The response to COVID-19 in urban settings requires a coordinated and multi-sectoral approach, engaging national and local government authorities as well as other segments of society. Local authorities and communities are particularly important partners for governments and UN and aid agencies. Critical sectors include health, water and sanitation, social services, transport, housing and energy, education, security, and commerce and economy.

Coordination is a critical component, especially for large cities. Uganda's capital Kampala has 40 percent of the total confirmed COVID-19 cases in the country. The Kampala Capital City Authority has set up a three-tiered coordination structure for its response, with a city task force led by the Director of Public Health & Environment, a Ministerial task force headed by the Minister for Kampala and Metropolitan Affairs, and Citywide and Division level task forces for Kampala City's five Divisions (Cities for Global Health, 2020).

A critical part of the COVID-19 emergency response in LDC cities has revolved around the identification of hotspots and provision of water and health services, especially in slums and underserved urban areas. Other priority areas include community engagement, waste collection, and targeted social protection schemes, as well as the continued provision of essential services, including combatting crime and insecurity, especially violence against women and girls (World Bank, 2020b). To do this, local authorities must receive financial means necessary, especially as they have suffered cuts from reduced central government transfers which are themselves facing severe fiscal crises.

In the medium-term, early recovery measures include business continuity, ensuring supply chains, re-starting transportation and other systems, providing safety nets for the urban poor as well as housing measures, micro-loans, rolling out employment programmes, and providing support for municipal finance. In the longer-term, local economic development strategies are critical for recovery, as are scaling up slum upgrading, strengthening emergency management, improving local governmental institutions, and investing in green recovery measures (World Bank, 2020c).

The COVID-19 pandemic has highlighted the inherent fault lines and weaknesses of unsustainable urbanization – and has further exacerbated them. The recovery, in the medium and long term, offers the possibility to address the root causes of unplanned, under-financed and uncoordinated urban growth in LDCs, while at the same time combatting climate change and building resilience. A consensus is emerging among experts that overcrowding, not density, is primarily responsible for rapid spread. Thus, maintaining acceptable levels of hygiene in houses, shops, places of employment and public transport are crucial. Health should become a new guiding principle in urban planning and governance (UN-HABITAT, 2020c).

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H. RESILIENCE PACKAGE FOR RECOVERY AND PREPAREDNESS FOR FUTURE SHOCKS

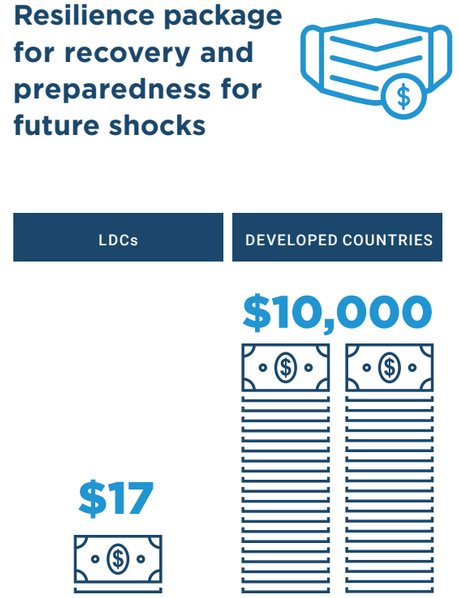
H.1 COVID 19—A SYSTEMIC RISK

The impacts of COVID-19 have reached all countries. Trade and travel are two key vectors that have pushed the spread of the pandemic. Millions of people, including increasing numbers in LDCs, are already affected by the virus and hundreds of thousands have lost their lives. In addition to the dismal human toll, the poorest and most vulnerable countries may face long-lasting effects the pandemic leading to more poverty, inequality and deprivation, as illustrated throughout this report.

The basic framework that assesses any risk or threat is typically constructed around four factors: hazard, exposure, vulnerability, and resilience[64], and it is the interaction of these four that leads to the economic consequences (Noy et al., 2020). In LDCs, people are highly exposed to the pandemic due to lack of adequate protective measures, extremely vulnerable due to weak fiscal and healthcare facilities and severely affected due to poor socio-economic resilience (see section A).

The pandemic affected the economies of all countries through demand and supply side shocks. Three such interrelated factors are: first, consumers and investors lose confidence in marketplaces affected by the pandemic or simply reduce their demand as a result of sudden loss of income, affecting the demand side of the market; second, absenteeism and reduction in the workforce negatively impacts the supply side; and lastly, public health safety measures aimed at reducing the spread of the virus severely affect economic activity through various mechanisms, such as a reduction, or halt of trade or travel (Nistha Shrestha, 2020). In a highly interconnected and complex global system, these factors have resulted in uncontrolled feedback loops and cascading effects leading to high uncertainties that are extremely difficult to manage.

Resilience package for recovery and preparedness for future shocks



COVID-19 related expenditures per capita in developed countries dwarfed those in LDCs in 2020

[64] Hazard refers to the possible, future occurrence of natural or human-induced physical events that may have adverse effects on vulnerable and exposed elements (White, 1973; UNDRO, 1980; Cardona, 1990; UNDHA, 1992; Birkmann, 2006b). Although, at times, hazard has been ascribed the same meaning as risk, currently it is widely accepted that it is a component of risk and not risk itself. Exposure refers to the inventory of elements in an area in which hazard events may occur (Cardona, 1990; UNISDR, 2004, 2009b). Hence, if population and economic resources were not located in (exposed to) potentially dangerous settings, no problem of disaster risk would exist. Thus, exposure refers to people, property, systems, or other elements present in hazard zones that are thereby subject to potential losses. Vulnerability refers to the propensity of exposed elements such as human beings, their livelihoods, and assets to suffer adverse effects when impacted by hazard events (UNDRO, 1980). Vulnerability is related to predisposition, susceptibilities, fragilities, weaknesses, deficiencies, or lack of capacities that favor adverse effects on the exposed elements(Cardona et al., 2012). Resilience is the "capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation (IPCCC).

