

## Background Paper

# Bouncing Forward Sustainably: Pathways to a post-COVID World Governance for Sustainability

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## **Abstract**

The ongoing COVID-19 crisis is generating massive adverse socio-economic impacts for societies around the globe and brings many issues of relevance for ongoing sustainability transformations into the spotlight. One such issue is the role of governance for sustainability, for which COVID-19 provides encouraging as well as challenging lessons. In this background note, we draw first, tentative lessons on how COVID-19 management has been governed across levels of governance, focusing on identifying opportunities for enhancing governance for sustainability including for tackling climate change.

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# Enhancing Governance for Sustainability: COVID-19 governance lessons for resilient and sustainable futures

## Governance for Sustainability in light of (post) COVID-19 recovery

The ongoing COVID-19 crisis is generating massive adverse health and socio-economic impacts for societies around the globe, which require further attention for managing the pandemic as well as generating green, just and lasting recovery efforts. The crisis also brings many issues of relevance for ongoing sustainability transformations into the spotlight. One such issue is the role of governance, which we here broadly define as “the totality of actors, rules, conventions, processes and mechanisms concerned with how relevant...information is collected, analysed and communicated, and how management decisions are taken.” (IRGC 2005; see also Ostrom 2009).

The approaches taken to address COVID-19 bring to the fore relevant lessons – some (still to be) learnt - regarding global, national and subnational governance and potential changes needed to inform a shift towards sustainable development pathways. They also offer insights into opportunities and challenges for catalysing transformational change through decisive actions, e.g. as done with social distancing measures strongly informed by scientific advice, albeit not necessarily always based on robust evidence. Yet, COVID-19 also highlights significant gaps in the science-policy-society interface – including with regard to access to reliable, verifiable data to better inform decision making, in the prevalence of institutional mechanisms to deal with systemic and compound crises, and in the preparedness of global and national science communities and governance systems, among others.

It is widely recognised that the existential challenges that humanity is facing, such as climate change, biodiversity loss, increased prevalence of infectious diseases and others, require ‘robust’ governance structures that foster cooperation and collaboration as never before (WBGU 2014).

COVID-19 provides encouraging as well as challenging lessons for enhancing governance for sustainability. In several ‘early-mover’ countries, bold and decisive national government action coupled with clear communication initially led to containing the spread of (the first wave of) COVID-19 (e.g. South Korea, Singapore). Globally and regionally, the fact that COVID-19 has resulted in amplifying geo-political divides, such as between China and the US, and the challenges to the unity of the European Union, have been widely discussed in the media, illustrating the need for effective global governance structures that foster needed cooperation and at the same time respect local knowledge and democratic process.

What is more, COVID-19 is but one example in a string of health and other disasters and crises that the world has faced with increasing frequency in the recent past. As global warming continues, it will certainly not be the last. It is thus key to address the new set of risks and uncertainties in order to reduce risks and be prepared for other extreme events that may follow. Not all disasters are about health. Climate scientists are warning us about global tipping points (Lenton et al. 2019) and local adaptation limits (Mechler et al. 2020) as well as about ‘unknown unknowns,’ which demand capacity to take robust, nimble, yet evidence-based responses that find acceptance by affected societies.

This draft note for the IIASA-ISC COVID-19 recovery pathways initiative lays out our approach and initial thinking on the theme of “Governance for Sustainability” in terms of identifying relevant questions to learn from

COVID-19 and draw lessons towards governance for sustainability pathways. We suggest four guiding questions (plus additional supporting questions), which we will further refine and seek answers to as part of the online consultations and further interactions with experts and the advisory panel. The ambition of the consultation process is to proceed towards co-generating some relevant policy recommendations for enhanced governance that is more agile, responsive, empowering, coherent, transparent, and adaptable in an ever more uncertain future, threatened by climate change and other stressors.

