**
  Together with the German Federal Ministry of Justice and Consumer Protection, a comprehensive discourse has been initiated to develop policy proposals.

- **Young Global Changers**
  An engaged global network of young individuals with innovative ideas to change the world in the spirit of recoupling.

Publications

- **G20 Insights**
  An online platform to disseminate implementable policy recommendations and conceptual visions for G20 policymakers.

- **Global Solutions Journal**
  With articles by scholars and researchers of the 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 agenda.

- **The Social Macroeconomics Series**
  The working paper series aims to understand the role of human sociality within macroeconomic activity.

- **The Global Solutions Papers**
  Recommendations and visions for policymakers that deal with major global challenges.

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