While it is neither possible nor desirable to significantly reduce this interconnectedness, resilience towards various new shocks such as COVID-19 requires designing systems that facilitate recovery and adaptation to the new circumstances (Hynes et al., n.d). While all countries are affected, LDCs are overwhelmed in terms of secondary and tertiary shocks - many of them external, demonstrating their high vulnerability. While health impacts are still unfolding and accelerated in many LDCs towards the end of 2020 albeit with great variety across countries, all LDCs face severe socio-economic impacts from the global economic crisis, due to domestic and global demand shocks, significant drops in FDI and remittances, supply chain disruptions, temporary collapse in oil and commodity prices, tourism shocks, and others (OECD and UNCDF, 2020). These factors are going to further jeopardize the implementation of the 2030 Agenda, which was already off track in most of the LDCs even before the outbreak of the pandemic.

If the spread of the pandemic and its debilitating impacts are not properly managed, the pre-existing conditions for LDCs, namely high levels of extreme poverty, spiraling debt burdens, lack of fiscal space, weak production chain and high dependence on volatile commodity markets will further worsen, leading to even higher vulnerabilities. Similar to the global financial crisis, the impacts of COVID-19 are likely to last longer in LDCs, even after the pandemic will be contained.

This situation calls for building resilience in such a way that the systems are able to absorb threats and maintain their inherent structure and behavior and improve system function and capacity to counter disruptions (Nistha Shrestha, 2020) and help avert systemic collapse. Countries that have better policies and mechanisms in place could better handle the crises, but few LDCs have the capacity to do so. The Government of Rwanda has been dealing with the crisis quite efficiently compared to other countries in similar situations.

Box H.1: Rwanda's resilience helps contain spread of COVID-19

Due to recent improvements in corporate governance, Rwanda has made some of the largest leaps in the 2019 FM Global Resilience Index65 in recent years, jumping 35 spots to its current rank of 77th most resilient in the world and fourth highest in Africa (FM Global Resilience Index, 2020) . Most importantly, it looks particularly well positioned to bounce back from this type of crisis as the country successfully contained Ebola from its borders after an outbreak in the neighbouring Democratic Republic of the Congo. With its mix of universal health care, medical supply-delivering drones and temperature checks at its borders, Rwanda is well-equipped to contain the spread of the virus, especially when compared to other countries in the region. Rwanda was the first country in sub-Saharan Africa to impose a total lockdown and is already distributing free food door-to-door to the country's most vulnerable. While tourism is expected to be hit hard, as Rwanda is a popular destination for many regional and international conferences and exhibitions, experts are hopeful that the country will have relatively few casualties to the virus, making it well-positioned to recover quickly.

Source: BBC (2020)

[65] The FM Global Resilience Index measures the resilience of a country's business environment.

Furthermore, countries that could undertake rapid measures with appropriate national strategies and support could also manage the crises well. Singapore, one of the first countries affected by COVID-19, adopted a national strategy for the pandemic which emphasized preparedness through a whole-of-nation approach. With a rapid surge in case in April 2020, the health system resilience of Singapore faced a major test as how effectively it could respond to the crises by reorganizing systems to manage the new conditions while maintaining core functions (Nuzzo et al., 2019). With 58,929 positive cases, the country managed to contain the death level to 29 (WHO, 2021). Important measures that contributed towards mitigating the impacts of the pandemic include (i) clear leadership and governance which adopted flexible plans appropriate to the situation; (ii) timely, accurate and transparent communication from the government; (iii) public health measures to reduce imported cases, and detect as well as isolate cases early; (iv) maintenance of health service delivery; (v) access to crisis financing; and (vi) legal foundation to complement policy measures which provided legal basis to enforce social distancing measures, such as a limitation on mass gatherings, and hold individuals as well as business owners accountable for violation (Chua et al., n.d.).

Many LDCs are struggling to meet their ongoing development needs while maintaining their current account balance, which makes it difficult for them to adopt and implement counter-cyclical macroeconomic policies (UN-OHRLLS, 2018). There are many quick disbursing loan facilities and insurance programmes introduced by Governments and international organizations to address sudden needs for financial resources, which are difficult for LDCs to access, primarily due to their capacity constraints. While multilateral support to LDCs increased rapidly in the second quarter of 2020, there are also significant limitations as discussed in section G. Some of the programmes and tools, particularly tailored to LDCs, are alleged to have inadequate funds compared to growing needs of LDCs. Recent years have seen the emergence of innovative capital-market based risk financing mechanisms such as catastrophe bonds, contingent credit, and regional catastrophic insurance pools, but only a limited number of LDCs benefitted from them.

While the COVID-19 pandemic demands huge investments in public health services, social protection and post-crisis recovery, the associated global macroeconomic downturn is going to further debilitate the fiscal space of LDCs for years to come. COVID-19 also constrains LDCs' access to finance for recovery and the implementation of the SDGs because of: (i) falling domestic public revenue; (ii) increasing debt burden and declining access to private external finance; and (iii) liquidity and solvency crises affecting private firms, notably small and medium enterprises (SMEs) (Bayat-Renoux et al., n.d.) (see also section E.)

