UPDATE ON THE CGIAR RESEARCH RESPONSE TO COVID-19

December 2020

The COVID-19 pandemic has caused a global health crisis and massive disruptions to economies and livelihoods. As the global leader in agricultural research, CGIAR immediately took action to analyze and counter the pandemic's potentially devastating impact on food security and nutrition worldwide, particularly in low- and middle-income countries (LMICs), first through the existing research programs, and then with the establishment of a COVID-19 Hub in July to develop additional research and coordinate system-wide efforts. This report details that research response to date.

IMPACTS OF COVID-19 AND RESPONSE MEASURES ON POVERTY, FOOD SYSTEMS AND FOOD SECURITY

The pandemic, combined with the social and economic impacts of measures to stop its spread, threatens food, nutrition and water security, as well as continued progress on global goals to end poverty and hunger. However, the pandemic's impacts have been wide-ranging and heterogenous across countries, sectors, and households. While some parts of the food value chain – such as the hospitality and food service industry – have been devastated by the pandemic and related lockdowns, other parts – such as food supply and small- and medium-sized enterprises (SMEs) – have proved surprisingly resilient (Reardon and Swinnen 2020).

The pandemic triggered a deep recession in 2020, with global gross domestic product (GDP) projected to contract by 4.4 percent. In 2021, growth is projected to rebound to 5.2 percent[1] (IMF 2020). CGIAR country models estimated a sharp drop in national incomes for some countries during the second quarter of 2020. In Kenya, Myanmar, Nigeria, Rwanda and South Africa, for example, the models estimated a decline of 30 to 40 percent in total GDP during these countries' lockdown periods (Thurlow, 2020). These models estimate that

many countries will begin 2021 with lower incomes and fewer jobs than they had at the start of 2020. Although restrictions will eventually be eased, they will have lasting effects on many businesses and households.

In many countries, major disruptions are being caused not by shocks emanating from the global economy but rather by the countries' own lockdown restrictions and social distancing policies (Béné 2020; Swinnen and McDermott 2020). The COVID-19 Policy Response Portal captures policy responses to the pandemic. While the global economic recession will have adverse effects for most people, it will have the largest effect on poor people's incomes. Working hours in LMICs declined by an estimated 23.3 percent in the second quarter of 2020, with working-hour losses expected to remain high in the third quarter of 2020 (ILO 2020). Meanwhile, contrary to historic trends, remittances during the pandemic are predicted to decline by about 20 percent (US$445 billion) in 2020 (Ratha et al. 2020).

Without unprecedented emergency relief, the economic fallout of COVID-19 could increase the number of people in extreme poverty by 20 percent in 2020, equivalent to 140 million people (Laborde et al. 2020b). In Bangladesh, for example, extreme poverty had risen 60 percent by April, with 57 percent of women-headed households reporting that their incomes were reduced to zero as a result of economic lockdown (BRAC 2020). OCHA (2020) predicts the pandemic could result in an increase in the number of acutely food insecure people, from 149 million to 270 million by the end of 2020. Women and children will be most affected (Headey et al. 2020).

Despite initial concerns, global food markets remained resilient to COVID-19 shocks, though some price volatility was observed in domestic markets. In India, for example, a high increase in prices was observed for

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[1] Predictions from the 13 October 2020 blog by the IMF Chief Economist Gita Gopinath.

onion, potato, and tomato ([Food Price Monitor 2020](#)). However, increased poverty is affecting food consumption; in China, for example, lower incomes led families to reduce spending on food, substituting more expensive goods (meat, fruits, vegetables) with bulk purchases of grains and staples ([Rozelle et al. 2020](#)). Similar trends were observed in Kenya with reported disruptions to livestock markets in northern Kenya ([Omosa 2020](#)) and urban slum consumers reporting a decrease in total food consumption, and a significant reduction in fruits and vegetables, as a result of the pandemic ([Chege et al. 2020](#)). Some areas have shown more resilience; in Ethiopia, while most people reported lower incomes, overall food consumption was stable, though diets shifted to incorporate more grains and staples, and fewer vegetables ([De Brauw et al. 2020](#)). In some cases, restrictions on market activity exacerbated disruptions to the agri-food system. For example, since the onset of COVID-19, 22 countries have implemented some kind of export restriction (mostly bans), affecting approximately 5 percent of globally traded goods (as a share in calories) ([Laborde et al. 2020a](#)).