#### **Four key questions guiding our inquiry**

- How has COVID-19 played out at different levels of governance (global, national, subnational)?
- How is governance to take proper account of compound and systemic risk?
- What are views on a desired new normal post COVID-19 in terms of governance?
- How can COVID-19 serve as a springboard for re-thinking governance for sustainable futures?

### **Setting the stage: governance research strands considered**

In order to address these questions, we build on the following research strands as our entry points to governance analysis and debate:

- Polycentric: involving various actors (governments, private sector, civil society) across scales in complex decision problems like the climate and COVID-19 crises (see Ostrom 2009);
- Future-oriented: enhanced global governance in the design of transformational future development pathways towards climate-friendliness and strong sustainability (WBGU 2014);
- Risk (systemic and compound): risk governance as fundamental for achieving sustainability in the midst of multiple crises and uncertain events (IRGC 2018; Jacobzone et al. 2020);
- Cooperation and conflict: taking into account different risk perspectives/discourses as critical for co-generating 'clumsy' solutions that address hard-to-resolve conflict (Verweij and Thompson 2006; IRGC 2005).

### **What did the COVID-19 crisis reveal to us about global and national governance for sustainable futures?**

COVID-19, as an exemplary crisis of sorts, continues to reveal governance achievements and challenges at global, national and subnational scales.

#### **Guiding question:**

- How has COVID-19 played out at different levels of governance (global, national, subnational)?

Additional questions to be considered

- Which government, private sector and civil society actors have been involved at global, regional, national and subnational levels and how did they coordinate?
- Why the tragic lack of cooperation among some nations/stakeholders and why excellent examples of cooperation, too?
- What science/policy interactions (and worldviews) explain the difference in national responses?

- What role did different scientific communities/advocacy coalitions play in driving COVID-19 related policy decisions and changes? (e.g. epidemiologists, virologists, economists)
- Which reflexive, self-evaluative mechanisms could be observed in decision-making regarding the COVID-19 pandemic? Which cooperative, polycentric mechanisms could be observed in decision-making regarding the COVID-19 pandemic? How were actions adapted to newly gained knowledge?

## Global and regional governance insight

The COVID-19 pandemic illustrates that global governance is hinged on multilateralism and cooperation. The COVID-19 virus has rapidly become a pandemic through our globally interconnected world, in which, however, international cooperation in large parts remains uncoordinated, ad-hoc and often experimental (in good and bad ways) (Bozorgmehr et al. 2020). Countries implemented unilateral travel and trade bans, e.g. export bans on face masks, and even competed for safety equipment needed to prevent the virus from spreading. Countries rarely coordinated their responses with other countries, including in the EU.

The ongoing COVID-19 crisis thus illustrates the classic commons problem in terms of devastating consequences of a global crisis in a world where cooperation and democratic process take second place to crisis mode, despite long-standing rhetoric on cooperation and multilateralism; and this is in a world that is facing more and more compound, interlinked crises solvable only through cooperative, coordinated efforts. In the absence of reliable and effective global governance structures, COVID-19 is making the interdependencies and fragilities of our socio-economic fabric blatantly obvious. While some claim that the COVID-19 pandemic may bring an abrupt end to rampant and unbridled globalization, others stress that in fact it has rather shown what consequences disasters may bring about if nations decide to go alone, but will not put a stop to globalisation in the long run.

There is no one governance model that fits all global sustainability policy contexts. Indeed, the COVID-19 crisis has shown that more hierarchical, yet cooperative, structures are essential for emergency/crisis management, whereas polycentric and deliberative/adaptive governance structures have been shown to be key for developing robust and evidence-based policies more generally. The interconnectedness of risks also requires novel approaches in research, better connecting different fields of research and analytical traditions, while bridging the communication gaps between research and other societal actors. Of relevance, transdisciplinary approaches are required instead of siloed institutional structures. Crisis and disasters do not respect administrative boundaries and may exceed national/local capacities. In an interconnected, and interdependent, globalized world (globalized movements of people and capital), one country alone cannot eradicate a virus like COVID-19.

