

## 1. SUMMARY

1.1 Country submitting the proposal	Country name:	Ecuador (lead country)
	Name of institution representing NDA or Focal Point:	Ministry of Environment and Water
	Full office address:	Av. Madrid 1159 y Andalucia, Quito, Ecuador
1.2 Date of initial submission	21 August 2020	
1.3 Last date of resubmission	13 November 2020	Version number V.2
1.4 Which institution will implement the Readiness and Preparatory Support project?	<input type="checkbox"/> National designated authority	
	<input type="checkbox"/> Accredited entity	
	<input checked="" type="checkbox"/> Delivery partner	
	Name of institution:	Inter-American Institute for Cooperation on Agriculture
	Full office address:	IICAs Headquarters. 600 meters north of the Ipís-Coronado Crossing, San Jose, Costa Rica
1.5 Title of the Readiness support proposal	Post COVID-19 Green Recovery for Food, Health, and Water Security strengthened by financial and technological innovations in Latin-American countries	

**1.6 Type of Readiness support sought**

- I. Capacity building
- II. Strategic frameworks
- III. Adaptation planning
- IV. Pipeline development
- V. Knowledge sharing and learning

**1.7 Brief summary of the request**

The COVID-19 pandemic is a global health crisis that is already having devastating impacts on the world economy – both directly and through necessary measures to contain the spread of the virus. These impacts are also being felt by the food and agriculture sector. While the supply of food has held up well to date, in many countries, the measures put in place to contain the spread of the virus are starting to disrupt the supply of agro-food products to markets and consumers, both within and across borders. The sector is also experiencing a substantial shift in the composition and – for some commodities – the level of demand.

As the Economic Commission for Latin America and the Caribbean (ECLAC) and International Labor Organization (ILO) pointed out, during the pandemic, movement restrictions generated disruptions in some food supply chains, affecting especially perishable commodities. Furthermore, it resulted in the loss of jobs and a reduction in farmers' income given that they are unable to sell their produce in local markets.

How damaging these impacts turn out to be for food security, nutrition and the livelihoods of farmers, and others working along the food supply chain will depend in large part on policy responses over the short, medium and long term. While the pandemic poses some serious challenges for the food system in the short term, it is also an opportunity to accelerate transformations in the food and agriculture sector to build its resilience in the face of a range of challenges, including climate change.

The central aim of this proposal is to outline pathways for post COVID-19 Green Recovery strategies in the Food, Health and Water sectors by supporting national and regional efforts of the targeted countries to strengthen financial and technological innovations. Hence, this Readiness Proposal will contribute to overcoming institutional, technical, and financial barriers in the agricultural sector, specifically to medium and smallholder farmers, through public institutions in environmental, agriculture, and national finances and economics sector, to encourage the adoption of advanced technologies, which accelerate economic recovery and employment creation, and improve farmers' livelihoods while reducing CO<sub>2</sub> equivalent emissions in the face of the global pandemic.

Barriers and gaps considered in this Readiness proposal include: isolation, absence of communication and little positive evidence of collaboration between political actors and innovation systems; weaknesses in mechanisms that allow the identification of the common causes of flaws in agrarian systems in the face of Post COVID-19 and climate change to redesign their structure, organization, and operation; minimal knowledge of Green Recovery innovative mechanisms and enabling investments for the implementation of technological innovation solutions and; limited experience and involvement of the regional innovation ecosystem with the needs of the agricultural sector, aggravated by the pandemic.

This readiness proposal is focused on post-COVID-19 Green recovery and the importance of designing green, resilient recovery efforts for Food Security in Latin-American countries, with direct beneficiaries as the national public institutions for public policymaking in targeted countries, including Ministries/Secretaries of Environment and Natural Resources (8), Agriculture (8), and Finance/Planning (5), some of which are National Designated Authorities.

The specific objectives of the request are:

- a) Strengthen policies, frameworks, and institutional capacities to foster public-private partnerships inside a regional innovation and financial ecosystem that

identifies and promotes technological innovation<sup>1</sup> for sustainable intensification of food production, availability, access, utilization and stability at local, national and regional levels (Outcome 1.3 & 2.2).

b) Increase the identification of innovative and financial opportunities related to low emissions, climate resilient, and technologically intensive sustainable food security for medium and smallholder farmers at national and regional levels (Outcome 4.1).

c) Enhance knowledge and digital platforms for sharing, learning, financing and scaling up intensive technologies for food and nutritional security, including dissemination of innovative mechanisms of collaboration, co-creation through Innovation Hubs (Outcome 5.2).

**1.8 Total requested amount and currency**

USD 2,037,047

**1.9 Implementation period**

18 months

**1.10 Is this request a multiple-year strategic Readiness implementation request?**

Yes

No

**1.11 Complementarity and coherence of existing readiness support.**

Yes

No

Some Latin American countries already have national Readiness initiatives in progress, for different climate change issues under a context prior to COVID, but such initiatives can generate synergies with this Readiness Proposal, avoiding potential duplication of efforts with ongoing projects. For example:

Country	Readiness Support	Type of Support	Status	Potential synergies with the current request
Ecuador	ECU-RS-001 (UNDP)	NDA Strengthening + Country Programming	Disbursed	Current request will leverage the capacities built and coordination mechanisms established to support participatory engagements. Specifically, activity 2.4.1.1. will be informed by the analysis of the opportunities and barriers to private sector engagement established under ECU-RS-001.
	ECU-RS-002 (UNDP)	Adaptation Planning	Disbursed	The investment strategy/plan to be developed under activity 2.2.2.4 will take into account the inputs from the funding and sustainability strategy of the NAP process prepared under ECU-RS-002.
	ECU-RS-003 (Fundacion Avina)	Strategic Framework	Disbursed	The IICA readiness will leverage the capacities built and lessons learnt through the Climate knowledge online platform developed under ECU-RS-003 to engage local government actors in Ecuador, as part of designing the regional innovation hub under activity 5.2.1.2
	ECU-RS-004 (GIZ)	Ecuador NDA Institutional Strengthening and Digitalization Process	Legal agreement effective	The IICA readiness will help to demonstrate the utility of the web-based systems developed with ECU-RS-004 to electronically streamline and improve standard NDA operating processes. The NDA website will be used to share relevant project information with key stakeholders.

<sup>1</sup> Technological innovations comprise new products and processes and significant technological changes of products and processes. OECD. 2013. Glossary of Statistical Terms. Online. Available at <https://stats.oecd.org/glossary/detail.asp?ID=2658>

COL-RS-001 (APC Colombia)	NDA Strengthening + Country Programming	Disbursed	Under COL-RS-001, a web platform for the registration of projects with concrete actions to tackle climate change was developed. The IICA readiness will utilize the national platforms/systems developed through previous support, especially for the articulation of the investment pipeline for green resilient recovery to be developed under activity 2.2.2.4. Similarly, IICA will explore the possibility of integrating training/capacity building activities within the MOOC (Massive Open Online Course) established under the APC-readiness project.
COL-RS-002 (Findeter)	Readiness Proposal for Colombia Municipal Solid Waste NAMA	Disbursed	IICA will consider the pre-feasibility analyses undertaken by Findeter in formulating Colombia's Municipal Solid Waste NAMA. The results of the Findeter -readiness will provide useful inputs for prioritizing potential investments for the agriculture sector, with a focus on solid waste management (activity 4.1.1.1).
COL-RS-003 (Fondo Accion)	Adaptation Planning	Disbursed	The IICA readiness will take into account the analysis of the regulatory framework conducted under COL-RS-003 to enable private sector investments in adaptation in Colombia. The preliminary results from previous readiness support will help to inform the design of co-creation mechanisms (2.4.1.1) for public-private investment.
COL-RS-004 (Asobancaria)	Supporting the implementation of the Colombian Pilots of Financial Innovation – Green Protocol	Disbursed	Under COL-RS-004, a diagnosis of the gaps and current conditions in sustainable financing and investment mostly in climate change, to develop financial solutions through the financial system, in 3 sectors (Industry, Agriculture and transport), was undertaken. The gap analysis for the agriculture sector will form an important entry point for assessing the impact of the pandemic on the sector's financial needs, as well as developing the regional investment strategy/plan for green, resilient recovery in Colombia.
COL-RS-005 (Bancoldex)	Strengthening of Bancoldex capacities to scale up climate financing in Colombia	Disbursed	The findings from key assessments undertaken by COL-RS-005 will inform the design of subsequent CNs (activity 4.1.1.1). Under the prior readiness support, baseline assessments on climate vulnerability of small-scale rural producers, including cost of impacts, access to finance, and business valuation of adaptation options were conducted. The IICA readiness will also take into account the analysis of opportunities and barriers for financial intermediaries to harness the agricultural lending and other financial services as part of designing the co-creation mechanisms for public-private investments.
COL-RS-006 (Fondo Accion)	Strengthening of the Collegiate Body on Climate Finance and Enhancement of the Country Programming Process in Colombia	Disbursed	The IICA readiness will coordinate closely with the implementation of COL-RS-006 focused on updating of Colombia's Country Programme to ensure that the agriculture investment pipeline elaborated from the IICA readiness feeds into the GCF CP planning process and ultimately the validation of Colombia's revised CP.
COL-RS-007 (Fondo Accion)	Strengthening capabilities of indigenous peoples	Disbursed	COL-RS-007 aimed to strengthen Indigenous Peoples' capacity and guarantee their efficient participation in the Country Programme update

		on climate finance in Colombia		and their empowerment of the climate finance projects in their territories. The IICA readiness will ensure continuity of this dialogue established with the IP organizations in Colombia and facilitate inclusive participation of IP groups in all workshops/trainings and particularly, in the regional innovation hub to developed under 5.2.
Guatemala	GTM-RS-001 (IUCN)	Implementation of Readiness Support in Guatemala: Strengthening institutional capacities of the Ministry of Environment and Natural Resources of Guatemala as the focal point for the GCF, and a broader group of stakeholders	Disbursed	The IICA readiness will take into account the sectoral mapping and identification of opportunities to engage the private and cooperative sectors, including micro, small and medium-sized enterprises established under GTM-RS-001. Efforts will be made to leverage the capacities built and stakeholder engagement processes established through readiness support. As part of the IUCN readiness, a pipeline of investment opportunities for the private sector in line with the Guatemala's NDC were identified. This information will serve as an important input to activity 2.4.1.1 as it relates to potential co-creation mechanisms.
	GTM-RS-002 (FAO)	Preparation of DNA with better information for financing proposals of the AFOLU sector in Guatemala	Disbursed	IICA readiness will take into account the pipeline of project ideas identified for the AFOLU sector under GTM-RS-002, in order to prioritize the development of a national CN under 4.1.1.1
	GTM-RS-003 (Rainforest Alliance)	Strengthening National Planning Processes for Anticipatory Adaptation to Climate Change in Guatemala	Disbursed	To undertake the assessment of COVID on the country's climate strategies (activity 2.2.1.1), the IICA support will review the climate change vulnerability assessment, including the in-depth analysis of climate-based information, mapping, and identification of key actions to reduce vulnerability, established under GTM-RS-003.
Peru	PER-RS-001 (GIZ)	NDA Strengthening + Country Programming	Disbursed	Peru's draft Country Programme developed under PER-RS-001 will serve as an entry point for prioritizing the development of a CN for activity 4.1.1.1 for the agriculture sector. The IICA readiness will also leverage other capacities and systems put in place through previous support e.g. climate finance MRV and NDA's website.
	PER-RS-002 (Profonampe)	Strengthening institutional capacities of Profonampe as GCF's National Implementing Entity in Peru	Disbursed	The IICA readiness will leverage the capacities built in Profonampe as Peru's national DAE under PER-RS-002, in order to design a CN under activity 4.1.1.1, taking into account the entity's track record and comparative advantage
	PER-RS-003 (Profonampe)	Increasing Profonampe's capacities as DAE of Peru – Stage II	Disbursed	Subsequent readiness support was provided to Profonampe to boost its internal capacities for project design and management. These capacities will be demonstrated through a CN to be developed under 4.1.1.1 for Peru.
	PER-RS-004 (Fundacion Avina)	National Adaptation Planning in Peru	Disbursed	Under PER-RS-004, a project/ program pipeline and structures for adaptation measures in the priority thematic areas (Water, Agriculture, Forestry, Fisheries and Aquaculture, and Health) were identified. The CN to be developed under 4.1.1.1 will be informed by the investment pipeline elaborated under PER-RS-004 and draft CP (PER-RS-001), and specifically emphasize the interlinkage

				between the key sectors in the context of covid and green resilient recovery.
	PER-RS-005 (Profonanpe)	Actions towards accessing different GCF funding modalities in Peru	Disbursed	Profonanpe is envisioning new ways of approaching climate change mitigation and adaptation, and biodiversity conservation. These include exploring on-lending and blending fiduciary functions. PER-RS-005 will help to further enhance the capacity of the entity to deploy innovative fiduciary instruments, and the experience and lessons learnt can be shared through the regional innovation hub/platform to be developed under 5.2.1.1
Brazil	BRA-RS-001 (UNEP)	Technology Needs Assessment for the Implementation of Climate Action Plans in Brazil	Disbursed	Activity 2.3.1.1 on barriers to technological innovation and appraisal of economically feasible technologies will be informed by the TNA results established under BRA-RS-001
	BRA-RS-002 (Funbio)	Strengthening Brazilian DAEs for the implementation and execution of GCF projects	Disbursed	The IICA readiness will leverage the capacities built in the existing national DAEs of Brazil to design a CN under activity 4.1.1.1
Mexico	MEX-RS-001 (GGGI)	Readiness Support for Country Programming and Direct Access in Mexico	Disbursed	Mexico's Country Programme developed under MEX-RS-001 will serve as an entry point for prioritizing the development of a CN for activity 4.1.1.1 for the agriculture sector.
Uruguay	URY-RS-001/2/3 (UNDP)	NDA strengthening + CP development Adaptation Planning	Disbursed	Uruguay's draft Country Programme developed under URY-RS-001 will serve as an entry point for prioritizing the development of a CN for activity 4.1.1.1 for the agriculture sector.
Bolivia	BOL-RS-001 (NDA)	NDA Strengthening + Country Programming	Disbursed	Bolivia's draft Country Programme developed under BOL-RS-001 will serve as an entry point for prioritizing the development of a CN for activity 4.1.1.1 for the agriculture sector.