The negative direct and indirect effects the pandemic has had on some parts of food systems strengthen the case for the One Health approach as a cost-effective way to reduce risks, with cross-sectoral, coordinated investments in human, environmental, and animal health ([Mardones et al 2020](#)).

KEY ADAPTATION MEASURES IMPLEMENTED BY GOVERNMENTS, THE PRIVATE SECTOR AND INTERNATIONAL ORGANIZATIONS

The agri-food system – particularly SMEs – has proven surprisingly resilient in the face of the COVID-19 pandemic and has demonstrated impressive abilities to adapt. In India, SMEs and informal vendors have been mostly successful in negotiating lockdown challenges, while large-scale processing firms were able to continue functioning, albeit at lower capacity ([Narayanan 2020](#)). Supply chain innovations have included social innovations (promoting flexibility in labor supply), business strategy (diversifying customer bases, inputs and logistics), technology (using digital tools to facilitate transactions), and financial resilience

(connecting producers and retailers to consumers) ([Reardon and Swinnen 2020](#)). As we look to "build back better," a group including chief executives, policy makers, philanthropists, and academics reaffirmed their [commitment to building a circular economy](#) in the wake of COVID-19. This includes a commitment to redesign food products and supply chains to regenerate nature, eliminate the concept of waste, and connect local production and consumption where appropriate.

However, due to the impacts of reduced incomes and already high rates of poverty in some areas, the private sector alone will not be able to ensure that some of the most vulnerable people have access to food; the public sector must also rapidly pivot.

In an effort to mitigate the pandemic's impacts on poverty and food insecurity, 200 countries and territories have planned or put in place 1,055 social protection measures since March ([Gentilini et al. 2020](#)), with cash transfers and food aid the most commonly implemented forms of social protection ([Fang et al. 2020](#); [Gentilini et al. 2020](#)). Approximately 40 percent of COVID-19 policy responses tracked to date were determined to be gender-sensitive ([UNDP 2020](#)), though this number may be lower for social protection responses, especially near the start of the pandemic ([Hidrobo et al. 2020](#)).

International organizations are also implementing programs to help countries cope with the pandemic's consequences for food security. World Food Programme (WFP), for example, is [leveraging its existing expertise](#) in emergency response, logistics, and supply chains to provide health and humanitarian services where commercial capacity currently doesn't exist. This includes strengthening or expanding social protection programs; sustaining food production, trade, distribution, and consumption; and providing alternatives to school feeding. The Food and Agriculture Organization of the United Nations (FAO) is supporting policy analyses and assessing the impact of COVID-19 on food systems, concentrating its efforts in [four areas](#): understanding and mitigating the pandemic's impact on food and agriculture,

safeguarding the food security and livelihoods of the most vulnerable, understanding the virus's origin and spread, and ensuring a unified One Health approach. The World Bank is making up to [$160 billion in financing](#) available to mitigate the health, economic and social shocks countries are facing, and working to rapidly redeploy resources in existing projects, including through contingent financing instruments designed for catastrophes such as pandemics.

CGIAR COVID-19 HUB PRIORITY ACTIONS AND PROGRESS OF WORK

The CGIAR COVID-19 Hub provides a coordinated research response to the global pandemic threatening health systems, national economies, poverty and food security. Convening researchers, funders and key stakeholders, the Hub focuses on supporting response and recovery work, at the national and global level, across CGIAR research themes, harnessing knowledge for emergency response, recovery and resilience.

Housed in the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH), the Hub provides evidence, innovations and tools to policymakers, partners and food system actors under four prioritized Work Areas with the following objectives:

Work Area	Objective
1. Address value chain fractures	Develop country, value-chain and commodity specific case studies and collaborative research to inform policy and investment decisions and actions to restore food / agriculture value chains.
2. Integrate a One Health approach to COVID-19 responses	Link health, economic and environment models and provide targeted reports and joint modeling for 3-4 priority countries, plus a series of high-profile evidence papers. This will build understanding of human, animal, environment health, de-risk agricultural hotspots and avoid future zoonosis cross-over events.
3. Support country COVID-19 responses	Establish a response network across CGIAR partner countries and provide national partners with analyses, evidence-based recommendations and scalable solutions on policies, strategies and investment options for integrated COVID-19 crisis and recovery responses.
4. Address food systems' fragility and build back better	Identify the impacts of COVID-19 on food systems' fragility and integrate foresight modelling results and prioritized solutions to improve resilience and build back better, with particular emphasis on vulnerable groups and country priorities.

