UN Research Roadmap for the COVID-19 Recovery

Leveraging the Power of Science for a More Equitable, Resilient and Sustainable Future

United Nations

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Opening Message from the UN Deputy Secretary-General

As we are gearing up for a Decade of Action to deliver the Sustainable Development Goals, the impacts of the COVID-19 pandemic are severe, taking a toll on countries, communities, and families worldwide. As many as 100 million people are expected to be pushed back into extreme poverty in 2020 — the first rise in global poverty since 1998.

Recovering better from the challenges resulting from COVID-19 will require global solidarity and innovation. To inform these recovery efforts, the United Nations (UN) published a *UN Framework for the Immediate Socio-Economic Response to COVID-19*, which sets out the framework for the UN family's urgent socio-economic support to countries and societies across the globe.

Building on these efforts the *UN Research Roadmap for the COVID-19 Recovery* aims to catalyze a worldwide learning recovery effort, where national and international strategies are informed by rigorous scientific evidence generated for the COVID-19 recovery period.

This *Roadmap* is a tool that can be used by researchers, research funding agencies, civil society organizations, governments and international institutions to build partnerships, align research response efforts, and demonstrate the power of global science.

Recovering better means improving the lives of the most vulnerable. If recovery efforts do not seek to include the most marginalized, we will fail to build a better world than we had at the outset of the pandemic.

We have a historic opportunity for change; for macroeconomic choices and fiscal policies that are pro-poor and that place peoples' rights at the centre of recovery. We must focus on gender equity and invest in public services and other measures that will help close the widening gap on inequalities and lead to a greener future.

Everyone benefits when we build inclusive solutions that work towards a more equitable, resilient, and sustainable future for all.

Shaped by the contributions of hundreds of researchers, implementers and leaders from around the world, the priorities outlined in this *Roadmap* will help us collectively work towards these solutions.

I would like to thank everyone who participated in and supported the creation of this *Roadmap*, in particular Professor Steven J. Hoffman and his colleagues at the Canadian Institutes of Health Research, as well as colleagues within the UN system including the UN Development Coordination Office. All have worked tirelessly to lead this effort in a participatory manner and to ensure that as many partners as possible could inform what research is needed from the outset of the recovery effort.

This *Roadmap* demonstrates what is possible through international collaboration and the UN. By working together, we will recover better and create strong, healthy, prosperous communities in our interdependent world.

Amina J. Mohammed
UN Deputy Secretary-General

Executive Summary

The COVID-19 crisis has exposed stark global inequities, fragilities and unsustainable practices that pre-date this pandemic and have intensified its impact. Recovering better from COVID-19 will depend on bold efforts to strengthen health systems, shore up social protections, protect economic opportunities, bolster multilateral collaboration, and enhance social cohesion. In light of the scale of action needed, the socio-economic recovery from COVID-19 also provides a historic opportunity to reimagine societies using a human rights lens and initiate the transformative changes needed to achieve the better and brighter future envisioned in the *2030 Agenda for Sustainable Development*.

Science represents the world's best chance for recovering better from the COVID-19 crisis. As societies face the difficult task of implementing recovery strategies with limited time and resources, they have a choice between business as usual and transformative changes. Transformation offers better prospects, but it will require ingenuity and research from the full range of disciplines.

This *UN Research Roadmap for the COVID-19 Recovery* provides a framework for leveraging the power of science in support of a better socio-economic recovery and a more equitable, resilient and sustainable future. Designed to complement the UN's *Framework for the Immediate Socio-Economic Response to COVID-19* (April 2020), this *Roadmap* was rapidly developed in ten weeks through a global participatory process that drew upon insights from researchers, research funders, government policymakers, civil society leaders and UN officials from around the world. Widespread engagement revealed a great many knowledge needs for informing a successful recovery. These knowledge needs are diverse, but they all illustrate a reality re-emphasized by the COVID-19 pandemic: that all people, systems and generations are intrinsically interdependent and that all societies face shared risks and responsibilities. Interdependence among people emphasizes the need for equity; interdependence among systems points to the need for resilience; and interdependence across generations highlights the need for sustainability. The most important knowledge need at this time is an understanding of how to better address and harness these interdependencies.

This *Roadmap* is a commitment and a guide to make use of research to determine how COVID-19 socio-economic recovery efforts

can be purposefully designed to stimulate equity, resilience, sustainability and progress towards the Sustainable Development Goals (SDGs). The *Roadmap* outlines a set of 25 research priorities – five priorities for each of the five pillars of the UN's socio-economic recovery framework – as well as numerous sub-priorities providing more comprehensive elaboration. Together, the priorities emphasize the need for research to advance gender equity, engage marginalized populations, ensure decent work, prevent a digital divide, tackle "One Health" intersectoral challenges, and inform global governance reforms.

By articulating research priorities that address the world's interdependence, this *Roadmap* also provides a framework for understanding how research can help societies achieve a quadruple bottom line in terms of producing direct benefits from their COVID-19 recovery efforts while simultaneously stimulating equity, resilience and sustainability co-benefits. Creating such synergies and virtuous cycles will be important for accelerating progress towards the SDGs.

Finally, the global research community has itself been impacted by the COVID-19 pandemic and will require investment and support so that it too can recover better to avert, withstand and respond to future crises. This *Roadmap* identifies five strategies for strengthening research ecosystems, including scaling up data infrastructure, implementation science, rapid learning systems, knowledge mobilization, and the science of science.

Ultimately, this *UN Research Roadmap for the COVID-19 Recovery* aims to better equip researchers, research funding

agencies, governments, UN entities and other international institutions to harness collective knowledge and innovation in order to catalyze transformative changes and achieve the SDGs. Translating this *Roadmap* into a robust research effort that informs equitable, resilient and sustainable recovery strategies will require continued partnership and collaboration. Implementation will benefit from commitments already made to track future research investments against the identified research priorities.

The COVID-19 pandemic has brought into sharp focus the need for ambitious plans that reimagine and rebuild health, social and economic systems so that they leave no one behind. The imagination, curiosity and solidarity of the global research community can lead the way to the better and brighter future imagined in the SDGs.

Equitable, resilient and sustainable future

Transformative changes

2030

Business as usual

Status-quo outcome
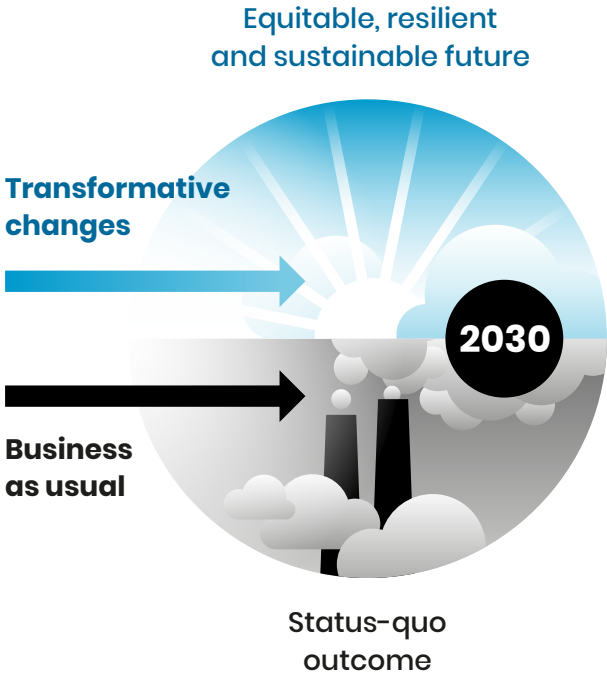
Ten key research priorities for an equitable, resilient and sustainable future

1. **How can COVID-19 socio-economic recovery efforts be purposefully designed to stimulate equity, resilience, sustainability and progress towards the SDGs?**

Equity

QUICK-WIN

2. What are the best approaches to integrating actively anti-discriminatory policies into emergency recovery responses? [RP5.3.2]

BEST-BUY

3. Which health system mechanisms can be leveraged to promote access to sexual and reproductive health services, gender equity and women's empowerment in society? [RP1.2.5]

GAME-CHANGER

4. How can international trade and finance be improved to ensure that all countries are included in the global economy in a fair and sustainable manner? [RP4.2.2]

The references in square brackets throughout this *Roadmap* link to research priorities and sub-priorities identified in Chapter 2.

Resilience

QUICK-WIN

5. How can safe access to high-quality education in schools be ensured during emergencies? [RP2.3.4]

BEST-BUY

6. How can international financial institutions most effectively contribute to financial stability during global emergencies and prevent sovereign debt crises? [RP4.3.3]

GAME-CHANGER

7. What are the best strategies for ensuring safe workplaces and decent work, in particular for those workers who face greater risks? [RP3.1.2]

Sustainability

QUICK-WIN

8. How can stimulus programs promote decent work and support the transition to greener and more sustainable economies? [RP3.2.1]

BEST-BUY

9. What mechanisms can enable different parts of government to work together on critical "One Health" challenges that cross human, animal and environmental health, such as antimicrobial resistance, extreme weather, food insecurity, habitat destruction and water degradation? [RP1.3.4]

GAME-CHANGER

10. How can approaches for preventing environmental degradation and preserving natural resources be better integrated into multilateral collaborations across economic areas? [RP4.5.1]

1.0

Introduction

For many people around the world, the COVID-19 pandemic has been one of the most destabilizing experiences of their lives. Within just months of discovering the SARS-CoV-2 virus, millions of people were infected and nearly everyone was affected by lockdowns, travel restrictions, and the resulting economic decline, social change and fear. The COVID-19 pandemic is both a biological and social phenomenon that has reminded the world, once again, that the well-being of people, populations and the planet are intertwined. The pandemic has shocked social and economic systems and has been a grand revealer of the underlying structures, obstacles and weaknesses that have long prevented the realization of the vision for a better and brighter future that was articulated in the 2030 Agenda for Sustainable Development.

In March 2020, UN Secretary-General António Guterres published the Shared Responsibility, Global Solidarity report that was a call to action in support of an integrated, coordinated, global response to the devastating socio-economic impacts of the COVID-19 pandemic. As one of three critical components of the UN's comprehensive efforts to save lives, protect societies and recover better, the UN Development System released a follow-on *Framework for the Immediate Socio-Economic Response to*

COVID-19 in April 2020.[1] This framework provided a strategy and blueprint for a robust socio-economic recovery from the pandemic, focusing on key actions across five pillars:

1. health systems and services;
2. social protection and basic services;
3. economic response and recovery programs;
4. macroeconomic policies and multilateral collaboration; and
5. social cohesion and community resilience.

These five pillars are further connected by an imperative to embed the dual objectives of gender equity and environmental sustainability into all recovery efforts.

While the COVID-19 crisis has exposed stark inequities, fragilities and unsustainable practices that existed before the pandemic, it has also provided an opportunity to recover better, to reimagine some of societies' most foundational systems using a human rights lens, and to initiate the kind of transformative changes needed to achieve the Sustainable Development Goals (SDGs) by their 2030 deadline. Yet we do not know exactly what these changes should look like or how to catalyze them. Such an ambitious undertaking urgently requires the generation and application of new knowledge.

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1   United Nations (UN), "A UN framework for the immediate socio-economic response to COVID-19", (New York, UN, 2020)

A choice between business as usual and transformative changes
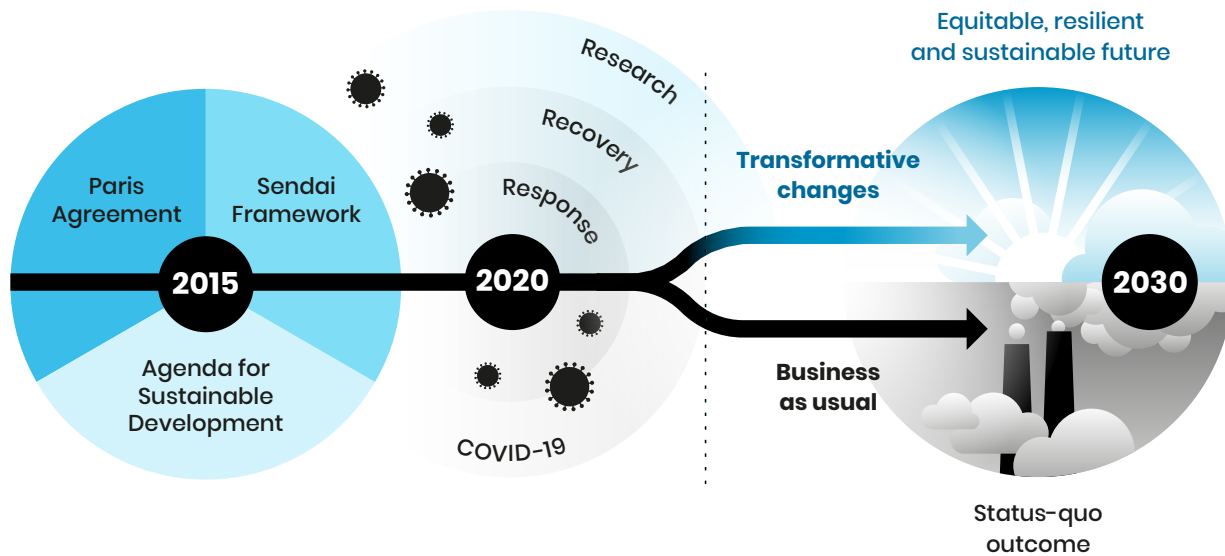
In this way, science represents the world's best chance of recovering better from the COVID-19 pandemic. Insights from the full range of disciplines including the natural sciences, engineering, health sciences, social sciences and the humanities are needed now more than ever. Faced with pressing challenges and limited resources, governments urgently need robust evidence to inform critical policy decisions. Research will be instrumental to learn from promising initiatives already taking place around the world and to identify how solutions can be adapted and scaled up to meet local and regional needs. Creative, inclusive and responsive research is also necessary for identifying drivers of change, assessing policy options, implementing choices successfully, and ensuring the expected benefits bear out for all. Importantly, research can also help reveal who has been left out and left behind and how best to include the voices and meet the needs of marginalized populations. Achieving the full potential of research will require investment in and support for research ecosystems, which

have themselves been impacted by the COVID-19 pandemic. They must also be built back better to avert, withstand and respond to future crises.

Embedding research into the design and implementation of COVID-19 socio-economic recovery efforts offers the single greatest opportunity for building a better future. Conversely, ignoring the lessons that existing and potential research can provide risks repeating past mistakes and recreating the systems that have failed to deliver a fair and good life for all.

In this way, the COVID-19 recovery period creates a choice that all societies will have to make between business as usual and transformative changes. No further knowledge is needed to take the business- as-usual path, but the resulting status-quo outcome will be disappointing. Fortunately, transformative changes offer better prospects – a more equitable, resilient and sustainable future – and the power of science can be leveraged to get there.

Policy priorities from the UN's Framework for the Immediate Socio-Economic Response to COVID-19

COUNTRY-LEVEL RECOMMENDATIONS

HEALTH SYSTEMS AND SERVICES	• Support the maintenance of essential health services and systems during and following the pandemic by prioritizing services, shifting service delivery, and actively managing health workforce, supplies and data; • Reduce financial barriers to essential services and accelerate access to emerging technologies such as diagnostics, vaccines and treatments; and • Focus on the most vulnerable by ensuring the continuity of services in fragile settings and supporting efforts to reach marginalized populations.
SOCIAL PROTECTION AND BASIC SERVICES	• Scale up and expand social protection systems, with a focus on pro-poor policies; • Maintain essential food and nutrition services, particularly for infants and young children, women, and other marginalized populations, including those living with HIV/AIDS; • Ensure continuity and quality of water and sanitation services through close collaboration with national and local authorities; • Secure sustained learning for all children and adolescents, preferably in schools; • Support the continuity of social services and access to shelters; and • Implement measures to address gender-based violence.

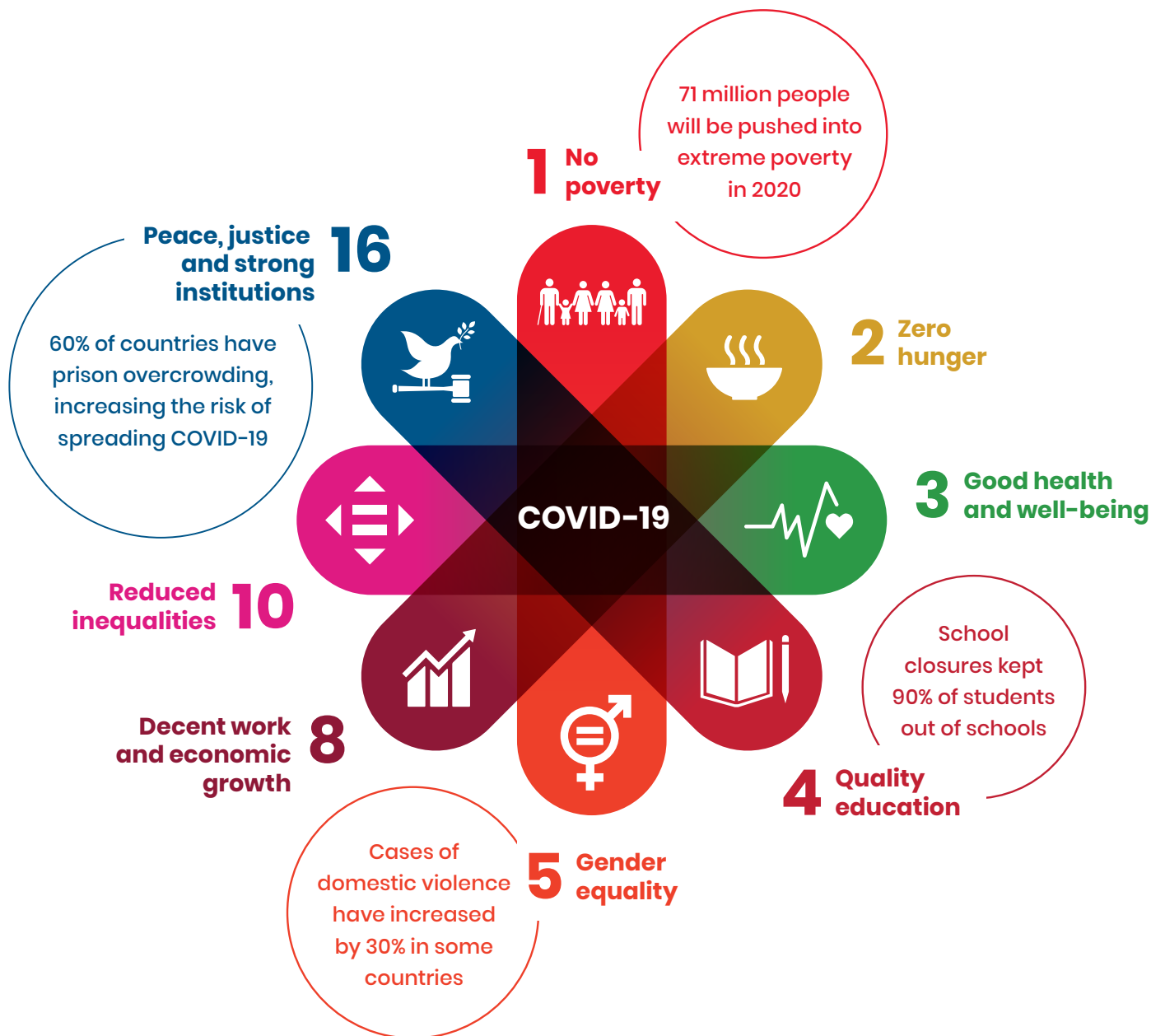| **ECONOMIC RESPONSE AND RECOVERY**	• Safeguard food supply chains throughout the crisis;
	• Introduce fiscal and monetary policies to stimulate the economy and employment overall; sectoral policies to counteract the negative effects of lockdowns, international trade contractions, and global supply chain disruptions; and investments in the care economy, where women represent three quarters of total employment globally;
	• Provide immediate financial support for small- and medium-sized enterprises and those who are self-employed or informally employed; and
	• Protect vulnerable workers.
MACROECONOMIC POLICIES AND MULTILATERAL COLLABORATION	• Carefully assess the scope and scale of the economic impact and the needed increase in expenditure;
	• Roll out large-scale fiscal measures, supported by targeted monetary easing, with a special focus on marginalized populations;
	• Analyze key implications and trade-offs of proposed policy measures to ensure that the desired impacts are sustained over time without causing economic and social instability and environmental degradation;
	• Address debt in developing economies;
	• Prioritize regional cooperation on trade policy to coordinate and harmonize measures that impact supply chains and connectivity;
	• Strengthen monetary coordination and financial stability through regional efforts; and
	• Promote cooperation to strengthen environmental resilience.
SOCIAL COHESION AND COMMUNITY RESILIENCE	• Foster inclusive social dialogue, advocacy and political engagement;
	• Empower community resilience, participation and equitable service delivery; and
	• Support good governance, fundamental freedoms and the rule of law.

COVID-19 has affected progress towards the SDGs

1 No poverty

71 million people will be pushed into extreme poverty in 2020

16 Peace, justice and strong institutions

60% of countries have prison overcrowding, increasing the risk of spreading COVID-19

2 Zero hunger

COVID-19

3 Good health and well-being

10 Reduced inequalities

School closures kept 90% of students out of schools

4 Quality education

8 Decent work and economic growth

Cases of domestic violence have increased by 30% in some countries

5 Gender equality

Objectives

Recognizing the transformative contributions that science can make to informing a better recovery from COVID-19, UN Deputy Secretary-General Amina J. Mohammed invited the rapid development of a *UN Research Roadmap for the COVID-19 Recovery* that would complement the UN's existing socio-economic recovery framework and ensure that the full potential of research is brought to bear on the challenges associated with the COVID-19 crisis

This *UN Research Roadmap for the COVID-19 Recovery* aims to:

• Ensure the COVID-19 recovery is informed by the best available research;

• Support learning from early response efforts to inform later recovery efforts;

• Bring renewed focus to the systemic issues highlighted by the COVID-19 pandemic and the marginalized populations most affected by the crisis; and

• Enable international scientific collaboration through a unifying global framework.