## 2. SITUATION ANALYSIS

### The Impact of COVID-19 on the Economy

COVID-19 is the infectious disease caused by the most recently discovered coronavirus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 is now a pandemic affecting many countries globally. As of 11 August 2020, the last IICA report on "Food Security Monitor for the Americas"<sup>2</sup>, with data from Johns Hopkins University<sup>3</sup>, show 10,843,797 confirmed cases of COVID-19 in the Americas. The Highest number of cases includes Brazil (3,057,470), Peru (483,133), Mexico (485,836), Colombia (397,623) and Ecuador (95,563). The COVID-19 pandemic represents an unprecedented disruption to the global economy and world trade, as production and consumption are scaled back across the globe.

Data from a joint study between the Economic Commission for Latin America and the Caribbean (ECLAC), and the International Labor Organization-UN estimates a contraction of the average regional economy of -5.3% in 2020. "The pandemic, which brings with it a combination of external and internal shocks, will be the cause of the greatest economic and social crisis in the region in decades, with very negative effects on employment, the fight against poverty and the reduction of inequality"<sup>4</sup>. The World Bank's calculations suggest that around 20 million jobs will be destroyed in the region this year, of which about half of them are formal<sup>5</sup>. Food and Agricultural Organizations-UN shares a Key Message<sup>6</sup>, "The COVID-19 pandemic is a global crisis which is already affecting the food and agriculture sector. Prompt measures to ensure that food supply chains are kept alive, domestically and internationally, to mitigate the risk of large shocks that would have a considerable impact on everybody, especially on the poor and the most vulnerable".

COVID-19 has caused a global health and economic crisis, which probably will be time-limited, says World Meteorological Organization<sup>7</sup>. Efforts to control the Coronavirus pandemic have reduced economic activity and contributed to localized improvements in air quality. However, it is too early to assess the implications for concentrations of greenhouse gases that are responsible for long-term climate change. Carbon dioxide levels at key observing stations have so far this year been higher than last year. Failure to reduce greenhouse gases and tackle climate change will have a negative impact on global economies, human living conditions and marine and land ecosystems, which may last up to centuries. "Past experience suggests that emission declines during economic crises are followed by a rapid upsurge. We need to change that trajectory", remarks WMO Secretary-General, Petteri Taalas.

As the COVID-19 outbreak continues to spread across the world, it is essential to address its existing and potential impacts on the food and agricultural sector, from the perspective of both food supply and food demand. Ensuring the continued functioning of global and national food supply chains will be crucial in securing food supply, preventing a food crisis in countries that are already experiencing food and nutrition security challenges, and reducing the overall negative impact of the pandemic on the global economy.

Although its share in total employment has fallen from 40.2 per cent to 26.8 per cent over the past two decades, agriculture provides livelihoods to more than one billion people worldwide and remains the backbone of many low-income countries, accounting for 60.4 per cent of employment and contributing up to two-thirds of gross domestic product in some of those countries. Agricultural workers experience the highest incidence of poverty. A quarter of workers engaged in the sector are in extreme poverty. Despite playing an important role in national economies, providing a link with the global structures of agricultural production and trade, and feeding the world, many agricultural workers and their families suffer from poverty and food insecurity<sup>8</sup>.

While agri-food sector jobs have been designated as essential in the context of the COVID-19 crisis in many countries, the measures adopted to slow down the pandemic may place further strain on the capacity of the sector to continue meeting demand, providing incomes and livelihoods, and ensuring safety and health for the millions of

<sup>2</sup> IICA. 2020. Food Security Monitor for the Americas. Online. Available at <https://www.iica.int/sites/default/files/2020-08/11%20August%202020.pdf>

<sup>3</sup> Johns Hopkins University. 2020. The Johns Hopkins Coronavirus Resource Center (CRC). Online. Available at <https://coronavirus.jhu.edu/>

<sup>4</sup> ECLAC-ILO. 2020. Employment Situation in Latin America and the Caribbean Work in times of pandemic: the challenges of the coronavirus disease (COVID-19). Online. Available at [https://www.ilo.org/wcmsp5/groups/public/-americas/-ro-lima/-santiago/documents/publication/wcms\\_746274.pdf](https://www.ilo.org/wcmsp5/groups/public/-americas/-ro-lima/-santiago/documents/publication/wcms_746274.pdf)

<sup>5</sup> Lopez, H. 2020. World Bank Blogs: Latin America, the pandemic and the challenge of building better instead of going back. Online. Available at <https://blogs.worldbank.org/latinamerica/latin-america-pandemic-and-challenge-building-better-instead-going-back>

<sup>6</sup> Semedo, H. 2020. Interview with FAO Deputy Director-General Semedo. Online. Available at <http://www.fao.org/news/news/detail/en/c/1296099/>

<sup>7</sup> WMO. 2020. COVID-19/Climate Change. Online. Available at <https://public.wmo.int/en/resources/coronavirus-covid-19/climate-change>

<sup>8</sup> ILO. 2020. ILO Sectoral Brief: COVID-19 and the impact on agriculture and food security. Online. Available at [https://www.ilo.org/wcmsp5/groups/public/-ed\\_dialogue/-sector/documents/briefingnote/ecms\\_742023.pdf](https://www.ilo.org/wcmsp5/groups/public/-ed_dialogue/-sector/documents/briefingnote/ecms_742023.pdf)

agricultural workers and producers. Urgent action to address the multiple decent work challenges faced by agricultural workers and to improve the functioning of the agri-food sector will be critical to effectively address crises, both present and future. Lessons need to be learned from the responses to the pandemic in agriculture with a view to “building back better.” The opportunities that arise to adopt technological innovations and improve environmental sustainability cannot be missed.

The Food and Agriculture Organization of the United Nations (FAO)<sup>9</sup> reported on the impact of COVID-19, noting in many countries food supply chains have shut down the economy to slow the spread of the coronavirus. Supermarket shelves remain stocked for now. However, a protracted pandemic crisis could quickly put a strain on the food supply chains, a complex web of interactions involving farmers, agricultural inputs, processing plants, shipping, retailers and more. The shipping industry is already reporting slowdowns because of port closures, and logistics hurdles could disrupt the supply chains.

Food demand is generally inelastic. However, a loss of purchasing power due to the disease could change the patterns of the diet with a demand that moves away from value-added foods towards basic cereals. Prices in affected areas should not necessarily show an impact, but difficulties in supplying markets and food purchases in panic for fear of empty shelves could lead to disruptions in the supply chain and localized price increases. Citizens have reported on the volatility of prices of fresh products (vegetables and fruits) in wholesale markets. The dairy industry is slowing down its purchases to avoid an increased health risk related to the restrictions of transport.

Many countries are following the advice from the World Health Organization (WHO)<sup>10</sup> regarding the introduction of physical distancing measures as one of the ways in which transmission of the disease can be reduced. The application of these measures has resulted in the closure of many businesses, schools, and institutes of education, and restrictions on travel and social gatherings. For some people, working from home, teleworking, and on-line or internet discussions and meetings are now normal practices. Food industry personnel, however, do not have the opportunity to work from home and are required to continue to work in their usual workplaces. Keeping all workers in the food production and supply chains healthy and safe is critical to surviving the current pandemic. Maintaining the movement of food along the food chain is an essential function to which all stakeholders along the food chain need to contribute. This is also required to maintain trust and consumer confidence in the safety and availability of food.

In a context of a global pandemic, one of the main problems that countries are facing is the collapse of their health system. In a collapsed health system, foodborne disease outbreaks must be contained as much as possible to avoid devastating health and economic consequences, in both developed and developing countries<sup>11</sup>. To preserve the integrity of the national food safety control system and to support international trade and the food supply chain, each competent authority will need to prioritize critically important services during the ongoing COVID-19 pandemic<sup>12</sup>. These may include introducing temporary suspensions of low-risk control activities that do not immediately affect the supply of safe food. Temporarily suspending low-risk control activities will allow authorities to continue to safeguard the health and safety of their staff while refocusing efforts in areas of higher risk and towards activities that are critical to the safety of food.

Consumers and other stakeholders are becoming much more aware of the importance of ensuring the safety of all products, but particularly of food products. The pandemic has “opened the eyes” of many consumers to potential health risks and will likely lead to an increased demand for higher and “guaranteed” safety of foods. To meet this demand, there will be a need for increased training and guidance programmes, and given the current environment, these will need to be virtual and online at the initial stages<sup>13</sup>. One of the challenges for those in the Sanitary and Phytosanitary (SPS) field is that if they are successfully doing their work and are able to minimize SPS risks, it is difficult to get the political attention necessary to ensure adequate funding and other resources. Although this pandemic is not an SPS problem, it may perversely give officials an advantage in arguing the need for more SPS capacity-building, serving as an excellent example of how difficult control can be if the public/agricultural health infrastructure is not robust.

<sup>9</sup> Torero, M. 2020. COVID-19 and the risk to food supply chains: How to respond?. Online. Available at <http://www.fao.org/3/ca8388en/CA8388EN.pdf>

<sup>10</sup> WHO. 2020. Overview of public health and social measures in the context of COVID-19: Interim guidance. Online. Available at <https://apps.who.int/iris/bitstream/handle/1278127/retrieve>

<sup>11</sup> FAO, ECLAC. 2020. Sistemas alimentarios y COVID-19 en América Latina y el Caribe: Riesgos sanitarios; seguridad de los trabajadores e inocuidad. Boletín N° 4. Online. Available at [https://repositorio.cepal.org/bitstream/handle/11362/45579/ca9112\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/45579/ca9112_es.pdf)

<sup>12</sup> WHO. 2020. COVID-19 and Food Safety: Guidance for competent authorities responsible for national food safety control systems Interim guidance. Online. Available at [https://apps.who.int/iris/bitstream/handle/10665/331842/WHO-2019-nCoV-Food\\_Safety\\_authorities-2020.1-eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/331842/WHO-2019-nCoV-Food_Safety_authorities-2020.1-eng.pdf)

<sup>13</sup> Staten, G. 2020. IICA Blog: Agricultural Health and Food Safety: Some COVID-19 Reflections. Online. Available at <https://blog.iica.int/blog/agricultural-health-and-food-safety-some-covid-19-reflections>



International Labour Organization<sup>14</sup> call to ensure safety and health at work with a particular focus on the safety and health of agricultural workers both when assuring the availability of adequate numbers of seasonal agricultural workers in advanced economies, and the continuity of production in developing countries. Agricultural workers often live in close proximity to the production site and to each other, which may increase the risk of exposure to COVID-19. All workers, in the agri-food sector, whether temporary, seasonal or migrant workers, irrespective of their legal status or gender, have the right to work in safe and healthy conditions. It is of the utmost importance to ensure that workers have access to all relevant information on COVID-19, personal protection, and hygiene in their own language.

The pandemic is also showing inequalities in the living conditions. Water is a critical resource to face the pandemic as well as to achieving Sustainable Development Goal (SDG) 6: Ensure availability and sustainable management of water and sanitation for all<sup>15</sup>. However, there are inequalities in the access to clean water and sanitation, weak wastewater treatment systems and poor water governance. In at least six countries of LAC, about 75% or less of households do not have basic hygiene facilities and 70% of households do not have access to adequate human waste management<sup>16</sup>. According to World Bank<sup>17</sup>, almost one in three Bolivians has no access to piped water at home, half of Brazilians have no access to improved water and Peruvians are facing deprivations to access water services. UNESCO<sup>18</sup> highlighted the challenges of the water sector to guarantee equality in access to water and sanitation at this very complex moment. *"This sector must be at the forefront and it is necessary to strengthen alliances in the region to seek answers together"*. The integrated water resource management and health are very relevant for facing those challenges as well as comprehensive emergency preparedness at the community, local and country that considers coordination among public and private sector, drinking water and wastewater regulators, and service utility providers.