The research agenda for each Work Area is established and managed by a designated Working Group that includes researchers from across the CGIAR system, bringing together a wide range of expertise to enable an agile multidisciplinary response to the pandemic.

The Hub has launched a number of activities, with initial outputs expected by the end of 2020 and additional research to be undertaken in 2021, with action plans that can be scaled up depending on funding availability.

Work Area 1: Address value chain fractures

This Work Area is filling critical gaps that currently exist in understanding the effects of the pandemic on value chains in low- and middle-income countries (LMICs), focusing on immediate needs to improve food availability and accessibility through well-functioning value chains, both formal and informal. It focuses on "major" value chains, whether these are for food consumption (especially nutritious, perishable foods) orlivelihoods (e.g. rubber, coffee, cocoa, fuelwood) and pays attention to differences in types of value chain

(short vs. long, informal vs. formal, local vs. regional etc.). Research outputs build on research already being conducted by CGIAR to test innovations to strengthen efficiency and inclusion in value chains, track government responses by CGIAR and other organizations (e.g. the COVID-19 Policy Response Portal), and contribute to decisions on policies, programs and investments.

Activities in progress:

1. Articulating key research questions and a conceptual framework for research to assess the effects of COVID-19 and policy responses to mitigate COVID-19 on food supply chains. Identify characteristics of value chains, policy actions and innovations that have contributed to resilience in value chains.

2. Collating and synthesing completed research from within and outside CGIAR on key questions related to value chain fractures and disseminating findings.

3. Developing a research workplan for 2020-2021 based on the key research questions and high priority gaps identified, with deliverables and milestones.

Target deliverables for end-2020:

- Inventory (including annotated bibliography) that summarizes studies related to value chain performance during COVID-19, including identification of specific areas of fracturing or resilience.

- Final framework for analysis of value chain fractures during COVID-19.

Work Area 2: Integrate a One Health approach to COVID-19 responses

CGIAR and its partners use integrated modeling to provide policy recommendations and address urgent issues on the role of agriculture in spreading zoonoses and how we can avoid future crossover events. This work includes de-risking agricultural hotspots using conventional epidemiology (surveillance and surveys, case-control studies, geospatial mapping/modelling at

the country level) in both animal and human populations and possible intervention trials. It will also help to avoid future crossover events by integrating lessons from COVID-19 and other emerging infectious diseases to better understand the transmission dynamics of zoonotic diseases. Finally, this includes integrated impact modelling of health, epidemiology, economics and agri-food systems, utilizing the newly-formed collaboration between CGIAR's economic modelers and the health modelers at the London School of Hygiene & Tropical Medicine (LSHTM).

Activities in progress:

1. Developing a typology of situations in which crossover of new pathogens from animal to human hosts is likely and/or has been documented, with policy options for reducing the risk of future crossover and their costs and benefits.

2. Epidemiology:
   - A framework and review of risk factor studies and risk analysis.
   - Risk factor studies linked to framework with primary data collection. The contexts will be on both animal and human from slaughterhouses and hospitals (Kenya).
   - An epidemiological investigation on the interspecies transmission of viruses between bats, pigs and humans in Vietnam.
   - Case control study to identify agriculture-related risk activities.
   - One Health risk analysis of COVID-19 in aquatic systems (case control study to identify agriculture-related risk activities).

3. Integrated health and economic modelling: The partnership between LSHTM and the International Food Policy Research Institute (IFPRI) integrates economic and epidemiological modelling methods to estimate the impact of COVID-19 on public health, agriculture and national economies of selected LMICs. The work brings together: (a) the health and healthcare system burden estimates from LSHTM's COVID-19 transmission and global

healthcare system costing models, and (b) IFPRI's well-established, long-term models of agricultural and broader macroeconomic (whole economy) processes. This joint work will be piloted for case studies in specific countries for which researchers have current health and economic productivity models. By integrating these modelling approaches, researchers will be able to assess the expected impact of COVID-19 on jobs, household incomes and GDP under alternative mitigation scenarios.

This work will also address the distribution of the estimated impacts from alternative scenarios assessing whether some population subgroups (for example poor households) are affected more than others.