The simultaneous decline in available financing from all sources and increase in spending needs amplifies the so-called 'scissor effect' of sustainable development finance identified by the OECD (OECD. 2019). The 'scissor effect' means that public debt in LDCs is likely to increase further, unless their access to finance is drastically improved. While the G20 has taken some limited measures of debt relief, factors like poor macroeconomic conditions and increased perceived country risk, are likely to lead to higher cost of public borrowing for LDCs (Bayat-Renoux et al., n.d.)

H.2 BUILDING BACK BETTER AND ENHANCING RESILIENCE

There is no certainty or predictability about future shocks and hazards that may affect LDCs. As the COVID-19 pandemic eventually begins to recede, other shocks and crises will remain on the horizon, many of which will become increasingly severe under the influence of climate change and reinforce each other (Bowen et al., 2020).

The way human activities are affecting the natural system is causing serious damage to biodiversity and ecosystem services, which is likely to have severe impacts on economic and social systems. The radical uncertainty associated with complex systems makes it impossible to predict where the next crisis will come from (Hynes et al., n.d.). COVID-19 has highlighted how unprepared the world is to detect and respond to emerging infectious diseases and the need for aggressive and smart investments to simultaneously navigate COVID-19 and prepare for future pandemics and other shocks (McKinsey and Company, 2020).

Thus, it is vitally important to undertake measures at national, regional and global levels that facilitate fast recovery and build resilient economic and social systems to recover from the crises, shield against future hazards, while protecting the planet. A shift from the traditional ex-post approach towards a resilience-based ex-ante approach for the management of future potential systemic and covariate shocks is needed. This transformative approach will enable the system to serve multiple purposes including prediction, preparation, absorption, recovery and adaptation to a wide range of systemic threats. Thus, resilience must become a core element within system

management and operation to ensure the ability to continue to function despite disruptions like COVID-19, and should be able not only to adapt and improve in its aftermath, but to seize upon new or revealed opportunities (Hynes & Linkov, n.d.). Countries need to design systems, including infrastructure, supply chains, economic, financial and public health systems, that are dynamic, smart and resilient. This can bring additional benefits on top of addressing the impacts of COVID-19 by making the national economic system stronger and resilient.

To address the effects of COVID-19, an integrated approach bolstering recovery of economic, public health, social welfare, and other affected systems will have the greatest return-on-investment. This will not only restore the baseline of growth and stability, but also lead to 'bounce forward' in a way that could leave national and international systems in a far better and sustainable state than before (Hynes & Linkov, n.d.). For example, incorporating climate resilience into COVID-19 stimulus packages can deliver strong economic returns, address underlying drivers of inequality and poverty, fight biodiversity loss and reduce the spread of infectious disease (Chan, 2020). It is important to invest in economic activities that will create jobs, protect communities and natural ecosystems, and promote sustainable development in a cost-effective manner in our ever-changing world (WRI, 2020).

However, climate change mitigation and adaptation need to go beyond recovery from COVID-19, aiming at limiting global temperature rise to 1.5°C, which will facilitate not only building back better but also sustainable. To achieve this goal, the IPCC Special Report urges to accelerate the transition across four systems: energy, land and ecosystems, urban and infrastructure, and industry (Bayat-Renoux et al., n.d.). These transitions also require access to a wide range of finance options, technologies and technical know-how to operate in various economic systems.

For all countries, the green recovery approach offers an opportunity to restructure critical sectors of the economy with a view to transitioning to climate resilient, carbon neutral and resource efficient economies in an inclusive and socially responsible way. Not only would this be in line with national and international commitments made under the Paris Agreement, Sustainable Development Goals and other international environmental agreements, such as the Aichi Biodiversity Targets, but they would also support improving the well-being of communities and societies over the near and medium to longer term (OECD, 2020). For example, better air quality, improved water quality, effective waste management, and enhanced biodiversity protection will not only reduce the vulnerability of communities to pandemics but will also improve overall societal well-being and resilience (OECD, 2020). Similarly, an investment in energy efficient buildings can rapidly generate large employment opportunities, reduce energy poverty and increase resilience to extreme weather events. Likewise, investments in climate-resilient agriculture and water management will preserve livelihoods and foster ecosystem restoration while investment in low emission, resilient infrastructure will protect people, jobs and assets. Overall, the green recovery approach offers a new growth paradigm that is not only friendly to the environment, but also contributes to employment and poverty alleviation.

Although green recovery sounds highly promising, it also entails risks, challenges and costs for LDCs. There should not be a one size fits all approach in transitioning to green development and the principle of common but differentiated responsibility should apply to LDCs. Developed countries need to enable and support LDCs' sustainable development through finance, technology transfer and appropriate reforms to the global economic and financial architecture (UNEP, 2017). LDCs should also enjoy the full flexibility offered under the TRIPS agreement and the UNFCCC and can be exempted from the environmental standards and protectionist measures in their trading system.

The central pillar of the green development strategy is getting access to modern technologies and technical know-how. The international community should take a strong technology policy dedicated to LDCs with a focus on adaptation and dissemination of green technologies and the treatment of green economic activities as "infant industries" that require appropriate support, including subsidies, preferably time-bound, access to credit and perhaps some level of protection (UNEP, 2017). Industrial countries should facilitate the flow of such technologies directly, or through the private sector and public institutes that receive public R&D funding to be more active in transferring technologies to LDCs. The Technology Bank for LDCs needs to be strengthened to enable it to play an authoritative and meaningful role in support of the access to and transfer of technologies to LDCs.