"A research roadmap will ensure that we can learn during, and from, this extraordinary pandemic event and that we can apply these learnings during and following the pandemic to recover better for the achievement of the Sustainable Development Goals."

**- UN Deputy Secretary-General
Amina J. Mohammed**

1.2

Approach

This *UN Research Roadmap for the COVID-19 Recovery* was developed through an ambitious ten-week process that was designed to capture and synthesize insights from researchers, research funders, government policymakers, civil society leaders and UN officials around the world. This process included commissioning a scoping review for each of the five pillars prioritized in the UN's socio-economic recovery framework, convening five steering groups composed of 38 different research funding agencies, and coordinating a series of formal and informal consultation activities. Throughout, efforts were made to prioritize the voices of young researchers and women, and to ensure representation from all regions of the world. This *Roadmap* further benefited from feedback and guidance from UN Resident Coordinators and numerous UN entities. Altogether, more than 250 individuals and organizations contributed. More details on this rapid process can be found in Appendix A.

The result – this *UN Research Roadmap* – synthesizes what was heard and explains how science can convert one of the most devastating events in people's lives into an opportunity to achieve transformative changes for everyone's benefit. Ultimately, this *Roadmap* aspires to provide the tools needed to start answering a singularly important question with which all societies need to grapple: **how can COVID-19 socio-economic recovery efforts be purposefully designed to stimulate equity, resilience, sustainability and progress towards the SDGs?**

In **Chapter 2**, this *UN Research Roadmap* provides a starting point by identifying 25 research priorities that need to be addressed in order to accelerate recovery efforts across the five pillars of the UN's socio-economic recovery framework. By carefully highlighting the most important areas for research and summarizing existing knowledge gaps, this *Roadmap* provides a guide to stimulate research efforts, focus investments and inspire coordination.

Chapter 3 provides a framework for thinking about how science can use the interconnectedness of the world to develop solutions with co-benefits that simultaneously advance equity, resilience and sustainability.

Chapter 4 introduces strategies that countries can pursue to build up and leverage science for global solidarity.

Chapter 5 provides suggestions for how researchers, research funding agencies, governments, civil society and UN entities can most effectively use this *Roadmap* to mobilize a science-informed and science-inspired recovery.

The stakes are too high and the opportunity too great to leave the potential of science for recovery unfulfilled. This *UN Research Roadmap for the COVID-19 Recovery* is a commitment and guide to bring the full power of science to bear on today's greatest challenges.

Panel E

Methodology

5

Steering groups

38

Research funding agencies

25

Countries and regions

20

Meetings

270

Experts

47

Written submissions

41

Participants in virtual consultations

8

Key informant interviews

5

Scoping reviews

28

Days

10,198

Initial search results

320

Studies reviewed

Research Roadmap

Research Priorities

The possible contributions of science to the socio-economic recovery from COVID-19 are vast. To make the most of limited time and resources, efforts are best focused on the most pressing knowledge needs. This *Roadmap* identifies 25 research priorities – five for each pillar of the UN's socio-economic recovery framework. Within each pillar, efforts were made to include questions that address specific recovery challenges as well as questions that, when answered, will inform longer-term systemic changes.

To provide a more comprehensive elaboration of research needs, additional sub-priorities were identified for each of the 25 research priorities. Three sub-priorities within each pillar were additionally flagged for particular attention: a quick-win where focused research is expected to generate immediate impacts; a best-buy where research investments are expected to yield outsized impacts; and a game-changer where research is expected to inform more transformative changes that will create immense positive impacts over time.

By addressing the priorities articulated in this *Roadmap*, the research community can inform solutions to the socio-economic consequences of the COVID-19 crisis and guide the design and development of recovery efforts that can accelerate progress towards the SDGs.

Quick-win   **Best-buy**

Game-changer

Populations experiencing the highest degree of marginalization

- Women

- Older persons

- Adolescents, children and youth, especially girls and young women

- Persons with disabilities, persons with mental health conditions

- Indigenous peoples

- Migrants, refugees, stateless and internally displaced persons, conflict-affected populations

- Minorities

- Persons in detention or in institutionalized settings (e.g. persons in psychiatric care, drug rehabilitation centres, old age homes)

- Slum dwellers, people in informal settlements, homeless persons

- Persons living with HIV/AIDS and other people with pre-existing medical conditions

- Small farmers, fishers, pastoralists, rural workers in informal and formal markets, and other people living in remote rural areas as well as urban informal sector and selfemployed who depend on market for food

- The food insecure, particularly in countries affected by prolonged conflict and crisis

- People in extreme poverty or facing insecure and informal work and incomes

- Groups that are particularly vulnerable and marginalized because laws, policies and practices do not protect them from discrimination and exclusion (e.g. LGBTI people).

Source: UN, 2020

2.1 Pillar 1

Health Systems and Services

QUICK-WIN

How can health systems promote compliance with voluntary and mandatory public health measures? [RP1.5.3]

BEST-BUY

How can information technologies be leveraged to build efficient data systems that monitor population health indicators, track clinical services, identify critical resource gaps, detect risks, enable appropriate information sharing and inform actions? [RP1.1.3]

GAME-CHANGER

What strategies and financing models are most effective in expanding universal health coverage? [RP1.2.2]

Promoting population health is critical to social stability, economic prosperity and achieving the SDGs. Public health crises like COVID-19 place a double stress on health systems, which must address the surge in immediate health needs related to the emergency while attempting to maintain routine healthcare services. Addressing this challenge will involve identifying near-term solutions to ensure the continued delivery of essential health services during emergency situations as well as longer-term interventions to bolster the resilience of health systems and populations. Although pandemics are infrequent, health emergencies are not, and the world will likely see a continued trend in emerging infectious diseases and extreme weather events resulting from rapid changes in interactions between global environmental processes and human health.[2][3] Therefore, recovering better will require a stronger knowledge base to support decisions on how best to govern, finance and deliver health systems that are more resilient, adaptive and responsive.

Valuable lessons from previous health emergencies such as SARS, H1N1 and Ebola have informed the health response to the COVID-19 pandemic and should continue to guide the recovery process. For example,

the 2009 H1N1 pandemic highlighted large variations in morbidity and mortality across different socio-economic groups as well as large disparities in exposure to infection, susceptibility to illness, and access to healthcare based on race and ethnicity in a number of countries.[4][5][6][7] The Ebola crisis in 2014-2016 highlighted the importance of enhancing detection capabilities through better surveillance systems; accountability, political will and public trust; and the protection of health workers. Building on the lessons from past health crises, research in the following five areas will be critical to create more equitable and effective health systems and ensure a successful recovery.

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80 million
estimated children under 1 year of age missing routine vaccinations due to COVID-19

38%
estimated increase in maternal mortality due to health system disruption resulting from COVID-19

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2   Moreno Di Marco and others, "Sustainable development must account for pandemic risk", *Proceedings of the National Academy of Sciences of the United States of America*, vol. 117, No. 8 (February 2020).

3   Nick Watts and others, "The Lancet Countdown on health and climate change: From 25 years of inaction to a global transformation for public health", *Lancet*, vol. 391, No. 10120 (February 2018).

4   Paul D. Rutter and others, "Socio-economic disparities in mortality due to pandemic influenza in England", *Int J Public Health*, vol. 57, No. 4 (February 2012).

5   Natalie S Levy and others, "Disparities in the severity of influenza illness: a descriptive study of hospitalized and nonhospitalized novel H1N1 influenza-positive patients in New York City: 2009-2010 influenza season", *J Public Health Manag Pract*, vol. 19, No. 1 (January 2013).

6   Sandra Crouse Quinn and others, "Racial disparities in exposure, susceptibility, and access to health care in the US H1N1 influenza pandemic", *Am J Public Health*, vol. 101, No. 2 (February 2011).

7   Toshie Manabe and others. "Socioeconomic factors influencing hospitalized patients with pneumonia due to influenza A(H1N1)pdm09 in Mexico", *PLoS ONE*, vol. 7, No. 7 (July 2012).

Research Priority 1.1: How should health systems be designed so they are responsive, adaptable and accessible when needed?

A resilient health system has the capacity to respond to a crisis while maintaining its core functions by learning and reorganizing when required.[8] Of particular concern during an emergency is the diversion of resources from routine needs, including preventive services, infection control, reproductive care and chronic disease management. These reallocations can lead to the exacerbation of chronic illness, emergence of vaccine-preventable diseases, and worsening of maternal and child health outcomes, among other negative results. Research is therefore needed to identify how health systems can respond and adapt effectively to prevent disruptions to routine care during emergencies, particularly for marginalized populations, while simultaneously addressing the immediate needs at hand [RP1.1.1].

Countries will differ in the specific challenges COVID-19 poses to their health systems and in their capacity to recover from them. These differences risk further exacerbating global health disparities. Looking to the future, there is a pressing need for evidence regarding innovative organizational structures and governance strategies that can foster more adaptable and resilient health systems

in a range of settings [RP1.1.2]. Increasing knowledge about the potential for digital health innovations and novel technologies to bridge the gap in care, particularly among marginalized populations and in low-resource settings, has important implications for preserving access to essential health services and medications during emergencies[9 10 11 12] [RP1.1.3] and can directly contribute to the pandemic response. For example, Rwanda was able to offer free COVID-19 testing with the use of innovative technologies such as robot-assisted testing, which also reduced health worker exposure to the virus.[13] In addition to technological solutions, research is urgently needed to identify the most effective human resource management strategies to protect health workers and maintain the health workforce, particularly during emergency situations [RP1.1.4]. This includes taking into account the significant role that community health workers play in providing essential services in many countries.

Research Priority 1.2: How can health systems eliminate discrimination in their service delivery and become drivers of equity in society?

The COVID-19 pandemic has exposed underlying inequities in health services delivery. Research that contributes to

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8   Margaret E. Kruk and others, "What is a resilient health system? Lessons from Ebola", *Lancet*, vol. 385, No. 9980 (May 2015).

9   Jonathan D Hron and others, "Rapid Implementation of an Inpatient Telehealth Program during the COVID-19 Pandemic", *Appl Clin Inform*, vol. 11, No. 3 (May 2020).

10 Alannah Smrke and others, "Telemedicine During the COVID-19 Pandemic: Impact on Care for Rare Cancers", *JCO Global Oncology*, vol. 6 (July 2020).

11 Begoña Tortajada-Goitia and others, "Survey on the situation of telepharmacy as applied to the outpatient care in hospital pharmacy departments in Spain during the COVID-19 pandemic", *Farm Hosp*, vol. 44, No. 4, (July 2020).

12 Morgan S. Jones and others. "Inpatient transition to virtual care during COVID-19 pandemic". *Diabetes Technology & Therapeutics*, vol. 22, No. 6 (May 2020).

13 International Monetary Fund, "Rwanda harnesses technology to fight COVID-19, drive recovery", 6 August 2020.

addressing these inequities and designing systems that dismantle them will require data that is disaggregated by characteristics such as age, gender, sex and race, as well as sustained engagement with marginalized populations [RP1.2.4]. To ensure that no one is left behind during recovery, evidence is also needed regarding effective and inclusive ways to centre the voices and experiences of marginalized populations in health systems decision-making processes [RP1.2.3]. Additional research considerations for building equitable health systems involve identifying strategies to ensure that marginalized populations are not excluded from promising digital technology innovations and learning how such technologies can increase equity in access to health services, particularly in emergency situations [RP1.2.1].

The COVID-19 pandemic has also highlighted the pressing need for knowledge regarding how recovery efforts can transform health system financing arrangements and accelerate progress towards universal health coverage [RP1.2.2]. This includes research to inform the development of health systems that address the needs of those who are often left out of national health insurance plans, such as migrants and refugees. Strategies for addressing the healthcare needs of marginalized populations will differ from country to country and will require applied research to determine the most appropriate solutions and implementation strategies for different contexts. Research that integrates the perspectives of health workers in a variety of settings will be particularly helpful in addressing such

questions. In light of the disproportionate impact of environmental challenges on marginalized populations, health systems that are designed in more sustainable ways also have the potential to become drivers of equity beyond the immediate health sector.

Research Priority 1.3: How can all parts of government be mobilized to promote health, prevent disease and prepare for future health emergencies?

In a resilient health system, diverse governmental, civil society and private sector actors from inside and outside the health sector work together in a coordinated manner. Although the COVID-19 pandemic has revealed how unprepared these interconnected systems were in most countries to handle a crisis of this scale, the recovery period provides an opportunity to learn how sectors can collaborate to increase resilience to future shocks. All of the SDGs are connected to health and its social determinants, so action on this front may be met with unusually high levels of public and political support.[14] To capitalize on this opportunity, evidence is needed on cross-sectoral approaches that can effectively increase population health and resilience. For example, the COVID-19 crisis has highlighted how intertwined the health and education sectors are when it comes to controlling the transmission of communicable disease. More broadly, schools can also play a critical role in health promotion and protection, including by providing access to vaccinations, screening, food assistance, and sexual and reproductive health services [RP1.3.1]. Implementation

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14   Alison Garnham, "After the pandemic", *IPPR Progressive Review*, vol. 27, No. 1 (June 2020).

research will be particularly important to understand the feasibility and effectiveness of such interventions in different contexts and the potential to adapt them and scale them up.

Health promotion is also closely linked to environmental sustainability, and would therefore benefit from green approaches to a COVID-19 recovery [RP1.3.4]. Existing evidence on promoting environmentally sustainable design and behaviours may need to be updated using a COVID-19 lens, including to align with current public health recommendations that favor investments in infrastructure to support human-powered mobility such as walking and bicycling.[15]

Research Priority 1.4: How can global governance be reformed to support more coordinated and collective responses against those health threats that transcend national boundaries?

The COVID-19 pandemic vividly demonstrated how quickly health threats can travel across national borders in a globalized world. Intense globalization highlights the need to build fit-for-purpose global governance structures that enable effective responses to transnational risks while also encouraging everyone to act in solidarity in the face of shared responsibilities [RP1.4.3]. Research on new kinds of global governance arrangements will help countries confront the challenges of an interdependent world and jointly develop technological and social innovations with shared benefits. Researchers can also help develop new ideas for ensuring that global governance

arrangements are transparent, participatory and reflective of local and regional variations, and that they incentivize long-term multi-generational thinking. For example, there is a knowledge gap regarding the design and effectiveness of mechanisms that promote meaningful participation of marginalized populations in the decision-making activities of global governance institutions.

A robust socio-economic recovery from COVID-19 will also require an enhanced understanding of the nexus between health, the environment, politics, economics and societal well-being, as well as the implications of such interconnectedness for the design of health systems and global health initiatives. This interconnectedness includes dependencies on global supply chains and mutual commitments under international agreements [RP1.4.1]. For example, research is needed on how to develop and strengthen health systems in a way that is environmentally sustainable. This includes investigating the links between climate change and zoonotic diseases, and specifically the impacts of deforestation, monocropping, input-intensive farming, misuse of agro-chemicals, prophylactic use of antimicrobials, and air pollution as co-risk factors [RP1.4.2].

Research Priority 1.5: How can health systems engage communities, build trust and support collective responses to emerging health threats?

During emergencies, health systems must build public trust and gain social acceptance

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15   Shardul Agrawala, Damien Dussaux and Norbert Monti, "What policies for greening the crisis response and economic recovery?: Lessons learned from past green stimulus measures and implications for the COVID-19 crisis", OECD Environment Working Papers, No. 164 (Paris, France, OECD Publishing, 2020).

in order to influence risk perceptions, modify behaviours and mobilize collective action towards protecting health. Achieving these goals will require addressing knowledge gaps about the most effective approaches for leaders to communicate public health risks and engage communities, particularly those hardest-hit by the health, socio-economic and security impacts of the pandemic [RP1.5.3]. Efforts to engage and build trust among marginalized populations through formal communication channels can face challenges related to language fluency and access to technology, among other factors. It is important to identify and evaluate population- and context-specific mechanisms to overcome these communication barriers [RP1.5.2]. For example, insufficient research has focused on strategies to engage migrants and migrant workers, who are particularly vulnerable to infectious disease outbreaks and often face underlying health issues such as violence,

unsafe living conditions and inadequate access to health services. Several populations that have been hardest hit by COVID-19 have also faced stigmatization due to prejudice and fear. To build trust and capacity to collectively tackle health threats, there is a need to leverage local and traditional knowledge, develop solutions tailored to communities, and then systematically support implementation and evaluate outcomes [RP1.5.1]. For example, new communication strategies must be developed to better engage Indigenous peoples and ensure that their traditional knowledge is incorporated into decision-making. Research can additionally contribute to enhancing collective capacity and action by examining the role of social networks in building community resilience to health threats and by highlighting the potential shared health benefits of reduced pollution and prevention of zoonotic disease outbreaks.

How should health systems be designed so they are responsive, adaptable and accessible when needed?

1.1.1 What strategies can help ensure continuity of all essential health services during emergencies, including preventive services, infection control, chronic disease management, and reproductive, maternal, and child healthcare?

1.1.2 Which organizational structures enable more adaptability in health service delivery and responsiveness to changing circumstances while safeguarding good governance?

1.1.3 How can information technologies be leveraged to build efficient data systems that monitor population health indicators, track clinical services, identify critical resource gaps, detect risks, enable appropriate information sharing and inform actions?

1.1.4 What are the best strategies for preparing health workers for emergencies, protecting their safety, and managing the health workforce during emergencies?

1.1.5 How can health systems strengthen their resilience to global supply chain shocks and design procurement strategies that ensure critical resources are available when needed?

IMPORTANCE

Emergencies can disrupt healthcare services and divert resources from routine prevention and care. These reallocations can lead to the exacerbation of chronic illness, emergence of vaccine-preventable diseases, and worsening of maternal and child health outcomes, among other negative results. Health systems research and a robust information infrastructure are integral to assessing the needs and outcomes of marginalized populations and ensuring that health services work for all before, during and after emergencies.

CONSIDERATIONS

There is a pressing need to research and evaluate innovations that meet the increased health needs of marginalized populations during emergencies, including among those living in slums, informal settlements, and rural or remote communities, who may be harder to reach. Data disaggregated by characteristics such as age, gender, sex and race are needed to support intersectional approaches that tackle health inequities.

HEALTH SYSTEMS AND SERVICES
RESEARCH PRIORITY 1.2

How can health systems eliminate discrimination in their service delivery and become drivers of equity in society?

1.2.1 How can digital health technologies and social media be leveraged during emergencies to promote equity?

1.2.2 What strategies and financing models are most effective in expanding universal health coverage?

1.2.3 How can health systems ensure that all voices are represented in decision-making, particularly among marginalized populations and at times when marginalization is amplified?

1.2.4 What are effective change management strategies to prevent all forms of discrimination, stigma and marginalization within the health system?

1.2.5 Which health system mechanisms can be leveraged to promote access to sexual and reproductive health services, gender equity, and women's empowerment in society?

IMPORTANCE

The COVID-19 crisis has put a spotlight on underlying inequities in healthcare access and outcomes. Differences in risks of infection and fatalities reflect long-standing disparities in living, working, health and social conditions, as well as in access to the resources needed to prepare for and respond to outbreaks. Research on how economic and social inequities intersect and impact healthcare provision is urgently needed.

CONSIDERATIONS

Strategies for addressing the needs of marginalized populations and ensuring a more inclusive health system will differ from country to country and will require context-specific research on implementation. Research that integrates the perspectives of health workers in a variety of settings will be particularly important. Research to promote equitable health services must also account for potential biases in statistical sources, which do not always include information about all populations.

How can all parts of government be mobilized to promote health, prevent disease and prepare for future health emergencies?

1.3.1 How can schools support the provision of preventive health services such as childhood vaccination, healthy eating, oral health, physical activity, stress management and sexual and reproductive health services?

1.3.2 How can health impacts from disruption to basic services like education, housing and public transportation be mitigated during emergencies?

1.3.3 How can governments fully leverage their legislation, regulation and taxation tools to promote health?

1.3.4 What mechanisms can enable different parts of government to work together on critical "One Health" challenges that cross human, animal and environmental health, such as antimicrobial resistance, extreme weather, food insecurity, habitat destruction and water degradation?

1.3.5 How can governments accelerate innovative private sector solutions to emerging health issues in order to deliver impact quickly and cost-effectively?

IMPORTANCE

An essential feature of resilient health systems is integration, which involves diverse actors from inside and outside the health sector working together in a coordinated manner. Evidence on the features of well-integrated systems will be critical to build capacity to rapidly respond to future pandemics. Research has a particularly important role to play in understanding how to effectively coordinate with sectors that have control over powerful levers for promoting health but do not have health promotion as a primary objective.

CONSIDERATIONS

Research is needed to assess differences in the feasibility of implementing intersectoral solutions across regions and countries based on income and resource availability. Research is also urgently required to inform action on intersectoral challenges like climate change, which risks further burdening the health system with the effects of extreme weather events and disease outbreaks.

How can global governance be reformed to support more coordinated and collective responses against those health threats that transcend national boundaries?

1.4.1 How can the world's existing multilateral architecture be optimally leveraged to ensure needed global public goods for health are efficiently produced, equitably distributed and sustainably managed?

1.4.2 What international arrangements would help prevent, prepare for, respond to and recover from global health emergencies?