On a positive note, research has led the way for showing global cooperation is essential: Collaboration between global health scientists has helped identify the COVID-19 virus' genome sequence and grow the virus in the lab. At the time of this writing (June 2020) borders between several countries remain closed while reopening is only slowly proceeding, often based on bilateral coordination between governments in the face of massive uncertainty as to whether further lockdowns will again be required. An integrative, globally coordinated governance approach would have helped to minimize the impacts of this systemic risk. To better prepare for future events like the COVID-19 crisis, better aligned international cooperation is thus sorely needed as, e.g. coordinated through further empowered institutions such as the WHO (the only global one of its kind) or strengthening the EU Civil Protection Mechanism (EUCPM) for fighting health pandemics.

## National governance insights

While slow initial global cooperation and little attention paid to the precautionary principle, despite a televised evolving situation in China, importantly contributed to the emergence of the COVID-19 crisis as a pandemic, COVID-19 also revealed the value of effective national systems and multi-level governance within national structures, with clear responsibilities and lines of command, for enabling coordinated, evidence-based crisis response. There is clear indication that effective national governance for crisis response and disaster risk management needs to build on transparent communication, solidarity and strong community behaviour for sustained impact (Shaw et al. 2020). The response to COVID-19 in many countries has also shown the significance and gaps regarding effective science-policy interfaces. In several countries (e.g. France, Austria, Germany, South Korea) scientific policy advisory systems have proven effective, including by quickly making relevant data available, and co-deciding next steps for containment (Banholzer et al. 2020, Fanelli et al. 2020). Going forward, this opens up an opportunity for upgrading the science-policy interface, where the social sciences will have an important role to play, too, as dealing with the massive socio-economic aftermath will require devising and implementing inclusive, equitable and future-oriented recovery packages. The COVID-19 crisis is also revealing the risks of neoliberal politics that have reduced the funding to and influence of public institutions. Austria serves as a useful example. Disregarding neoliberal calls for 'efficient' health care - meaning reducing the costly number of hospitals and intensive-care units across the country - Austria proved more resilient in containing the pandemic than, for instance, neighbouring Italy. This illustrates the balance between efficiency and redundancy, the latter so necessary for resilience. It also illustrates a premise of plural-rationality theory: robust public policy calls for a negotiated balance between hierarchical (procedural rationality), individualistic (neo-liberal, consequentialist rationality) and egalitarian (moralistic rationality).

National governments across the world, as well as regional institutions like the European Union, have committed to recovery stimulus packages that are several times the sizes of the estimated USD 2.5 trillion funding gap for achieving the SDGs. Clearly there is an opportunity to allocate these funds to advance the transformation needed for achieving the SDGs, for example, to curtailing air travel and creating jobs in renewable energy and mitigating effects on social inequalities. The opportunity extends to addressing the anthropogenic drivers of pandemics and other 'sustainability' crises – biodiversity loss, greenhouse gas emissions, poverty, ... According to the WEF the recovery from the COVID-19 virus crisis presents an opportunity to shift towards a more "sustainable, inclusive economy, revitalizing industry, preserving vital biodiversity systems and tackling climate change."<sup>1</sup> To achieve this transformation, and to achieve it quickly, as COVID-19 recovery funds are already being allocated, will require political will. This raises a fundamental governance question: how to (quickly) institute (polycentric and inclusive) national policy processes that can reverse the 'business as usual' policy priorities focused largely on jobs and economic growth?

At a deeper level, what does this imply for governance regimes? The question whether democratic or autocratic regimes are better suited to foster development is an ongoing debate. While democracies perform better in protecting individual rights, empirical studies suggest that democracies do not outperform autocracies regarding the provision of public goods such as education or clean water and climate-friendly policies (Stepping and

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<sup>1</sup> <https://www.weforum.org/agenda/2020/05/the-european-green-deal-must-be-at-the-heart-of-the-COVID-19-19-recovery/>



Banholzer, 2017). Still, democratic countries are highly concerned that the COVID-19 crisis is doing away with the checks and balances that hold governments and political leaders accountable (Lührmann et al. 2020). A high number of states, like India and Hungary, and leaders used emergency rulings and lockdowns to expand their political power (Kleinfeld 2020; Leininger 2020).