The transition to a greener economy requires new skills, both for newly emerging jobs and for existing jobs that are evolving as highlighted in section B. The availability of workers and enterprises with the right skills for green jobs plays not only a critical role in initiating the transition to a green economy, but also in enabling a just transition that ensures social inclusion and decent work. Comprehensive measures for vocational training and reskilling can improve transferability across firms and sectors, thus enhancing ability to successfully relocate as needed (OECD, 2020). Developed and developing countries can play a key role in providing education and training to the youth population of LDCs to be able to benefit from the modern digital economy and technologies.

Developed countries can take a lead in transitioning to the green development strategies in their recovery measures. There is a significant opportunity for countries to integrate low-carbon development in their COVID-19 rescue and recovery measures, and to incorporate these into new or updated NDCs and long-term mitigation strategies that are scheduled to be available in time for the reconvened twenty-sixth session of the Conference of the Parties (COP 26) in 2021 (UNEP, 2020). A green recovery could reduce expected emissions by up to 25 percent and increase the chances of keeping the world below a 2-degree Celsius scenario by up to 66 percent (UNEP, 2020).

Despite huge potentials, the stimulus packages launched by developed countries have paid limited attention to green recovery measures. As of the beginning of December 2020, the total G20 stimulus funding is estimated at US$12.7 trillion, roughly divided between budgetary measures and liquidity support, which will boost their economies and accelerate development (Vivid Economics, 2020). Despite huge potentials and urgent needs, in the stimulus packages announced to date, nature and biodiversity have been particularly neglected. It is estimated that the announced stimulus to date will have a net negative environmental impact in 16 of the G20 countries and economies (Vivid Economics, 2020).

Developing countries, especially LDCs, on the other hand– already the most vulnerable to the impacts of COVID-19 and climate change–do not have the monetary and fiscal space to roll out ambitious recovery packages (Bayat-Renoux et al., n.d) (see also section E.). The group of 46 least developed countries collectively managed to put in place direct and indirect fiscal support by only 2.6 percent of their GDP, while the size of the stimulus for the developed countries averaged 15.8 percent of their GDP. In dollar terms, stimulus spending per capita averaged nearly $10,000 in the developed countries, while it amounted to less than $20 per capita in the least developed countries (UN DESA, 2021).

LDCs need immediate assistance from the international community to undertake recovery measures and build back better. Supporting LDCs is indeed the collective self-interest of all as the world is now highly interconnected and globalized, in which an outbreak anywhere is an outbreak everywhere. In a world where an ecosystem in a Chinese province can trigger a global economic crisis, it is important to abandon traditional, linear, compartmentalized ways of designing and applying policy, and cooperate pragmatically from local to international levels (Hynes et al., n.d).

It is therefore critical to undertake a comprehensive global approach to support the LDCs to enable them to redress the outbreak of COVID-19 and its devastating consequences and to reinforce their resilience systems to fight future crises. Recovery measures of the developed countries need to consider positive spill overs for developing and least developed countries.

H.3 MULTI-HAZARD EARLY WARNING SYSTEM (MHEWS)

LDCs are frequently affected by multiple crises at the same time with cumulative effects. The nature and origin of the threats may be different, but there are a lot of commonalities in their ultimate impacts as they generally put people at risk to encounter large and long-lasting losses to their livelihoods with the poor and marginalized segments of the society, including women and girls, being most severely affected. One of the lessons from both the COVID-19 pandemic and extreme weather events is the need to understand the vulnerability of individuals, communities, and societies so as to provide reliable, targeted guidance and warnings and ensure the willingness and capacity to prepare for a reasonable worst-case scenario as a basis for informed long-term planning (Rogers et al., n.d.).

It is therefore vitally important to understand the cascading effects of various hazards, where a specific incidence may have series of effects resulting in primary, secondary and tertiary hazards. For example, a meteorological event, such as a tropical cyclone, produces heavy rainfall, which in turn causes flooding that disrupts transportation networks, energy supplies, and other critical infrastructure, that causes loss of life or physical harm, social isolation, interruption to employment, education and livelihood activities, and psychological distress (Rogers et al., n.d.). Health shocks like COVID-19 also follow the same pattern in terms of primary, secondary and tertiary hazards related to it (see table H.1).

A Multi-hazard early warning system (MHEWS) is an important tool to mitigate the impacts of various hazards. The key objective of such a system is to disseminate clearly understood warning to people with the aim of protecting them from the direct and cascading impacts of the hazards on

Table H.1. Example of events with primary, secondary, and tertiary hazards and associated impacts

EVENT	PRIMARY HAZARDS	SECONDARY HAZARDS	TERTIARY HAZARDS
Virus	Infectious disease	• Disease spread by human behavior • Economic disruption	Overwhelming of health services • Loss of productivity Public finances overwhelmed • Loss of education opportunities • Unemployment • Civil disobedience Psychological problems

Source: Learning from Multi-Hazard Early Warning Systems to Respond to Pandemics, Rogers et al., n.d.

their lives and livelihoods. This can provide a clearly defined and well-understood framework for early action to cope with complex disasters, which can make it easier for authorities and other stakeholders, including populations at risk, to understand the full spectrum of a disaster's secondary and tertiary effects and thus can focus on preparedness efforts, and how best to provide more targeted warnings and response services (Rogers et al., n.d.).

The MHEWS is intended to convey risk levels in an easy-to-understand format, ensure credibility and accountability, and help create transparency between different stakeholders (Garcia & Fearnley, 2012). Well-known examples are the Pacific Tsunami Early Warning Centre and the Asteroid Terrestrial-impact Last Alert System (ATLAS). During the past decade, the international community focused attention to the development and application of early warning systems primarily in the area of meteorological disasters including volcanic, earthquake, tsunami and flood hazards.