Target deliverables for end-2020: Framework for epidemiological risk mapping.

Work Area 3: Support country COVID-19 responses

National policymakers and implementers urgently need evidence and options as they make decisions and adapt to the evolving pandemic. In this Work Area, the CGIAR COVID-19 Hub is engaging with governments and other national partners to identify country demands for innovative and evidence-based solutions for emergency response and recovery (across different population groups, focusing on the vulnerable) and co-design with key stakeholders cross-CGIAR interventions targeted to these specific needs. CGIAR Country Teams established under the Hub play a facilitating role in this process, linking country demand for COVID-19-relevant research and supply of CGIAR data, knowledge, evidence, innovations and capacity development.

Activities in progress:

CGIAR Country Teams were formed from representatives of Centers present in two pilot countries – *Bangladesh and Ethiopia* – tasked with facilitating agile, coordinated, multi-disciplinary responses from various CGIAR research areas, in close collaboration with national partners and based on a mapping of country demands. Country Teams have begun initial activities to operationalize the country engagement process and to scope demand, supply, and feasibility for CGIAR COVID-19 work that reflects national COVID-19 priorities. This includes diagnostics (gathering key government and other actors' strategies, priorities and actions on COVID-19 responses; identifying entry points and focal persons; and mapping the ongoing CGIAR work and capacities relevant to each country) and dialogue to agree on priority research areas. In partnership with national stakeholders, the Hub will co-design and implement cross-CGIAR COVID-19 research action plans for each country to be implmenented during 2021.

The Country Teams are supported by Working Group 3 with expertise in economic modeling, food production and supply, nutrition, gender, social protection and One Health.

In **Bangladesh**, an FAO-CGIAR Assessment of COVID-19 impacts was launched in October 2020, providing a starting point for the dialogue on research and innovation needed for recovery and building resilience. Research priorities include digitalization of the food supply chain, adoption of a green growth economic model, inclusive social safety nets that can foster growth, food system monitoring to check system health, innovations for food supply chain infrastructure, and development of short food value chains. One CGIAR contribution, in partnership with FAO, includes developing a food system dashboard to collect and publish individual and composite indicators for different parts of the food system, informing policy decisions and private sector actions.

In **Ethiopia**, where the Country Team unites researchers from 12 CGIAR entities, CGIAR is providing broad-based, holistic, integrated support across the government's top five priority areas outlined in the COVID-19 Multi-Sectoral Preparedness and Response Plan: (i) Respond to Desert Locust; (ii) Ensure agricultural input supplies (fertilizer, seeds, feeds and veterinary medicines); (iii) Reduce food supply shortage; (iv) Strengthen nutrition and health and Water, Sanitation and Hygiene programs and (v) Support the Ministry of Agriculture with actions to

improve market functioning, food safety and post-harvest reduction through the pandemic.

Target deliverables for end-2020:

1. Diagnostic document outlining demand, supply and feasibility of CGIAR research to support COVID-19 response and recovery, with research gaps clearly identified.

2. Synthesis of the existing key CGIAR research outputs.

3. Action plan for each country with activities for 2021 with objectives, key deliverables, milestones, operational arrangements, responsibilities and budget.

4. Identification of three additional countries for cross-CGIAR engagement under the COVID-19 Hub.

Work Area 4: Address food systems' fragility and build back better

This Work Area adopts a forward-looking lens, focusing on food systems' fragilities in the medium- and longer-term for major outcome areas such as health/nutrition, sustainability (environment and other) and inclusion/socioeconomics, while demonstrating the links to other systems (such as social, business and environmental). It maps COVID-19 impacts on food systems, food security and nutrition needed to understand key fragility points as well as underlying vulnerabilities, identifying ways to build back better by making food, land and water systems more sustainable, inclusive and resilient to shocks (including climate, economic, pandemic and conflict). Work Area 4 considers possible evolutions of consumption patterns, expected technological breakthroughs (digitalization, robotization, alternative proteins, food safety requirements) and adjustments in social innovation systems around food (trust, reliability, collective action, public sector confidence, etc.).

Activities in progress:

1. Mapping key fragility points from COVID-19 to food systems and identifying underlying vulnerabilities.

2. Designing a conceptual framework for mapping impacts and analysis of key food system vulnerabilities, and a literature review to populate the framework.