1.4.3 How can countries address shared health risks, promote collaboration, act in solidarity and count on each other's assistance when needed?

IMPORTANCE

The COVID-19 crisis has highlighted the extent to which our world has become globalized and how quickly health threats can travel across national boundaries. Globalization means that we need fit-for-purpose global governance structures that enable effective responses to transnational risks while also encouraging solidarity in the face of shared responsibilities. Research on new kinds of global governance arrangements will help countries confront the challenges of an interdependent world and jointly develop social innovations that benefit everyone.

CONSIDERATIONS

Global governance arrangements have sometimes failed to ensure that all people, communities and countries have the opportunity to participate in making decisions that affect them. Research can help develop new ideas for ensuring global governance arrangements are transparent, participatory, reflective of local and regional variations, and that they incentivize long-term multi-generational thinking.

How can health systems engage communities, build trust and support collective responses to emerging health threats?

1.5.1 Which citizen engagement and communication strategies are most effective in preventing discrimination, stigma and marginalization during health emergencies?

1.5.2 How do public health leaders most effectively communicate health risks to different populations and promote appropriate responses to them?

1.5.3 How can health systems promote compliance with voluntary and mandatory public health measures?

IMPORTANCE

In order for health systems to be effective at influencing risk perceptions and behaviours during public health emergencies, they must build public trust and gain social acceptance. Knowledge gaps exist around the most impactful approaches for health leaders to engage the public, build trust and mobilize collective action towards tackling health threats.

CONSIDERATIONS

Engaging and building trust among marginalized populations through formal communication channels can be impeded by issues such as language fluency and access to technology. These challenges can particularly affect older persons, people with disabilities, migrants, and those living in slums, informal settlements and rural and remote settings. There is an important opportunity for engaged research that integrates these populations' perspectives and lived experiences into future strategies to foster collective public health responses.

2.2 Pillar 2

Social Protection and Basic Services

![icon] **QUICK-WIN**

What are effective strategies for safeguarding the mental health of front-line workers providing basic services? [RP2.5.4]

![icon] **BEST-BUY**

How can inequities in access to internet infrastructure and basic digital technologies be eliminated for all? [RP2.4.1]

![icon] **GAME-CHANGER**

What are the most effective and equitable ways of ensuring basic income protection for all? [RP2.1.1]

Social protection and basic services are the range of public actions taken to protect people's well-being and prevent poverty and social exclusion. Disruptions to these sectors during the COVID-19 crisis have harmed people's well-being and will continue to cause long-term damage well after the pandemic has been controlled.[16] Protecting and promoting people's current and future well-being requires action across a range of areas, including ensuring their ability to access healthy food, clean water, high-quality education, safe housing and digital infrastructure. To fulfill these needs in an equitable and sustainable way, social protection systems should be human rights-based and pro-poor, and work to reduce the factors that push households to adopt coping strategies that can leave them further marginalized in the future.[17] Although social protection measures introduced in a time of crisis generally aim to mitigate immediate impacts, COVID-19 recovery efforts present a unique opportunity to rebuild social protection systems in a way that also addresses the systemic causes of inequities and promotes greater resilience to future social and economic shocks. Progress in the following five research areas will help achieve these goals.

Research Priority 2.1: How can necessary social protections be made available to all people when they need them?

People need to be able to count on social protection measures at all times, including during emergencies, when the need for

4 billion

people that had no or inadequate social protection pre-pandemic.

1024

social protection measures developed by 195 countries or territories around the world due to COVID-19 as of June 2020.

support often increases. Widespread and sustained social protection measures have the potential to reduce the magnitude of the pandemic's socio-economic impacts, prevent a catastrophic increase in global poverty rates, and shorten the time to full recovery. For systems of social protection to be effective, these policies must be designed to work for everyone and may also require targeted supports for marginalized populations, including non-citizens. Research on which social protection measures work, for which groups, and in which contexts, will be key to designing and implementing effective policies.

Despite numerous studies on the impact of social protection measures, there is limited evidence regarding how their design influences their effectiveness, the contextual factors required to ensure their success, how effective they are at reducing inequities over the long-term and how they can support those working in the informal economy. Priority areas for research on social protection programs include how to design policies that ensure

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16 Walter Leal Filho and others, "COVID-19 and the UN Sustainable Development Goals: Threat to solidarity or an opportunity?" *Sustainability*, vol. 12, No. 13 (July 2020).

17 Gabriele Koehler, "Transformative social protection: reflections on South Asian policy experiences", *IDS Bulletin*, vol. 42, No. 6 (November 2011).

basic income protection for all [RP2.1.1], how to create opportunities for inclusion in the formal economy as it rebuilds [RP2.1.2], and how to prevent and address gender-based and domestic violence during emergency situations, when stress can increase tension at home at the same time as access to emergency shelters and services may be restricted [RP2.1.5]. Research that focuses on embedding opportunities for evaluation and rapid learning into social protection programs is particularly needed to inform innovation and continuous improvement [RP2.1.4]. Finally, social protection delivery systems are often large and complex, rendering them vulnerable to error, fraud and corruption. Research can contribute to understanding how oversight by governments and international agencies can help ensure that funds intended for social protection programs reach those who need them [RP2.1.3].

Research Priority 2.2: How can social protections be implemented to tackle the underlying root causes of socio-economic marginalization and inequities?

In addition to understanding how social protection measures can meet immediate needs, it is critical to identify the potential for such measures to address the systemic causes of socio-economic inequities. Research has shown that failing to understand and consider systemic inequities can lead to the implementation of social protection programs that are not only ineffective, but also cause harm and exacerbate inequity. For example, social protection measures administered at the household level may not reach women and children, depending on how resources are controlled and distributed

within the household. Similarly, social protection measures that are administered at the individual level are often tied to formal employment, but marginalized populations are more likely than others to hold precarious or part-time employment or work in the informal economy, which makes them less likely to qualify for support programs. To inform the implementation of effective and equitable social protection programs, research must consider the drivers of socio-economic disparities within and across countries [RP2.2.1] as well as the impact of such disparities on access to social protection services [RP2.2.2]. Research should also consider how the COVID-19 pandemic has potentially resulted in new forms of marginalization and vulnerability. Finally, researchers can help inform the design of participatory approaches that engage communities, including marginalized populations, and ensure that local and traditional knowledge is effectively integrated into the design of programs [RP2.2.3].

Research Priority 2.3: How can environments be built, shaped and sustained in ways that allow all people to thrive?

The environments in which people live, work and play are critical to health and socio-economic outcomes. The closure of schools, businesses and public spaces in an effort to slow the spread of COVID-19 has had important consequences for social well-being and livelihoods globally. For example, school closures not only interrupted learning but also limited access to other social protection measures. The nutritional status of children, especially in poor households, is expected to significantly deteriorate as a result of the pandemic, owing to reduced household income

Domino effect of school closures

School closures → Interrupted learning → Strain on parents → Gaps in childcare → Children unattended → Riskier behaviours → Exploitation → Child labour

and the loss of school meals.[18] Closures can also prevent parents, and particularly mothers, from engaging in the labour force due to increased caregiving responsibilities. Over the long-term, school closures will have country-wide consequences. More research is needed to understand the long-term impact of school closures on the collective knowledge and skills of a society and, in turn, on future national income and economic growth. Research can also provide critical insights to support the safe return of children to schools and reduce the need for school closures in response to future emergencies [RP2.3.4].

The pandemic has also laid bare place-based vulnerabilities to emergencies, including for those living in poor and densely-populated areas such as refugee camps, slums and informal settlements. Important questions for further research in this area include how access to clean water, sanitation, nutritious food and safe housing can be maintained during emergencies [RP2.3.3] and how social and built environments can be purposefully designed to support this access in ways that protect the natural environment [RP2.3.1]. As the world moves forward, focusing research on ecological sustainability and learning from local and traditional knowledge and practices can help to preserve the ecosystem services provided by the natural environment and protect against societal and environmental vulnerabilities [RP2.3.2]. This is particularly important because degradation of the natural environment can jeopardize access to social protection services, which can further contribute to poor health and conflict.

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18   Rafael Pérez-Escamilla, Kenda Cunningham and Victoria Hall Moran, "COVID-19 and maternal and child food and nutrition insecurity: a complex syndemic", *Maternal & Child Nutrition,* vol. 16, No. 3 (May 2020).

Research Priority 2.4: How can an exclusionary digital divide be prevented in an increasingly virtual world?

Digital inclusion, which refers to the ability to access and use the internet and digital technologies for information and communication, has become a basic need and right. Although digital technologies have been heavily relied on to mitigate the social and economic effects of physical distancing strategies implemented during the COVID-19 pandemic, access to these technologies is uneven within and across countries and back-up options have not always been available for those who are excluded. Understanding how to prevent an exclusionary digital divide will be vital to the immediate socio-economic recovery from COVID-19 and to build resilience to future shocks. In particular, evidence is needed to inform policies that overcome barriers and risks associated with digital technologies while also maintaining any digital inclusion gains that occurred during the COVID-19 pandemic, such as increased opportunities for working from home, virtual healthcare visits and remote learning. Research priorities include identifying strategies that promote equitable access to internet infrastructure and basic digital technologies [RP2.4.1] and informing policies that foster digital and media literacy to promote the safe use of digital resources [RP2.4.4]. It will additionally be important for researchers to consider how digital technologies can be used to improve access to high-quality education [RP2.4.3], to protect children and to address gender-based and domestic violence [RP2.4.2].

Research Priority 2.5: How can social protections and basic services help to promote population mental health?

Mental health affects family relationships, work productivity, civic engagement and overall well-being. The mental health impacts of the COVID-19 pandemic will have long-term consequences for socio-economic recovery and progress towards the SDGs. Research and innovative solutions to promote mental health literacy and access to treatment and support are needed to mitigate these impacts. In particular, it will be critical to understand the potential roles of government, civil society and the private sector in supporting the mental health of all people before, during and after crises [RP2.5.1]. Such research must consider the specific needs of those who are likely to face greater mental health burdens during pandemics, including health workers and marginalized populations. For example, gender-based analyses of the mental health needs arising from burdens of caregiving and changing socio-economic conditions [RP2.5.2], as well as research that focuses on the mental health needs of front-line workers [RP2.5.4], would be particularly helpful.

**SOCIAL PROTECTION AND BASIC SERVICES
RESEARCH PRIORITY 2.1**

How can necessary social protections be made available to all people when they need them?

2.1.1   What are the most effective and equitable ways of ensuring basic income protection for all?

2.1.2   How can governments, civil society and the private sector ensure opportunities for including all people in the formal economy, including access to legal documentation, credit, education and skills training?

2.1.3   What accountability, oversight and transparency mechanisms can ensure funds for social protection programs are spent as intended and help those who most need them?

2.1.4   How can opportunities for rapid learning be embedded into social protection programs to enable innovation and support continuous improvement?

2.1.5   What strategies can best prevent and address gender-based and domestic violence during emergency situations?

IMPORTANCE

People need to be able to count on social protection measures at all times, including during emergencies, when the need for support often increases. To be effective, these policies must be designed to work for everyone and may also require targeted supports for those facing marginalizing conditions. Research on which social protection policies work, for which populations, and in what contexts, will be key to designing and implementing effective protections.

CONSIDERATIONS

Populations such as children, women, marginalized racial groups, migrants and refugees are often more difficult to reach through social protection programs. As a result of pandemic response measures such as school closures, girls are particularly vulnerable to loss of social protections and programs to prevent child marriage and gender-based violence. Research should consider how measures such as targeted violence prevention and response initiatives can address gaps in social protection.

How can social protections be implemented to tackle the underlying root causes of socio-economic marginalization and inequities?

2.2.1 What drives the stark disparities in socio-economic status between populations within and across countries?

2.2.2 How does inequity impede access to social protection services?

2.2.3 How can communities and marginalized populations be effectively engaged in the design of social protection programs that affect them?

IMPORTANCE

Failing to consider the systemic causes of socio-economic inequities can result in social protection programs that are not only ineffective but also exacerbate inequity. During the COVID-19 recovery, it will be critical to examine how the root causes of socio-economic inequities can be addressed through social protection measures. Research can inform the design of participatory approaches that incorporate local and traditional knowledge to ensure programs respond to the needs and priorities of communities.

CONSIDERATIONS

In addition to exacerbating inequities for already marginalized populations, the COVID-19 pandemic has uncovered and created new societal vulnerabilities. Careful consideration of longstanding, new and emerging forms of marginalization and inequity, and the interactions among them, is therefore warranted in research to guide a robust recovery.

How can environments be built, shaped and sustained in ways that allow all people to thrive?

2.3.1 How can social and built environments be purposefully designed to maximize human opportunity while safeguarding the natural environment?

2.3.2 How can traditional knowledge and practices be mobilized to protect against societal and environmental vulnerabilities?

2.3.3 How can access to clean water, sanitation, nutritious food and safe housing be maintained, particularly for marginalized populations, during emergencies?

2.3.4 How can safe access to high-quality education in schools be ensured during emergencies?

IMPORTANCE

The pandemic has laid bare place-based vulnerabilities to health emergencies, including for those living in poor and densely-populated areas. Research is needed to better understand how human environments can be designed to protect against social and environmental vulnerabilities while sustaining the planet.

CONSIDERATIONS

Research that focuses on ecological sustainability and draws on local and traditional knowledge and practices may be particularly helpful in ensuring a recovery that is both environmentally and socially transformative. Research regarding the long-term impacts of school closures on learning and labour outcomes, as well as on strategies to reduce educational disruptions in future crises is critical.

How can an exclusionary digital divide be prevented in an increasingly virtual world?

2.4.1 How can inequalities in access to internet infrastructure and basic digital technologies be eliminated for all?

2.4.2 How can technologies be leveraged to enable child protection and avoid gender-based and domestic violence for all?

2.4.3 How can digital technologies help improve access to high-quality education for all?

2.4.4 How can digital literacy, including media, be fostered to ensure safe use of digital resources?

IMPORTANCE

Digital technologies have been heavily relied upon to mitigate the effects of physical distancing strategies, but access is uneven within and across countries and alternatives are not always available for those who are excluded. Understanding how to prevent an exclusionary digital divide will be vital to both the immediate recovery from COVID-19 and to building resilience to future shocks.

CONSIDERATIONS

Access to digital technologies and digital literacy vary by age, gender, sex, socio-economic status and rural or urban setting, among other characteristics. Research on these challenges will be critical to help overcome barriers and risks associated with digital technologies while also maintaining any digital inclusion gains that occurred during the COVID-19 pandemic, such as increased opportunities for working from home, virtual doctor visits and remote learning.

How can social protections and basic services help to promote population mental health?

2.5.1 How can governments, civil society and the private sector mitigate the impact of emergencies and the responses to them on mental health?

2.5.2 What are the gendered mental health needs arising from burdens of caregiving and changing socio-economic conditions?

2.5.3 What role can traditional knowledge and practices play in promoting mental health and well-being?

2.5.4 What are effective strategies for safeguarding the mental health of front-line workers providing basic services?

IMPORTANCE

Mental health affects family relationships, work productivity, civic engagement, and overall well-being. The mental health impacts of the COVID-19 crisis will therefore have long-term consequences for the socio-economic recovery from this pandemic and progress towards the SDGs. Research and innovative solutions to promote mental health literacy and access to treatment and support are urgently needed to mitigate these impacts.

CONSIDERATIONS

Research on the mental health impacts of the pandemic and strategies to address them should keep in mind the specific needs of marginalized populations, children and health workers. For example, gender-based analyses of the mental health impacts of increased caregiving opportunities would be helpful.

2.3 Pillar 3

Economic Response and Recovery Programs

BEST-BUY

How can innovative financial tools such as gender budgeting and climate accounting be leveraged to prevent negative downstream consequences of policies and maximize co-benefits for equity, resilience and sustainability? [RP3.5.5]

QUICK-WIN

How can supports for informal workers address the unique needs of women, refugees, migrants, and young people engaged in informal work? [RP3.4.4]

GAME-CHANGER

How can food supply chains be secured for the world's most marginalized populations to ensure food security and nutrition in all circumstances? [RP3.3.2]

The COVID-19 pandemic has plunged the global economy into the deepest recession in eight decades. This economic shock has led to a jobs and livelihoods crisis that has disproportionately impacted marginalized populations and widened global economic inequities. Countries and communities are facing job losses, reduced household income, supply chain disruption, the loss of export revenue, a sharp decline in remittance flows, and increasing debt pressures. These trends threaten to erode social cohesion, destabilize countries, reverse a decade of poverty reduction, and jeopardize the achievement of the SDGs. Previous crises have demonstrated that a robust economic response must address the well-being of workers, the needs of enterprises and economic sectors, and the systems that keep the economy going. Although governments can turn to research on strategies to protect workers and jobs, the existing evidence does not adequately address the unique needs of low-resource and fragile settings where communities are grappling with dual health and economic crises. Research on strategies to address unemployment is also heavily weighted towards the formal economy.

To address the COVID-19 recovery, further research is needed to support governments to develop context-specific plans that take into account their fiscal situation, job market characteristics, size and nature of their formal economy, and maturity of their social protection systems. Importantly, research can bring an equity lens to the economic recovery by focusing on the distributional consequences of fiscal stimulus efforts and support programs, as well as a sustainability lens by investigating how best to harness economic recovery efforts to support green solutions.

14%

decline in global working hours in the second quarter of 2020, equivalent to 400 million full-time jobs.

Studies that prioritize the needs of those workers and populations most impacted by the economic downturn will address important knowledge gaps about how economic recovery efforts can address immediate needs and reduce long-term inequity. Based on the specific economic challenges presented by the COVID-19 pandemic and the gaps in the evidence on how to address them, there are five key areas in which research is urgently needed.

Research Priority 3.1: How can economic recovery policies protect workers, ensure their well-being, and promote a resilient workforce?

Workers around the world are facing new risks on the job, adapting to novel ways of working, and struggling to cope with the impacts of the pandemic on their health, caregiving responsibilities and livelihoods. As with many aspects of the pandemic, the impacts of the economic downturn fall disproportionately on workers in marginalized circumstances and those in poorly protected jobs, who are least able to address the consequences.

Building on lessons from past health and economic crises, research can support the development and implementation of policy solutions that enable people to return to work safely. Identifying economic recovery

policies that protect workers, ensure their well-being and promote a resilient workforce will require a more detailed understanding of the effectiveness and equity implications of income and labour protection policies such as unemployment insurance, paid leave, and job security during illness-related absences, as well as how these policies can be expanded to ensure protection for part-time workers and those in the informal economy and non-standard forms of employment [RP3.1.1]. Researchers can also help to ensure that the pandemic recovery entrenches the principles of decent work[19] by examining how new workplace risks and arrangements impact health and productivity [RP3.1.2] and by studying how best to mitigate the negative physical and mental health impacts associated with these changes [RP3.1.5]. In addition, strategies for worker protection and workforce resilience often fail to take into account the unique experiences of young workers, older workers and workers with disabilities, among others [RP3.1.4]. By engaging with affected persons, research can increase the chances that individual interventions and comprehensive protections will reflect and address the needs of all workers.

Research Priority 3.2: How can strategies to support sectors and enterprises most impacted by the COVID-19 pandemic better prepare them for future shocks?

Workplaces around the world have been impacted by the downstream consequences of the pandemic. Companies have experienced supply chain interruptions and reduced access to labour as workers become sick, occupied with caregiving responsibilities, or unable to work due to restrictions on mobility. Drastic reductions in demand and revenue have also caused liquidity challenges. Research on strategies to support the sectors and enterprises most impacted by the COVID-19 pandemic and better prepare them for future shocks will be a key priority to keep the economy running and people out of poverty.

As with past health and economic crises, governments have implemented a range of fiscal stimulus measures, work-related social protections, and active labour market policies to absorb the economic shocks associated with COVID-19, encourage employment, and protect at-risk sectors and enterprises. Although responses to the 2007-2008 global financial crisis focused on male-dominated banking, construction and manufacturing industries, a fulsome economic response to COVID-19 will require research to inform strategies suitable for the sectors most impacted by the current crisis, such as tourism, service and hospitality, where women are more concentrated [RP3.2.3]. Efforts to support business continuity and preserve jobs can take a number of forms, including tax incentives, public work programs, and measures to make credit more readily available to businesses. Equity and sustainability lenses have rarely been applied to the evaluation of these types of programs and could be instrumental in ensuring that economic recovery efforts are designed in a way that considers their distributional and environmental impacts [RP.3.2.4]. For example, achieving an equitable recovery will require addressing knowledge gaps regarding the

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19   Decent work refers to work that is productive, delivers a fair income with security and social protection, safeguards basic rights, offers equality of opportunity and treatment, provides prospects of personal development, and guarantees freedom for people to express their concerns, organize and have their voices heard. ILO, "Decent work" (Date accessed 11 September 2020).

unique needs of small- and medium-sized enterprises that tend to be more vulnerable to economic shocks and have fewer assets and lower liquid cash reserves [RP3.2.2]. Economic challenges also present an opportunity for transitions to greener economies. Research can inform efforts to seize this opportunity and fill an important knowledge gap regarding how fiscal stimulus programs can best strengthen natural infrastructure and green industries and ensure that the new economic opportunities associated with a green shift are available to all [RP3.2.1].

Research Priority 3.3: How can a global economy with constant movement of people, goods and capital work for everyone and protect the planet?