The rapid spread of the COVID-19 pandemic has demonstrated that local, national, and international warning systems for pandemics are seriously underdeveloped. Five years ago, the UN Member States extended the definition of risk to include biological hazards, adopting the Sendai Framework for Disaster Risk Reduction, driven by countries that had experienced epidemics from strains of Ebola, MERS, and SARS. One of the framework's seven global targets is to substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments by 2030. Despite the Sendai Framework, only 81 countries have a national strategy for disaster risk reduction, and only a few of these reference pandemic threats (Fearnley & Dixon, 2020). The COVID-19 pandemic reveals in hindsight that the costs of mitigation were very small compared with the losses and therefore more should have and could have been done to mitigate the risk through an early warning system (Harford, 2020).[66]

Drawing lessons from COVID-19, the MHEWS, with its four diverse key elements: risk knowledge, monitoring and warning service, dissemination and communication, and response capability (UNISDR-PPEW, 2006), needs to include pandemics and other shocks alongside natural disasters. Several countries were successful by rapidly putting in place standardized early warning system for COVID-19. New Zealand has developed a set of protocols that underpins its COVID-19 alert system. This comprises four colour-coded alert levels–prepare, reduce, restrict, and lockdown–providing clear guidance on the risk assessment, and the range of measures in place. Each alert level has specific outcomes, summaries, and measures for public health, personal movement, travel and transport, gatherings, public venues, health and disability care services, workplace, and education so that there is clarity in what can and cannot be conducted at each alert level (Fearnley & Dixon, 2020).

The disaster management laws of some countries cover epidemics or pandemics as disasters. Samoa integrated epidemics and pandemics in its early warning system for the measles outbreak that affected the country in December 2019, which in turn enabled them to take early action as COVID-19 started spreading into the Pacific (Rogers et al., n.d.)

It is important for LDCs to put in place MHEWS, which will lead to understanding of the magnitude of the risks, identify the exposure and vulnerability of people, estimate potential threats and consequences, provide specific warnings and guidance, and suggest specific ex-ante mitigation and ex-post adaptation actions aiming at minimizing the physical, societal and economic damage to individuals, families and countries as a whole. Appropriate national strategies and strong international cooperation are essential to ensure that necessary tools are available and responses appropriate (Kluge 2020, H.H.P. 2020).

Many LDCs cannot afford to develop modern multi-hazard early warning systems at the national and regional levels. National strategies are often fragmented and unable to respond to unpredictable shocks and crises to a larger magnitude. The national policies and strategies are also under-funded owing to their weak financial and technical capacities. Some countries have enacted comprehensive risk reduction strategies, but fail to undertake corresponding regulatory reforms, institutions and human capacity building and mobilize necessary financial resources, technology and technical know-how.

H.4 MULTI-HAZARD CRISES MITIGATION AND RESILIENCE BUILDING MECHANISM FOR LDCs

Over the years, the international community has adopted a more coordinated approach in the global policy dialogue on various economic, social and environmental issues. While the three important global agreements (i) the Sendai Framework for Disaster Risk Reduction (ii) the 2030 Agenda for Sustainable Development and (iii) the Paris Agreement on Climate Change are unique in their respective focus and priorities, a common thread is the recognition of the need for an integrated approach to manage the risks of extreme events and climate across different economic sectors, levels of government and society. Such an approach would include pre-disaster investments in (i) risk analysis to understand the risks, (ii) early warning, preparedness, and preventive measures to reduce the risks; and (iii) innovative risk financing and risk transfer measures to distribute the residual risks (Golnaraghi, et al., 2017).

Given the depth, breadth and complexity of challenges that the least developed countries have been facing in the context of various hazards and shocks, there is no silver bullet that can address all of them. Therefore, a comprehensive Multi-hazard crises mitigation and resilience building mechanism for LDCs could be designed, leveraging existing measures and initiatives. The mechanism, which would entail a number of measures to be established or revitalized at the national, regional and global levels, would cover the response to various types of disasters and shocks, including pandemics. This will enable those countries to save lives and money, speed up response times and bring more predictability and rigor to the global response to shocks and crises (UN, 2017). A number of measures, including financial, regulatory and institutional, need to be put in place to establish and operationalize this mechanism for LDCs.

Catalyzing a more effective disaster response and resilience building requires integrated financing systems, that is, harmonized trigger systems where funds are released and anticipatory action implemented in a coordinated way according to aligned plans (Montier et al., 2019, Harries and Jaime, 2019). Bayat-Renoux et al. suggest the following initiatives to deepen and scale up funding in the era of COVID-19, namely:

1. Leveraging ongoing NDC enhancements efforts to foster policy integration between climate action, economic recovery and the SDGs.
2. Creating dedicated green and climate-resilient financial products in developing countries to access institutional finance.
3. Making blended finance work for nascent markets and technologies through better design and bold new mechanisms.
4. Deepening domestic financial sectors and financial institutions.
5. Exploring innovative financing instruments to increase developing countries' access to climate finance.

Enhancing resilience must start at the local level. A more resilient household is typically more prepared as a result of having access to a range of counter-cyclical social protection systems and insurance instruments to draw upon when savings are depleted and/or a shock is especially severe. The capacity to react to shocks or adaptation is dependent on various forms of capital including human (health and education), natural, financial, physical and social and all these assets play a role in risk-smoothing, adaptive capacity and recovering from shocks (UN-OHRLLS, 2018). Strong social protection systems for the poorest and marginalized groups of people, that are capable of reaching affected households with immediate assistance, are vitally important to ensure their resilience against any type of shock and hazard. As an immediate response, direct cash transfers, food for work and education programmes and other forms of social protection can provide some relief from the immediate shocks (OECD, 2020). Furthermore, it is important to build a larger and more diversified asset base, including productive, financial, and human capital-related assets and to leverage such assets to relocate away from an area of spatially concentrated risk (Bowen et al., 2020).