The relationship between water and food<sup>19</sup> can be considered in rural areas, where it refers to agriculture, with or without irrigation, and in urban areas, where it is mainly linked to the provision of drinking water and sanitation services to the population, the contribution of food to cities and waste management. In the first case, the connections established with water with two coinciding purposes in the production of food through its medium: irrigation and aquaculture. Even when irrigation is efficient, there are normally significant losses in transport to the plot, which is the usual situation in the region. A first conclusion of this situation is the need to subject the expansion of the "agricultural frontier" to rigorous controls due to the implications not only of water consumption but also of energy that it implies. This explains why most of the reforms in developed countries focus on reducing the use of water in agriculture to enable the dedication of that "excess" water to other uses that may create greater added value. These are policies that seek, with the reduction of water used in agriculture, the possibility of relaunching certain industrial uses without affecting food production, or of formulating policies (such as modernizing irrigation) to save water and achieve the same level of production food. These policies often cause conflicts between the organized structures representing farmers (federations, associations, etc.) and those of other uses, including with governments.

To avoid some of the risks associated with irrigation, the emphasis is sometimes placed on the greater capacity to improve food production with "green water" (which is that from the rain, is on the ground and which would be linked to rainfed crops), in contrast to "blue water", (artificially transported), with different types of pipes and which gives rise to irrigated crops.

In the relationship between water and food, it is necessary to take into account what is known as "virtual water", which is the water transported (incorporated or used in the production and transformation process) with the food that a country imports (or exports). This approach can serve to justify from public policies to the development of technological innovations based on the position of the country (zone, basin or region) as an exporter or importer of virtual water in relation to certain foods. The balances that can be established in relation to virtual water, together

<sup>14</sup> ILO. 2020. ILO Sectoral Brief: COVID-19 and the impact on agriculture and food security. Online. Available at [https://www.ilo.org/wcmsp5/groups/public/-ed\\_dialogue/-sector/documents/briefingnote/wcms\\_742023.pdf](https://www.ilo.org/wcmsp5/groups/public/-ed_dialogue/-sector/documents/briefingnote/wcms_742023.pdf)

<sup>15</sup> UN- Department of Economic and Social Affairs. 2020. SDG 6. Online. Available at <https://sdgs.un.org/goals/goal6>

<sup>16</sup> Campos, S. 2020. IADB Blogs: Water and soap against coronavirus in Latin America and the Caribbean. Online. Available at <https://blogs.iadb.org/agua/en/water-and-soap-against-coronavirus-in-latin-america-and-the-caribbean/>

<sup>17</sup> World Bank. 2018. The Connections between Poverty and Water Supply, Sanitation, and Hygiene (WASH) in Panama. A Diagnostic. Online. Available at <http://documents1.worldbank.org/curated/en/289081533100906521/pd7The-connections-between-poverty-and-water-supply-sanitation-and-hygiene-in-Panama-a-diagnostic.pdf>

<sup>18</sup> UNESCO. 2020. Waters of Latin America and the Caribbean: contributions in times of COVID-19. Online. Available at <https://en.unesco.org/news/waters-latin-america-and-caribbean-contributions-times-covid-19>

<sup>19</sup> Embid, A. Martín, L. 2017. El Nexo entre el agua, la energía y la alimentación en América Latina y el Caribe. Planificación, marco normativo e identificación de interconexiones prioritarias. Online. Available at [https://repositorio.cepal.org/bitstream/handle/11362/41069/S1700077\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/41069/S1700077_es.pdf)

with the situation, in general, surplus or deficit, of water, may advise the intensification of certain production policies of some type of food.

The irrigation and drainage (I&D) sector continues to have complex and far-reaching impacts across the water-energy-ecosystem-food nexus due pandemic conditions<sup>20</sup>. As an enabler of hundreds of millions of agricultural jobs in rural areas, the sector enables the world's critical production systems, livelihoods for the majority of the world's poor, and holds the keys to shift to greener recovery. Irrigation agencies around the world have continued to function despite challenging circumstances. However, there have been multiple shocks impacting service delivery, such as fiscal constraints, interruption of supply chains due to travel restrictions, and lack of availability of labor. Well aware of the climate crisis and the shocks it brings, the need to grow more with less, and the desire to better serve thriving farms, the I&D sector was already in the process of repositioning itself towards modern and sustainable service provision, and the pandemic adds urgency to existing sector transformation needs. This includes the need for a broader strategic approach that includes transforming governance and service provision, supporting watershed management, improving water productivity and efficiency, and an overall greening of the sector through water-smart agriculture.

In Latin America, it is estimated that 42.4% of employment is in sectors at high risk and 16.5% in sectors at medium-high risk. These workers have a high chance of facing a reduction in working hours, wage cuts and layoffs. Countries where employment is concentrated in sectors such as agriculture and livestock, for example, Guatemala, Honduras, Ecuador and the Plurinational State of Bolivia, are likely to have a lower proportion of workers in high-risk sectors. However, if the virus were to spread to rural areas, activity in this sector could also collapse. The distribution of female and male employment in each sector will determine the gender impact of the pandemic on the labor market. Sectors considered to have a high risk of job loss are found to have a higher concentration of male workers. On average, women make up an estimated 44% of employees in high-risk sectors<sup>21</sup>.

Special attention should be given to the rural youth of the region. Of the 30.9 million young people between the ages of 15 and 29 living in "rural" areas in 2016 in the 20 countries that make up Latin America, about 9.6 million work in the agricultural sector and 8.2 million in non-agricultural activities. In addition, about 2.8 million "urban" youth also work in the agricultural sector. Additionally, there are some 11.9 million rural youth who do not work<sup>22</sup>. Although they are a heterogeneous group, they face significant disadvantages and have higher levels of poverty than rural adults<sup>23</sup>, as well as urban youth, which places them as a particularly vulnerable group. In terms of education, although the gap between urban and rural areas has tended to close, it still persists; worse indicators of educational completion, attendance and access to tertiary education are evidenced. At the labor level, rural young people enter the labor market earlier than their urban peers and do so in a greater proportion in low-productivity jobs, with lower income and less social security coverage. Due to this lack of opportunities, rural areas continue to be poles of expulsion for the young population, which presents the highest rates of emigration to urban sectors.

Studies developed by OECD in 2016<sup>24</sup> shows that entrepreneurship ecosystems for high-growth entrepreneurs are developing quickly, but offer employability and social mobility only to a few. LAC has few high growth youth entrepreneurs and many subsistence entrepreneurs. The prevalence of own-account workers among youth (16%) is almost three times the prevalence in OECD countries (6%). Only 13% of young entrepreneurs in the region possess tertiary education, compared to 33% in OECD countries. Young entrepreneurs face challenges in accessing financing instruments, improving capacity building, developing business networks and an entrepreneurial culture, accessing new markets and overcoming regulatory barriers, even more so than their adult counterparts. Fostering entrepreneurship can improve and facilitate youth transition from school to work and adult life. An inclusive entrepreneurship approach with different instruments will increase productivity and equity. Broader, multi-dimensional support, beyond micro-credit, is required for subsistence entrepreneurs to address vulnerabilities outside the labor market. This includes tailored financing instruments adapted to the needs of young entrepreneurs, with more flexible requirements on credit history, collateral and risk. Public financial institutions can play a role in making financing instruments for the young more flexible, both through credit and new instruments.

<sup>20</sup> World Bank. 2020. The Water Blog: Examining the pandemic's impact on the irrigation and drainage sector and opportunities for recovery. Online. Available at <https://blogs.worldbank.org/water/examining-pandemics-impact-irrigation-and-drainage-sector-and-opportunities-recovery>

<sup>21</sup> ECLAC-ILO. 2020. Employment Situation in Latin America and the Caribbean Work in times of pandemic: the challenges of the coronavirus disease (COVID-19). Online. Available at [https://www ilo.org/wcmsp5/group/public/—americas/—ro-lima/—sro-santiago/documents/publication/wcms\\_746274.pdf](https://www ilo.org/wcmsp5/group/public/—americas/—ro-lima/—sro-santiago/documents/publication/wcms_746274.pdf)

<sup>22</sup> FAO. 2016. Juventud rural y empleo decente en América Latina. Online. Available at <http://www.fao.org/3/a-i5570s.pdf>

<sup>23</sup> Guiskín, M. 2019. Situación de las juventudes rurales en América Latina y el Caribe. Serie Estudios y Perspectivas, Sede subregional de la CEPAL en México. N° 181 Online. Available at [https://repositorio.cepal.org/bitstream/handle/11362/45048/1/S1901202\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/45048/1/S1901202_es.pdf)

<sup>24</sup> OECD/ECLAC/CAF. 2016. Latin American Economic Outlook 2017: Youth, Skills and Entrepreneurship, OECD Publishing, Paris. Online. Available at <http://dx.doi.org/10.1787/leo-2017-en>

Family farmers operate 80% of the production units in Latin America and the Caribbean and work 35% of the arable land<sup>25</sup>. Furthermore, some 60 million people are involved, who make up 54% of workers employed in agriculture. It is estimated that there are 16.5 million Family Farmers units, 56% of them in South America and the other 35% in Mexico and the Central American countries (IICA 2016). These numbers highlight the size of this segment of farmers, as well as its potential to transform agriculture in the Americas.

Recently studies carried out by the IADB<sup>26</sup> predicted in the coming years, agricultural economies in LAC will face increasing challenges posed by climate change and variability, including rising temperatures, changing rainfall patterns, and more intense, more frequent extreme weather events. These changes could affect yields and food security in the region. In order to formulate effective responses to these challenges, it is necessary to examine the economic ramifications of the biophysical impacts associated with changing climates. At the regional level, the climate models project an average 1C-4C degree increase in maximum temperatures, and a 30% decrease in rainfall. The studies indicate in specific:

- In Bolivia, with the exception of irrigated rice and soybean, simulations show that, in a 'no-adaptation' scenario, the modeled cropping systems in Bolivia are likely to experience yield declines, on average, relative to a no-climate change (No-CC) scenario. Bean systems in the central lowlands may be especially hard hit, followed by rainfed wheat and maize.
- In Colombia, suitability modeling suggests that the average suitable area for banana, potato, and wheat cultivation may decrease substantially—by 55.1%, 20.8%, 21.3%, respectively. Projected suitability loss for sugarcane in parts of Valle del Cauca is offset by suitability gains in the north - east. Cassava and yam exhibit considerable resilience, with suitability projected to remain stable or increase across most of the country.
- In Ecuador, total agricultural production is projected to increase by 2050 under both CC and No-CC scenarios for all modeled crops except rice, which exhibits a significant decline in production. The introduction of climate stressors may also have a positive impact on maize production (+9.2 pp), but a negative impact on rice production (-7.8 pp), and a comparatively slight impact on soybean (+1.9 pp) and wheat (-2.1 pp) production growth. Turning to trade is projected to continue running a trade deficit in all of these key crops except for bean out to 2050 under both CC and No-CC scenarios.
- In Guatemala, rainfall is projected to decrease sharply across much of the country by 2050, in some areas by as much as 30%. Maximum and minimum temperatures, meanwhile, are projected to increase by 1-2.5°C across the country. Future agriculture in the country may thus have to contend with increasing heat and water stress simultaneously.
- Mexico is likely to experience a large range of climate impacts, due to the extent and variation in its geography. The average decline in suitability for Arabica and Robusta coffee is projected to be severe (43.9% and 22.9%, respectively), but a spatially explicit suitability impact map indicates that projected steep declines in Arabica coffee suitability in the western Sierra Madre and southern lowland areas are, to some extent, offset by gains farther inland.
- Yield impact modeling in Peru suggests that in 2050, climate change could result in a substantial average decline of 31.7% for rainfed rice, and a less severe 8% for rainfed bean. Irrigated systems are projected to fare considerably better, with irrigated rice yields falling by 21% and irrigated bean yields actually rising by 7%. The average projected yield for irrigated maize and rainfed wheat, meanwhile, exhibits relative resilience, declining by just 9.4% and less than 5%, respectively

With the COVID 19 pandemic, a trend towards less productive, technological and commercial interdependence arises, or has been reinforced and less open world trade, characterized by trade tensions and the weakening of the institutional framework of multilateralism. It is not entirely clear if this trend necessarily implies a reversal of globalization, or a slowdown of it, or in its place, we are facing the birth of a new globalization with a different governance, more inclined towards the diversification of production and consumption strategies, and food distribution, regionalization, local consumption, inclusion and towards sustainability. In the process of shaping this new globalization, philosophies of food self-sufficiency, the promotion of the consumption of locally produced products and initiatives for the regionalization of trade and shorter value chains and closer to the consumer coexist and sometimes conflict. Faced with the alternatives of consuming what is produced locally or promoting a more open, transparent and integrated international trade, it is clear that what must be promoted are the appropriate balances between both strategies, taking into account the multiple economic, social and environmental factors that determine whether the consumption of what is produced locally or internationally will make the agricultural and

<sup>25</sup> IICA. 2017. Family farming in the Americas: Guiding principles and concepts of IICA's technical cooperation. Online. Available at <https://repositorio.iica.int/bitstream/handle/11324/2608/BVE17038696.pdf>

<sup>26</sup> IADB. 2020. Vulnerability to climate change and economic impacts in the agriculture sector in Latin America and the Caribbean. Online. Available <https://publications.iadb.org/publications/english/document/Vulnerability-to-Climate-Change-and-Economic-Impacts-in-the-Agriculture-Sector-in-Latin-America-and-the-Caribbean.pdf>

food systems of Latin America and the Caribbean more resilient, efficient and sustainable. With adequate balances of their economic, social and environmental effects, it is possible for food to be richer, more nutritious, more abundant and more affordable if local consumption and production strategies, international trade and the promotion of regional chains are combined. All this towards a diversification of strategies that will not only make agricultural and food systems more resilient, but also make the use of scarce resources, such as water, soil and biodiversity, more efficient for well-being and good health of all<sup>27</sup>.