The economic and social disruption caused by COVID-19 has exposed both the opportunities and risks associated with global migration, trade and finance. Many questions remain as to how a global economy with constant movement of people, goods and capital can work for everyone and safeguard natural environments. For example, simultaneous disruptions to farm production, food processing, transportation and consumer demand all impacted livelihoods along the food chain. Prolonged challenges in this sector could exacerbate food insecurity and lead to political unrest. Beyond the immediate need to ensure food assistance, research can help to explore how more localized production, shorter supply chains and circular economies can improve food systems resilience and reduce environmental impacts [RP3.3.2].

In addition, the flow of remittances to low-income, middle-income and fragile countries is an integral resource for households and a key source of tax revenue. As workers see their incomes and work prospects decline, and sending and receiving funds continues to be challenging due to lock-down measures, remittance volumes are expected to drop by $100 billion in 2020.[20] Research on how to best ensure diaspora communities can send financial remittances in a safe, equitable, affordable and convenient manner is therefore urgently needed [RP3.3.1]. Digital technologies present an opportunity to respond to a range of economic, market and individual-level challenges, and can potentially improve the flow of remittances, streamline payment options and improve access to banking services and e-commerce opportunities for smaller enterprises and farmers. The design and implementation of these novel technologies should be studied with a particular focus on how they serve marginalized populations and whether they exacerbate existing inequities [RP3.3.4].

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20 World Bank, "COVID-19 crisis through a migration lens", Migration and Development Brief, No. 32 (Washington, D.C., World Bank, 2020).

The COVID-19 pandemic has once again illustrated the precarity of migrant workers. These workers represent 4.7% of the global labour force and often have limited access to healthcare, live in overcrowded environments, work in informal or marginalized sectors, and lack workplace and social protections due to legal, administrative and practical barriers.[21] More evidence examining the impacts of crises like COVID-19 on migrant workers' health, security and well-being is required to inform short-term protections against the livelihood losses and xenophobia associated with the pandemic as well as long-term solutions that ensure decent work for all migrant workers [RP3.3.3]. Applying a gender-based lens will be important to understanding the unique experiences and needs of women migrant workers, whose working experience too often includes physical and sexual violence.

Research Priority 3.4: How can policy solutions promote the well-being of informal workers and ensure their long-term economic equity?

The impacts of the pandemic have been felt acutely by the more than 2 billion people worldwide who earn their livelihoods in the informal economy.[22] [23] The informal economy refers to enterprises and economic activities that are not regulated by governments or do not provide workers with basic social or legal protections. Altogether, the informal economy employs 60% of the world's working population.[24] Those engaged in informal work rarely benefit from social protection programs and government stimulus measures, and business and employment supports often do not extend to informal enterprises. It is estimated that due to the pandemic and its economic impacts, the rate of relative poverty for informal workers will increase by almost 34% globally.[25]

There is a dearth of research on the experiences of the informal economy during health and economic crises, and insufficient systematic inquiries exist into the policy solutions that can promote long-term well-being and economic equity for informal workers [RP3.4.1]. Past research provides some lessons on strategies to extend income and labour protections to informal workers,[26] [27] but additional research specific to economic crises is required [RP3.4.2]. Research is also needed to determine how immediate policy responses can protect informal workers from workplace exposures to infectious diseases like COVID-19 and whether interventions such as temporary employment programs and cash transfers[28] are adequate to address the needs of the sector. In particular, evidence is needed

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21   International Labour Organization (ILO), ILO global estimates on international migrant workers: results and methodology, 2nd ed. (Geneva, ILO, 2018).

22   Martha Alter Chen, "The informal economy: definitions, theories and policies", WIEGO Working Paper, No. 1 (Manchester, Women in Informal Employment: Globalizing and Organizing (WIEGO), 2012).

23   ILO, "COVID-19 crisis and the informal economy: immediate responses and policy challenges", ILO Brief (Geneva, ILO, 2020).

24   ILO, "Informal economy: More than 60 per cent of the world's employed population are in the informal economy", 30 April 2018.

25   ILO, "Impact of lockdown measures on the informal economy: a summary", ILO Brief (Geneva, ILO, 2020).

26   Rebecca Holmes and Lucy Scott, "Extending social insurance to informal workers: a gender analysis", Working Paper, No. 438 (London, Overseas Development Institute, 2016).

27   Jeemol Unni and Uma Rani, "Social protection for informal workers in India: insecurities, instruments and institutional mechanisms", Development and Change, vol. 34, No. 1 (March 2003).

28   UN, "Policy brief: the world of work and COVID-19", (New York, UN, 2020).

on whether policy solutions are successfully addressing the needs of young people, women, migrants and refugees, all of whom are heavily represented in the informal sector [RP3.4.4].

The informal economy is often closely tied to the natural environment. While some informal work like charcoal production and artisanal mining can degrade the environment, informal workers engaged in activities like waste picking, street vending and home-based work often have smaller carbon footprints than similar occupations in the formal sector. A priority area of research, therefore, concerns how informal workers can be included in the design and implementation of national and local strategies to reduce greenhouse gas emissions and encourage greener economic development [RP3.4.5].

Research Priority 3.5: How have recent economic changes disproportionately impacted women and how can recovery strategies be inclusive and gender-transformative?

Women's economic livelihoods have been disproportionately affected by the COVID-19 pandemic. There is a real risk that without policy solutions that prioritize the needs of women, worldwide progress on gender equity will be rolled back. Public health measures in response to COVID-19 have had important impacts on female-dominated sectors, such as healthcare, food service, tourism and hospitality [RP3.5.1]. Experience from past outbreaks has demonstrated

the importance of gender-based economic analysis, but this practice has often failed to take an intersectional approach that considers the varied experiences of younger and older women, women from marginalized racial groups, women with disabilities, and migrant and refugee women, among others [RP3.5.5]. Research is needed to address an important knowledge gap regarding how stimulus and recovery programs can include diverse women's voices and promote gender-transformative[29] changes that simultaneously address the underlying causes of gender inequities [RP3.5.2]. The pandemic has additionally revealed the vital role of paid and unpaid care work in maintaining a healthy economy and society. As the majority of the workforce in care sectors and the primary caregivers to children and family at home, women have disproportionately borne the burden of increased care work during the COVID-19 pandemic. These additional care responsibilities could lead many women to temporarily or permanently exit the labour market. A full and equitable economic recovery therefore requires evidence as to how women and their households are coping and which policy interventions can support a shift in the gendered distribution of care [RP3.5.3].

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29 Gender-transformative approaches and solutions focus on addressing the causes of gender-based inequities and on transforming harmful gender norms, roles and power relations. UNICEF, "Technical note on gender-transformative approaches in the global programme to end child marriage phase II: A summary for practitioners", (Date accessed 11 September 2020)

How can economic recovery policies protect workers, ensure their well-being and promote a resilient workforce?

3.1.1 How can employment be safeguarded during crises without impacting longer-term economic prospects or exacerbating inequities?

3.1.2 What are the best strategies for ensuring safe workplaces and decent work, in particular for those workers who face greater risks?

3.1.3 How can workers' incomes and jobs be best protected when they are sick or have caregiving responsibilities?

3.1.4 How can the voices and needs of young workers be addressed in economic and employment policies?

3.1.5 How has greater reliance on remote working arrangements affected working environments, work-life balance, and the mental health of workers?

IMPORTANCE

The COVID-19 pandemic has created a jobs and livelihoods crisis, exposed workers to new risks, and highlighted the importance of building social protection systems that guarantee decent work. Although the impacts are widespread, populations including young workers, women, migrant workers, refugees, farm workers and self-employed individuals have been hit the hardest. Research on policy solutions to safeguard the most at-risk workers can inform economic responses that ensure an equitable long-term recovery.

CONSIDERATIONS

Strategies for worker protection and workforce resilience often fail to consider those in non-standard forms of employment and the informal economy. Research on the design, implementation and impact of interventions can contribute to addressing the needs of workers in marginalized circumstances.

How can strategies to support sectors and enterprises most impacted by the COVID-19 pandemic better prepare them for future shocks?

3.2.1 How can stimulus programs promote decent work and support the transition to greener and more sustainable economies?

3.2.2 What national and regional economic development strategies are most appropriate to support small- and medium-sized enterprises?

3.2.3 What measures can governments take to maintain employment for people during economic shocks?

3.2.4 What strategies are most effective in supporting businesses and workers to transition to more sustainable sectors?

IMPORTANCE

Efforts to contain COVID-19 have disrupted markets and the flow of goods, slowed demand for non-essential services, and forced enterprises around the world to scale down or cease operations. Research on strategies to support the sectors and enterprises most impacted by the COVID-19 pandemic and better prepare them for future shocks will be a key priority to keep the economy running and people out of poverty.

CONSIDERATIONS

Research can address a gap in knowledge on how the COVID-19 socio-economic recovery can support investment in natural infrastructure and a transition to low-carbon economies, while ensuring that green solutions benefit populations most affected by climate change. Because income stress and job insecurity can push people into environmentally unsustainable sources of income, solutions for transitioning the unemployed into more sustainable sectors are needed.

How can a global economy with constant movement of people, goods and capital work for everyone and protect the planet?

3.3.1 What can be done to ensure remittance systems are safer, more equitable, affordable and convenient?

3.3.2 How can food supply chains be secured for the world's most marginalized populations to ensure food security and nutrition in all circumstances?

3.3.3 How can the human rights, livelihoods and well-being of migrant workers be safeguarded during emergencies?

3.3.4 How can digital solutions support socio-economic recovery and development without exacerbating existing inequities?

IMPORTANCE

The economic and social disruption caused by COVID-19 has exposed the opportunities and risks associated with global migration, trade and finance. Research focused on how to repair ruptures in global supply chains and migration routes and strengthen globalized systems will improve the lives of the people and economies that depend on them.

CONSIDERATIONS

Research should consider how to improve economic resilience and reduce environmental impacts through evaluation of solutions such as more localized production, shorter supply chains and the circular economy. A focus on diaspora and migrant communities is also key to understanding the impacts of COVID-19 on globalized networks. In particular, a gender-based lens will advance knowledge about the unique needs of women migrant workers, whose working experience too often includes physical and sexual violence.

How can policy solutions promote the well-being of informal workers and ensure their long-term economic equity?

3.4.1 What are the unique challenges faced by the informal sector and informal workers during emergencies?

3.4.2 What are the best strategies to extend existing social protection systems to cover informal workers?

3.4.3 What tailored solutions are needed to support micro- and small-enterprises in the informal sector?

3.4.4 How can supports for informal workers address the unique needs of young people, women, migrants and refugees engaged in informal work?

3.4.5 How can the informal sector be included in efforts to implement green technologies and expand green industries?

IMPORTANCE

The impacts of the pandemic have been felt acutely by the 2 billion people worldwide who earn their livelihoods in the informal economy and rarely benefit from social protections, stimulus measures, and business and employment supports. Research that addresses the needs of the informal sector and informal workers is key to ensuring that socio-economic recovery efforts benefit the least well-off and do not exacerbate existing inequities.

CONSIDERATIONS

Efforts to support informal enterprises and informal workers are hampered by a lack of data and evidence. Research can improve understanding of the wider informal economy and explore ways to engage marginalized, gender diverse and young voices in designing solutions that are participatory and gender-transformative. Research should also consider the needs of informal workers who are newly-poor and near-poor and are often excluded from other supports.

How have recent economic changes disproportionately impacted women and how can recovery strategies be inclusive and gender-transformative?

3.5.1 How do emergencies differentially impact women and women-owned businesses across age, sex, race, sexual orientation, disability, socio-economic status and migration status?

3.5.2 How can economic stimulus programs be designed to simultaneously promote economic recovery and intersectional gender equity?

3.5.3 What strategies can support a meaningful and sustained shift in gendered distribution of care work and promote greater participation in the labour market for women?

3.5.4 How can economic responses to emergencies address the additional time pressures faced by women and reduce and redistribute unpaid care work?

3.5.5 How can innovative financial tools such as gender budgeting and climate accounting be leveraged to prevent negative downstream consequences of policies and maximize co-benefits for equity, resilience and sustainability?

IMPORTANCE

Women's economic livelihoods have been disproportionately affected by the COVID-19 pandemic and poor women and women from marginalized populations are among the hardest hit. Concentration of employment in sectors most impacted by the pandemic, and increased caregiving demands at home, threaten to roll back important progress in women's labour market participation and economic equity. Research can help to ensure that national, regional and global recovery plans are gender-transformative.

CONSIDERATIONS

Research on the gendered impacts of economic and health crises often fails to take an intersectional approach and to fully consider the varied experiences of younger and older women, women from marginalized racial groups, women with disabilities, and migrant and refugee women, among others. Researchers can help identify best practices for gender-responsive budgeting, and explore ways that women can lead and benefit from efforts to transition to a greener economy.

2.4 Pillar 4

Macroeconomic Policies and Multilateral Collaboration

QUICK-WIN

What lessons from past economic crises can inform the design of national, regional and global recovery strategies? [RP4.1.1]

BEST-BUY

How can greater international tax cooperation be fostered in order to secure government finances and combat tax avoidance and evasion? [RP4.3.1]

GAME-CHANGER

How can multilateral organizations be reformed to ensure fair representation and equitable partnerships across diverse cultural, economic and regional contexts? [RP4.4.1]

The nature and magnitude of the economic impacts associated with the COVID-19 crisis will vary based on factors including countries' income levels, dominant industries, access to global supply chains, engagement with multilateral partnerships, and options for debt relief, including from private lenders. If effective action is not taken, this crisis risks pushing an additional 140 million people globally into extreme poverty.[30] Understanding the economic impacts of various policy options in different settings and for different populations will be central to ensuring that the macroeconomic response to COVID-19 is targeted, inclusive, effective, and fosters bold climate action and a transition to green economies. In particular, although research shows that previous economic crises presented opportunities to implement essential elements of future sustainable energy solutions,[31] questions remain about how best to harness economic recovery efforts to support green solutions and minimize greenhouse gas emissions. The following five priorities describe particularly pressing research needs related to macroeconomic policies and multilateral collaboration.

Research Priority 4.1: How can macroeconomic policy promote a more inclusive and sustainable recovery from COVID-19?

In light of the vast economic impacts of the COVID-19 pandemic, a key research priority involves understanding how macroeconomic policy can promote a more inclusive and sustainable recovery. Economic stimulus measures implemented during past crises have been shown to reduce effects on household poverty and family income; in contrast, austerity measures have generally had adverse impacts on health systems, population health, child well-being, housing, mental health, long-term employment, education and caregiving, especially among marginalized populations.[32] The 2007-2008 global financial crisis provided several lessons for the current recovery, as the short-term response similarly saw many countries initially implement expansionary fiscal stimulus and social protection policies. Evidence shows that where age-sensitive and child-specific measures were implemented, they reduced the longer-term effects of the crisis on child health, nutrition and education.[33] However, between 2010 and 2012, the global recession forced many countries to adopt austerity measures that often reduced funding for social protection programs and had negative long-term implications for marginalized populations in the long-term.[34]

30   Joseph Stiglitz and Hamid Rashid, "Averting catastrophic debt crises in developing countries: extraordinary challenges call for extraordinary measures", CEPR Policy Insight, No. 104 (London, Centre for Economic Policy Research, 2020).

31   Henrik Lund and Frede Hvelplund, "The economic crisis and sustainable development: The design of job creation strategies by use of concrete institutional economics", *Energy*, vol. 43, No. 1 (July 2012).

32   Nyasha Tirivayi and others, "A Rapid Review of Economic Policy and Social Protection Responses to Health and Economic Crises and Their Effects on Children", Innocenti Working Papers, No. 2020-02 (Innocenti, Florence, UNICEF Office of Research, 2020).

33   Bruno Martorano, "The consequences of the recent economic crisis and government reactions for children", Innocenti Working Papers, No. 2014-05 (Innocenti, Florence, UNICEF Office of Research, 2014).

34   Isabel Ortiz, Jingqing Chai and Matthew Cummins, "Austerity measures threaten children and poor households: recent evidence in public expenditures from 128 development countries", UNICEF Social and Economic Policy Working Papers, No. 2011-09 (New York, UNICEF Department Policy and Practice, 2011).

To fully understand how macroeconomic policy can promote a more inclusive and sustainable recovery from COVID-19, researchers should therefore take stock of lessons from past economic crises [RP4.1.1]. The current crisis also underscores the critical importance of greater macroeconomic policy coherence so that policy effectiveness is not undermined. To this end, further research is needed to understand how governments can achieve greater coherence between fiscal and monetary policy measures and minimize their spillover effects, such as asset price bubbles without investment [RP4.1.2].

There is also a pressing need to better understand the impacts of economic shocks and responses on different populations. For example, economic stimulus measures implemented during the 2007-2008 global financial crisis favoured male-dominated industries, while social assistance and unemployment measures overlooked younger men who face higher risk of substance use and suicide.[35] The COVID-19 pandemic has stressed the importance of promoting trade processes that increase opportunities for women as employees and entrepreneurs. Analyses that incorporate an intersectional lens will also be critical to inform fiscal stimulus packages that protect human rights, advance gender equity and address the needs of marginalized populations [RP4.1.3], while environmental considerations can guide strategies for rebuilding the most affected sectors of the economy in more resilient and sustainable ways [RP4.1.4]. In addition to improving the design of crisis response and recovery measures, research that incorporates

gender and generational perspectives and the voices of marginalized populations could foster innovative approaches to transitioning to a greener and more equitable economy.

Research Priority 4.2: How can inequities in development opportunities be eliminated?

Understanding the differential socio-economic impacts of the COVID-19 pandemic across countries, populations and generations is central to determining how inequities in development opportunities can be eliminated so that recovery efforts maintain and accelerate progress toward the SDGs. Some countries are more vulnerable to macroeconomic shocks and may have fewer financial levers to mitigate them. The adverse impacts of the COVID-19 crisis on economic growth and poverty rates around the world are consequently likely to worsen inequities across countries. Understanding the role of international trade and development financing mechanisms in mitigating these impacts will be central to ensure that development gains are not further jeopardized as a result of the pandemic and that countries are not left behind during the recovery. For example, further research is needed to understand the effectiveness of different financing strategies, including debt relief, foreign direct investment, official development assistance, private sector financing, and philanthropic financing across unique country contexts, and to examine how international trade and finance can be improved to ensure that all countries are included in the global economy in a fair and sustainable manner [RP4.2.2].

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35 Nyasha Tirivayi and others, "A Rapid Review of Economic Policy and Social Protection Responses to Health and Economic Crises and Their Effects on Children", Innocenti Working Papers, No. 2020-02 (Innocenti, Florence, UNICEF Office of Research, 2020).

To mitigate the spread of COVID-19, extraordinary restrictions on human movement have been put in place around the world. Consequently, millions of internal and international migrants have lost their livelihoods and the economy has lost an important part of its labour force, especially in the health and food production sectors. Migrants are increasingly finding themselves in precarious situations. Large numbers of international migrants are stranded abroad at the same time that protections, such as asylum systems, have been weakened. Migrant remittances, which form an important source of external funding in many countries – including some that do not qualify for other relief mechanisms – have decreased significantly as a result of current movement restrictions. Researching the direct consequences of the crisis for migrants and the communities that depend on them can help build back systems that address the specific risks associated with labour migration during crisis and non-crisis times [RP4.2.3].

Research Priority 4.3: How can increased public expenditure during COVID-19 be financed while ensuring an inclusive and sustainable recovery in all countries?

Governments worldwide have increased public expenditure to mitigate the socio-economic impacts of the COVID-19 pandemic, including widespread income and employment losses. However, the rise in public spending and declining revenue associated with the crisis are likely to increase fiscal stress and debt reliance for many countries. Research has an important role to play in examining how national interventions and international institutions can mitigate these risks and guard against them

in the future. Priority areas of inquiry include understanding how greater international tax cooperation can be fostered to support government finances and combat tax evasion [RP4.3.1] and examining how macroeconomic policies implemented during recovery can meet the dual objectives of generating revenue and advancing sustainable progress toward the SDGs [RP4.3.2]. Research into how international financial institutions can support financial stability and prevent sovereign debt crises [RP4.3.3] and how governments can leverage private sector financing for the public good [RP4.3.4] will also be critical to recovering better from the COVID-19 pandemic.

Research Priority 4.4: How have recent global shocks affected the functioning and legitimacy of international institutions?

Multilateral organizations and agreements have been undermined in recent years, and a de-globalization trend characterized by bilateralism and nationalist perspectives has been gaining prominence. Research that examines the impact of recent global shocks on the functioning and legitimacy of international institutions will provide needed insights to inform international policy decisions and institutional reforms. A just and trusted global governance system requires a fair balance of power and inclusive representation, although more research would be helpful in determining how best to achieve these qualities. More evidence is also needed to understand how increased representation and participation within international institutions affect these bodies' performance and perceived legitimacy [RP4.4.1] as well as how international institutions can be reformed to foster greater international

cooperation and promote resilience in the face of future emergencies [RP4.4.4]. International institutions could also be strengthened through research on approaches that realize international human rights while respecting national sovereignty [RP4.4.3].

Research Priority 4.5: How can multilateral collaboration and progress towards the SDGs be sustained in an increasingly polarized world?

The COVID-19 crisis has reaffirmed that the threats facing the world are increasingly transnational in nature and require both national action and multilateral collaboration. Viruses do not carry passports, environmental disasters know no borders, and climate change is impacting every part of the world. Yet geopolitical rivalry is increasing and has been further amplified by the COVID-19 pandemic. Research that investigates how multilateral collaboration can be sustained in an increasingly polarized world will be critical in supporting policymakers to identify collaborative strategies for addressing shared threats and achieving the SDGs. For example, more knowledge is needed regarding the international rules, processes and systems that can help countries work together to address transnational risks [RP4.5.2]. With respect to health threats in particular, additional knowledge is required on what reforms are needed to the International Health Regulations and other multilateral instruments in order to promote global health security [RP4.5.3].