3. Completeing a survey on studies conducted by CGIAR on the impacts of COVID-19 and measures to address them.

4. Conducting rapid surveys (phone surveys or deeper information collection) to estimate the impacts of COVID-19 in specific areas of interest from different types of agriculture, value chains and food systems.

Target deliverables for early 2021:

1. Identification of COVID-19 impacts on food consumption, diets, and livelihoods in LMICs, including an illustrative map as a possible digital tool of key fragility pointsand the rapid surveys. It will include identification of some critical points in food systems that can be a source of COVID-19 propagation.

2. A synthesis of what has been learned from COVID-19 that adds to knowledge on food systems' fragility (due to e.g. economic, social and political, clilmate shocks, governance).

3. Identification of main areas for potential remedial interventions.

More than 80 COVID-19 relevant studies are currently being undertaken across CGIAR. They will feed into the of food systems fragility mapping and complementary rapid surveys will be carried out, also looking into methodological aspects and quality of information and data.

ADDITIONAL CROSS-CGIAR RESEARCH AND INNOVATIONS UNDERTAKEN DURING 2020

While the activities of the Hub focus on delivering new coordinated CGIAR-wide research response across the prioritised work areas and implementing an engagement process with partners in selected countries, from the very beginning of the pandemic, all CGIAR entities have adjusted their current programs of

work to address the pressing challenges posed by disruptions to food systems, across all regions. Examples of such work through pivoting of the existing programs[2], mapped against the four Work Areas of the Hub, are outlined below. Most work was undertaken under Work Area 1, considering the urgency to assess the effects of the pandemic on consumers and value chain actors and develop innovations to minimize the disruptions in value chains. Additional examples are provided in the Annex.

Work Area 1: Address value chain fractures

- IFPRI is working with governments and local partners to evaluate the economic costs of COVID-19 in LMICs, and identify policy and public investment priorities for relief and recovery. The work program is (a) assessing the exposure of national food systems to COVID-19 shocks; (b) identifying vulnerable population groups, including poor men and women; and (c) recommending policies to mitigate risks to food security, poverty, and diet quality. Analyses have been completed for Bangladesh, Egypt, Ethiopia, Ghana, Kenya, India, Indonesia, Jordan, Myanmar, Malawi, Mali, Niger, Nigeria, Pakistan, Rwanda, Senegal, Sudan, and Tunisia.

- IFPRI examined COVID-19 and resilience innovation in food supply chains, reviewing a range of innovations developed to keep supply chains running during the pandemic and making recommendations for continued innovation for speeding recovery and ensure better food supplies post-pandemic. These recommendations are vital to guide government policy responses to facilitate a shift toward more resilient food supply chains in the long run.

- The International Rice Research Institute (IRRI) and AfricaRice assessed the impact of COVID-19 and made policy recommendations for rice value chains in West Africa, with short-term solutions including options for support to crucial intermediaries, particularly rice millers, and medium- and long-term recommendations for upgrading the rice value chains through policies to create an enabling environment for domestic and foreign direct investment.

- WorldFish conducted a multi-country survey of fish supply chain actors in Bangladesh, India, Myanmar, Nigeria, Egypt, and Timor-Leste to evaluate the availability and price of aquatic foods and production inputs during the pandemic. These assessment results are pertinent to policy makers and country partners hoping to mitigate the impact of COVID-19 of fish supply chain actors.

- To support partners in the COVID-19 response, the International Maize and Wheat Improvement Center (CIMMYT) and International Institute for Tropical Agriculture (IITA) developed and deployed multiple stress-tolerant and productive maize varieties to help farmers. Partners distributed maize so that farmers could cultivate and produce the crop during the COVID-19 lockdown, benefitting more than 3.5 million households.

Work Area 2: Integrate a One Health approach to COVID-19 responses

- The International Livestock Research Institute (ILRI) had a new multi-sectoral partnership established with the United Nations Environment Programme (UNEP) and other key partners to develop an evidence-based assessment report on the risk of future zoonotic outbreaks. The report, Preventing the next pandemic: Zoonotic diseases and how to break the chain of transmission, focuses specifically on the environmental side of the zoonotic dimension of disease outbreaks during the COVID-19 pandemic. It fills a critical knowledge gap, examining the root causes of the pandemic and

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[2] The immediate response to the COVID-19 pandemic was achieved by pivoting the existing resources of CGIAR allocated during 2020–2021 to the CRPs under Window 1 (portfolio investments supporting CGIAR as a whole) and Window 2 (program investment) of the CGIAR Trust Fund, complemented in some cases by Window 3 and bilateral funding.

other zoonoses and providing policy makers with a better understanding of the context and nature of potential future zoonotic disease outbreaks. The report recommends the need for a One Health approach to prevent and respond to zoonotic disease outbreaks and pandemics.