[66] In 2015, Bill Gates gave a TED talk called "The next outbreak? We're not ready"; which has been watched by 2.5 million people by the end of 2019, but no major action was taken.

STATE OF THE LDCs

LDCs need to strive for universal health coverage for the resilience of health systems. Planning for a "reserve army" of health workers with flexible mandates at national, sub-regional and regional levels, which was introduced in several countries after previous epidemics, can be very useful to provide additional support to the regular healthcare workforce and allows for a more flexible management of human resources across regions. Bill Gates in 2015 suggested creating an army of specialists from many disciplines to meet whatever crisis or epidemic might arise (Hynes et al., n.d.).

It is also important to put in place well-designed market-based risk transfer tools which can make an important contribution to more reliable and timely post-disaster relief and response, early recovery and ultimately the reconstruction phase. However, there is still a huge gap in availability of insurance protection. In LDCs and other low-income countries typically more than 95 percent of all losses related to all natural hazards remain uninsured (Golnaraghi, et al., 2017).

For an effective application of risk transfer, the public sector needs to provide enabling legal and regulatory environments, including clearly defined property rights, land zoning, freedom from corruption and regulatory certainty. For innovative products, such as parametric insurance, which can be designed for households, farms and other firms, or at the level of local and regional administrative units (Golnaraghi, et al., 2017). Weak capital markets, poor credit ratings and sometimes lack of adequate regulatory regimes impede LDCs to introduce weather-related derivatives and insurances at low-cost premiums.

It is also crucial for LDCs to secure fast-tracked and easy access to various risk mitigation and resilience-building funds at the regional and global levels, including funding for adaptation to climate change; and getting access to adequate bilateral financial and technical support for ex-ante and ex-post measures in the LDCs. Vulnerable countries like LDCs, to successfully recover and advance, will need urgent access to financial support and future debt relief from governments, multilateral development banks, and donors, including as committed under the UNFCCC (GCA, 2020).

With development finance accounting for a prominent share of the financing for sustainable development mix in LDCs, ODA continues to be a critically important source of finance for these countries but its quantity and quality needs to be improved (see section G.).

The Green Climate Fund (GCF), which is the largest dedicated climate fund has so far provided US$2.1 billion for the LDCs, or 37 percent of its global portfolio. At the end of 2020, 32 LDCs had submitted proposals to the Green Climate Fund (GCF) Readiness and Preparatory Support Programme, of which 22 had received approval. However, the climate financing received by the least developed countries falls far short of the estimated requirements and needs to focus more on mitigation (UN, 2021).[67]

As it is unlikely that domestic and foreign public funds will be sufficient to cover the growing needs of LDCs to reach the SDGs, they also need to seize on the potentials offered by innovative finance as well as new financial products, such as green bonds. However, in developing countries, notably LDCs, the market for green bonds remains in its infancy due to shallow capital markets; the high cost of issuance due to LDCs' lower credit rating; the issue of minimum size; and the lack of appropriate institutional arrangements for green bond Management (Bayat-Renoux et al., n.d.). Efforts are ongoing to address these challenges. International financial institutions are assisting some developing countries and LDCs to issue green local currency bonds. For example, GCF is supporting Jamaica to set up the Caribbean's first regional green bond exchange through its Readiness and Preparatory Support Programme (Bayat-Renoux et al., n.d.). Such support needs to be extended to all LDCs to attract required level of capital.

Catastrophe Bonds (Catbonds) constitute the most common form of insurance-based lending instruments. Catastrophe bonds are reinsurance contracts that allow the issuer to access higher levels of capital in the event of a triggering event through a special purpose vehicle set up solely to issue the bond. Investors take the risk of an event occurring in exchange for an attractive yield and access to assets uncorrelated to traditional asset classes. Catbonds do not necessarily involve traditional debt issuance, with covers typically provided for natural catastrophe exposures and typically no restriction on the use of the proceeds of the catastrophe bond (The Geneva Association, 2017).

To reduce vulnerability from external debt, LDCs can also consider implementing countercyclical loan loss provisioning, which makes higher provisions during good times to build buffers that can be drawn down during tough times. This is often called the "safety-and-soundness" principle. The countercyclical provisions (CCPs) are loan arrangements and debt securities that feature an ex-ante covenant, in which countries' debt service obligations are temporarily permitted to fall in response to an external shock, as measured in a predetermined way. For instance, parametric meteorological data can

[67] The LDC 2050 Vision Report has estimated the costs of implementing adaptation priorities in LDCs' Nationally Determined Contributions at $40 billion annually between 2020 and 2030.

be used to assess the severity and expected costs of a storm or hazards, or through the use of economic data to determine the impact of commodity price volatility on a country's terms of trade (Hydrant, 2016).

While in the immediate and short-term response to the COVID-19 crisis, grant support is and remains critical, blended finance can play a key role to support LDCs in mobilizing resources for the medium-to-long term recovery. LDCs continue to receive the lowest share of only 6 percent of private finance mobilized by official development finance interventions, although the volume has been increasing (OECD and UNCDF, 2020). This can catalyze private finance by using scarce public resources to de-risk low emission, climate-resilient investment opportunities and address certain country risks (Bayat-Renoux et al., n.d.).