Research should also inform strategies for ensuring that investments and agreements related to the socio-economic recovery from COVID-19 promote environmentally sustainable growth over the long-term. Such strategies might include investments aimed at reducing material supply dependencies and fostering economic diversification towards circular economy business models and jobs, especially in key economic areas such as agriculture, transport, telecommunications, energy and infrastructure. Beyond investments, research is also needed to understand how global value chains can be made stronger and more resilient [RP4.5.4] and how multilateral collaborations can better integrate policies and approaches that prevent environmental degradation and preserve natural resources [RP4.5.1].

Consequences of contracting fiscal space

5-20%

estimated contraction of the global economy due to COVID-19 which could result in an increase in poverty rates for the first time since 1990, with Asia, Africa, and Latin America enduring the hardest impact.

Government fiscal space

Community programs

Unemployment benefits

Public education

Public health programs

Health services

Job training programs

Arts and culture programs

Development assistance

Transit investment

Housing supports

Fiscal pressures

How can macroeconomic policy promote a more inclusive and sustainable recovery from COVID-19?

4.1.1 What lessons from past economic crises can inform the design of national, regional and global recovery strategies?

4.1.2 How can governments achieve greater coherence among fiscal, monetary, labour market and development policy measures and minimize their spillover effects?

4.1.3 How can fiscal stimulus packages integrate intersectional considerations to protect human rights, gender equity and marginalized populations?

4.1.4 How can the most affected economic sectors be rebuilt to be more equitable, resilient and sustainable?

IMPORTANCE

Without effective action, the COVID-19 pandemic risks pushing millions of people worldwide into extreme poverty. Understanding the economic impacts of policy interventions on different sectors and populations will be central to ensuring that the macroeconomic response is targeted, inclusive, effective and sustainable. Research on the effectiveness of immediate socio-economic response mechanisms and their longer-term potential is vital to ensure that progress toward the SDGs is protected and accelerated.

CONSIDERATIONS

Lessons from past economic crises will be important for building evidence about the stimulus measures that can reach those most in need and help prevent a global rise in extreme poverty. Research that incorporates gender-based, equity and generational lenses can improve the design of crisis recovery measures and foster innovative approaches to transitioning to a greener and more equitable economy.

**MACROECONOMIC POLICIES AND
MULTILATERAL COLLABORATION
RESEARCH PRIORITY 4.2**

How can inequities in development opportunities be eliminated?

4.2.1 How can fair and sustainable economic transfers across generations promote intergenerational equity?

4.2.2 How can international trade and finance be improved to ensure that all countries are included in the global economy in a fair and sustainable manner?

4.2.3 How can global governance reforms mitigate systemic risks and inequities, particularly for marginalized populations such as migrants, refugees, asylum-seekers and internally displaced persons?

IMPORTANCE

Some countries are more vulnerable to macroeconomic shocks and may have fewer financial levers to mitigate them. Understanding the role of international trade and development financing mechanisms in mitigating these impacts will be central to ensure that development gains are not further jeopardized as a result of the pandemic and that countries are not left behind during the recovery.

CONSIDERATIONS

As a result of COVID-19, millions of migrants have lost their livelihoods and many sectors have lost a key segment of their labour force. Research that centres the experiences of migrants and the communities that depend on them can help build back systems that address the specific risks associated with labour migration during crisis and non-crisis times.

How can increased public expenditure during COVID-19 be financed while ensuring an inclusive and sustainable recovery in all countries?

4.3.1 How can greater international tax cooperation be fostered in order to secure government finances and combat tax avoidance and evasion?

4.3.2 How can public revenue be strengthened to meet current needs while achieving co-benefits of an inclusive and sustainable recovery?

4.3.3 How can international financial institutions most effectively contribute to financial stability during global emergencies and prevent sovereign debt crises?

4.3.4 How can governments better leverage private sector financing for the public good?

IMPORTANCE

Governments worldwide have increased public expenditure to mitigate the socio-economic impacts of the COVID-19 pandemic. The rise in public spending and declining revenue associated with the crisis are likely to increase fiscal stress and debt reliance for many countries. Research will be critical in determining how national interventions and international institutions can mitigate these risks and guard against them in the future.

CONSIDERATIONS

As in other sectors, there are key opportunities to realize the co-benefits of a more inclusive and sustainable recovery through strategies that enhance countries' financial stability and strengthen their ability to respond to economic shocks. Research should also consider the core role of international agencies and systems in securing government finances, particularly in areas such as international tax cooperation.

How have recent global shocks affected the functioning and legitimacy of international institutions?

4.4.1 How can multilateral organizations be reformed to ensure fair representation and equitable partnerships across diverse cultural, economic and regional contexts?

4.4.2 How can international e-commerce agreements stimulate investment in internet connectivity and uptake of digital infrastructure in all countries?

4.4.3 How can international human rights be fully realized while respecting national sovereignty?

4.4.4 How can global governance and financial systems be made more resilient to future emergencies?

IMPORTANCE

A just and trusted global governance system requires equal balance of power and inclusive representation, but there is a knowledge gap regarding how best to achieve this outcome. Research that examines the impact of recent global shocks on the functioning and legitimacy of international institutions will provide needed insights to inform international policy decisions and institutional reforms during the recovery period.

CONSIDERATIONS

Research should consider how increased representation and participation within international institutions affect these bodies' performance, perceived legitimacy, and resilience in the face of emergencies. Evidence regarding the institutional design of successful international participatory processes will be particularly helpful.

How can multilateral collaboration and progress towards the SDGs be sustained in an increasingly polarized world?

4.5.1 How can approaches for preventing environmental degradation and preserving natural resources be better integrated into multilateral collaborations across economic areas?

4.5.2 What international rules, processes and systems can help countries work together to address shared risks?

4.5.3 What reforms are needed to the International Health Regulations and other multilateral instruments that promote global health security?

4.5.4 How can global value chains be strengthened and made more resilient?

IMPORTANCE

The COVID-19 crisis has reaffirmed that the threats we face are increasingly transnational in nature and require both national action and multilateral collaboration. However, geopolitical rivalry is increasing and has been further amplified by the COVID-19 pandemic. Research that investigates how multilateral collaboration can be sustained in an increasingly polarized world will be critical in supporting policymakers to identify collaborative strategies for addressing shared threats and achieving the SDGs.

CONSIDERATIONS

The costs of climate change fall most heavily on children, women, people with disabilities, and poor households, among others. Researchers can support policy efforts to ensure that investments and agreements related to the socio-economic recovery from COVID-19 promote environmentally sustainable growth and resilience to shared risks.

2.5 Pillar 5

Social Cohesion and Community Resilience

QUICK-WIN

How does misinformation spread and how can digital technologies be used to minimize it? [RP5.5.3]

BEST-BUY

What are the best strategies for building sustainable, inclusive and resilient cities that protect people from future pandemics and climate change? [RP5.4.3]

GAME-CHANGER

What mechanisms are effective in ensuring the most impacted communities and marginalized populations are engaged in designing and implementing solutions? [RP5.1.1]

Social cohesion describes the degree of social connectedness and solidarity that exists among people within society.[36] It provides an important resource during emergency responses and is a critical element of post-crisis recovery plans, as communities and social networks coordinate to create solutions that are able to address their needs. For example, strong leadership, tight bonds, effective communication channels and trust among community groups have been highlighted as factors that facilitated collective action and recovery responses during the 2014-2016 Ebola outbreak.[37] The COVID-19 crisis has placed critical pressure on social cohesion. Interpersonal relationships and connectedness have been significantly disrupted by physical distancing measures to slow the spread of the virus, including through the cancellation of pivotal social and cultural events that build cohesion such as weddings, funerals, sporting events and conferences.[38] For some populations, the impact of the pandemic on social cohesion has both compounded and been compounded by pre-existing challenges, including armed conflict, natural disasters and racism. Marginalized populations are also particularly likely to experience challenges during recovery from COVID-19, as they may have more limited access to social capital and are often excluded from decision-making processes.[39] A recovery process that strengthens social cohesion, empowers communities and fosters resilience must centre affected populations and reinforce ongoing social dialogue and political engagement. Research can generate evidence about successful community engagement strategies as well as promote community engagement within research processes themselves. The following research priorities will be particularly important to inform efforts to build social cohesion and community resilience during the COVID-19 recovery process.

Research Priority 5.1: How can communities be optimally engaged in decision-making during emergencies to strengthen social cohesion?

Community engagement in decision-making processes can enhance social cohesion and build trust by facilitating the identification of local needs, the dynamic exchange of information, and the consolidation of diverse perspectives.[40] Such processes also have the potential to centre the voices of marginalized populations and contribute to developing appropriate solutions in a timely manner. Past research has demonstrated that when they are designed with an eye to equity and representativeness, processes that engage affected communities in decision-making can enhance the perceived legitimacy and local relevance of resulting interventions, which increases their likelihood of successful implementation.[41]

36 Eurofound & Bertelsmann Siftung, *Social cohesion and well-being in the EU* (Gutersloh & Dublin, 2014).

37 Olakunle Alonge and others, "Understanding the role of community resilience in addressing the Ebola virus disease epidemic in Liberia: a qualitative study (community resilience in Liberia)" *Global Health Action*, vol. 12, No. 1 (September 2019).

38 Viviana Gallego and others, "The COVID-19 outbreak and implications for the Tokyo 2020 Summer Olympic Games." *Travel Medicine and Infectious Disease*, vol. 34, No. 1 (February 2020).

39 Nicholas Pitas and Colin Ehmer. "Social Capital in the Response to COVID-19." *American Journal of Health Promotion* (May 2020).

40 Divya Chandrasekhar, Yang Zhang and Yu Xiao, "Nontraditional participation in disaster recovery planning: cases from China, India, and the United States", *Journal of the American Planning Association*, vol. 80, No. 4 (February 2015).

41 Daniel P. Aldrich, "Social capital in post disaster recovery: towards a resilient and compassionate East Asian community" in *Economic and Welfare Impacts of Disasters in East Asia and Policy Responses*, Y. Sawada and S. Oum, eds. (Jakarta, ERIA, 2012).

There is consequently a critical need for further research that examines the design of effective mechanisms for engaging affected communities in the development and implementation of interventions in crisis, post-crisis and non-crisis situations [RP5.1.1]. Community-based research approaches and other research models that draw on local and traditional knowledge and lived experience will be particularly powerful in answering these questions and highlighting additional strategies to strengthen social cohesion [RP5.1.2]. Research regarding how government leaders can build transparency, accountability and legitimacy into broader decision-making processes and instill confidence among the communities they serve can also help advance progress in this area [RP5.1.4]. It will also be important to consider the unique impacts of the COVID-19 pandemic on social cohesion for people who are in detention and interface with the justice system, particularly in light of pre-existing concerns about population density, overcrowding and public health practices in prisons and detention centres.[42] Research is particularly needed to understand the impact of the pandemic on this population, inform strategies to protect them during future health emergencies, and investigate these issues in relation to people who work and interact with people who are in detention, including institutional staff, health workers and family members [RP5.1.5].[43]

Research Priority 5.2: How can governments effectively communicate with local communities to build trust, forge consensus and promote cooperation to achieve shared goals?

Trust is a fundamental component of relationship-building and social cohesion, and relies on continuous, high-quality communication across community groups and with all levels of government.[44] Inclusive leadership and legitimacy of authority promote shared identity and common goals and have been identified as central elements of relationships between governments and the public.[45] In contrast, perceived abuse of powers, exclusionary policies, suspension of civil liberties, and low levels of accountability have been identified as disruptive to social cohesion.[46][47][48] Building on such research will be important for COVID-19 recovery efforts and for strengthening resilience in the face of future emergencies, particularly by further exploring the factors that promote public trust in government and foster compliance with public health requirements and recommendations [RP5.2.1]. In particular, mechanisms to facilitate collective dialogue and consensus-building towards whole-of-government and whole-of-society approaches to COVID-19 recovery require further examination.

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42   Talha Burki, "Prisons are 'in no way equipped' to deal with COVID-19", *Lancet*, vol. 295, No. 10234 (May 2020).

43   Alexandra Sánchez and others "COVID-19 in prisons: an impossible challenge for public health?", *Cadernos de Saúde Pública*, vol. 36, No. 5 (May 2020).

44   Tegan Cruwys, Mark Stevens and Katharine H Greenaway, "A social identity perspective on COVID-19: health risk is affected by shared group membership", *British Journal of Social Psychology*, vol. 59, No. 3 (May 2020).

45   Stephen Reicher and Clifford Stott, "On order and disorder during the COVID-19 pandemic", *British Journal of Social Psychology*, vol. 59, No. 3 (July 2020).

46   Seraphine F. Maerz and others, "State of the world 2019: autocratization surges–resistance grows", *Democratization*, vol. 27, No. 6 (May 2020).

47   Ajnesh Prasad, "The organization of ideological discourse in times of unexpected crisis: explaining how COVID-19 is exploited by populist leaders", *Leadership*, vol. 16, No.3 (May 2020)

48   Stephen Reicher and Clifford Stott, "On order and disorder during the COVID-19 pandemic", *British Journal of Social Psychology*, vol. 59, No. 3 (July 2020).

Domains of social cohesion and their respective dimensions

Trust

Connectedness

Cultural identity
Trust in institutions
Perception of fairness
Community engagement

Common good

Solidarity and helpfulness
Respect for social rules
Civic participation

Social cohesion

Digital technologies

Community spaces

Social relations

Strong social networks
Trust in people
Acceptance of diversity
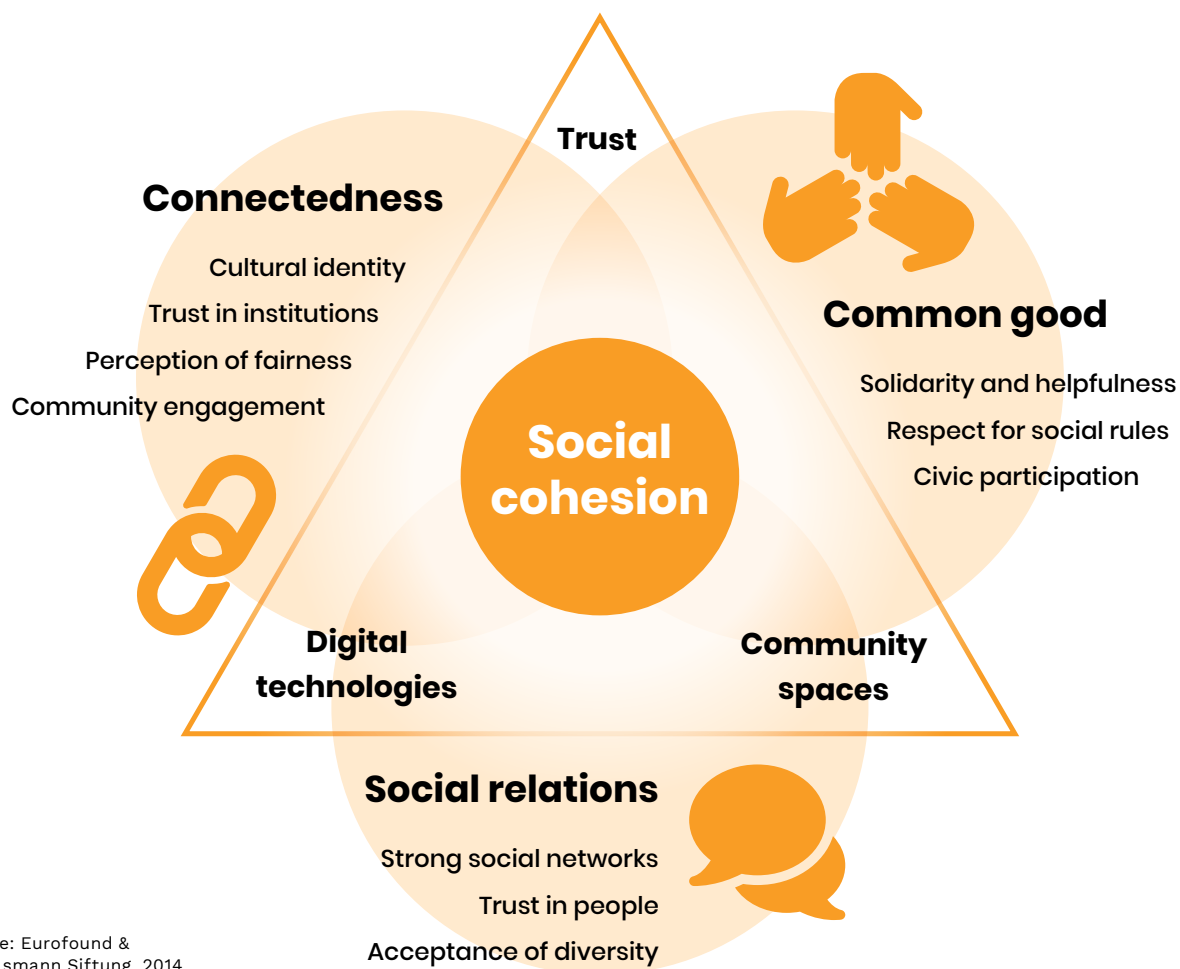
Source: Eurofound & Bertelsmann Siftung, 2014

The disproportionate impact of the COVID-19 pandemic on women and girls has also highlighted the importance of engaging affected populations in efforts to address their needs. Research has shown that grassroots movements play a key role in reducing women's vulnerability and increasing community resilience.[49] Additional research on effective mechanisms for civil society organizations to build relationships with government leaders before, during and after emergencies can support understanding in this area [RP5.2.2].

Research Priority 5.3: How can recovery efforts from emergencies help eliminate pre-existing social inequities in order to enhance the resilience of communities?

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49   Jenny Moreno and Duncan Shaw, "Women's empowerment following disaster: a longitudinal study of social change", *Natural hazards*, vol. 92, No. 1 (May 2018).

The uneven and unequal impacts of the COVID-19 pandemic have made pre-existing inequities more visible and further exacerbated systemic inequities related to racism, sexism, colonialism, ableism, homophobia, transphobia and xenophobia, among others. Research has a critical role to play in understanding the equity perils of the pandemic, the impact of exacerbated inequities on social cohesion, and the role of social movements that have recently been invigorated.[50] In particular, research efforts can contribute to a recovery that builds equitable and resilient communities by examining the effectiveness, sustainability and scalability of different local and community-led solutions [RP5.3.1]. There is also a knowledge gap regarding how community institutions and governance structures can be made inherently resilient in order to better cope with mounting and emerging challenges and serve as the basis for durable change [RP5.3.3]. Research in this area can inform strategies for ensuring that institutional and policy changes related to recovery efforts target systemic inequities in order to enhance community resilience [RP5.3.2]. Another key concern relates to the need for gender-based analyses of the impacts of COVID-19 and responses to it on social cohesion and community resilience.[51][52] Recent gains in gender equity have been jeopardized during this pandemic, which highlights the need for research on the gender norms, roles and relations that influence women's

opportunities to inform local, national and international response strategies.

Research Priority 5.4: How can community spaces enhance social resilience and cohesion?

The COVID-19 pandemic and response have reshaped local geographies and mobility patterns and reconfigured how people interact with each other and with their natural and built environments. The traditional uses of urban and rural spaces have been altered, social networks have been impacted by mobility restrictions, and segregated spaces have become more visible. Innovations have also emerged through the pandemic, creating opportunities for communities to be more mutually supportive and collaborative. Research on the short- and long-term effects of these social and spatial reconfigurations will be critical to understand the impacts of physical distancing measures [RP5.4.2] and inform the design of public spaces that address marginalization and segregation [RP5.4.1].

The COVID-19 pandemic has also changed many people's relationships with the natural world. This trend can be leveraged to increase social cohesion and environmental sustainability during recovery. For example, evidence shows that urban green spaces can foster opportunities for greater social cohesion while also acting as habitat refuges

50   International Organization for Migration (IOM), "Countering xenophobia and stigma to foster social cohesion in the COVID 19 response and recovery", Issue Brief (Brussels, IOM, 2020).

51   Sarah Bradshaw and Maureen Fordham, "Women and girls in disasters: a review for DFID" (August 2013).

52   Jenny Moreno and Duncan Shaw, "Women's empowerment following disaster: a longitudinal study of social change" *Natural Hazards*, vol. 92, No. 1 (May 2018).

for biodiversity and lowering pollution.[53] Well-designed, compact cities can also foster land reclamation and reduce habitat encroachment from deforestation and wetland draining. However, additional evidence is needed to understand how local governments can implement greening initiatives without negatively affecting neighborhood affordability. Further research in this area could help inform strategies for building more equitable, resilient and sustainable environments that protect against future health and climate threats [RP5.4.3].

Research Priority 5.5: How can digital technologies be harnessed to promote social cohesion while ensuring no one is excluded?

Today's world is increasingly digital. The emergence of automation, artificial intelligence (AI) and machine learning is already having profound social impacts. Digital technologies have created new opportunities to address emerging and longstanding social challenges related to health, education, agriculture and the economy, but they also have the potential to exacerbate pre-existing inequities and may introduce unintended consequences.[54] Particularly in light of the critical information and communications role that digital technologies played during the COVID-19 pandemic, research should carefully consider strategies to maximize the potential of these technologies to promote social cohesion and well-being while minimizing biases, harms and exclusions [RP5.5.2].