- ILRI launched a new One Health Research, Education and Outreach Centre in Africa (OHRECA) in Kenya. The centre aims to contribute toward addressing neglected zoonotic diseases, antimicrobial resistance, food safety and emerging infectious diseases in sub-Saharan Africa. One of the themes of OHRECA is to address emerging infectious diseases, including COVID-19.

- At the onset of increased virus transmission in Kenya, the Kenyan Ministry of Health requested ILRI to support its national COVID-19 diagnostic effort. The ILRI laboratory temporarily re-purposed to process COVID-19 tests for the Kenya Ministry of Health. Results are returned to Ministry of Health within 24 hours. To date, more than 20,000 samples have been tested for presence of SARS-CoV-2.

- A recent paper by ILRI researchers and colleagues highlighted the inequalities in COVID-19 surveillance in vulnerable population of nomadic pastoralist communities across Africa, which are largely invisible to health surveillance systems despite the fact that they are of key significance in the landscape of emerging infectious diseases. This paper also elaborates on the ways in which current health surveillance infrastructure is ill-equipped to capture pastoralist populations and the animals with which they coexist, and highlights the consequential risks of inadequate surveillance among pastoralists and their livestock to global health. Concrete solutions to address this gap were proposed.

- Finally, a study quantified the global geography of wildlife-human interfaces and developed a risk hierarchy based on the nature of these interfaces. It revealed that 40 percent of the world's most

connected cities are close to areas of impactful spillover and identified important conduits for potential future pandemics.

Work Area 3: Support country COVID-19 responses

Bangladesh:

- A second rapid assessment of food and nutrition security in the context of COVID-19 in Bangladesh was conducted by scientists from CIMMYT, IFPRI, WorldFish, IRRI, the International Fund for Agricultural Development (IFAD), and FAO. These analyses considered the impact on food security, food reserves, food prices, agricultural input, agricultural machinery service providers, rice value chains, meat processors, fish and vegetable exports, fish value chain, dairy industry, and social safety nets. The outcome is a list of short- and long-term recommendations necessary for recovery from COVID-19.

Ethiopia:

- To cast light on how households in Addis Ababa, Ethiopia, are reacting to the crisis, IFPRI's Ethiopia Strategy Support Program is undertaking monthly phone surveys. Initial data demonstrate that poorer households are taking a greater economic hit than those with higher incomes, and that dietary diversity has declined.

Work Area 4: Address food systems' fragility and build back better

- Assessing the role of water in the COVID-19 crisis, the International Water Management Institute (IWMI) reports that the pandemic has amplified the impact of water inequalities. Mitigating this will require water supply and reuse innovations, including emergency water provision to high-risk groups and smart water allocation for multiple essential uses.

- Research by the International Potato Center (CIP) is helping partners adapt delivery models for nutritious crops and foods under COVID-19, paying particular attention to the critical role of women in

averting the negative impacts of the pandemic and to the increased importance of locally-produced biofortified staple crops for delivering affordable nutrition when other markets are disrupted.

- A study on changes and adaptations in village food systems in the Solomon Islands during the early stages of the COVID-19 pandemic led by WorldFish assessed impacts in food security and identified ongoing initiatives that can be springboards for further action to increase the resilience of rural communities.

BRIDGING TO THE CGIAR 2030 RESEARCH AND INNOVATION STRATEGY

The global disruptions caused by COVID-19 could prove a precursor for further food system shocks under the climate crisis, with disruptions in public health systems, economies and ecosystems reversing the hard-earned gains in food security and poverty reduction achieved in past decades. Yet, it is entirely possible to change the trajectory by "building back better" from COVID-19.

The Hub will provide inputs for the development of strategic partnerships that address vulnerabilities and transform food, land and water systems and provide lessons learned from the COVID-19 research response that can inform CGIAR's future research agenda. The research outputs, engagement processes and partnerships emerging from the COVID-19 Hub will feed into the development of the CGIAR Investment Plan 2022–2024 and CGIAR Initiatives to deliver the CGIAR 2030 Research and Innovation Strategy, which

will target risk management and resilience as critical qualities for food, land and water systems.