Most of Latin-American countries NDCs recognized agriculture as a priority sector to contribute to mitigation and adaptation targets. Particularly, the countries established agricultural sector lines of actions that look for developing research and generation of information systems to strengthen managing climate change in the sector, and to develop and implement sustainable agro-productive systems. These lines of actions included water resources management actions, and recently national arrangements demonstrated the urgency to include health actions for specific activities related with food production. The importance of promoting sustainable, climate resilient agricultural production and enhancing food security in the Latin America region in the face of climate change is reflected in the fact that most countries include the topic in their NDCs analyzed by IICA in 2016<sup>28</sup>. Twenty-eight of the NDCs from the region referenced the vulnerability of agriculture and food security to climate change and stress it as a priority for climate adaptation. The NDCs highlighted the dependency of the countries on the agricultural sector for economic and rural development, employment, food security, and foreign exchange earnings. While the primary focus of the region's NDCs regarding agriculture was adaptation, many countries (24) also included agriculture as one of the sectors covered in the mitigation section of the NDC. Fewer included specific actions, projects or goals focusing on reducing emissions from the agricultural sector.

#### Greening the Economic Recovery from COVID-19

Emissions reductions caused by economic downturns tend to be temporary — and can lead to emissions growth as economies attempt to get back on track. After the global financial crisis of 2008, for example, global CO<sub>2</sub> emissions from fossil fuel combustion and cement production grew 5.9% in 2010, more than offsetting the 1.4% decrease in 2009<sup>29</sup>. Recently research estimate that the direct effect of the pandemic-driven response will be negligible, with a cooling of around  $0.01 \pm 0.005$  °C by 2030 compared to a baseline scenario that follows current national policies. In contrast, with an economic recovery tilted towards green stimulus and reductions in fossil fuel investments, it is possible to avoid future warming of 0.3 °C by 2050<sup>30</sup>.

With the pandemic potentially triggering a global economic slowdown, Governments are already exploring ways to stimulate their countries' economies. The approaches they take to stimulate economic growth will have long-lasting effects. What governments must avoid is trying to boost their economies in the wake of one global health crisis by exacerbating another — namely air pollution. A stimulus package that includes ramping up fossil fuel production or use would do exactly this. During previous economic crises, a number of countries turned quickly to stimulus packages that included investments in "shovel-ready" infrastructure projects. In many cases, this included building more coal or other fossil fuel power plants, upgrading roads, investing in heavy industries such as automobile manufacturing and more. Following that old playbook to respond to the COVID-19 pandemic would be a terrible mistake, as it would amplify the air pollution health crisis.

As countries look to give their economies a much-needed jolt in the wake of the COVID-19 outbreak, governments and companies considering stimulus packages essentially have two choices: They can lock in decades of polluting, inefficient, high-carbon and unsustainable development, or they can use this as an opportunity to accelerate the inevitable shift to low-carbon and increasingly affordable energy systems that will bring long-term economic benefits. The latter will also fight two major crises head-on: air pollution and the growing climate emergency.

Each country's situation will be different, for example, in their macroeconomic conditions, fiscal space, extent to which broad-based stimulus packages have already been launched, capacity to incorporate climate considerations, the ambition of their climate commitments, and the importance placed on other policy objectives. But some principles can still help fiscal policymakers green their response to the COVID-19 crisis<sup>31</sup>:

<sup>27</sup> Arias, Witkowski and Chavarria. 2020. ¿Es viable o sostenible el consumo de alimentos producidos localmente? On line. Available at <https://blog.iica.int/blog/es-viable-o-sostenible-consumo-alimentos-producidos-localmente>

<sup>28</sup> Witkowski, K. 2016. Nationally Determined Contributions from LAC: Where does agriculture fit? Online. Available at: <https://www.iica.int/es/node/16866>.

<sup>29</sup> Mountford, H. WRI Blogs: Responding to Coronavirus: Low-carbon Investments Can Help Economies Recover. Online. Available at <https://www.wri.org/blog/2020/03/coronavirus-economy-low-carbon-investments>

<sup>30</sup> Forster, P.M., Forster, H.L., Evans, M.J. et al. Current and future global climate impacts resulting from COVID-19. *Nat. Clim. Chang.* 10, 913–919 (2020)

<sup>31</sup> IMF, Fiscal Affairs: 2020. Special Series on Fiscal Policies to Respond to COVID-19: Greening the Recovery. Online. Available at <https://www.imf.org/-/media/Files/Publications/covid19-special-notes/en-special-series-on-covid-19-greening-the-recovery.ashx>

- **Choose to support green, rather than brown, activities:** Public investment projects could focus on boosting and developing and adopting climate-smart technologies, supporting adaptation, avoiding carbon-intensive investments. Public works programs to provide income support to the poor affected by the crisis could be aimed at projects that support adaptation (e.g., irrigation). Debt guarantees and other support could be extended to green industries/activities in preference to brown industries/activities.
- **Make the financing green:** Consider financing the additional climate spending with green bonds. Private finance could be mobilized for green investment (e.g., through targeted and transparent guarantees). Require banks that receive public support to disclose the climate readiness of their portfolio.

### The Urgency for Technological Innovation

The growing urgency of the climate crisis shows the dire need for immediate measures to drastically cut emissions now. And the opportunities to do so, given new developments with clean technologies and their falling costs, have never been better. The IPCC AR5 Climate Change Mitigation Report<sup>32</sup> recognizes that mitigation technological options and practices can reduce GHG emissions per unit of land or per unit of product in the Agriculture, Forestry and Other Land Use (AFOLU) sector. However, the reduction of emissions from croplands, grazing lands, and livestock and the reduction of carbon losses from soils also faces technological hurdles. The limitations to generate, procure, and apply technology to solve environmental issues also face financial and institutional constraints. The lack of ability to manage and re-use knowledge assets for communication and learning also affects deployment of mitigation technologies. Thus, the increase of sustainable agricultural production in developing regions is affected by a weak development, poor access, and a limited transfer of the technology.

FAO<sup>33</sup> remarks in such a scenario - in which achieving economic, social and environmental sustainability is increasingly essential for the planet - the agri-food system needs urgent and innovative solutions. In this regard, financial, technological innovation and digitization is a recommended way to consider. Digitization has become a fundamental engine for rural transformation, creating new opportunities for farmers. The future of agri-food systems will depend, largely, on how stakeholders in agriculture will be able to take advantage of digital transformation to improve inclusion, efficiency and environmental impacts.

The use of innovative technology in agriculture can accelerate the reactivations of the sector through productivity enhancements of the food chain, promote the creation of jobs and welfare of farmers in the Post COVID-19 era, which in turn can increase people's purchasing power to increase their consumption of agricultural products.

Recently FAO's Policy Brief "Enabling agricultural innovation systems to promote appropriate technologies and practices for farmers, rural youth and women during COVID-19" states that *"The impact of the COVID-19 pandemic will vary for different groups of rural population, with the highest impact expected to be on farmers and other vulnerable groups, especially women and youth. Targeted support is feasible only by activating a network of actors or organizations within agricultural innovation systems (AIS) and promoting customized technologies and practices suitable for location specific contexts"*<sup>34</sup>. In a broader scope, opportunities are identified in the National Innovation Systems, which incorporate actors so far little or weakly related to the food and agriculture sector. These systems frame the relationships within and between organizations, institutions and socioeconomic structures, which determine the speed and direction of innovation and the construction of technological capabilities<sup>35</sup>. A system is made up of components (companies, universities, research centers, government, among others), the relationships between these components and the institutions. The concept of a system does not necessarily imply that it is something that is formally and consciously designed and constructed. It includes a set of individuals, organizations and institutions, whose interactions determine the innovative performance of the whole set. Nor is it assumed that the system components work in a joint, coordinated and coherent way, but the importance of the interaction between them for the innovation process is emphasized.

For the development of the Readiness proposal a preliminary mapping of institutions and mechanisms at the national and regional level includes:

- **Universities:** Public and private, with academic centers in agriculture and other fields of engineering and transferable capacities to the food and agriculture sector.

<sup>32</sup> IPCC. 2014. AR5 Climate Change 2014: Mitigation of Climate Change. Online. Available at [https://www.ipcc.ch/site/assets/uploads/2015/02/ipcc\\_wg3\\_ar5\\_full.pdf](https://www.ipcc.ch/site/assets/uploads/2015/02/ipcc_wg3_ar5_full.pdf)

<sup>33</sup> FAO. 2020. Food systems and COVID-19 in Latin America and the Caribbean: The opportunity for digital transformation. Online. Available at <http://www.fao.org/3/ca9508en/CA9508EN.pdf>

<sup>34</sup> FAO. 2020. Enabling agricultural innovation systems to promote appropriate technologies and practices for farmers, rural youth and women during COVID-19. Online. Available at <http://www.fao.org/3/ca9470en/CA9470EN.pdf>

<sup>35</sup> Padilla, R. Gaudin, Y. and Rodríguez, P. 2012. Sistemas nacionales de innovación en Centroamérica. Online. Available at [https://repositorio.cepal.org/bitstream/handle/11362/49251/5/2012603\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/49251/5/2012603_es.pdf)

- **Research centers:** firstly, those that are part of the Consortium of International Agricultural Research Centers, CGIAR, for this proposal include:
  - International Maize and Wheat Improvement Center, CIMMYT, Mexico
  - International Potato Center, CIP, Peru
  - The Alliance of Biodiversity International and the International Center for Tropical Agriculture, CIAT, Colombia.
  - By the affinity and institutional history shared with IICA, in a regional approach is included The Tropical Agricultural Research and Higher Education Center (CATIE) Costa Rica.

At the national level, the national institutes of Agrarian Innovation are listed, such as:

- The National Institute of Agricultural and Livestock Forestry Research, INIFAP, Mexico
- Institute of Agricultural Sciences and Technology, ICTA, Guatemala
- National Autonomous Institute of Agricultural Research, INIAP, Ecuador
- Colombian Corporation for Agricultural Research, AGROSAVIA
- National Institute of Agrarian Innovation, INIA, Peru
- National Institute of Agricultural Research, INIA, Uruguay
- Brazilian Agricultural Research Company, EMBRAPA

Digital Fabrication Laboratories, or FabLab, which have recently been incorporated as innovation actors, under disruptive methodologies and with a greater involvement of civil society, and oriented towards achievement. They are defined as a place to play, to create, to mentor and to invent, a place for learning and innovation. Fab Labs provide access to the environment, the skills, the materials and the advanced technology to allow anyone anywhere to make (almost) anything. In the target countries of this proposal, 31 are preliminarily identified in Mexico, 3 in Guatemala, 10 in Ecuador, 3 in Bolivia, 22 in Peru, 13 in Colombia, 4 in Uruguay and 123 in Brazil<sup>36</sup>.