As further elaborated in section G., mobilizing blended finance will require immediate action to start building a pipeline of bankable projects aligned with LDCs' national development strategies and their emerging Integrated National Financing Frameworks, that can attract investors' appetite. For blended finance to be effective for the COVID-19 recovery, the wide range of actors involved-donors, DFIs, MDBs, impact and commercial investors, local financial institutions, etc.- should coordinate on how to address underserved actors and sectors, e.g. target MSMEs, provide decent and sustainable jobs, invest in sustainable infrastructure, promote gender equality and support health systems as well as the transition towards digital economies (OECD and UNCDF, 2020).

Well-designed parametric insurance can improve the efficiency of the resources that are available because of their very nature of early recognition of the severity of disasters. The CCRIF SPC (formerly the Caribbean Catastrophe Risk Insurance Facility) is the world's first multi-country risk pool that is based on parametric insurance. It has been providing parametric catastrophe insurance covering weather events and earthquakes for Caribbean Governments since 2007, and excess rainfall since 2013 (UN, 2017). In 2016 pay-outs of US$23.4 million to Haiti were made under the country's tropical cyclone and excess rainfall policies, as a result of Hurricane Matthew (CCRIF, 2020).

Similar insurance schemes have been developed in other regions. The Pacific Catastrophe Risk Insurance Company (PCRIC) was established in June 2016. It secured increased reinsurance coverage of $45 million for the 2017-2018 cyclone season, providing five participating Pacific Island Countries with parametric insurance protection for climate and seismic risks. So far it only covers two graduated countries, Samoa and Vanuatu. Capital was provided through a Multi-Donor Trust Fund (Artemis.bm, 2020).

In May 2014, the African Risk Capacity Insurance Company Limited launched a catastrophe insurance pool for its African members to improve responses to climate-related food security emergencies, which has made rapid payouts to several African LDCs affected by droughts. It is estimated that the cost of ARC is outweighed more than 4 times by the benefits compared to traditional emergency appeals (UN-OHRLLS, 2018). Currently 9 African LDCs have joined the risk pool and have approved Contingency Plans that stipulate how payouts would be utilized. ARC has also expanded its product range by launching a tropical cyclone insurance in 2020.[68]

Parametric catastrophe insurance requires extensive environmental data as well as sophisticated modelling technology. Most LDCs do not have access to this information, nor the technical capacity to design parametric insurance programs, thus technical assistance needs to be provided to LDCs to overcome these deficiencies. There is also a strong case for donor subsidies of premiums for such insurance if the country undertakes effective disaster risk management, to allow more LDCs to participate, which would further diversify risk and enhance efficiency (UN-OHRLLS, 2018).

While parametric insurance enables rapid payouts, the amounts disbursed in general do not cover the costs for rebuilding which can be, in some cases, more than 100 percent of GDP, especially in small countries. Thus, there is the need for complementary mechanisms to cover the cost of disasters and recovery. However, in 2020, many humanitarian and other appeals remained grossly underfunded (see also section G.).

It is also noteworthy that relying on insurance alone will not be enough as it merely allows for the ex-post transfer of climate risk, which does not necessarily involve the proactive reduction of climate risks upfront (The Geneva Association (2017). As the risks are higher in LDCs, the cost of insurance will also be higher. Thus, it is important to reduce and address the vulnerability of LDCs to lower the premiums. LDCs also need support by development partners, including IFIs, in accessing parametric insurance schemes, for example through support for an LDC entering an insurance scheme for the first time and subsidized premiums (UN-OHRLLS, 2018). Concessional insurance can help countries secure premium financing for a number of years while they progressively include premiums into their budgets (World Bank, 2017).

[68] Updates–African Risk Capacity

H.5 CONCLUSION AND RECOMMENDATIONS

If the spread of the pandemic and its debilitating impacts are not properly managed and contained, the pre-existing conditions of LDCs, namely high levels of extreme poverty, unsustainable debt burdens, lack of fiscal space, fragile production chains and dependence on volatile commodity markets will further worsen. Like the global financial crisis, the impact of COVID-19 will further exacerbate poverty, increase vulnerability and lead to greater instability in the LDCs. The effects of COVID-19 will last longer in LDCs than in the rest of the world. It is possible to envision a scenario where the pandemic has been largely contained in developed and in many developing countries while still remaining unrestrained in the LDCs. This will further widen the gap between LDCs and other countries and increase dramatically the divide among the LDCs and the rest of the world.

One of the lessons from both the COVID-19 pandemic and extreme weather events is the need to understand the vulnerability of individuals, communities, and societies so as to provide reliable, targeted guidance and warnings and ensure the willingness and capacity to prepare for a reasonable worst-case scenario as a basis for informed long-term planning.

This situation calls for building resilience in such a way that the economic systems are able to absorb threats and improve system function and capacity to counter disruptions to avoid the extensive loss of lives and livelihoods. Countries that have better policies and mechanisms in place could better handle the crises. Furthermore, countries that could undertake rapid measures with appropriate national strategies and support could also manage the crisis well. LDCs need to make a shift from the traditional ex-post approach towards a resilience-based ex-ante approach for the management of the COVID-19 pandemic as well as future potential systemic and covariate shocks.

Countries need to design systems, including infrastructure, supply chains, economic, financial and public health systems, that are dynamic, smart and resilient. This can bring additional benefits on top of addressing the impacts of COVID-19 by making the national economic system stronger and resilient.