In a world where rapid change, shocks, and tipping points are the "new normal," CGIAR's work will consider vulnerability to multiple risks to food systems (e.g. zoonoses, degraded ecosystems, climatic shocks, market swings, political upheaval, migration). Building on progress in the Hub, the future CGIAR research portfolio will tackle turning this vulnerability into resilience by reducing exposure where possible, building human and societal capacity, and managing the sensitivity of forest, water, farming and food systems to the onslaught of systems shocks.

The country engagement process undertaken in Work Area 3 is a frontrunner and a pilot for One CGIAR – linking the breadth of CGIAR research closely with partners' priorities. Taking the example of Ethiopia, CGIAR is building on the long-term partnership arrangements between CGIAR and key Ethiopian partners such as the Ministries of Agriculture, Health, Water Irrigation and Energy, Finance and Economic Planning, Peace and Security; the Ethiopian Institute of Agricultural Research; the Agricultural Transformation Agency; the Ethiopian Public Health Institute and the multi-donor Rural Economy Development and Food Security Working Group. In developing and delivering the new research portfolio, CGIAR will work closely with such national entities, as well as regional bodies, regional development banks, UN agencies and other partners, utilizing the existing mechanisms for collaboration and developing new partnerships.

ANNEX: Examples of research and innovations implemented by CGIAR during 2020 in response to the COVID-19 crisis

Additional examples of CGIAR work undertaken as part of the current program to assist the countries with addressing the challenges posed by the pandemic include:

Work Area 1: Address value chain fractures

- A report from the CGIAR Research Program on Grain Legumes and Dryland Cereals examined an expected rise in seed demand in sub-Saharan Africa and highlighted the need for governments and relief organisations to step in to prevent farming crises and keep reserves to ensure availability of seeds. Related to this, the Nigerian government and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) have begun distributing seeds to 100,000 smallholder farmers; while IITA made quality seeds (over 11,000 bundles) available to farmers across Nigeria and provided high-quality seeds of improved crop varieties (cassava, plantain, maize, soybean, and cowpea) to smallholder farmers in Cameroon.

- AfricaRice proposed strategies for rice loss reduction in Africa, highlighting technologies that increase farm and postharvest yields and quality along the value chain, and facilitated the creation of rice innovation platform to improve value chain linkages and governance.

- AfricaRice found that COVID-19 had limited effects on rural rice producers in Madagascar but caused disruptions in the perishable products markets (vegetables and milk products), input markets (seeds of off-season products, animal feed and phytosanitary products), and declining income. AfricaRice urged preparationfor provisions of quality seeds to farmers and for sensitising rural households about the necessity of maintaining a nutrition-rich diet.

- WorldFish ran a high-frequency, six-country phone survey covering Timor Leste, Myanmar, Bangladesh, Egypt, Nigeria, and three Indian states

(Odisha, Assam, Andhra Pradesh). Results are reported through an interactive dashboard hosted on a dedicated WorldFish COVID-19 webpage. These resources are available to policy makers and country partners, contributing to decisions on mitigating the impact of COVID-19 on fish supply chain actors and consumers.

- WorldFish implemented a monthly phone survey of 557 enterprises in fish and poultry supply chains in eight geopolitical zones of Nigeria. The survey covers most of the country and is designed to capture differences in the impacts of COVID-19 related policies by geopolitical zone, from June to December.

Work Area 2: Integrate a One Health approach to COVID-19 responses

- ILRI is assessing impacts of COVID-19 on animal industry across the world.

  a. In India, ILRI assessed the impact of COVID-19 on the poultry industry through a review of reports in popular media from February 2020 to June 2020. Scientists used online surveys directed to poultry farmers across India to understand perceptions of the pandemic and how it affected their businesses.

  b. A survey of consumers in Southeast Asia (Vietnam, Cambodia, Laos, Thailand) on the impacts of the pandemic on animal source food retailers and consumers is being conducted.

  c. In Kenya, two cross-section phone surveys were conducted, including milk sellers in informal dairy markets and their consumers in peri-urban Nairobi. The collected information included current milk selling practices, business size and COVID-19 related prevention measures implemented in their businesses (for milk vendors) and milk consumption practices, food security and COVID-19 related knowledge and practices (for households).