Still, it is increasingly evident that democratic regimes are currently inadequate in meeting the transformative challenges presented by the SDGs. One cure – as advocated by many (and consistent with plural rationality theory) - is transformation of governance away from hegemonic 'government' to the empowerment of coalitions or networks of government, market actors and civil society. This is variously referred to as multi-actor, polycentric (cross scales and sectors) governance. Following Ostrom et al. (1961), polycentric governance systems are characterized by multiple centres of authority and distribution of power. Recent examples can be found in implementing nature-based solutions for the reduction of climate risks, which require a transformation in how societies engineer protection against the escalating losses from catastrophic events. In three documented cases in Germany, Italy and China (Martin et al., 2020) novel arrangements emerged in the public administration that involved multiple institutional scales and/or sectors to include not only flood and landslide protection, but also nature conservation, urban planning, water quality, waste management, tourism, recreation, and many more administrative responsibilities. In addition to polycentric arrangements, these changes were possible because of meaningful engagement of all persons and institutions with a stake in the outcome (Reed 2008; Scolobig et al. 2016; Linnerooth-Bayer et al. 2016).

## Subnational governance

The contribution by subnational governance and civil society have been less in the spotlight, although there are important lessons to be learnt. For example, in South Korea, community-based activism contributed to success in containing the (first) wave of infections. This involved pro-actively finding and reporting suspected cases as well as supporting vulnerable groups through 'safety groups' that ad-hoc organized from community grassroots women's group. As well, local autonomous disaster prevention groups and women's associations voluntarily engaged in disinfecting at-risk public facilities. Other grass-roots NGOs attended to the lack of mask shortages by self-organizing such masks and delivering to those in need including the elderly and disabled (Shaw et al. 2020). In other countries, such as Germany, some cities and regions played an important role in spearheading crisis response, giving the needed impetus for the government to advance nation-wide measures to contain COVID-19. Bottom-up and subnational levels of governance and its role in spearheading efforts in national and global governance systems particularly needs further analysis.

For this discussion, it is important to differentiate between multi-actor processes for crisis management versus crisis prevention and recovery. An emergency almost inevitably shifts the balance of power and control in favour of the executive branch of governments (De Marchi 2020). National leaders had little time to broadly consult domestic or international stakeholders. Indeed, in Austria, it is estimated that a 7-day delay in calling for lockdown measures would have significantly increased cases, hospitalizations and deaths. It appears that the public recognizes the need for an 'expertocracy' in a crisis; yet, as mentioned above, it is critical for democracies to assure checks and balances that limit autocratic processes to crisis situations. Governments expect citizens to trust their actions as being inspired by the common good. Conversely, citizens need to stay alert that democratic institutions remain accountable and avoid authoritarian temptations (De Marchi 2020).

## A risk perspective for enhancing governance for sustainability

In a globalized world economy (globalized movements of people and capital), some analysts suggested it was foreseeable that a pandemic like COVID-19 would materialize at some point. In fact, there have been other pandemics over the last 100 years, such as the Spanish flu, as well as several novel epidemic and pandemic-prone diseases, such as Ebola, Zika, SARS and MERS. Thus COVID-19 is to be considered more of a 'gray rhino' – a foreseeable extreme event possible to prepare for – rather than a 'black swan', a hardly foreseeable, unlikely extreme event (Taleb 2007; Wucker 2020). In the face of increasing occurrence of pandemics, taking a risk perspective to global and national governance is well justified and indeed offers learning opportunities for policy and practice.

### Guiding question

- How is governance to take proper account of compound and systemic risk for building resilience?