- **Government:** defined as the beneficiary of this proposal, and giving emphasis to the ministries of Environment, Agriculture, Economy and finance, as well as those related to Science and technology.
- **Companies:** Private Sector or "Private Providers" interpreted as a broadly and pragmatically to include any organization that markets expertise and products on a commercial basis<sup>37</sup>. Three different levels of Private Actors are considered as a key role<sup>38</sup>:
  - **Micro, Small & Medium Enterprises (MSMEs):** The local private sector in developing countries consists primarily of MSMEs, which include sole proprietors, smallholder and family farms, and enterprises. For example the conglomerates of company in the area of information and Communication technologies. The latter, for example, agglomerated in the national chambers of ITC companies, regionally repeseted by the Federation of Associations of LAC, Spain and Portugal of ICT Entities - ALETI, which includes:
    - National Chamber of the Electronics, Telecommunications and Information Technologies Industry (CANIETI), of Mexico
    - Bolivian Chamber of Information Technologies, CBTI
    - Federação das Associações das Brazilian Empresas de Tecnologia da Informação, ASSESPRO
    - Colombian Federation of the Software and IT Industry, FEDESOFIT
    - Ecuadorian Software Association, AESOFT
    - Export Software Commission - Guatemalan Association of Exporters, SOFEX / AGEXPORT
    - Peruvian Association of Software Producers, APESOFT
    - Uruguayan Chamber of Information Technology, CUTI
  - **Large Enterprises & Multinational Corporations (MNCs) –** Large enterprises employ 50 or more employees and are more prevalent in advanced developing countries. MNCs are increasingly active in developing countries as registered companies with in-country operations, and also through indirect investments through their supply chains. For example,

<sup>36</sup> FabLabs.io. 2020. World Map of FabLabs. Online. Available at <https://www.fablabs.io/fabs>

<sup>37</sup> World Bank. 2010. Private Providers of Climate Change Services The Role and Scope for the Private Sector in the Provision of Non-Financial Climate Change-Related Services Relevant to Water Infrastructure. Online. Available at <https://openknowledge.worldbank.org/bitstream/handle/10985/27856/5/65710NWPOWN2610800349455801PUBLIC1.pdf>

<sup>38</sup> UNPD. 2020. Engaging the private sector. Online. Available at <https://www.adaptation-undp.org/privatesector/>

those that offer goods and services to the food and agriculture sector, both nationally and globally, and that carry out research and development activities towards disruptive technologies in agriculture

- **Capital Providers (Investors) & Market Facilitators** – Actors that make direct investments and provide financial services, respectively. They include banks, venture capitalists and angel investors, financial entities in national and regional levels, with operations in food and agriculture, water and environmental sectors.

The World Government Summit describes in the document: “Agriculture 4.0: The Future of Farming Technology”<sup>39</sup> (see Figure 1) that new technologies are disrupting the classic agriculture systems. The food industry must maximize old technologies and create new ones to satisfy the increasing demand for food using fewer inputs, reducing GHG emissions, and facing climate change. Technology is seen as the fundamental pillar of the new agriculture era by regaining the food value chain with the needs of consumers. The use of advanced intensive technologies will raise profit, efficiency, social and environmental safety of agribusiness. In fact, today three technology trends that are positive shifting the agricultural sector are: new techniques of production (e.g. Hydroponics and bioplastics), new technologies to bring production to consumers (e.g. vertical and urban farming), and the incorporation of cross-industry technologies and applications (e.g. Internet of Things and precision agriculture).

Figure 1. Map of Technologies and Maturity



Source: <https://www.worldgovernmentsummit.org/observer/reports/2018/>

Currently, under the pandemic shadows, the agricultural sector has more limited capacity to identify, compile, and share information on technological innovation to small farmers that would increase low emissions and climate resilient investments. The sector also has higher constraints to provide financing to these advanced technologies to be applied to the food value chain. Therefore, efforts are necessary to organize and strengthen the technical knowledge in a manner that mobilize Post COVID-19, the public and private funds needed to deploy intensive/advanced technologies for agriculture.

Despite uncertainties surrounding the economic outlook post – COVID-19, emerging markets are expected to experience an acceleration in the adoption of disruptive technologies and a proliferation of online business models and platforms. The pace of the acceleration will likely be faster in upper-middle-income countries than in low-income countries. However, such acceleration will mean not only increased adoption of technologies developed in high-income markets but also innovation relevant to local needs<sup>40</sup>.

<sup>39</sup> World Government Summit 2018. Agriculture 4.0: The Future of Farming Technology. Online. Available at <https://www.worldgovernmentsummit.org/api/publications/document?id=95df5a04-e57c-6575-b215-f0000a7ddb5>

<sup>40</sup> IFC. 2020. The Impact of COVID-19 on Disruptive Technology Adoption in Emerging Markets. Online. Available at <https://www.ifc.org/wps/wcm/connect/537b5e66-a35c-40cf-bed8-0f618c4f63d8/202009-CCOVID-19-IMPACT-Disruptive-Tech-EM.pdf?MOD=AJPERES&CV=DwYjs5zG0>

To address innovation challenges, in the context of a proposal that seeks the development of a resilient agriculture post COVID-19, knowledge and methodologies in the field of Innovation Management will be incorporated. First, the Diffusion of Innovation (DIO) Theory<sup>41</sup> is considered, with special emphasis on classifying adopter categories on the basis of innovativeness (innovation diffusion curve). From mapping exercises in the target countries, potential actors for each category and their characterization can be identified. This allows locating management and development strategies for innovations (technological and financial) both in the implementation of this proposal, and in search of its sustainability in an exit strategy. For each category it is considered:

- **Innovators**, very eager to try new ideas. Control or Access of substantial financial resources to absorb the possible loss owing to an unprofitable innovation and the ability to understand and apply complex technical knowledge. Through the proofs of concept of technologies, an attempt is made to initiate a process of managing the curve with these actors, probably understood as a private sector that can quickly develop tangible results in the target countries regarding innovations that respond to resilient agriculture against post COVID-19 recovery
- **Early adopters**, this adopter category, more than any other, has the greatest degree of opinion leadership in most social systems. Potential adopters look to early adopters for advice and information about the innovation. The early adopter is considered by many as "the individual to check with" before using a new idea. Although a mapping of actors can better define them in each context, the national institutes of agrarian research or the chambers of producers in each country or regional can play a fundamental role in this category. They can be encouraged by knowledge management processes to fulfill their role of "to check with before using". The beneficiaries of this proposal, Ministries / Secretaries in the areas of environment, agriculture, finance and planning, through their technical instances are included in this category, encouraged in the processes of facilitation of early development technologies
- **Early majority**, may deliberate for some time before completely adopting a new idea. Their innovation-decision period is relatively longer than that of the innovator and the early adopter and later **Majority adopt** where new ideas just after the average member of a social system. Adoption may be both an economic necessity and the answer to increasing network pressures. These categories will be considered in the processes of development of concept notes at the national and regional level, to ensure a sustained escalation of the findings of innovation processes or identification of innovations for small and medium producers, beyond compliance with the implementation of the project.
- **Laggards**, They possess almost no opinion leadership. They are the most localite in their outlook of all adopter categories; many are near isolates in social networks. The point of reference for the laggard is the past. Decisions are often made in terms of what has been done in previous generations and these individuals interact primarily with others who also have relatively traditional values. For this group, good practice will be ensured in the documentation and systematization of project deliverables and the sustained management of the innovation cluster.

To guide the process of identification, compilation and exchange of information on technological innovation, the use of innovation methodologies will also be used. For example, a close relationship work methodology will be considered with indirect beneficiaries, such as small and medium producers, through direct beneficiaries, public entities, under the Design Thinking or Design Thinking methodology. In its process, it considers 1) the empathy and deep understanding of the conditions that digital solutions will both develop and operate adding value to the processes in the field, 2) it defines in a concrete way needs to be attended by the user and the objective towards users agricultural producers and their organizations, proposing at this stage the innovative aspects of development, to 3) devise, co-create, design, where the Technology Needs Assessment that have been undertaken in the target countries related to climate change, environment and agricultural production, to 4) prototype the solution to the systems to 5) test and feed back to optimization. Finally 6) guide the implementation of the proposed solutions. This entire cycle in the understanding that digital solutions are rarely offered as a finished product, but this Design Thinking cycle is virtuously repeated, improving and scaling the scope of innovations.

#### Challenges and Opportunities for Green Resilient Recovery

Some of challenges to be addressed for resilient, low carbon and Green Recovery of Food Production systems, cited by ITC<sup>42</sup>, includes:

- **Establish integrated, climate-smart production systems** with food crops, cash crops and agroforestry. Diversification makes it easier to adapt to climate change and means better soil quality and productivity.

<sup>41</sup> Rogers, E. 1962. Diffusion of innovations. Third Edition. The Free Press. New York, N. Y, USA.

<sup>42</sup> International Trade Centre. 2020. Unsung Heroes: How Small Farmers Cope with COVID-19. Online. Available at [https://www.intracen.org/uploads/Files/intracen.org/Content/Publications/Unsung\\_Heroes\\_Low-res.pdf](https://www.intracen.org/uploads/Files/intracen.org/Content/Publications/Unsung_Heroes_Low-res.pdf)



Diversified crop production also improves livelihoods and the welfare of farmers by mitigating income risk, ensuring food security and improving household nutrition.

- **Explore new markets and value addition** to generate better returns, more income streams and new commercial channels. Targeting several market channels at the same time, focusing on local economies as well as export, and branching out into new products can bring in more customers while diversifying market and price risk.
- **Expand alliances for investment, innovation and equitable value distribution.** Investments by buyers, financiers and the public sector in adaptive technology could help farmers become more efficient, scale up productivity and increase their incomes. A relationship of trust and transparency between buyers, producers and value chain operators can also reduce the asymmetries in the distribution of profit.
- **Engage consumers and shift to digital tools and platforms.** Digitalization of working procedures and new online delivery platforms enable producers to get better organized. This means they can reach local, regional and international markets and win new customers. It also responds to the growing demand for responsible production and consumption and bridges the gap between producers, buyers and consumers.

One of the big challenges identified relates to Private Sector Engagement. Specific barriers related with Climate Change and probably Green Recovery issues are<sup>43</sup>:

- Policy & regulation that hinder adaptation
- Prevailing perceptions that hinder looking beyond grant-financed adaptation
- Insufficient climate knowledge & absence of climate change risk assessments
- Weak identification and evaluation of cost-effective adaptation measures
- Need to attract financing to implement adaptation measures
- Limited technical capacity to implement adaptation measures

Considering these limitations, in a perspective of Food, Health and Water, this proposal will consider specific actions<sup>44</sup> to catalyze private sector engagement from the proposed activities (included in the Logical Framework):

- **Generate business-relevant climate information and risk analysis:**
  - Activity 1.3.1.1: Conduct a mapping exercise of the key innovation system actors in Latin America and their roles in strengthening the response to COVID-19.)
  - Activity 2.2.2.2: Conduct modeling exercises to optimize and prioritize different measures including projections of food stocks and yield forecasts to identify any gaps or surpluses that can arise due to import bans or shortages, particularly in key international trade partners
- **Implement Technical assistance and training:**
  - Activity 1.3.1.2: Design digital communication and training instruments for agribusinesses and producer organizations.
  - Activity 4.1.1.1: Execute an assessment of collaboration and co-creation mechanisms to encourage public-private investment inside intensive technology innovation use agri-food production clusters.
  - Activity 4.1.2.1: Develop Regional Concept Note and National Concept Notes
- **Markets and business development:**
  - Activity 2.2.2.4: Develop a regional green resilient, agriculture investment strategy and plan for the participant countries, for priority measures, in consultation with public and private investor.
  - Activity 2.2.3.1: Conduct a barrier analysis of the enabling environment for developing technological and financial intensification innovations of food, health, and water security, supported by innovation and regional financial ecosystems.
  - Activity 4.1.1.2: Provide a proof of concept report about the adaptation and validation of three (3) disruptive technologies innovations
- **Partnership and cooperative models**
  - Activity 2.2.1.2: Stakeholder interviews and meetings on opportunities for aligning the country's climate change agenda with the economic green recovery agenda.
  - Activity 2.2.3.2: Stakeholder interviews and meetings for determining roles and opportunities of youth and young entrepreneurs on green recovery agenda

<sup>43</sup> UNPD. 2020. Engaging the private sector. Online. Available at <https://www.adaptation-undp.org/privatesector/>

<sup>44</sup> UNPD. 2020. Engaging the private sector. Online. Available at <https://www.adaptation-undp.org/privatesector/>

- Activity 2.2.3.23: Identify regional agri-food production clusters with higher scaling-up potential of technological and financial innovations to develop Green recovery entrepreneurship and employability, considering youth and young entrepreneurs.
- Activity 5.2.1.2: Implement the operation of one (1) regional innovation hub for COVID Green recovery
- Financial instruments
  - Activity 2.2.1.1: Perform desk analysis and report of the impacts of COVID-19 and economic stimulus measures on the climate change strategies and plans.
  - Activity 2.2.2.1: Undertake stakeholder interviews and meetings to identify a range of measures (regulatory, fiscal, financing/investment, etc. in the food and agriculture sector of participating countries) to maximize climate, economic and social benefits.

### Overview of the Readiness Project

The central aim of this proposal is to outline pathways for post COVID-19 Green Recovery strategies in the Food, Health and Water sectors supporting by national and regional efforts of the targeted countries to strengthen financial and technological innovations. Hence, this Readiness Proposal will contribute to overcoming institutional, technical, and financial barriers in the agricultural sector, specifically to medium and smallholder farmers, through public institutions in environmental, agriculture, and national finances and economics sector, to encourage the adoption of advanced technologies, which accelerate economic recovery and employment creation, and improve farmers' livelihoods while reducing CO<sub>2</sub> equivalent emissions in the face of the global pandemic.