Reliance on digital technologies can have varying social impacts, ranging from facilitating social, employment, and educational connections, to enabling harassment, creating surveillance and privacy issues, and undermining democracy and self-determination through the spread of misinformation [RP5.5.3].[55] The COVID-19 pandemic is the first in the social media era, and people around the world have turned to social media platforms for news and information. In light of this trend, research to help combat the digital spread of hatred, xenophobia and misinformation will be particularly critical [RP5.5.1], along with research that examines the impact of virtual environments on experiences of belonging and community in lower-contact settings [RP5.5.4].

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53 Viniece Jennings and Omoshalewa Bamkole, "The relationship between social cohesion and urban green space: an avenue for health promotion", *Int. J. Environ. Res. Public Health*, vol. 16, No. 3 (February 2019).

54 Matthew L. Smith and Sujaya Neupane, "Artificial intelligence and human development: toward a research agenda", White Paper (Ottawa, International Development Research Centre, 2018).

55 *Ibid.*

How can communities be optimally engaged in decision-making during emergencies to strengthen social cohesion?

5.1.1   What mechanisms are effective in ensuring the most impacted communities and marginalized populations are engaged in designing and implementing solutions?

5.1.2   What are effective community-based research approaches to quickly identify and mitigate the impact of emergencies on social cohesion?

5.1.3   What are the best strategies for leveraging existing local and traditional knowledge sources to inform decision-making?

5.1.4   How can leaders build transparency, accountability and legitimacy into decision-making processes to instill confidence in the communities they serve?

5.1.5   How can the unique needs of people who are in detention or institutionalized be considered in emergency response and recovery efforts?

IMPORTANCE

Interventions to address and build back from the COVID-19 crisis will be more equitable and sustainable and will foster greater societal resilience if they engage with affected communities and marginalized populations. Research can generate evidence about successful community engagement strategies as well as promote community engagement within research processes themselves.

CONSIDERATIONS

Recovery efforts should center the voices of marginalized populations and address relationships across households, community organizations, and local, regional and national governments. Research to support these efforts must consider how best to foster social cohesion and recovery in communities facing multiple crises, such as those affected by armed conflict.

How can governments most effectively communicate with local communities to build trust, forge consensus and promote cooperation to achieve shared goals?

5.2.1 What factors influence whether people have trust in their governments and are willing to do what their governments ask of them?

5.2.2 How can civil society organizations be engaged to strengthen trust and maintain social cohesion?

5.2.3 How can community leaders, knowledge brokers, and other influencers be leveraged to build support for collective action?

IMPORTANCE

Trust is a fundamental component of relationship-building and social cohesion, and depends on high-quality communication across community groups and with all levels of government. During the COVID-19 pandemic, response measures in some settings have increased exercise of powers, curtailed human rights, and reduced access to civic space and social networks. Research on effective mechanisms to address these disruptions, strengthen relationships and support collective dialogue among affected communities and decision-makers will be critical to recovery.

CONSIDERATIONS

The design of communication and trust-building strategies must account for the differential impacts of the pandemic on different populations and consider their knowledge and lived experiences. For example, research into the disproportionate effects of the COVID-19 pandemic on women and girls should build on existing evidence that women's leadership in grassroots movements is a fundamental element of community resilience and social cohesion.

How can recovery efforts from emergencies help eliminate pre-existing social inequities in order to enhance the resilience of communities?

5.3.1 Which local solutions are most effective in addressing inequities and increasing community resilience?

5.3.2 What are the best approaches to integrating actively anti-discriminatory policies into emergency recovery responses?

5.3.3 What strategies can be used to ensure the continuity of community institutions, rule of law, access to justice, and human rights during emergencies?

IMPORTANCE

The COVID-19 pandemic has highlighted and exacerbated pre-existing systemic inequities related to racism, sexism, colonialism, ableism, homophobia, transphobia and xenophobia, among others. Research has a critical role to play in understanding the equity perils of the pandemic, the impact of exacerbated inequities on social cohesion, the role of social movements that have recently been invigorated, and how policy and institutional changes related to recovery efforts can target systemic inequities.

CONSIDERATIONS

Research can contribute to a recovery effort by examining the effectiveness, sustainability and scalability of different local and community-led solutions. Further research can strengthen understanding of how different governmental, civil society and private sector actors can work to promote gender equity and women's rights.

How can community spaces enhance social resilience and cohesion?

5.4.1 How can public space be used to address marginalization, segregation, unrest and violence?

5.4.2 What are the enduring impacts of physical distancing measures on social cohesion in communities?

5.4.3 What are the best strategies for building sustainable, inclusive and resilient cities that protect people from future pandemics and climate change?

5.4.4 What are the unique ways in which rural populations are impacted by emergencies and how can these impacts be mitigated?

5.4.5 How does the movement of people between urban and rural areas impact the social fabric of communities?

IMPORTANCE

The COVID-19 pandemic has reshaped local geographies and mobility patterns and reconfigured how people interact with each other and with their natural and built environments. Innovations have also emerged through the pandemic, creating opportunities for communities to be more mutually supportive and collaborative. Research on the short- and long-term effects of these social and spatial reconfigurations will be critical to inform the design of more resilient and cohesive societies.

CONSIDERATIONS

Research on environmental interventions should consider not only their co-benefits for community resilience, but also how they can be implemented in ways that are inclusive, affordable and accessible to all. In addition, research is needed to understand the impact of the pandemic on the demographic makeup of different communities, the consequences for social cohesion and the implications for a long-term recovery.

How can digital technologies be harnessed to promote social cohesion while ensuring no one is excluded?

5.5.1 How do the internet and social media amplify, and how can they combat, hatred and xenophobia?

5.5.2 What are the potential biases that may be introduced or reinforced by digital technologies during emergencies that amplify inequities and threaten social cohesion?

5.5.3 How does misinformation spread and how can digital technologies be used to minimize it?

5.5.4 What are the impacts of digital spaces and virtual environments such as social media on experiences of belonging and community engagement in a lower-contact society?

IMPORTANCE

During the COVID-19 pandemic reliance on digital technologies has had varying social impacts, ranging from facilitating social, job-related and educational connections to enabling harassment, creating surveillance and privacy issues, and undermining democracy and self-determination through the spread of misinformation. Research is urgently needed to understand how these technologies can be used to address complex challenges in an inclusive and sustainable way.

CONSIDERATIONS

Digital technologies are not accessible and affordable to all and they have the potential to further harm already marginalized populations. Research should carefully consider strategies to maximize the potential of these technologies to promote social cohesion and well-being while minimizing their unintended harms. Research to help combat the rise in the digital spread of hate and misinformation will be particularly critical.

3.0

Interdependence and Co-Benefits

The research priorities that emerged across the five pillars of this *UN Research Roadmap for the COVID-19 Recovery* are united by a single focus: **interdependence**. This focus on interdependence reflects a message that permeated consultations and discussions – namely, the overriding need for COVID-19 recovery efforts to consider the intrinsic ways in which people, systems and generations are dependent on each other.

Recognizing the world's interdependence among people, systems and generations leads to three important conclusions. First, if the health and well-being of people are interdependent, then it is to everyone's benefit to place **equity** at the core of all decisions, in keeping with the central promise of the *2030 Agenda for Sustainable Development* to 'leave no one behind'.[56] Second, if the various social and economic systems on which people rely are interdependent, then these systems must be designed with greater **resilience** to protect all of them against the future inevitable shocks that will arise against each of them, as per the *Sendai Framework for Disaster Risk Reduction*.[57] Third, if the prosperity and well-

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56   UN, "Resolution adopted by the General Assembly on 25 September 2015. Transforming our world: the 2030 Agenda for Sustainable Development" (New York, UN, 2015).

57   UN, *Sendai Framework for Disaster Risk Reduction 2015-2030* (Geneva, United Nations Office for Disaster Risk Reduction, 2015).

being of future generations depends on what happens today, then all decisions and actions must prioritize **sustainability**, as reflected in the *Paris Agreement to the UN Framework Convention on Climate Change*[58] and many other instruments.

The realities of an interdependent world have compelled this *UN Research Roadmap* to be singularly focused on driving a research agenda that helps ensure COVID-19 socio-economic recovery efforts can achieve co-benefits for equity, resilience and sustainability. Finding innovative interdisciplinary, intersectoral and international solutions for recovering better – that account for the world's interdependence among people, systems and generations – is the greatest opportunity for achieving the kind of transformative changes that will be needed to meet the SDGs by their 2030 deadline.

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

59 World Health Organization, "Health systems: Equity", (Date accessed 11 September 2020).

60 United Nations Office for Disaster Risk Reduction (UNISDR), "2009 UNISDR Terminology on Disaster Risk Reduction," (Geneva, UNISDR, 2009).

61 World Commission on Environment and Development, *Our Common Future* (Oxford, Oxford University Press, 1987).

62 UN, "Sustainability", (Date accessed 11 September 2020).

Definitions of equity, resilience and sustainability

Equity is the absence of avoidable or remediable differences among people based on social, economic, demographic or geographic factors.[59]

Resilience is the ability to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of essential basic structures and functions.[60]

Sustainability is meeting the social, economic and physical needs of the present without compromising the ability of future generations to meet their own needs.[61][62]

3.1

Equity for Interdependence Among People

QUICK-WIN

What are the best approaches to integrating actively anti-discriminatory policies into emergency recovery responses? [RP5.3.2]

BEST-BUY

Which health system mechanisms can be leveraged to promote access to sexual and reproductive health services, gender equity, and women's empowerment in society? [RP1.2.5]

GAME-CHANGER

How can international trade and finance be improved to ensure that all countries are included in the global economy in a fair and sustainable manner? [RP4.2.2]

The COVID-19 pandemic has highlighted that people around the world are highly interconnected. The initial spread of COVID-19 through domestic and international travel networks, the worldwide economic fallout from the pandemic, and the far-reaching implications of local and national policy responses have vividly demonstrated the shared vulnerability that characterizes a globalized world. At the same time, the impacts have not been distributed equally; the crisis has laid bare pre-existing inequities and further marginalized certain populations. As a result of systemic barriers, some populations have faced disproportionately higher infection and mortality rates and found it more challenging than others to take the public health measures necessary to minimize community transmission.[63] For example, compliance with COVID-19 physical distancing measures has been shown to be affected by characteristics such as age, gender, sex, education level, income and internet access.[64] Global interdependence means that addressing systemic sources of marginalization can empower affected individuals and communities while also strengthening collective abilities to respond to health and socio-economic crises in the future. In light of shared risks and responsibilities, research to recover better must therefore take an explicit equity lens so that everyone can benefit.

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63 Andre M. N. Renzaho, "The need for the right socio-economic and cultural fit in the COVID-19 response in Sub-Saharan Africa: examining demographic, economic political, health, and socio-cultural differentials in COVID-19 morbidity and mortality", *International Journal of Environmental Research and Public Health*, vol. 17, No. 10 (May 2020).

64 David Holtz and others, "Interdependence and the cost of uncoordinated responses to COVID-19", *Proceedings of the National Academy of Sciences of the United States of America*, vol. 117, No. 33 (August 2020).

Advancing equity requires actively transforming norms, policies, laws, systems and institutional practices so that all people have fair and just opportunities to thrive. For research to support these efforts, it must take an intersectional and human rights-based approach.[65] Intersectionality promotes the understanding that people's identities are shaped by complex interactions and relationships among multiple co-existing factors, including their age, gender, sex, race, ethnicity, Indigeneity, sexual orientation, geography, disability, socio-economic status and migration status.[66] [67] In turn, these intersecting factors interact with a complex set of social and institutional power structures and systemic forms of discrimination and oppression. Research to support an equitable recovery from COVID-19 must grapple with these complex systems, assess human rights implications, and centre the voices, experiences and concerns of the populations they marginalize [RP3.1.4].

This *UN Research Roadmap* reflects the fact that, in an interdependent world, promoting equity will be critical to ensuring a better recovery from COVID-19, advancing progress towards the SDGs and building more successful societies. Equity is therefore embedded throughout all of the research priorities identified in this *Roadmap*. This includes identifying evidence gaps regarding the effects of policies and programs on marginalized populations and highlighting areas of research that particularly affect these populations [RP1.2.4; RP5.3.2]. The research community has a key role to play in making available data and evidence on indicators of inequity to support advocacy and awareness-raising efforts and to inform planning and decision-making [RP2.2.1].

This *UN Research Roadmap* also foregrounds equity in the research process. Ensuring that affected communities are able to meaningfully participate in researching, proposing, designing and evaluating solutions based on their priorities and preferred outcomes can help to change the power dynamics of research and development processes [RP2.2.3; RP3.5.2; RP4.1.3; RP5.1.1].[68] In this way, the COVID-19 pandemic provides a critical opportunity to consider the potential of more participatory, collaborative and relational research approaches that work with and for marginalized populations, support transformative changes and increase resilience to future crises.

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65   UNICEF, "Human rights-based approach to programming: What is HRBAP?", 23 January 2016.

66   Kimberlé Crenshaw, "Mapping the margins: intersectionality, identity politics, and violence against women of color", *Stanford Law Review*, vol. 43, No. 6 (July 1991).

67   Olena Hankivsky, ed. *An Intersectionality-Based Policy Analysis Framework* (Vancouver, BC, Institute for Intersectionality Research and Policy, 2012).

68   Rachel Black and K. Sabeel Rahman, "Centering the margins: a framework for equitable and inclusive social policy", (Washington, D.C., New America, 2017).

Inequality, equality, equity and justice

Inequality

Equality

Equity

Justice

3.2

Resilience for Interdependence Among Systems

QUICK-WIN

How can safe access to high-quality education in schools be ensured during emergencies? [RP2.3.4]

BEST-BUY

How can international financial institutions most effectively contribute to financial stability during global emergencies and prevent sovereign debt crises? [RP4.3.3]

GAME-CHANGER

What are the best strategies for ensuring safe workplaces and decent work, in particular for those workers who face greater risks? [RP3.1.2]

As the COVID-19 crisis has made clear, interdependencies exist not only among people, but also among systems and sectors of society. While this interdependence can be a source of strength and efficiency, the COVID-19 pandemic has shown that it can also increase vulnerability and amplify external shocks. Indeed, when one facet of these interconnected systems fails, the others are stressed, sometimes to a breaking point. For example, supply chain disruptions contributed to critical shortages of personal protective equipment during the onset of the COVID-19 pandemic, which created further obstacles to containing the virus and jeopardized the mental and physical well-being of patients and front-line health workers.

With COVID-19, people around the world have directly experienced the weakening and destabilizing effects of long-standing poverty, gender inequity, racism, and environmental degradation within their societies and are witnessing how these effects increase their vulnerability to crises. On the other hand, these lessons suggest that there is an opportunity to build resilience into interconnected systems through intentional and transformative policies aimed at tackling these vulnerabilities. This intention will require new knowledge on strategies that leverage the interconnectedness of sectors to purposefully design redundancies and safeguards within core systems that simultaneously produce co-benefits in the process [RP1.3]. For example, offering health promotion, vaccination and reproductive and sexual health services through schools [RP1.3.1] as well as through the health system

[RP1.1.1] can help increase access to essential care and contribute to the continuity of these services when health systems are overwhelmed.

This *Roadmap* recognizes that recovering better requires consideration of how institutions, systems and political structures can be made inherently resilient in order to cope with mounting and emerging challenges. In particular, this *Roadmap* identifies the pressing need for interdisciplinary and systems research to guide the design and implementation of transformative policies that promote resilience across sectors [RP1.3.4; RP2.1.4; RP3.5.5; RP4.1.3; RP5.3.1]. A greater understanding is also needed regarding how to leverage local and traditional knowledge and practices [RP2.3.2; RP5.1.3] to inform the design of resilient human environments that allow all people and the planet to thrive [RP2.3.1; RP5.4.3].

3.3

Sustainability for Interdependence Among Generations

QUICK-WIN

How can stimulus programs promote decent work and support the transition to greener and more sustainable economies? [RP3.2.1]

BEST-BUY

What mechanisms can enable different parts of government to work together on critical "One Health" challenges that cross human, animal and environmental health, such as antimicrobial resistance, extreme weather, food insecurity, habitat destruction and water degradation? [RP1.3.4]

GAME-CHANGER

How can approaches for preventing environmental degradation and preserving natural resources be better integrated into multilateral collaborations across economic areas? [RP4.5.1]

Future health, economic and environmental well-being will depend on the responses made to today's challenges and the treatment of critical ecosystems – just as the paths that were taken yesterday are impacting the options and outcomes of today. As one example, coastal habitats provide important protection from waves and storm surges for inland communities. Failure to protect these coastal habitats from human activity over the past century has contributed to the worsening severity of impacts of hurricanes, tropical storms and tsunamis in recent decades, resulting in catastrophic loss of life and significant economic damages. [69] However, the direct economic costs of environmental degradation and the associated loss of ecosystem services are typically not fully considered in financial accounting before making decisions.

The decisions made today can thus either pave a path that facilitates more sustainable policy choices in the future or they can compound existing challenges and make it harder to break out of vicious cycles. Some anthropogenic impacts on the environment, such as climate change, radiation contamination and deforestation, will take generations to reverse. Yet history also shows that decisive and cooperative international efforts can have transformative impacts. For example, international efforts to ban the production of ozone-depleting chemicals have led to the steady recovery of the ozone layer. [70] Bold action taken now could slow global warming and prevent the most severe impacts of climate change,

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69 United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), *In the front line: shoreline protection and other eco-system services from mangroves and coral reefs* (Cambridge, UK, UNEP-WCMC, 2006).

70 UNEP, "The Montreal Protocol", (Date accessed 11 September 2020).

which are expected to endanger health, livelihoods, food security, water supply, human security and economic growth for all and pose particular risks for marginalized populations.[71][72] Policies to promote the sustainable management of natural resources can also help to ensure that the ecosystems on which all people depend are able to endure and thrive. Building such virtuous cycles will facilitate a sustainable recovery from COVID-19 and protect the future of the planet across generations.

This *UN Research Roadmap* highlights the rich potential that exists to embed sustainability considerations within and across pillars of the

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71 The Global Commission on the Economy and the Climate, *Unlocking the inclusive growth story of the 21st century: accelerating climate action in urgent times* (Washington, D.C., New Climate Economy, 2018).

72 World Meteorological Organization, "United in science 2020", (Geneva, United Nations, 2020).

UN's socio-economic recovery framework. For example, when working to protect and strengthen health systems, there are opportunities to evaluate how medical supply chains can be rebuilt and reoriented to foster circular economies and promote value-retention processes that minimize waste and create green jobs [RP1.4.1]. Similarly, opportunities exist to strengthen collaboration among health workers, environmental scientists and zoonotic disease specialists to increase understanding of emerging disease risk and prevent the next pandemic [RP1.3.4]. There are also imperatives across all five pillars to consider the interdependence of protecting health, social well-being and environmental sustainability. Examples include identifying and evaluating strategies to promote the use of green spaces and active transportation and understanding how well-designed cities can reduce environmental degradation while promoting social cohesion, health and sustainability [RP2.3; RP5.4.3]. Similarly, research on fiscal stimulus packages and job-creation initiatives can reveal the potential for these measures to foster both economic growth and innovation for environmental sustainability, for instance by incentivizing land restoration, resource-smart food systems, circular economies, and transitions to low-carbon approaches, especially in the energy sector [RP3.2; RP4.1].

To ensure a durable recovery and sustainable future, it is imperative that research activities are informed by environmental considerations. Otherwise, research outputs risk supporting environment-blind policies and programs that reinforce the status quo and compromise the sustainability of our interconnected social, health and economic systems.

3.4

Achieving a Quadruple Bottom Line

Recovering better from the COVID-19 pandemic will require simultaneously addressing the imperatives that arise from interdependencies among people, systems and generations. Although equity, resilience and sustainability each play critical individual roles in ensuring a robust recovery and preparing for future crises, they ultimately form a 'three-legged stool' in that all three must be strengthened in order for societal goals to be achieved.