Additional questions to be considered

- How is COVID-19 similar/different to other global risks?
- What governance regimes are in place (or emerging) to deal with comparable global-reach risks (e.g., climate change, other pandemics, financial crises) and why are these more/less effective than COVID-19 governance?
- How does the world assign responsibility and liability for systemic risks that cross national borders?
- What are opportunities for compound (national and global) risk governance, i.e. tackling multiple shocks concurrently and creating co-benefits to further overcome silos in approaches that focus on either recovery or prevention?
- What institutional rearrangements would be needed for effective and adaptive (global) systemic risk governance?

COVID-19 is an event that can be explained as a manifestation of compound, systemic and existential risk (such risk framing also implies attention to concepts of uncertainty, complexity and surprise; see IRGC 2005, 2018).

Compound risks/events occur as a consequence of multiple, otherwise unrelated hazards interacting. Compound risks/events can either be sequential, i.e. the first event triggering the second (the third, fourth etc.) or coincidental but collocated in space and time. Both manifestations of compound events lead to a compounding of impact that may breach coping capacities of communities or even national governments.

Systemic risk shows how quickly contagion can spread from one region (within countries and across countries, even continents) to another via globalized movements of people, goods and capital and lead to potential system-wide collapse (Jacobzone et al. 2020). Globalization has, among others, been made possible through massively externalizing its environmental and social costs (e.g. non-taxing of airfare and shipping cargo; slave-like cheap labour in least developed countries). Internalizing the cost through global governance institutions (such as a carbon tax) is likely to reduce the speed of travel and contagion, slow down globalization and further change supply-chains from global to regional, while providing climate benefits in line with the Paris ambition. Some countries are actually considering taking measures along these lines as part of bail-out packages (e.g., discussions in Austria and Germany).

Existential risk describes how a shock may lead to breaching coping capacities and jeopardizing livelihoods for individuals (jobs, income, security), communities (local value chains, social life) and whole societies (breakdown of health systems; mass unemployment etc.). As we see the COVID-19 crisis unfolding, its existential risk potential becomes more and more apparent.

Systemic and compound risks are currently ill-governed (IRGC 2018), thus it does not come as a surprise that responses to COVID-19 in many countries have highlighted significant gaps with regard to institutional mechanisms for dealing with systemic and compound crises, in the preparedness of global and national disaster risk reduction communities and risk governance systems as well as access to reliable, verifiable data (definitions and accounting procedures changed in many countries). On the other hand, the science community in many places swiftly proceeded to generate and provide access to relevant risk and impact data in order to inform decision-making. Also, civil society-based organizations in many locations around the globe have been able to effectively mobilize their constituency, some of them taking a systems approach to their operations, which included attention to systemic and compound risks (e.g. NGOs in South Asia preparing for COVID-19 and the expected onset of the Monsoon-related flooding season).

The COVID-19 crisis has also shown the importance of paying attention to individual and collective risk perceptions, which depend on worldviews, cultural backgrounds and past experiences. Risk perception is not only shaped by the hazard – the COVID-19 virus – itself but also by the nature and effectiveness of risk management measures. Countries that employed tough and early measures (e.g. Austria), and therefore were able to keep casualties at a minimum, are now experiencing the paradox that relatively large shares of their populations have perceived COVID-19 risk as very low from the beginning leading to reluctant uptake of the introduced measures during the re-opening of public life (Prainsack et al. 2020). Even more so, conspiracy theories are gaining traction that early and strong action against the COVID-19 crisis has been based on vested political interests. On the other hand, the populations of countries that have delayed action (e.g. UK) perceive the risk of COVID-19 as extremely high (Dryhurst et al. 2020).

Targeted and participatory science-led discourses, communication and mechanisms can show a way forward. This may include:

- Reflective and adaptive discourse involving flexible risk governance and risk management approaches for continuously managing, learning from, reframing, and even transforming highly uncertain and exponentially growing risks, characteristic for a pandemic such as COVID-19 (Hochrainer-Stigler 2020).
- Epistemological discourse for understanding and transparently communicating complexity issues, i.e. the secondary and tertiary systemic impacts and risks (unemployment, growing debt, potential collapse of sectors) that further test the socio-economic fabric as COVID-19 proceeds.
- Innovation governance and anticipatory risk governance for incentivizing actors from public and private sectors to collaborate on the development of a vaccine.