It is important to highlight that the proposal is based on a regional approach, 8-targeted countries, as a strategy that allows for complementing the capacities among the countries and developing mechanisms for horizontal and South-South cooperation, which strengthen the processes for generating solutions to complex issues. This was recognized in an OECD study<sup>45</sup>, which validated a series of global cases where regional and multi-country approaches were found to be strategies that contribute to the effectiveness of development cooperation projects and programmes. Similarly, a regional network of specialists and cooperation agencies for 22 countries in Ibero-America, named *Somos Iberoamérica*, of which IICA is a guest agency, determined that under the current context of COVID 19 it is essential for the countries of the region to strengthen spaces for joint work and South-South cooperation, since these expand the scope of the cooperation and facilitate the implementation of innovative initiatives to respond to the challenges and needs posed by the current emergency. This occurs insofar as regional cooperation fosters processes for exchanging experiences and facilitates the mobilization of specialized knowledge, in addition to strengthening capacities among partner countries and promoting the management of alliances on issues where there are complementarities<sup>46</sup>.

Readiness funds will be used to execute the following activities:

- i. Conduct a mapping exercise of the key innovation system actors in Latin America;
- ii. Perform analysis of the impacts of COVID-19 and economic stimulus measures on the climate change strategies and plans for the Food and Agriculture sector,
- iii. Stakeholder consultations on opportunities for aligning the country's climate change agenda with the economic green recovery agenda for Food Security to identify a range of measures (regulatory, fiscal, financing/investment, etc. in the food and agriculture sector of participating countries) to maximize climate, economic and social benefits;
- iv. Conduct modeling exercises to optimize and prioritize different measures of food stocks and yield forecasts, inter-agency and stakeholder consultations to validate priority measures,
- v. Barrier analysis of the enabling environment for developing technological innovations of food security
- vi. Identify regional agri-food production clusters with higher potential for scaling up of technological and financial innovations
- vii. Assessment of collaboration and co-creation mechanisms to encourage public-private investment inside intensive technology agri-food production clusters
- viii. Develop regional Concept Notes for planning and attracting new investments on Green Recovery; and

<sup>45</sup> OECD (2010). La cooperación Sur-Sur en el contexto de la eficacia de la ayuda. Available at <https://www.oecd.org/dac/effectiveness/46080702.pdf>

<sup>46</sup> Somos Iberoamérica (2020). Cooperación Sur-Sur y adaptación a la emergencia: la respuesta de los países Iberoamericanos. Available at <https://www.somosiberoamerica.org/temas/cooperacion-sur-sur/cooperacion-sur-sur-y-adaptacion-a-la-emergencia-la-respuesta-de-los-paises-iberoamericanos/>

- ix. Design and implementation of a Regional Innovation hub/platform for COVID Green recovery and, design digital communicational and training instruments for agribusinesses and producer organizations.

Particularly, this proposal will be used to support capacity development of participating countries in innovative technology for agriculture (Objective 1); advancing strategic frameworks for technological intensification of agrarian systems (Objective 2), developing a pipeline of projects in the agricultural sector that involve sophisticated technology (Objective 4), and improving knowledge sharing and learning through the establishment of a regional Cluster for innovation solution co-creation (Objective 5). The following outcomes are proposed:

**Outcome 1.3:** Relevant country stakeholders have established adequate capacity, systems, and networks to support the planning, programming, and implementation of GCF-funded activities.

Anticipated Deliverables in detail includes:

- Scoping study report on innovation and financial actors in Latin America and types of support that can be provide solutions in the context of COVID-19 for Food Security form medium and small farmers (D 1.3.1.1) This study will offer relevant information on actors that are both currently linked to various levels of intensity, or with potential links to the water, food and agriculture sectors, their characteristics and national organization. The regional relationships and networks in which they participate and facilitate the horizontal mobilization of efforts in technological and financial innovation will also be identified for the eight target countries. Emphasizes the possible organizations in the regions of Mesoamerica, Andean Region and the Southern Cone, as a preliminary grouping of the target countries, without detriment to relations outside this regional organization. Their antecedents in capacity, systems and networks that contribute in a tangible way to the framework of activities that can be contained in operational frameworks in the strategic areas of intervention of the GCF and the identified national priorities of the countries will be determined in detail. Non-traditional actors are considered in this characterization, including potential actors related both to the field of technological and financial innovation. In technological innovation, they were preliminarily identified as the Digital Fabrication Laboratories or FabLabs, in their approach to producing Citizen Science and using agile innovation methodologies and their link to plans to be developed in the face of the climate-resilient recovery of the post COVID-19 sector. Financial innovation will cover both entities linked to traditional financial mechanisms and those that are entering into innovative mechanisms with climate investment criteria or Venturing Capital towards risky technological innovation.
- The Design of digital communication and training instruments for agribusinesses and producer organizations will develop five (5) workshops, five (5) e-courses and five (5) short Radio Series implemented through for remote learning to raise awareness of the impact of COVID-19 on agriculture and food emphasizing for medium and small farmers (D 1.3.1.2) Workshops, e-courses and radio series will have as content the development of the quantitative and qualitative impact of the pandemic in each country's farmers, considering the demand and supply of agribusiness. Likewise, the analysis of strengths, opportunities, and weaknesses that technological innovation offers to the agricultural sector and related sectors will be developed to deploy a green recovery. These products will be prepared with a vision of comprehensive utility for all participating countries, considering the previous experience of the Delivery Partner IICA in the production and management of regional knowledge in agriculture and environment. The development of this release includes two interrelated stages, planning and implementation. The planning stage will use both proven methodologies and tools in adult education in rural areas and agro-entrepreneurship, with review and contributions from the participating countries, considering the abundant offer of virtual training in times of pandemic, and innovating in the way and structuring of each training instrument. Following this planning and considering the opportunities in the context, the ideal moments will be identified, by target country or groups of target countries to carry out targeted calls and channels to implement adequate coverage aimed at small and medium farmers.

**Outcome 2.2:** GCF recipient countries have developed or enhanced strategic frameworks to address policy gaps, improve sectoral expertise, and enhance enabling environments for GCF programming in intensive technology agriculture.

Anticipated Deliverables in detail includes:

- Diagnostic analysis report on COVID-19 impacts and opportunities in the Food Security emphasizing medium and small farmers (D 2.2.1.1a). It has been discussed, based on available information, the effects of the COVID-19 pandemic in various areas, the health and economic, mainly discussed. While the restrictions vary in intensity and frequency in the countries, it is relatively easy to identify immediate global

effects, but almost impossible to know specific sectoral effects in the medium and long term. This deliverable tries to separate the impacts of the COVID-19 pandemic specifically for the food, water and agriculture sectors known. As well, as to emphasize the prioritization by level of impact and duration of its effects, as a guide for taking of sectorial decisions and input for subsequent deliverables in the line of medium-term action plans, as well as interventions in potential technological and financial innovations, Concept Notes and structuring of a regional innovation hub for COVID Green recovery. This study will consider the existing asymmetries in the areas of water, food and agricultural production in the participating countries, but looking for points of shared resonance for small and medium-sized farmers and production for internal markets and civil society. Considering the national and international financial flows towards the social and economic recovery of the participating countries, the national and regional actions for the water, food and agriculture sectors will be inventoried and the contrast that can be observed with the impacts in a vision medium and long term at the national and regional levels. Recognizing the existing and increased weaknesses due to the pandemic situation, warnings and recommendations are made regarding the data sources and the medium-term monitoring mechanisms based on these, for the monitoring of impacts.

- Develop a national inventory/database for each country on public and private storage facilities/ collection centers closer to producers (where farmers can deliver their produce without the need to go to markets), consumption trends and consumption channels, analysis of traceability systems for E-Commerce. Include available cooling infrastructure, map out, and assess cold chains that can be used for emergency storage of perishable/semi perishable goods. (D 2.2.1.1b). This study will allow updating, with a vision of risk to the continuity of food chains, the resilience regarding the capacity both to capture supply and to provide food to society in a sustained manner. In the participating countries, different public, proven, mixed or complementary modalities are identified for food storage and marketing facilities. The update requires detailed monitoring of various actors, with different levels of information systematization and exchange systems, as well as the probable scarcity of information on infrastructure conditions. Approaches to food waste, and the likely increase in carbon and water footprints are expected to be generated. It also analyzes the emerging trend of E-Commerce specifically for agricultural markets, the models that have been generated both in pre-designed platforms for electronic commerce, as well as those that are being designed in the medium, the management methodologies, the health challenges in the food handling and the shortening of chains with possible approaches to the reduction of greenhouse gases derived from transport. The analysis of cold storage facilities are analyzed based on their resilience capacity both in cases of disruption by the pandemic, as well as other natural extremes (floods, seams, hurricanes, among others) with an adaptation vision. Approaches to risks associated with non-traditional greenhouse gases (such as CFCs) can be derived.
- Report on the outcomes of the stakeholder consultations opportunities for aligning the country's climate change agenda with the economic green recovery agenda for Food Security (D 2.2.1.2). A total of 16 workshops, two per target country, will be developed for two different groups of stakeholders. The differentiation is carried out at the level of Indirect Beneficiary, small and medium producers in their forms of organizations (associations, cooperatives and chambers) and Direct Beneficiary such as Ministries / Secretariats of agriculture, environment and water and those of Planning and finance, considering the NDAs in this group. For each country and target group, a preliminary profile of findings on the COVID-19 impacts should be prepared for the sector and policies in the agricultural and environmental fields, as well as the emerging, temporary or medium-term plans that each country has generated.
- Identify a range of measures (regulatory, fiscal, financing/investment, etc. in the food and agriculture sector of participating countries) to maximize climate, economic and social benefits (D 2.2.2.1). The consultations will also seek to assess the effectiveness of current social protection mechanisms targeting agri-businesses in Latin America (such as cash transfers, access to loans, credit-life insurance products and weather index insurance). These mechanisms can be particularly important for agri-food enterprises, especially when there are temporary drops in their economic activity, as is currently the case. In regular times, such mechanisms can play a major role in sheltering agribusinesses and rural communities from crop failures, injecting finance into often cash-starved rural economies and creating infrastructure.
- Updated economic and fiscal models and projection scenarios for food stocks and yield forecasts (D 2.2.2.2). The determination of the impacts of the COVID-19 pandemic in the water, food and agriculture sectors is taken as input, and these are refined in consultations with the stakeholders. Specific and contextualized statistics are provided to ensure food resilience, through modeling exercises for key or priority crops associated with small and medium producers. A food balance approach between stocks (current, historical and projects) is approached. International commercial dynamics are incorporated for similar or substitute products of the key food projects. Water and carbon footprints can be associated with key crops in the modalities of national production or international provision. This balance should allow decisions to be made regarding food security, water resource management, carbon emissions mitigation

and adaptation strategies (i.e. crop prioritization, complementation, adaptation, replacement for small and medium farmers). The proposal at this level of documentary and statistical maturity is once again valid and specially prioritized by Stakeholders (D 2.2.2.3) in a national view, as well as potential interactions for blocks of countries targeted by the proposal.

- Green resilient agriculture recovery strategy and investment plan document for the participating countries (D 2.2.2.4). Which brings together the main deliverables, findings and validations of Output 2.2.2 "Regional food and agriculture sector strategy for green climate resilient recovery developed and adopted by NDAs". It involves a process of transforming findings and the results of consultation with Stakeholders, in the dynamic vision of the value chains of small and medium farmers. It emphasizes a balance between the strategy recommendations for a food supply, a responsible use of the water resource and a change in the pattern in greenhouse gas emissions, for a better understanding of the effects, dynamics and measures that can be generated in food production. It establishes a recommendation with a medium-term vision, and aligned with the evolution of the pandemic dynamics and economic recovery evolution in the target countries. The investment pipeline will not be GCF exclusive but will consider opportunities for joint programming with other climate funds e.g. AF, GEF, CIFs, etc., through parallel and/or sequential funding. Nevertheless, the regional strategy and investment plan will serve to inform the subsequent updates/revisions of countries' GCF Country Programmes.
- Barriers, enabling conditions and a report addressing opportunities for the technological intensification of food security systems (Identify at least 20 regional innovation and/or financial options and mechanisms for intensive technology food productions in GCF programming focused in green recovery and green employability, with public utility in participant countries, supporting formulation of successful (D 2.2.3.1). The preparation of this deliverable begins with a direct consideration of the effects of the pandemic in the highlighting of the water, food and agriculture sectors, its validation by stakeholders and the Green resilient agriculture recovery strategy and investment plan derived from the previous Outputs. It is estimated that to arrive at an indicator of at least 20 regional innovations, up to a total of 100 technological and financial options can be evaluated. Considerations are included to environmental and social safeguard policies for technological innovations, as well as the risks derived from Prohibited Practices, Preventing financial mismanagement, Anti-money laundering and anti-terrorist financing for financial innovations. Preliminary criteria related to barriers and enabling conditions include: the review of additionally in the reduction of carbon emissions or reductions in the water footprint; intellectual property restrictions; benefit-cost relationships of technologies; regional and national availability for scaling in the short term; support and resolution of unforeseen events by local providers or possibilities on appropriation, adaptation and increase in national innovation management capacities; and possibility of incorporation into youth ventures. The analysis will mainly focus on the gaps related to policy & regulatory frameworks, markets, access to finance, new technology, and information system, etc. that limit the capacity for decision-making advanced technology. The analysis will also identify at least 20 innovation and/or financial options and mechanisms for intensive technology food productions in GCF programming focused on green recovery and green employability. A comprehensive appraisal of the economic viability of different new technologies and financial instruments to be implemented in Latin American countries will be undertaken. This study should put into the local context which technologies are feasible to implement, not only on a technological level but also on the economical realities of each country.
- Determine roles and opportunities of youth and young entrepreneurs on green recovery agenda and participation in forecasted regional agri-food production clusters (D 2.2.3.2). The paradigm shift sought in the resilience of the water, food and agriculture sectors will be incorporated with a vision of integration of future generations of small and medium producers and providers of technological and financial services. This deliverable will focus on the profiles of rural and to some extent urban youth, with their potential medium-term role in scalable leading roles in financial and technological innovation. For this, integration models in sectors other than those addressed (for example, industrial, commerce or services) of young entrepreneurs will be evaluated and how these can be adapted to successful strategies within a Regional Cluster. Likewise, the proposed maturity model focuses on changes in the vision and attitude of adults in the way of recognizing the value and generating growth alliances for young people and their potential interventions in the innovative resilient agrarian systems that are built. It also proposes to determine the economic maturity of potential entrepreneurship regarding the supply of employment and underemployment and contributions to local economies.