Panel L

Equity, resilience and sustainability are each necessary for a better recovery
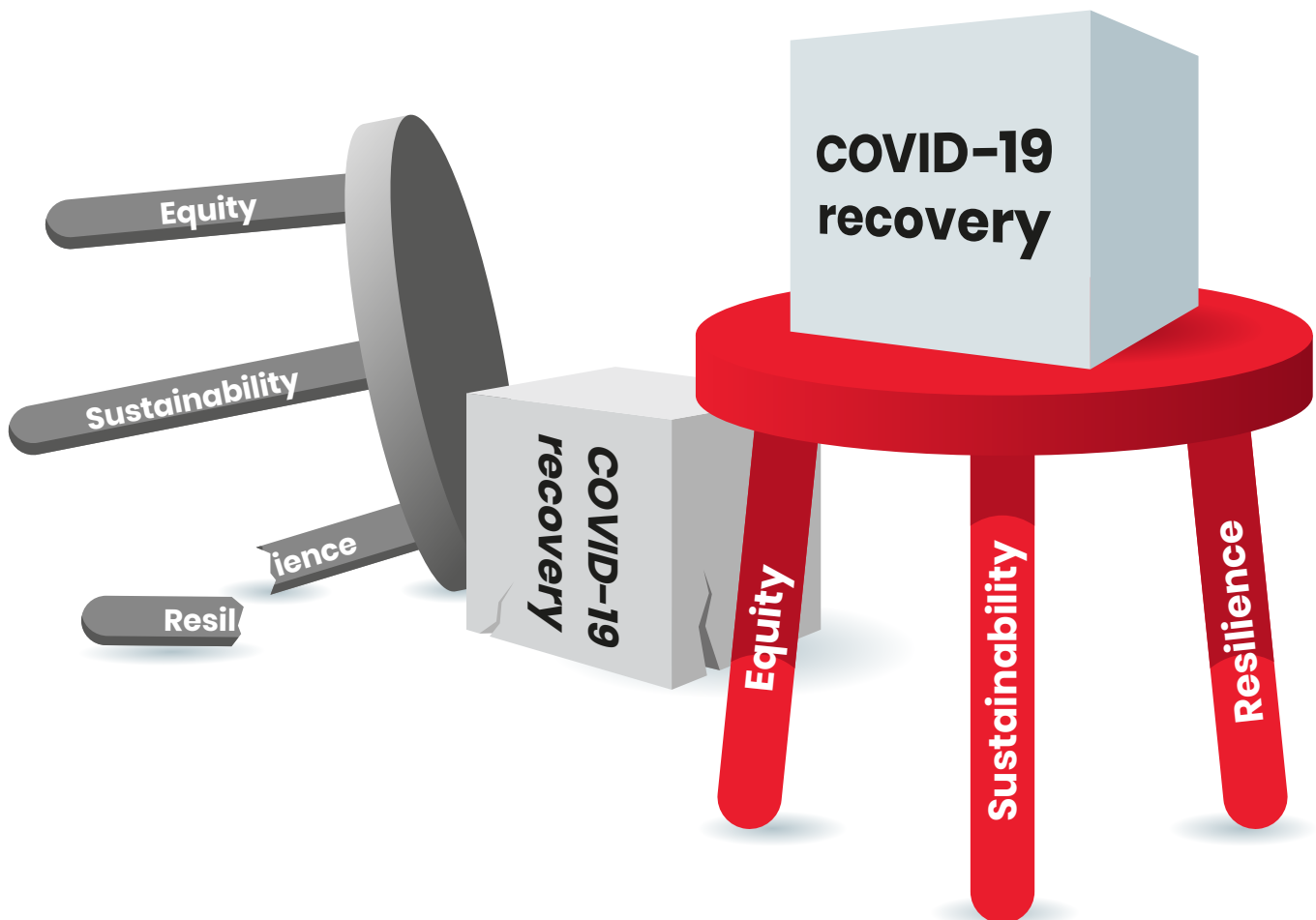
Taken together, this *UN Research Roadmap* provides a framework for understanding how research can help societies achieve a quadruple bottom line in terms of producing direct benefits from their COVID-19 recovery efforts while simultaneously stimulating equity, resilience and sustainability co-benefits. The knowledge base to guide effective action in this area currently lags behind what is needed to ensure that efforts to recover better not only address interdependencies but also harness the opportunities they present. By centering research priorities around equity, resilience and sustainability, this *Roadmap* offers the research community a way of thinking about the COVID-19 recovery and launching research inquiries with transformative potential. Emphasizing the imperative to achieve co-benefits for equity, resilience and sustainability in all COVID-19 recovery efforts also provides governments, civil society and the private sector with a sound basis upon which to evaluate the policy options in front of them. Creating such synergies and virtuous cycles will be important for accelerating progress towards the SDGs.

Aiming for a quadruple bottom line from COVID-19 recovery efforts

Solutions that also achieve two co-benefits

Solutions that also achieve one co-benefit

Solutions that only achieve direct benefits

Equity

Resilience

Sustainability

Solutions that also achieve three co-benefits
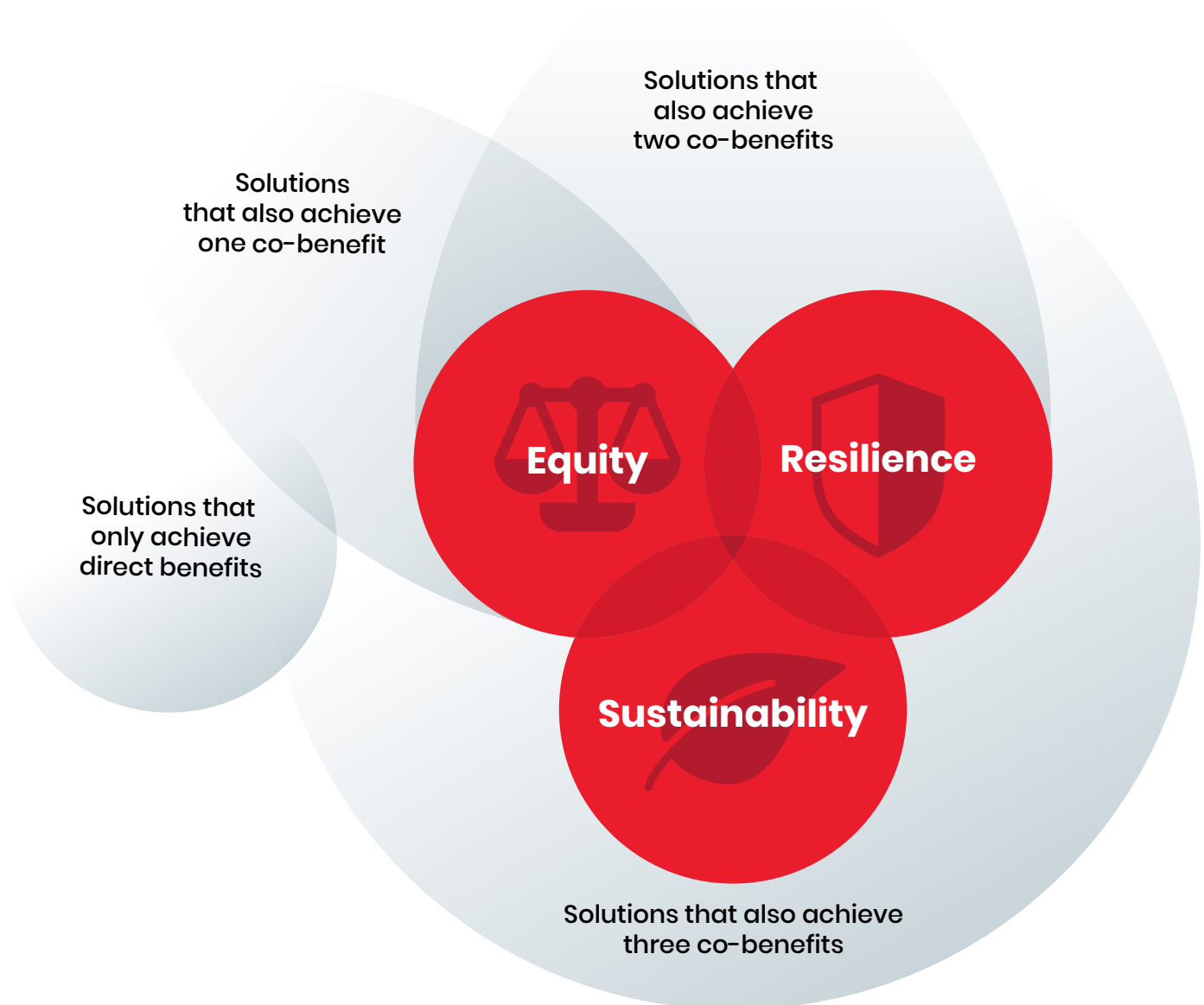
4.0

Science Strategies

This *UN Research Roadmap* highlights the potential for research to help drive an equitable, resilient and sustainable socio-economic recovery from COVID-19. At the same time, any roadmap is just a starting point – implementation matters. The complex challenges and opportunities associated with the COVID-19 recovery process require robust research ecosystems that are equipped to investigate and help manage interdependencies. Just as considerations of equity, resilience and sustainability will be critical to the global response, they also need to be cultivated within research systems, processes and practices. The implementation of five key strategies can help allow the full power of science to be harnessed for the COVID-19 recovery.

73   Open Data Charter, "What is a data infrastructure",
     (Date accessed 11 September 2020).

74   Global Alliance for Chronic Diseases, "Implementation science",
     (Date accessed 11 September 2020).

75   John N. Lavis and others, "Rapid synthesis: Creating rapid-learning
     health systems in Canada", (Hamilton, Canada, McMaster Health
     Forum, 2018).

76   Social Sciences and Humanities Research Council, "Knowledge
     mobilization", 27 June 2019.

77   Research on Research Institute, "About",
     (Date accessed 11 September 2020).

Panel N

Definitions of five science strategies

Data infrastructure includes the organizations, policies, processes, systems and technologies involved in the collection, storage, management, oversight, distribution and use of data.[73]

Implementation science is the study of methods and strategies to promote the uptake of effective interventions into practices, programs and policies.[74]

Rapid learning systems use the best available evidence and local data to inform decisions and commit to learn from their experiences as quickly as possible so as to enable continuous improvements and to contribute to the global evidence base.[75]

Knowledge mobilization are efforts designed to promote the use of research evidence to inform choices and generate positive impacts.[76]

Science of science is focused on how research is funded, practiced and evaluated, and how research cultures and systems can be made more efficient, open, inclusive and impactful.[77]

4.1

Data Infrastructure

Investments in data systems and the infrastructure that supports them will be the linchpin of efforts to implement this *Roadmap*. The importance of high-quality, comprehensive, inclusive and timely data for rigorous research and evidence-informed decision-making cannot be overstated. In fact, data gaps have hindered both the public health and research responses to the COVID-19 pandemic. Many governments, for example, have had to make crucial decisions without data on COVID-19 testing, case incidence, hospitalization and mortality. Research and decision-making during the pandemic have been further hampered by inadequate data disaggregation by age, gender, sex, race and other characteristics relevant in national contexts. These data gaps have limited the ability to predict the pandemic's trajectory and mitigate its impacts. Robust data on socio-economic indicators, including income, employment and housing status, will also be critical to guide recovery efforts. For example, such data will be necessary to evaluate the near- and long-term effects of public health measures, social protection programs and fiscal stimulus packages implemented in response to the pandemic.

Basic population data, such as birth and death registrations collected through Civil

Registration and Vital Statistics (CRVS) systems, will be an important starting point to inform an effective socio-economic response to COVID-19. However, maintaining such vital sources of data can be challenging in low-resource settings. Efforts to modernize and improve data infrastructure should address systemic barriers that hinder data collection among marginalized populations, including those that prevent women from registering marriages, births or deaths. Strong routine collection of community health data that is inclusive and disaggregated across equity stratifiers is needed to identify the impacts of crises on the most affected populations and ensure their needs are met during recovery.

During the COVID-19 pandemic, data models have been a key element of many countries' public health responses and they will remain a powerful tool throughout the socio-economic recovery period. However, models are only as good as the data upon which they are built. Researchers are often dependent on both public and private sources of data to train, define and test their models, and their work is reliant on having access to data at the required level of granularity. Analyses and models to inform several priority areas of this *Roadmap* will require data that can be harmonized and linked across disparate systems and different sectors. For example, investigating how the health impacts of disruption to basic services can be mitigated during emergencies [RP1.3.2] may require individual- and system-level health statistics, information on school closures, and data on public transportation, food systems and housing. Similarly, investigating how a global economy can work for everyone and protect

the planet [RP3.3] may require integrating spatial and temporal data from government and private sector sources. Linking datasets that cover multiple national contexts would support international research on the differential impacts of public health and macroeconomic response strategies across countries and inform recovery policies that are tailored to each country's unique context.

Strengthening data systems for a robust recovery also requires attention to the infrastructure that facilitates the collection, storage, maintenance, governance, distribution and use of data. Developing strategies that promote open data sharing while ensuring privacy protections for personal information can support global opportunities to harness data as a tool for socio-economic recovery. Democratizing data by making it publicly available upon release can also support transparency in public decision-making.[78] Data governance policies must clearly outline processes around privacy, ethics, trust, ownership, meta-data availability and public accountability. For example, privacy concerns should be addressed by ensuring that personally identifiable data is anonymized and aggregated where appropriate. Governments have a critical role to play in building open repositories for open data sharing as well as ensuring that collected data is not inappropriately repurposed or weaponized.

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78 Lauren Gardner and others, "A need for open public data standards and sharing in light of COVID-19", *Lancet Infectious Diseases*, (August 2020).

Panel O

Data pipeline from collection to use

Data collection
Basic data including civil registrations and vital statistics

Inclusive
Disaggregation across equity stratifiers and minimizing biases

Open
Accessible, depoliticized, mobilized and collaborative

Linkable
Harmonized, cross-sectoral and joining data across countries

Availability
Accurate, complete and timely

Governance
Privacy, ethics, trust, ownership, meta-data, public accountability and sharing of data

4.2

Implementation Science

Addressing the socio-economic impacts of COVID-19 and building back more equitable, resilient and sustainable societies will require the development of tailored solutions that are appropriate for each unique context. Decision-makers need to know not only what works, but also for whom and under what circumstances. Harnessing science for the COVID-19 socio-economic recovery will therefore require local research capacity in the field of implementation science, which focuses on generating evidence to answer such questions. In particular, implementation science examines how interventions that have been successfully implemented in one setting can be adapted to different contexts in ways that are effective and equitable. For example, efforts to implement social protection policies in a country affected by conflict will face specific challenges that are unlikely to be addressed by solutions imported directly from other settings. An implementation science approach to this challenge would therefore focus on how successful solutions can be adapted and tailored to the particular circumstances of a given context. As a result of this focus on context, implementation science can provide decision-makers with strategies for addressing system complexities, sectoral interdependencies and the needs of diverse stakeholders.

Implementation science emphasizes participatory approaches and partnerships among researchers, decision-makers, affected communities and other stakeholders. This approach has the benefit of enabling the inclusion of diverse voices and favouring sources of local and traditional knowledge. In addition, implementation science can be used to examine the impact of various interventions on multiple dimensions of equity. This focus on equity is a particular strength for supporting COVID-19 recovery efforts and can help mitigate the disproportionate impacts of the pandemic on marginalized populations. Due to its emphasis on context-specific research methods, implementation science can also help to develop innovative approaches to implementing solutions that work in low-resource settings and that target marginalized populations.

Panel P

**The implementation
science approach**

Evidence

Interdisciplinary
approaches

Implementation
partners

Intervention

Implementation

Natural and built
environment

Context

Social and policy
environment

Impact
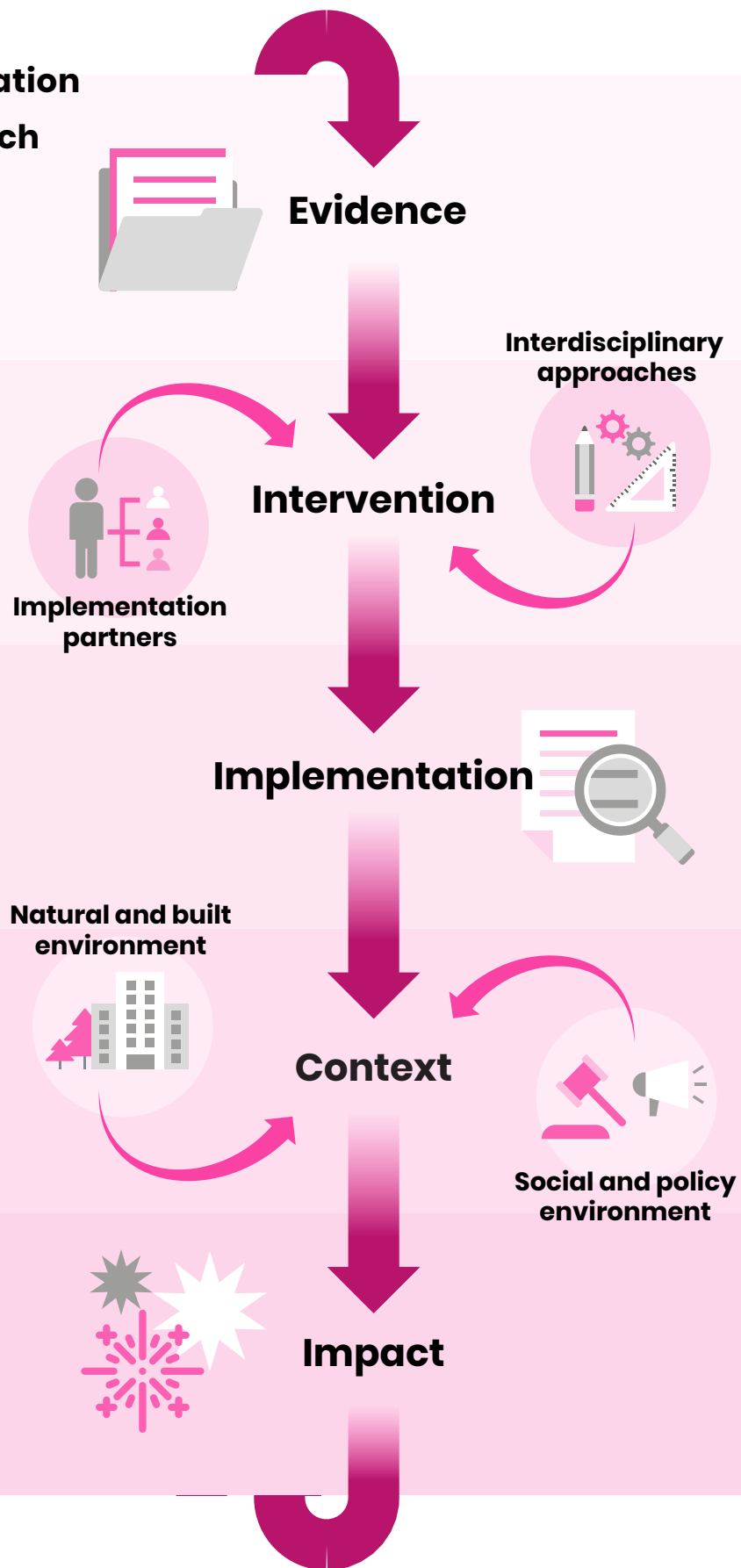
4.3

Rapid Learning Systems

Responding to complex and dynamic challenges in an interdependent world requires early and ongoing evidence about what is working, for whom, and in which contexts. When opportunities for learning are purposefully built into the design of policies and programs, they can help decision-makers accelerate progress and adapt strategies where needed. Rapid learning systems support quick, iterative cycles of knowledge generation and implementation and adaptation in decision-making. Interventions are continuously evaluated to produce insights into what works in which contexts and to identify the impact of research itself, such that continuous improvements can be made in a timely manner. In the health sector, for example, rapid learning systems have been recognized for their potential to improve patient experiences, population health and system performance, all by leveraging real-time data and analytics, institutionalizing research capacity, and creating a supportive culture and infrastructure to rapidly and continuously adapt and improve.

A critical building block for implementing this *Roadmap* will therefore involve adopting a rapid learning approach to help ensure that COVID-19 recovery efforts are designed from the outset to adapt to changes and integrate learnings quickly. All sectors of society have a role to play in activating rapid learning systems. These efforts will therefore benefit from a systems approach to public policy and to research, which encourages interdisciplinary, intersectoral and international collaborations.[79]

Based on existing research, rapid learning systems that support a robust socio-economic recovery should be: centred on the priorities of the most affected communities; characterized by meaningful partnerships between researchers and knowledge users; supported by innovative research funding programs that foster rapid research, implementation and evaluation; driven by timely and accessible data; enabled by a culture of continuous learning and improvement; progressive in developing and championing new metrics and models that incentivize impact-oriented research; accountable to and engaged with the public; and constantly improving the research ecosystem's performance and impact with data and evidence.[80]

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79   Scott J Leischow and others, "Systems thinking to improve the public's health", *Am J Prev Med*, vol. 35, No. 2 Suppl (March 2008).

80   John N. Lavis and others, *Rapid synthesis: Creating rapid-learning health systems in Canada* (Hamilton, Canada, McMaster Health Forum, 2018).