## **From crisis mode to effective forward-looking risk governance: how can we go back beyond “business as usual”?**

As COVID-19 – in many cases – can be seen as transformational, how can we build on insights and innovations to foster relevant socio-ecological transformation towards sustainable development pathways including through the implementation of the SDGs?

### **Guiding question**

- What are the views on a desired new normal post COVID-19 in terms of governance?

Additional questions to be considered

- What priorities about future governance pathways are emerging?
- What are the key enablers and conditions to ensure a resilient post-COVID-19 recovery?
- How can we design and implement democratic processes for resilience post-COVID-19 societies?
- How are different sectors re-shaping their way of working? How can we expect actors to engage in governing pandemic systemic risk, including the health insurance industry?
- Which conflicts emerged during the governance of COVID-19 and which conflicts/ diverging interests are expected to emerge post COVID-19 and how do these shape global sustainability transitions?
- What does the “new normal” imply for fundamental (human) rights (e.g. surveillance etc.)? How is the balance between protecting health versus protecting our fundamental rights and freedom handled in different countries?

The COVID-19 crisis has opened a window of opportunities for change and for “bouncing forward” through adaptation and transformation. For example, new concepts of human well-being are being discussed which include the strengthening of local value chains, social and ecosystem resilience and at the same time the reduction of social and economic vulnerabilities (Florizone and Vaughan 2020). New forms of solidarity (e.g. crowdfunding, crowdsourcing, Hackathons around the world (such as the EUvsVirus pan-European Hackathon between public, private sector and civil society) have emerged together with new forms of social/technological/work infrastructures (e.g. distributed networks, third spaces).

A new post COVID-19 normality is “under construction” but the implications of this historical moment are not entirely clear. Will we go back to “business as usual”? How will the “new normal” look like? Who oversees deciding? As we write (June 2020), governments have committed to approximately USD 7 trillion in recovery stimulus packages (Subhani 2020).

A radical diversity of futures appears possible. In each of these futures, a plurality of views on a desired “new normal” will likely coexist and maybe clash. COVID-19 recovery plans, prescriptions and manifestos<sup>2</sup> vary considerably in terms of aims and priorities. Contributions focus alternatively on reforming health systems;

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<sup>2</sup> e.g. <https://wellbeingeconomy.org/ten-principles-for-building-back-better-to-create-wellbeing-economies-post-COVID-19/>; <https://www.who.int/news-room/feature-stories/detail/who-manifesto-for-a-healthy-recovery-from-COVID-19-19/>; <https://www.opendemocracy.net/en/oureconomy/after-pandemic-ten-point-plan-collective-provision-basic-needs/>; <https://healthyrecovery.net/>

fostering a green new deal; protecting and preserving nature/environmental standards; investing in essential services such as healthcare facilities; accelerating energy transitions; promoting sustainable food systems; building healthy and liveable cities; guaranteeing universal basic services and incomes; creating jobs; mobilising political movements; improving social justice; reducing consumption; achieving the Sustainable Development Goals; rejuvenating democracy; support specific economic sectors (e.g. tourism); reorienting capitalism; restructuring the economy; etc. (Stirling 2020).

In many cases, the changes that organisations assertively recommend specifically in response to the COVID-19 pandemic, look very similar to those they would have advocated beforehand. Steps are already being taken to “build back better” in response to COVID-19. For example, to protect environmental standards the European Commissioner for Climate Action and environment ministers of 17 EU countries committed to upholding the European Green Deal during the COVID-19 recovery (against pressure from 40 MEPs to put the Green Deal on ice).<sup>3</sup> However, in parallel, the US National Highway Traffic Safety Administration relaxes vehicle fuel efficiency standards and the US Environmental Protection Agency suspends the enforcement of environmental laws.