Report on regional agri-food production clusters with higher potential for technological scaling using innovative financial instruments, including virtual consultations workshop reports, with specific focus (chapters) on the role of youth and young entrepreneurs.(D 2.2.3.3). Articulating accumulated results in the implementation of the project at this point, the possible establishment of relevant Cluster or Clusters is projected for an expanded, dynamic operation and attached to the principles of innovation and climate resilience. The combination of actors, common

problems, barriers and shared enabling conditions, regional context, coincidence in plans and strategies for resilient recovery aims to be the consultants in the definition of methodological and conceptual spaces to enhance the role of direct beneficiaries (public agencies) towards indirect beneficiaries (small and medium farmers) due to the diversity of actors in roles of technological and financial provision, trade unions, the private sector and especially youth entrepreneurship. At this point, the working groups with national or regional potential for the target countries are outlined that will provide further evaluation of (economically) feasible technology trends that can be applied in the food and agriculture sector in line with countries' NDCs, considering the role of youth and young entrepreneurs in supporting climate-resilient actions.

**Outcome 4.1:** An increase in the number of quality project Concept Notes developed and submitted.

Anticipated Deliverables in detail includes:

- Report on innovative collaboration and co-creation mechanisms and promising technologies to build investment proposals in solutions for technological innovation for agri-food production clusters, including virtual consultations reports (D 4.1.1.1). This deliverable contributes to obtaining a concrete and detailed route on the real use of technological and financial innovations. Provides details regarding the funding levels and strategies that will be required for start-up. Identify additional values in mitigating carbon emissions and increasing resilience for small and medium producers. Clarifies and guides the challenge of innovation, collaboration and co-creation for the public sector, as a direct beneficiary. It proposes organization of technological, financial, productive and public actors, as well as their roles to promote the culture of collaborative management of financial and technological innovations. It preliminarily measures the potential for warning and potential scope of innovations and their technical and economic environmental results in the medium term.
- Report of the developments in the field of proofs of concept that include at least two digital platforms (E-Commerce and Weather monitoring), as well as the methodologies and technological digital tools for the application of GIS for food, health, and weather security, and management for medium and small farms (D 4.1.1.2) To accelerate the processes of involvement and development of technological innovations, proofs of concept will be developed in the target countries, which allow both generating results on their application and also the barriers or enabling conditions in the actors and the context for the development of innovation in water, food and agriculture for small and medium producers. A regional open data platform for the management of meteorological data of agronomic and environmental importance will be delivered to countries and public entities, powered by a battery of at least three low-cost weather stations and tailored to each country. A platform for the development of E-Commerce for food will be delivered that highlights the environmental and economic advantages of production from small and medium farmers. Proofs of concept will be developed and digital tools (programming and algorithms) will be obtained that allow the use of Geographic Information Systems (GIS) in key territories in the target countries for the monitoring of relevant variables in the management of water, soil and farming. It includes prospecting for Synthetic Aperture Radar (SAR) satellite technology that largely solves geospatial monitoring problems regarding the tropical climate and cloudiness of the target countries and has a high geospatial resolution capacity for large areas of land.
- NDAs Validated One (1) Regional and eight (8) National Concept Notes, in concordance with the GCF Programming Manual (2020) (D 4.1.2.1 – D 4.1.2.2). These documents, constructed with a close approach to the NDAs / focal points, provide basic information on an intended project or program derived from the implementation of Readiness and consider national circumstances to seek feedback on whether the concept is aligned with the GCF investment criteria and policies and other funders or donors at the regional or international level. As recommended by the GCF Programming Manual the Concept Note should provide the following information: A brief climate context and baseline; A project description, including project components; The project size, suggested financial instruments and other financial information; Brief information on how the concept note meets the GCF investment criteria; and Information on engagement with the NDA (s) and relevant stakeholders. The Concept Notes will additionally identify which will be the most convenient arrangements for a quick action on the conformation of the project, identifying the public entities, Accredited Entities, Executing Entities, and the alliances between them that provide an optimized service in the paradigm shift objectives for Projects.

**Outcome 5.2:** Partnerships established to foster development and dissemination of methods, frameworks, and information systems for enhanced climate finance programming at subnational, national, and regional levels.

Anticipated Deliverables in detail includes:

- Develop and implementation of methodologies for a regional innovation hub that organize sustainable actors, technologies, and co-creation of technological innovation for Food Security from a climate-resilient and low emission agricultural sector, including digital consultations and workshop reports (D 5.2.1.1 – D 5.2.1.2). A Cluster, Agri-cluster in specific, can be defined very broadly to include crop production and services, livestock, food processing, agricultural machinery and equipment, as well as agricultural-related transportation and distribution. Clusters can be an array of linked industries and other entities important to competition. They include, for example, suppliers of specialized inputs, such as components, machinery, and services, and providers of specialized infrastructure. Clusters also often extend downstream to channels and customers and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies or common inputs. Many clusters include governmental and other institutions, such as universities, standard-setting agencies, think tanks, vocational training providers, and trade associations that provide specialized training, education, information, research and technical support. This deliverable emphasizes a successful exit strategy and the long-term sustainability of the initiative established on the design and operating strategy of the Regional Innovation Cluster. In each target country, actions of design, presentation and consultation of a concept of collaborative space such as Regional Innovation Hub will be implemented. Emphasis will be given to the products obtained as: identified and energized actors around climate resilience for water, food and agriculture in the context of post-COVID-19 recovery; Green resilient agriculture recovery strategy and investment plan, financial and technological innovations (some of them with developed proofs of concept); innovative collaboration and co-creation mechanisms; and Concept Notes for the potential scaling up of both regional and National initiatives. In each target country, preparatory actions will be carried out on the conceptual model of the Cluster in a national node and its interaction at the regional level. At least two national workshops will make it possible to define the integration of actors, the prioritization and real engagement of young people, articulation of public entities, roles of the private sector, fed by the potential scaling of actions and investments with the concept notes. National node agreements that coincide in all or most of the target countries are prioritized and potentialized to transform them into the core of action of the regional Cluster towards the climate-resilient recovery of the water, food and agriculture sectors. Governance models of the regional Cluster, focused on planning for results, are provided in the medium term, to ensure its continuity. Potential sources of economic, material and human resources, in the public, private and cooperation spheres, are identified to ensure the basic operation. A strategic and operation plan in the medium term is provided for the Regional Cluster based on all these elements.

### ***Participating Countries Context***

According to World Bank Stats (see Table 1)<sup>47</sup> the agriculture land represents on average 30.2% of the land area, recording Colombia and Peru the higher and lower participation of land area with 40.3% and 18.5%, respectively. Furthermore, on average the agricultural sector contributes to 7.3% of the GDP where Guatemala registers the highest value of 9.4% and Brazil the lowest value of 4.4%. In terms of employment, on average the sector provides 22.8% of total employment, achieving participation around 30.0% in Guatemala, Peru and Ecuador but reduce its contribution to 16.6% in Colombia and 9.2% in Brazil. Additionally, the food production index shows an increase in the production of food crops in all countries. Thus, the agricultural sector is a very important contributor to the economic and social welfare in the participating countries.

Table 1. Selected Agriculture Indicators for Participating Countries

Indicator	Ecuador	Brazil	Peru	Colombia	Guatemala	Mexico	Uruguay	Bolivia
Agricultural land (% of land area) – 2016	22.2	33.9	18.5	40.3	36.0	54.5	82.6	34.8
Agricultural, forestry, and fishing, value added (% of GDP – 2019)	9.0	4.4	6.9	6.7	9.4	3.5	5.9	12.2
Employment in agriculture (% of total employment) – 2019	29.2	9.2	27.4	16.6	31.5	13	8	31
Food production index (2004-2006 = 100) - 2016	114.4	136.5	151.8	116.7	161.5	126.7	116.7	146.4

Source: <https://data.worldbank.org/indicator>

<sup>47</sup> The World Bank. 2020. Stats Data Indicators. Online. Available at <https://data.worldbank.org/indicator>

Using the CAIT Climate Data Explorer (see Table 2)<sup>48</sup> it can be concluded that the agricultural sector is also a relevant contributor of the greenhouse gases in the participating countries with an average participation of 30.6% of the GHG emissions. Brazil records the higher agricultural sector contribution to CO2 equivalent emissions with 47.9% and Ecuador registers the lower contribution with 19.7%.

Table 2. Agriculture GHG Emissions for Participating Countries

Historical GHG Emissions – 2016	Ecuador	Brazil	Peru	Colombia	Guatemala	Mexico	Uruguay	Bolivia
Subsector Agriculture GHG Emissions (MCO2e)	12.75	503.2	26.10	56.77	9.90	95.72	27.39	27.24
Total GHG Emissions Excluding LUCF (MCO2e)	64.66	1050.18	97.41	190.38	34.47	676.89	37.1	55.98
Agriculture as % of Total GHG Emissions	19.7%	47.9%	26.8%	29.8%	28.7%	14.1%	73.8%	48.7%

Source: <https://www.climatewatchdata.org/ghg-emissions>

The Global Innovation Index<sup>49</sup> evaluate 129 countries considering inputs (institutions, human and capital research, infrastructure, and market sophistication) and outputs (business sophistication, knowledge and technologies, creative) elements. Brazil, Peru and Colombia are ranked in the second quartile and Ecuador and Guatemala in the third quartile (see Table 3). Brazil, Peru, and Colombia were in line with expectations for their level of development and Ecuador and Guatemala where below expectations.

Table 3. Global Innovation Index for Participating Countries

Country	Input Sub-Index		Output Sub-Index		Global Index		Expectations for level of development
	Value	Ranking	Value	Ranking	Value	Ranking	
Ecuador	34.27	98	13.94	97	24.11	99	below
Brazil	42.94	59	20.94	64	31.94	62	in line
Peru	43.82	55	13.76	98	28.76	76	in line
Colombia	43.67	56	18.02	74	30.84	68	in line
Guatemala	30.56	110	14.14	96	22.35	106	below
Mexico	42.40	61	24.80	57	33.60	55	in line
Uruguay	40.75	69	20.92	65	30.84	69	below
Bolivia	33.67	97	10.95	117	22.41	105	below

Source: <https://www.globalinnovationindex.org/Home>

FAO states that the Covid-19 affects in a symmetric way the entire food system<sup>50</sup>. Agricultural production, within the national and international trade that unfolds, is altered as a capital and labor-intensive industry that begins to face input restrictions, in a scenario that accompanies higher unemployment and an economic recession that lead to the demand reduction. The overall exposure to supply shocks integrate the country exposure derived from share of intermediate inputs, consumption of fixed capital and gross output per agricultural worker and share of agricultural exports. The demand exposure to demand shocks is given by share of food expenditures per capita and the share of agricultural import. With the exception of Peru, remaining participating countries depicted an important potential affectation of Covid-19 in the supply side, and particularly Guatemala also has an important exposure in the demand side (see Table 4).

Table 4. Food and Agriculture Exposure for Participating Countries

Exposure per Country	Ecuador	Brazil	Peru	Colombia	Guatemala	Mexico	Uruguay	Bolivia
Overall supply exposure	High	High	Middle Low	Middle Low	Middle Low	Middle Low	Middle High	Middle Low
Overall demand exposure	Middle Low	Low	Middle Low	Middle Low	High	Middle Low	Middle Low	Middle Low

Source: <http://www.fao.org/3/ca8430en/ca8430en.pdf>

<sup>48</sup> Climate Watch. 2020. Sectors-Agriculture. Online. Available at <https://www.climatewatchdata.org/sectors/agriculture>

<sup>49</sup> Cornell University, INSEAD, and WIPO. 2020. The Global Innovation Index 2020: Who Will Finance Innovation? Online. Available at [https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_gi\\_2020.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gi_2020.pdf)

<sup>50</sup> FAO. 2020. COVID-19: Channels of transmission to food and agriculture. Online. Available at <http://www.fao.org/3/ca8430en/ca8430en.pdf>



This proposal recognizes the need for creating links and improving alignment with recovery national conditions in participating countries, including the accompanying the financing the institutions such as the World Bank, the International Monetary Fund (IMF), the Inter-American Development Bank (IDB), and the Corporación Andina de Fomento (CAF) which aids were oriented to the attention of the pandemic and the recovery of the economy. For example:

• **Ecuador:**

With the Declaration of National Sanitary Emergency, the Government of Ecuador activated its response protocols at the national and local levels<sup>51</sup>. The National Emergency Operations Committee and the Technical Worktables were activated on March 13, 2020, under the leadership of the Vice President of the Republic. The following sectors have been activated to meet the specific needs identified by the National Government: 1. Health, 2. Water, sanitation and hygiene (WASH), 3. Temporary Accommodations, 4. Education, 5. Food security, 6. Protection, a. Gender-based violence, b. Child protection, 7. Logistics, 8. Early Recovery and Livelihoods, 9. Coordination.