Cultivating iterative cycles of knowledge generation
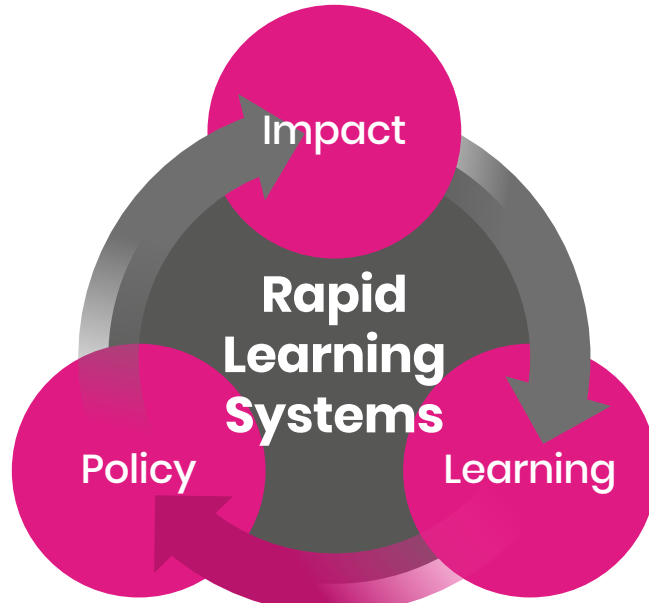
Examples of how learning can inform adaptations to existing policies

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Reversing reduces the outcome

Antimicrobial misuse

Antimicrobial resistance

=

Balancing maintains the target outcome

Economic growth

Energy production

Climate action

+

Reinforcing intensifies the outcome

Women leaders

Women's empowerment
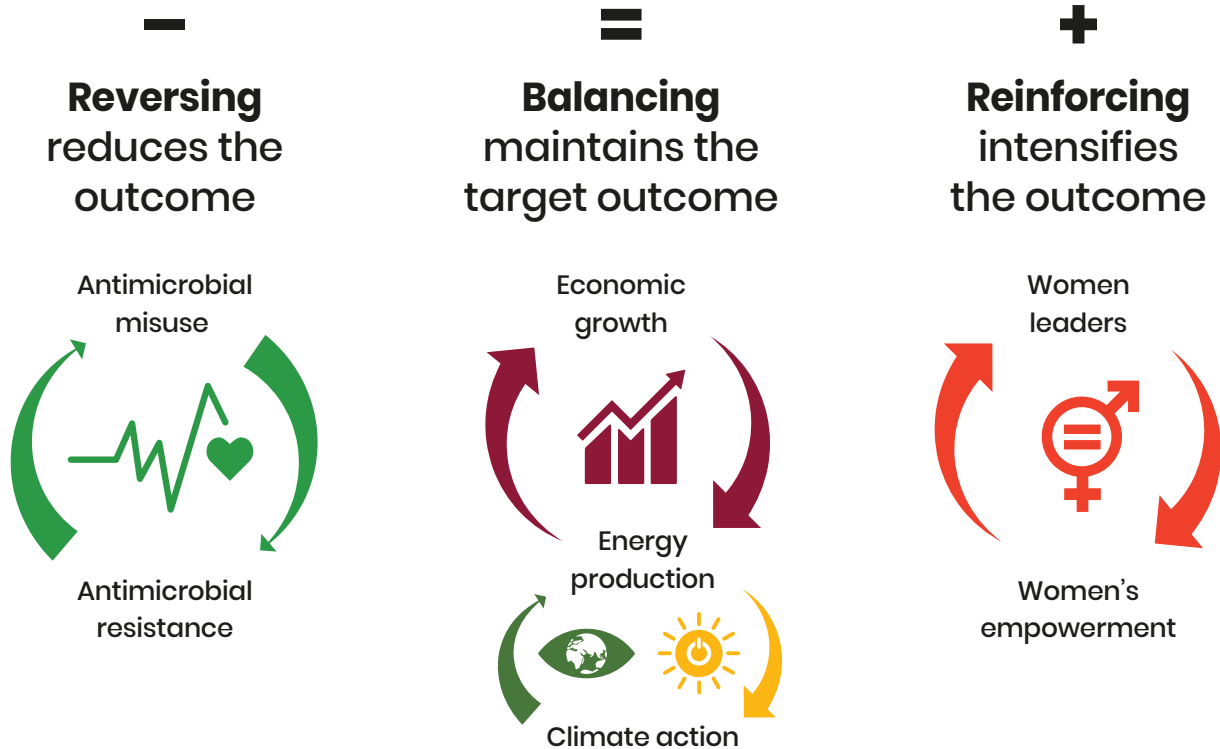
4.4

Knowledge Mobilization

The COVID-19 pandemic highlighted the need for rapid research responses to challenges that are global in nature but manifest differently within and across countries. During the recovery period, an opportunity exists for researchers and decision-makers to reconsider the processes that guide how evidence is generated, mobilized and evaluated to inform policy. Governments are often forced to make decisions or take action despite non-existent, incomplete or contested evidence bases – particularly in novel situations like the COVID-19 crisis. However, research and decision-making processes can be purposefully designed to maximize the extent to which evidence can be used responsibly, transparently and with attention to context in both crisis and non-crisis times.

Research does not occur in a vacuum. Researchers can increase the impact and relevance of the evidence they generate by engaging with decision-makers and affected communities at different points in the research process. Even when addressing challenges with global relevance, local priorities and needs should inform research agendas to ensure that the resulting evidence addresses context-appropriate concerns and is useful to those responsible for adopting and implementing the implicated policies.

There is also a growing movement towards 'co-producing' evidence by integrating the local and traditional knowledge of affected communities and the policy concerns of decision-makers when collecting, analyzing and interpreting data. When carefully designed, such efforts present key opportunities to incorporate lay, traditional and expert knowledge into research to address complex social challenges. Similarly, decision-makers have opportunities to increase their effectiveness by working with researchers, those with lived experience and the broader public to integrate the best available evidence in ways that are appropriate in a given context.

Strategic action is also required from researchers to ensure that existing evidence informs decision-making through knowledge mobilization efforts. This is not a straightforward process. Decision-makers receive advice from multiple sources and they must balance political, economic, social and ethical concerns when making policy choices, often within rapid timelines. In addition, decision-making authority is typically diffused across a large number of actors and across sectors, and policy processes are influenced by organizational hierarchies within government as well as policy networks that span government, civil society and private sector actors. Researchers can increase the chances that the best available evidence informs policy decisions by engaging with the complexity of the policy process, including by tailoring their knowledge mobilization efforts to the policy actors, networks and contexts involved, taking into consideration the dominant policy instruments in the relevant sector, and presenting compelling

narratives.[81][82] One set of useful tools for making the state of existing knowledge readily available to decision-makers involves evidence syntheses, such as systematic reviews and meta-analyses, which bring together the global evidence on a topic using rigorous and transparent methods. 'Living' evidence syntheses are continually updated to reflect new research and hold particular promise for informing responses to rapidly-evolving challenges like COVID-19. The evidence-to-policy interface also greatly benefits from platforms that focus on ensuring the quality, reliability and availability of evidence syntheses, such as the Cochrane Collaboration, Campbell Collaboration, and the COVID-19 Evidence Network to Support Decision-making.[83]

Mobilizing evidence for policymaking also requires governments to institutionalize opportunities for research use. In light of the complexity of the policymaking process and its many inputs and time pressures, it is

81   Kathryn Oliver and Paul Cairney, "The dos and don'ts of influencing policy: a systematic review of advice to academics", *Palgrave Communications*, vol. 5, No. 21 (February 2019).

82   Patrick Fafard and Steven J. Hoffman, "Rethinking knowledge translation for public health policy", *Evidence & Policy: A Journal of Research, Debate and Practice*, vol. 16, No. 1 (February 2020).

83   McMaster Health Forum, "COVID-Evidence Network to support decision-making (COVID-END)", (Date accessed 11 September 2020).

Mobilizing knowledge to inform public policy

	CHALLENGE	GUIDANCE
1. Audience make-up	Policy is made through diffused decision–making with each policy decision made by many people.	Knowledge mobilization efforts should be designed to target broader networks that include a broader range of policy actors.
2. Audience breadth	Some policy issues are managed by specialised groups, others involve actors from across government.	Knowledge mobilization efforts need to consider diversity of the many people that will influence any given policy.
3. Policy context	Each issue has a different kind of policy network and policy advisory system.	Knowledge mobilization efforts should be tailored to the characteristics of the policy network and advisory system.
4. Policy instruments	Different policy instruments are dominant for different issues and involve different policy processes.	Knowledge mobilization efforts should be designed very differently depending on the dominant policy instrument.

Source: Fafard & Hoffman, 2020

critical to design systems that reduce some of the many barriers to leveraging available evidence – including evidence that may call into question long-standing research or policy consensus. A key way to ensure that research is considered thoroughly and systematically in decision-making involves institutionalizing scientific advisory systems within government, including through chief science advisors, scientific advisory committees, and formal organizations with a mandate to review and synthesize evidence for policy. When designing these systems, it is also critical to consider key principles of the good governance of evidence, including but not limited to transparency, stewardship and contestability.[84] In addition, these bodies will be most effective when they form part of an interconnected system that intersects purposefully and strategically with policy networks.

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84 Justin Parkhurst, *The Politics Of Evidence: From Evidence-based Policy to The Good Governance of Evidence* (London, Routledge, 2016).

4.5

Science of Science

Science is much more than a method or a collection of disciplines. It is also a series of interconnected systems of people, policies and processes that shape how knowledge is generated and mobilized. The research ecosystem spans multiple institutions and actors across government, civil society and the private sector and includes researchers, research institutions, research funding agencies, regulatory bodies, academic societies, advisory systems, publishers, and individual and institutional knowledge users. To maximize the performance and impact of research ecosystems, there is a need for enhanced evidence regarding how their different elements work together and how they can be better designed to address global challenges in an interdependent world. In other words, there is a need to strengthen the science of science.

Research on the design and performance of research ecosystems will have both national and global benefits. Evidence to strengthen national research capacity is critical to ensure that local researchers can generate timely and context-appropriate knowledge to support decision-making. Globally, the science of science can help enhance learning across research ecosystems, identify opportunities for increased efficiency and reduced duplication, and increase innovation in research methods and processes. At both the national and global levels, evidence about

research ecosystems can help decision-makers be more strategic in ensuring that future knowledge and human capital needs are met, particularly as they relate to emerging trends and threats.

At present, research on the financing and practice of science is limited. Dedicated funding and support are required to strengthen the science of science and raise its profile as a critical area of study. This *Roadmap* highlights several key lines of inquiry that such research should then consider. This includes how to make the research enterprise more equitable, diverse, inclusive and participatory; how to make research systems more rapidly responsive to emergencies; how to encourage more collaborative research that builds on interdisciplinary insights; how to support systems approaches to complex challenges; how to best implement open science approaches; and how research ecosystems can support the mobilization of knowledge so that it can be acquired, assessed, adapted and applied in decision-making processes. Research is needed on all aspects of research ecosystems, including the impact of different funding practices, methodological approaches, partnership structures, advisory systems and translational strategies on different outcomes and in different contexts.

The COVID-19 crisis vividly demonstrated the core role that research ecosystems play in solving shared challenges – and by extension, the responsibility that governments, civil society and the private sector have to ensure these ecosystems are optimized for rapid learning, knowledge mobilization and intersectoral collaboration. It is in everyone's

best interest to adopt a scientific approach to designing and evaluating the research ecosystems that inform decisions with far-reaching implications.

Science strategies for harnessing the power of science

5.0
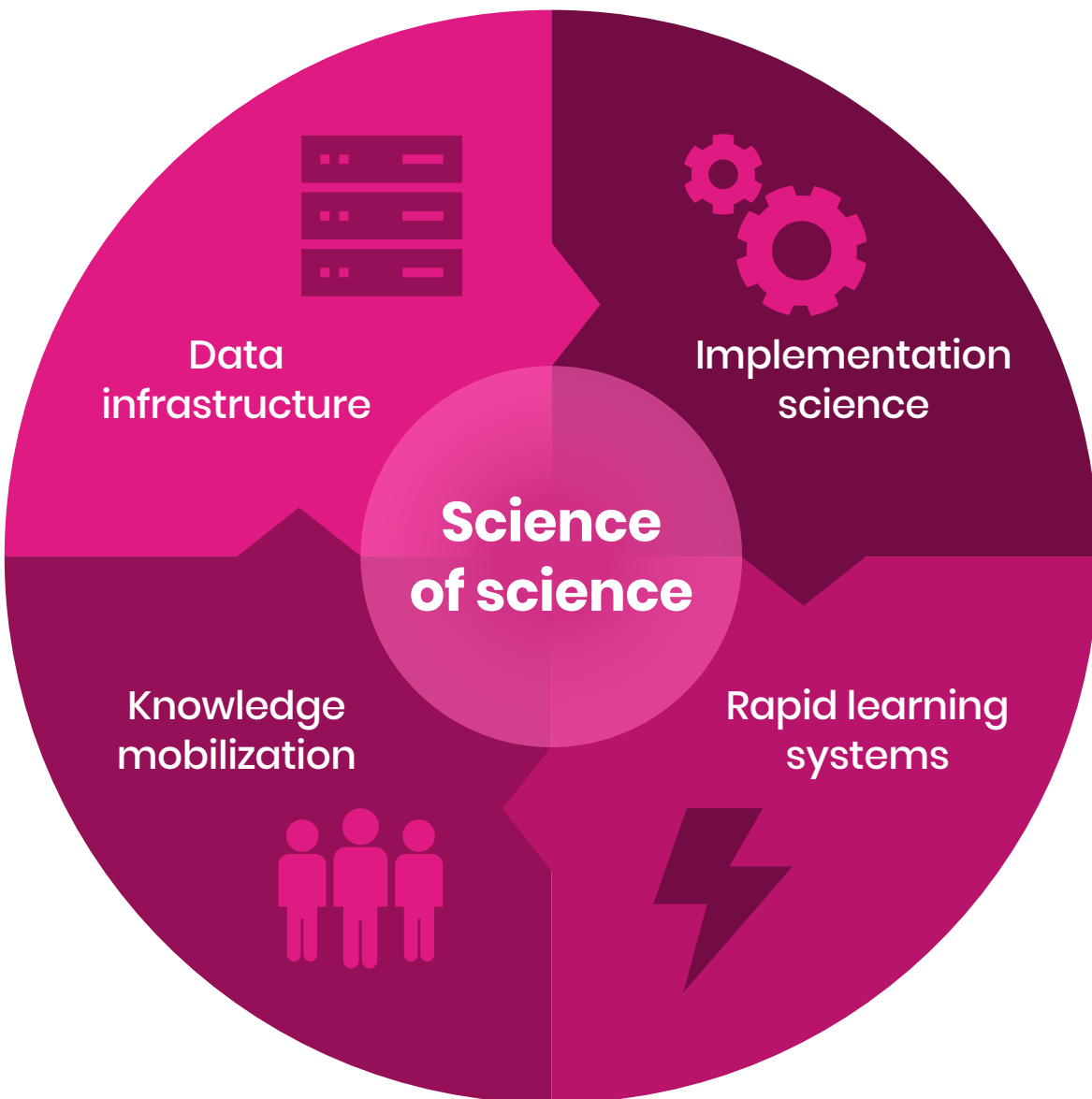
Next Steps

Following widespread engagement with researchers, research funders, government policymakers, civil society leaders and UN officials around the world, this *UN Research Roadmap for the COVID-19 Recovery* has identified key research priorities to inform the socio-economic recovery from the current pandemic and accelerate progress towards the SDGs. While organized within five pillars, the 25 research priorities in this *Roadmap* are linked by their focus on addressing the interdependence of people, systems and generations and advancing a framework for achieving equity, resilience and sustainability co-benefits through COVID-19 recovery efforts. The identified sub-priorities to these research priorities add further details regarding the knowledge needed at this crucial time. The *Roadmap* also highlights specific areas where focused research investments can generate quick-wins, best-buys and game-changers.

This *Roadmap* is both a commitment and a guide to bring the full power of science to bear on today's greatest challenges. Translating this initiative into research that informs an equitable, resilient and sustainable recovery effort will require a continuation of the partnership and collaboration that led to this *Roadmap* in the first place. Action is needed across the research ecosystem.

Researchers will need to take up the mantle to tackle the complex research priorities identified and inform transformative solutions for the myriad problems that the COVID-19 pandemic revealed and created.

Research funding agencies will need to work together to ensure sufficient and coordinated investment to address these research priorities.

Governments around the world and **civil society organizations** will need to ask for the research that they need to inform their recovery efforts, support it however they can, institutionalize the use of research evidence in their decision-making processes, and champion the mobilization of knowledge for evidence-informed policies and programs.

UN entities will be relied upon to bring further attention to the importance of science for development, support the continued strengthening of national research ecosystems, make use of science to inform the UN's COVID-19 recovery efforts, and forge innovative partnerships with existing scientific platforms and the research community more broadly.

Indeed, strengthened international collaboration will be vital to implementing this *Roadmap*. For example, collaboration among the world's research funding agencies can maximize the impact of investments in research while minimizing gaps and duplication. International joint research funding initiatives – particularly those that facilitate equitable partnerships and help to build local research capacity where it is most needed – would be a positive outcome of this *Roadmap*. Such initiatives can be facilitated by supporting, expanding and leveraging existing multilateral platforms such as the International Science Council, Global Research Council, InterAcademy Partnership, Global Research Collaboration for Infectious Disease Preparedness (GloPID-R), Bonn Group, Science Councils Granting Initiative in Sub-Saharan Africa, Trans-Atlantic

Platform, and the Belmont Forum. Existing partnerships between these platforms can be enhanced and their relationship with the UN facilitated in order to maximize the impact of the global scientific endeavour on public policy and action towards recovery. It will also be important for the global research community to take stock of the impact this pandemic has had on research ecosystems worldwide and work to strengthen them against future shocks. Leveraging science for transformative change requires building back research ecosystems that are themselves more equitable, resilient and sustainable and supporting their ability to respond to future crises.

Tracking international research investments towards the priorities identified in this *Roadmap* will be instrumental in facilitating continued collaboration.[85] The UK Collaborative on Development Research (UKCDR) and GloPID-R have partnered to create a COVID-19 Research Project Tracker,[86] which is a living database of funded research projects mapped against the World Health Organization's *Coordinated Global Research Roadmap for the 2019 Novel Coronavirus* that focuses on the immediate health response to the pandemic.[87] The UKCDR and GloPID-R are committed to incorporating the research priorities identified in this *Roadmap* into their tracker and living systematic review analyses for COVID-19-related research projects, which will facilitate improved coordination and impact.

Although this *UN Research Roadmap for the COVID-19 Recovery* was developed as a direct response to the ongoing pandemic and the socio-economic recovery period that will follow, the identified research priorities are also essential to accelerating progress towards the SDGs. The world was not previously on track to achieve these goals and it is clear that the business-as-usual path forward will not get it there. With COVID-19 serving as a grand revealer of the stark inequities, fragilities and unsustainable practices of the past and present, the world now faces a historic choice and opportunity to alter its trajectory. The key to success will be evidence-informed transformative changes that promote equity for everyone's benefit, build resilience into critical systems, and protect and restore the global environmental commons for generations to come.

Achieving the SDGs will ultimately require political will and bold action that is guided by science. Embedding research into the design and implementation of the COVID-19 socio-economic recovery is the best way to leverage the ingenuity of people, communities and countries to build a more equitable, resilient and sustainable world. Never before has there been a more important moment to mobilize science for a better and brighter future.

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85   Alice Norton and others, "Strengthening the global effort on COVID-19 research", *Lancet*, vol. 396, No. 10248 (August 2020).

86   UKCDR & GloPID-R, "COVID-19 Research Project Tracker" (Date accessed 11 September 2020).

87   World Health Organisation (WHO), "A coordinated global research roadmap: 2019 Novel Coronavirus" (Geneva, WHO, 2020).

Methodology

This *UN Research Roadmap* was developed through an ambitious ten-week process that engaged researchers, research funders, government policymakers, civil society leaders and UN officials from around the world. The process involved three parallel streams of activities: 1) rapid scoping reviews of existing research evidence; 2) steering groups of research funding agencies; and 3) consultations through virtual events, written submissions, key informant interviews and existing platforms. These activities focused on identifying the most important knowledge needs, research priorities and science strategies for achieving a transformative socio-economic recovery from COVID-19. Insights from these three streams of activities were synthesized to create this *Roadmap*.

Rapid scoping reviews were commissioned for each of the five pillars of the UN's socio-economic recovery framework. In consultation with subject-matter librarians, scoping review teams systematically searched for existing research on responding to and recovering from the socio-economic impacts of emergencies. The scoping reviews summarized 320 relevant studies, pinpointed key knowledge gaps, and identified promising opportunities for advancing gender equity and fostering environmental sustainability within each pillar. Scoping reviews were completed in four weeks during July and August 2020. These reviews informed the deliberations of the steering groups and laid the groundwork for Chapter 2 of this *Roadmap*.

In parallel, five steering groups comprising diverse senior leaders from 38 research funding agencies representing 25 countries and regions were convened to identify the most important research priorities for one of the five pillars of the UN's socio-economic recovery framework. Each steering group was tasked with identifying up to five research priorities for their assigned pillar and up to five additional sub-priorities for each research priority. Steering groups were additionally asked to highlight important considerations for addressing each research priority and to identify sub-priorities that might be quick-wins, best-buys and game-changers. To complete their work, each steering group met three to five times during July and August 2020, reviewed the scoping reviews, and engaged additional expertise within their agencies and their broader research communities as possible. The ten co-chairs of the five steering groups came together for a final meeting on August 31, 2020 to forge a final list of 25 research priorities. Steering group members then provided iterative feedback over email until the priorities were finalized. The work of the steering groups was the primary basis for Chapter 2 and informed Chapters 3 and 4 of this *Roadmap*.

From June to August 2020, consultation activities engaged more than 150 researchers, policymakers and implementation leaders to ensure that the *Roadmap* responded to the knowledge needs of those who are leading local, national, regional and global recovery efforts. The feedback gathered through these consultations informed Chapters 2 and 3 and was the primary basis for Chapter 4 of this *Roadmap*.

Consultation activities included a virtual roundtable discussion that was convened by Canada's International Development Research Centre on August 18, 2020 in English and French. The roundtable brought together 41 emerging and senior researchers and policy leaders to discuss the gender equity and environmental sustainability dimensions of the COVID-19 socio-economic recovery and identify associated knowledge needs and research priorities. The two-hour event included a mix of plenary discussions and breakout sessions. Participants came from 21 countries and two-thirds were women.

Following an open invitation to members of the International Network for Government Science Advice and targeted invitations from the UN Office for Partnerships, 47 individuals and organizations provided written submissions on the impact of the COVID-19 pandemic on their work, the evidence that had proved most helpful in their efforts to recover from the crisis, and the key knowledge needs that this *Roadmap* could help to address. Eight key informant interviews were conducted to explore these challenges, evidence sources and key knowledge needs in more detail. Early advice on science strategies and feedback on draft research priorities were also provided by 17 UN entities from the UN COVID-19 Technical Team, by five UN Resident Coordinators, and by leaders from eight multilateral scientific platforms.

Please see Appendix B for more information about the individuals and organizations who contributed to the scoping reviews, steering groups, consultations and other activities that led to this *Roadmap*.

Appendix B

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Rapid summaries of all steering group meetings were prepared by a team at UK Research & Innovation. This team included Naomi Beaumont, Sharon Brookshaw, Dr. Margaret Charleroy, Clare Hunter Funnell, Catherine Gilmore, Alicia Hazzard, Eira Hughes, Maria Calderon Munoz, Dana Olesen, Dr. Louise Richards, Jessica Tait, Maria Traill, Megan Wade and Dorota Walas.

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![United Nations logo]