Important measures that could mitigate the impacts of the pandemic include (i) clear leadership and governance which adopted flexible plans appropriate to the situation; (i) timely, accurate and transparent communication from the government; (iii) public health measures to reduce imported cases and detect as well as isolate cases early; (iv) maintenance of health service delivery; (v) access to crisis financing; and (vi) legal foundation to complement policy measures.

To address the effects of COVID-19, an integrated approach bolstering recovery of economic, public health, social welfare, and other affected systems will have the greatest return-on-investment. This will not only restore the baseline of growth and stability, but also lead to 'bounce forward' in a way that leaves national and international systems in a far better and sustainable state than before.

The green recovery approach offers a new growth paradigm that is not only friendly to the environment, but also contributes to employment and poverty alleviation. Developed countries need to enable and support LDCs' sustainable development through finance, technology transfer and appropriate reforms to the global economic and financial structures. LDCs should also enjoy the full flexibility offered under the TRIPS agreement and the UNFCCC and should not be subject to environmental standards and protectionist measures in their trading system. Supporting LDCs is indeed the collective self-interest of all as we live in a highly interconnected and globalized world.

The international community should take a strong technology policy dedicated to LDCs with a focus on adaptation and dissemination of green technologies and the treatment of green economic activities as "infant industries" that require appropriate support including subsidies, preferably time-bound, access to credit and in some cases some level of protection.

A focus on gender equality can contribute greatly to building back better through the enhanced contribution of women and girls to long term sustainable development. Meeting women's need would bring substantial benefits to the family and society and thereby contribute to reduce the vulnerability of women and girls against various hazards and shocks.

A MHEWS is an important tool to mitigate the impacts of various hazards to a greater extent. This can provide a clearly defined and well-understood framework for early action to cope with complex disasters, which can make it easier for authorities and other stakeholders, including populations at risk, to understand the full spectrum of a disaster's secondary and tertiary effects and thus where to focus preparedness efforts, and how best to provide more targeted warnings and response services.

Drawing lessons from the COVID-19, the MHEWS, with its four diverse key elements - risk knowledge, monitoring and warning service, dissemination and communication, and response capability–will support LDCs to better position themselves against shocks and crises. LDCs need support to develop and implement modern multi-hazard early warning systems at the national and regional levels.

Building resilience against various potential covariate shocks and crises is the first line of defense to protect lives and livelihoods of the people. It is important to build the capacity of the household to prepare for, cope with, and adapt to shocks in a manner that protects their well-being: ensuring that they do not fall into poverty or become trapped in poverty as a result of the impacts.

Given the depth, breadth and complexity of challenges that the least developed countries have been facing in the context of various hazards and shocks, there is no silver bullet that can address all of them. Therefore, the international community may consider establishing a comprehensive multi-hazard crises mitigation and resilience building mechanism for LDCs by leveraging existing measures and initiatives. A number of measures, including financial, regulatory and institutional, need to put in place to establish and operationalize this mechanism for LDCs. The LDC5 Conference offers an opportunity to agree on a multi-hazard early warning system and a comprehensive multi-hazard crises mitigation and resilience building mechanism for LDCs including its terms of reference, institutional mechanism and funding modalities.

Allocation of ODA taking into account the LDC criteria and especially the economics and environmental vulnerability index would increase finance available for resilience building, especially for the most vulnerable LDCs. In addition, many LDCs that are in or at high risk of debt distress need long-term solutions to their debt problems in order to be able to finance the building back better agenda.

It is also crucial for LDCs to secure fast-tracked and easy access to various risk mitigation and resilience-building funds at the regional and global levels, including funding for adaptation to climate change; and getting access to adequate bilateral financial and technical support for ex-ante and ex-post measures in the LDCs. LDCs also need to seize on the potentials offered by the innovative finance as well as new financial products, such as blended finance and green bonds. Catbonds constitute the most common form of insurance-based lending instruments.

LDCs can also consider implementing the countercyclical loan loss provisioning, which makes higher provisions during good times to build buffers that can be drawn down during tough times. This is often called the "safety-and-soundness" principle. Blended finance can play a key role to support LDCs in mobilizing resources for the medium-to-long term recovery.

For the large financing needs of resilient infrastructure and sustainable energy it is necessary to combine financing from different sources in a way that uses the most concessional resources where they provide the highest social and environmental returns. Capacity building in the design and implementation of infrastructure projects as well as support for the preparation of bankable projects is urgently needed.

Such investments will not only create employment but also enhance the competitiveness of LDCs, enable regional integration and diversification of their economies to make them more resilient to commodity price shocks. Likewise, creating an enabling environment for MSMEs, including in agriculture and providing targeted support is crucial to ensure that environmental sustainability is aligned with poverty eradication and the reduction of inequalities.

Digital technologies have proven to be effective against the various disruptions caused by COVID-19, if affordable access is in place (Mezzour et al., 2020). Countries that are advanced in digital access including mobile and internet connectivity could quickly resort to alternative arrangements for education, commerce and businesses as well as office works (see also section F.). The use of AI based simulations in healthcare can contribute to improving pandemic management by establishing a large-scale smart decision-making system (Mezzour et al., 2020). Access to modern technologies is essential for LDCs to cope with abrupt unseen shocks and hazards.

In order to achieve the goal of building back better in LDCs, reverse the set-backs due to the COVID-19 crisis and enhance their resilience to future shocks, the alignment of both domestic and external finance with the SDGs is crucial.

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Front cover: Fatou Sadio Mangara, second year pediatric student and intern at the neonatal unit at the Gabriel Touré Hospital in Bamako, Mali. Mali has been ranked as one of the countries in the world least prepared to respond and cope with the impacts of the COVID-19 crisis.

Photo: UNICEF