Thus, we can already witness opposing emerging trends that may be exacerbated by the pressure to deliver recovery packages quickly. Challenges include not only the emergence of conflicting views about the future and about the priorities regarding global sustainability transitions, but also conflicts and return of nation states and nationalisms, further erosion of international institutions as well as potential reduction of international cooperation. All these issues and barriers call for the further identification of and reflection about opportunities that can build on the involuntary transformation brought about by COVID-19.

Opportunities for change are, for example, related to the merging of policy agendas -most notably COVID-19 economic recovery plans and climate adaptation/sustainability/green economy plans (as, e.g., promoted by the European Commission). In a strive for the implementation of plans to enhance the resilience of individuals and communities, new people-driven governance models have been advocated. Managing and preventing public health crises (and other disasters, too) show that without whole-of-society engagement policies and measures may turn out to be ineffective/ignored, i.e. civil society and private sector need to be involved in governance mechanisms to the extent feasible/needed (see Shaw et al. 2020).

## **Synthesis: Opportunities for enhancing governance for sustainability**

The background note is supposed to inform deliberation at the three consultations with experts and stakeholders and eventually lead to identifying a few ‘actionable’ policy options. For now, we proceed towards synthesis in order to focus on opportunities for enhancing governance for sustainability incl. for tackling climate change, widely considered the major crisis needing urgent attention.

### **Guiding question**

- How can COVID-19 serve as a springboard for re-thinking governance for sustainable futures?

Additional questions to be considered

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<sup>3</sup> <https://wellbeingeconomy.org/ten-principles-for-building-back-better-to-create-wellbeing-economies-post-COVID-19>

- How do the findings translate into implications for achieving one or more SDGs (individually/together) and particularly climate change issues?
- How can research support enhanced governance for sustainability in a post COVID-19 world?

The crisis appears not only as a *chance* to upgrade resilience-based efforts and build back better towards relevant transformations. In the absence of universal cures to ongoing epidemiological and climate crises, particularly threatening the most vulnerable, socio-economic resilience is a *necessity* to build back at all and ensure that relevant transformations may further proceed. Opportunities for institutionalizing and enhancing polycentric governance across levels from global to national and local levels as well as sectors, among others, may comprise for the following scales and issues:

- **Global and regional governance:** Systemic and compound risk governance through informal and formal institutions is to be enhanced so that the global 'web of security' is strengthened. A more integrative, globally coordinated governance approach for minimizing the impacts of COVID-19's systemic risks is essential. To better prepare for future events, better aligned international cooperation is needed including truly empowered global and regional institutions. This could mean
  - ✓ increased support for institutions such as the WHO (the only global institution of its kind) or strengthening the EU Civil Protection Mechanism (EUCPM) for fighting health pandemics,
  - ✓ overcoming silos between crisis prevention, response and transformation,
  - ✓ Improved sharing of data on data, monitoring and (multi-hazard) early warning. Ensuring data between states is reliable and shared appropriately so that it can be factored into decision-making,
  - ✓ ensuring that a significant amount of donor funding reaches the most vulnerable at community levels for dealing with compound and systemic risks.
  - ✓ in terms of preventive efforts, globally coordinated levies on environmental externalities (carbon etc.) targeted at improving environmental and health outcomes as well as reducing the adverse effects of globalization through impacts on trade and travel, the latter having been a key COVID-19 driver,
- **Governance in national systems:** Governments ought to put systemic resilience centre-stage and thus help safeguard individual and collective rights and liberties (part for migrant labour, gender, the poor). This may involve
  - ✓ Investments into health, physical and social infrastructures that build resilience systemically,
  - ✓ Attention to improving state capability and inclusion via fostering formal and informal safety nets,
  - ✓ Overcoming 'herding' approaches, as taken during Covid-19, to better account for specific national systems circumstances (at national, subnational, community levels),
  - ✓ Further devising appropriate science-policy-society interfaces for taking 'right' and acceptable decisions.

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