  d. To have projections of the time and size of the pandemic's peak, and to be able to assess the

impact of different interventions in the local setting, an assessment is under way of the impact of Non-Pharmaceutical Interventions (NPIs) on the [transmission dynamics of COVID-19 in Ethiopia, Kenya and Djibouti](#) using mathematical models . The outputs of this work will enable decision makers in the Horn of Africa to choose efficient NPIs under different settings to mitigate COVID-19.

e. WorldFish is initiating a One Health collaborative project with Cefas (UK) on safe and sustainable aquatic foods in Bangladesh. Key deliverables include (a) a Bangladesh One Health workshop, (b) virtual meetings with One Health national authorities, (c) a report on assessment of Bangladesh aquatic food systems from a One Health perspective, and (d) development of traning tools and delivery of traning for COVID-19 screening in water, seafood and wet markets.

Work Area 3: Support country COVID-19 responses

Bangladesh:

- A series of phone surveys of farmers and food value chain actors addresses issues of inclusion and efficiency of the food value chain with an assessment before and after COVID-19, to enable an understanding of how the pandemic has impacted the value chain. The results of these efforts already are supporting in-country policy and programming.

- Impact assessment of COVID-19 on food security, agriculture, aquaculture and resilience is ongoing, focusing on the impact on food security, farm income and employment, access to markets for selling agricultural products, effects on farmers and traders and access to social protection. These efforts target the impacts of COVID-19 on low-income and vulnerable households in particular.

- CGIAR experts contributed to the Ministry of Agriculture's workplan to address challenges emerging from COVID-19. Major inputs included strengthening capacity of the Department of

Agricultural Marketing to collect and disseminate farmgate prices of agricultural commodities, promoting farm mechanization via forming community service providers comprising rural youths, and exploring options for cut-flower exports. CGIAR institutions are strengthening farm mechanization efforts as a COVID response.

Ethiopia:

- CGIAR is undertaling analysis of production data (e.g. which fruits and vegetables are commonly grown and by which types of farmers) and uses econometric models to understand variations in productivity levels, identifying critical constraints in the value chain from semi-structured interviews. The output will support Ethiopian policies and investments by stakeholders such as the Ministry of Agriculture, the Agricultural Transformation Agency, the Government of the Netherlands, the U.S. Agency for International Development and SNV Netherlands Development Organisation to increase the consumption of nutritious food.

- CGIAR has been working with national partners to develop solutions that highlight how agricultural expertise can be adapted to support efforts to mitigate the COVID-19 pandemic. Activities that aim to better target and prioritize the limited public resources were proposed, including COVID-19 pooled sample testing and a method using geospatial analysis to map and identify hotspot areas where COVID-19 mass testing can be prioritized.

Work Area 4: Address food systems' fragility and build back better

- The Alliance of Bioversity and CIAT developed a framework for the [analysis of resilience of local food systems and links to food security](#), identifying a series of lessons that can be used to improve understanding of food system resilience and its link to food security in the context of the COVID-19 crisis and other shocks.

- ICRISAT provided solutions to transform [India's food system post-COVID-19](#). Recommendations

included developing a sustainable value chain, investing in research and innovation, women's empowerment, and inter-sectoral synergy, among others.

- IITA provided support to Oyo state in Nigeria to develop a COVID-19 response strategy, in the immediate, short, and long term. In addition, 6,000 bundles of cassava were earmarked to support the development of a sustainable cassava seed system in Oyo, Ogun and Osun states.

- IITA established an internet radio station dedicated to disseminating agricultural information during COVID-19 to farmers in Africa.

- International Center for Agricultural Research in the Dry Areas (ICARDA) conducted a study on gendered impacts of the lockdown and the pandemic and coping strategies in rural Egypt and Tunisia with a focus on livestock production, showing that regulating access to consistent and affordable supplies of feedstock and other agricultural inputs is an essential first step to resilience-building.

- IFPRI is analysing how extension and advisory services have innovated as a result of the COVID-19 crisis and other emergencies. They will examine what extension's role is in emergencies such as human disease epidemics and natural disasters and make recommendations to strengthen extension and provide policymakers with information to assist in decision making.

To learn more about the CGIAR COVID-19 Hub, visit www.a4nh.cgiar.org/covidhub/ or email COVID-19-Hub@cgiar.org.