Particularly, the country has implemented biosafety logistics corridors and protocols to maintain biosecurity strategies and ensure quality in the supply of food chains (i.e. AGROCALIDAD), has promote alternative medium and small food fairs, alternative circuits (baskets, barter) as options for food distribution (i.e. AGROTIENDA), has provided credit for productive reactivation focused on agricultural and agro-industrial business affected by the pandemic (i.e. "Reactivate Ecuador"), and has positioned agricultural products in differentiated markets through the "Ecuador Premium & sustainable" trademark strategy.

Specifically, the country has received support of the following financial institutions: World Bank<sup>52</sup> approved (April 2, 2020) a US\$20 million loan for managing the COVID-19 pandemic supporting the national plan to respond to this health emergency through a project focusing on prevention and adequate medical care, strengthening the national public health system; IDB<sup>53</sup> disbursed (April 16, 2020) \$25.3 million to support country's COVID-19 response, funds were used to increase the capacity of national healthcare system; IMF<sup>54</sup> approved (May 2, 2020) US\$643 million to meet urgent balance of payment needs stemming from the outbreak of COVID-19 and to support the country's most affected sectors, including the healthcare and social protection systems; the World Bank<sup>55</sup> approved (May 7, 2020) a flexible US\$506 million loan to help cover the country's budget needs during the Covid-19 emergency and to promote economic recovery; CAF<sup>56</sup> approved (May 7, 2020) US\$400 million to face the health and economic crisis generated by COVID-19 in the country; IDB<sup>57</sup> approved (May 13, 2020) US\$93.8 million loan to provide support to small businesses during the pandemic; and World Bank<sup>58</sup> approved (July 1, 2020) a US\$260 million loan for Ecuador's National Finance Corporation B.P. to promote access to financing for microenterprises and small and medium enterprises for productive activities to support the country's economic reactivation and recovery from the pandemic.

Is intended that the implementation of the Readiness proposal considers the national instruments of environmental climate change and agricultural development policies, at the national and regional levels. For example, in the case of Ecuador as a leading country, the Ministry of Agriculture proposes *"the sustainability and continuity of the actions derived from the project in the institutionalization of products related to technological innovation, productivity, quality, market development, access to services to infrastructure, strengthening of associativity, environmental sustainability and climate-resilient agriculture, among others. That are pertinent, in each activity of the Organic*

<sup>51</sup> UN. 2020. Plan de respuesta humanitaria Covid-19 Ecuador. Online. Available at <https://ecuador.un.org/sites/default/files/2020-05/20200430-EHP-EQUADOR-COVID-19.pdf>

<sup>52</sup> World Bank. 2020. Project Appraisal Document on a Proposed Loan in the Amount of US\$20 Million to the Republic of Ecuador for Ecuador Covid-19 Emergency Response Project. Online. Available at <http://documents1.worldbank.org/curated/en/471731565949890451/pdf/Ecuador-COVID-19-Emergency-Response-Project.pdf>

<sup>53</sup> IDB. 2020. News Release: IDB disburses \$25.3 million to support Ecuador's COVID-19 response. Online. Available at <https://www.idb.org/en/news/idb-disburses-253-million-support-ecuadors-covid-19-response>

<sup>54</sup> IMF. 2020 Press Release: IMF Executive Board Approves US\$643 Million in Emergency Assistance to Ecuador to Address the COVID-19 Pandemic. Online. Available at <https://www.imf.org/en/News/Articles/2020/05/01/pr-20203-ecuador-imf-executive-board-approves-us-643-million-in-emergency-assistance>

<sup>55</sup> World Bank. 2020. Press Release: Ecuador Obtains US\$506 Million from the World Bank to Strengthen its Covid-19 Response and Stimulate the Economy Online. Available at <https://www.worldbank.org/en/news/press-release/2020/05/07/ecuador-obtains-us506-million-from-the-world-bank-to-strengthen-its-covid-19-response-and-stimulate-the-economy>

<sup>56</sup> CAF. 2020. Noticias: CAF aprueba USD 400 millones para enfrentar la crisis sanitaria y económica generada por el COVID-19 en Ecuador Online. Available at <https://www.caf.com/es/actualidad/noticias/202005/caf-usd-400-millones-covid19-en-ecuador>

<sup>57</sup> IDB. 2020. News Release: Ecuador will support the financial sustainability of MSEs with IDB Support. Online. Available at <https://www.idb.org/en/news/ecuador-will-support-financial-sustainability-msees-idb-support>

<sup>58</sup> World Bank. 2020. Press Release: Ecuador Will Receive US\$260 Million from the World Bank to Finance Loans for Microenterprises and SMEs. Online. Available at <https://www.worldbank.org/en/news/press-release/2020/07/01/ecuador-micro-pequenas-medianas-empresas>

*Statute of Organizational Management by Processes of the MAG<sup>59</sup> to be implemented by the Units according to their competencies. All the products and results of this Project are directly related to the axes of the agricultural public policy that will be implemented by 2030, therefore, each indicator will be monitored. In the strategic objectives of the MAG<sup>60</sup> it has been proposed that: by 2030 the MAG will be an institution committed to the sustainable development of the sector and will promote sustainable production as part of its strategic objectives, therefore, the results achieved directly related to this vision. The results will be monitored, reported and verified so that they prevail over time. These results are also aligned with compliance with the SDGs and with National Strategies established in the agri-food sector agency. Additionally, it is expected to generate lessons learned in order to transmit them to the decentralized units along the country”.*

• **Brazil:**

The effects of COVID-19 in Brazil highlight the importance of leading to a green recovery, which can be an opportunity for the transformation of the agricultural sector. In this regard, there is evidence that Brazil is prepared to adopt a recovery aligned towards a low-carbon economy. Resources mobilized at the national and sub-national levels could improve national capacities to implement sustainable agriculture. Brazil’s long-term development strategy shows that efforts in the sector are converging towards sustainable and more resilient agriculture. It would be expected that by 2030, Brazil could generate under a low carbon model more than 2 million jobs, 12 million hectares restored, 42% reduction of GHG compared to 2005 levels, reduction on air and water pollution, more livelihoods and food security for the most vulnerable communities<sup>61</sup>.

On March 16, 2020, two days after the first significant increase in reported cases, the Brazilian government redirected R\$5 billion (slightly over \$1 billion U.S. Dollars) to the Ministry of Health through Provisional Measure 924 in order to fight COVID-19 and released its first stimulus package granting R\$5 billion in credit lines to small companies through public banks, mainly for working capital. On that same day, the National Monetary Council also adopted several measures increasing the capacity of banks to grant credit in the amount of R\$637 billion (approximately \$125 billion U.S. Dollars). The government also exempted importers from the payment of tax on imported goods if such goods are used to fight COVID-19<sup>62, 63</sup>.

• **Peru:**

It is known that Latin America is one of the most affected regions in the world because of COVID-19; in this regard the agriculture share on the Peruvian PIB is about 7.5% (15,302.7 Million USD), and the population employed in agriculture is estimated at 20%<sup>64</sup>. According to ECLAC & FAO<sup>65</sup>, it is expected that the effects on the agriculture sector will be on supply and demand. Peru has responded to the COVID-19 emergency. However, beyond the state of emergency, the country has the opportunity to align its public policies and strategies towards a sustainable and resilient economy through a green economic recovery. Considering this, the national government is exploring measures to contain the devastating effects of the pandemic and enhance the resilience of the agricultural sector. This includes promoting access to consumers and local production through direct financing to small producers at the national level, among others. The Peruvian government announced a US\$26.4 billion (90 billion Peruvian soles) stimulus package, which includes provisions for health spending, cash transfers, loan guarantees, and future infrastructure investment.

On April 16, 2020, Peru placed a US\$3 billion bond issuance to finance part of its stimulus package<sup>66</sup>, and, as a result, the country received more than US\$25 billion in orders from more than 400 investors. Approximately 50% of the orders originated from investors in the United States, 30% from Europe and 20% from Asia and Latin

<sup>59</sup> Ministerio de Agricultura y Ganadería de Ecuador. 2018. Estatuto Orgánico de Gestión Organizacional por Procesos del Ministerio de Agricultura y Ganadería. Edición Especial del Registro Oficial 572 4-X-2018. Online. Available at <https://www.gob.ec/sites/default/files/regulacion/2019-04/Acuervo%20093%20.pdf>

<sup>60</sup> Ministerio de Agricultura y Ganadería de Ecuador. 2020. Seis ejes de política convertirán al agro en el motor de la economía. Online. Available at <https://www.agricultura.gob.ec/seis-ejes-de-politica-convertiran-al-agro-en-el-motor-de-la-economia/>

<sup>61</sup> WRI. 2020. A new economy for a new era: Elements for building a more efficient and resilient economy in Brazil. Online. Available at [https://wri.org.br/sites/default/files/af\\_neb\\_sumario\\_executivo\\_english.pdf](https://wri.org.br/sites/default/files/af_neb_sumario_executivo_english.pdf)

<sup>62</sup> World Bank. 2020. Covid-19 in Brazil: Impacts and Policy Responses. Online. Available at <https://www.worldbank.org/en/country/brazil/publication/covid-19-in-brazil-impacts-policy-responses>

<sup>63</sup> Banco Central de Brasil. 2020. Measures to face the COVID-19 crisis. Online. Available at <https://www.bcb.gov.br/en/about/covid-19-measures>

<sup>64</sup> CEPAL. 2020. CEPALSTAT. Base de datos y publicaciones estadísticas. Online. Available at [https://estadisticas.cepal.org/cepalstat/WEB\\_CEPALSTAT/Estadisticas/indicadores.asp?idioma=e](https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/Estadisticas/indicadores.asp?idioma=e)

<sup>65</sup> ECLAC, FAO, IICA. 2019. Perspectivas de la agricultura y del desarrollo rural en las Américas: una mirada hacia América Latina y el Caribe 2019-2020. Online. Available at [https://repositorio.cepal.org/bitstream/handle/11362/451111/1/CEPAL-FAO2019-2020\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/451111/1/CEPAL-FAO2019-2020_es.pdf)

<sup>66</sup> El Peruano Diario Oficial. 2020. Decreto legislativo n° 1455. Programa “Reactiva Perú” para asegurar la continuidad en la cadena de pagos ante el impacto del covid-19. Online. Available at <https://busquedas.elperuano.pe/normaslegales/decreto-legislativo-que-crea-el-programa-reactiva-peru-por-decreto-legislativo-no-1455-1885394-1/>

America. In addition, IMF<sup>67</sup> approved (May 28, 2020) US\$11,000 million under the Flexible Credit Line designed for crisis prevention.

**•Colombia:**

Colombia is aiming for a concrete and sustainable economic recovery after the effects of COVID-19, considering that the agriculture sector in the country has been presenting the greatest growth among the national economical activities. Given that the agricultural sector represents 7.4% of Colombia's GDP (21,817,3 million USD), with a percentage of the population employed in the same sector of 16%<sup>68</sup>, green resilient recovery is of utmost importance. Colombia could improve conditions on food security and the implementation of low-carbon practices in the sector. Certainly, the strategies developed by the Colombian government<sup>69</sup> have been oriented to implement sustainable agriculture practices and the reduction of GHG emission in the sector. In this regard, the green economic recovery presents an opportunity to a paradigm shift in agriculture practices and strategies.

Due to the increasing number of COVID-19 cases in Colombia, the government has recently enacted legislation aimed at providing incentives to those companies that offer services to mitigate the effects of COVID-19. On March 21, 2020, Decree 444 of 2020<sup>70</sup> created the Emergency Mitigation Fund, pursuant to which the government is allocating 14.8 billion Colombian pesos (approximately \$3.9 million US Dollars) to the Fund to (a) address the growing need of healthcare resources, (b) mitigate adverse effects on the economy, and (c) maintain employment growth. Such Funds will therefore be used to finance public, private or mixed companies that engage in activities of national interest within these objectives.

Furthermore, the country has received financing of the following financial institutions: World Bank disbursed (April 2, 2020) US\$ 250 million from a development policy loan to address the health emergency. IMF agreed<sup>71</sup> (May 1, 2020) a new US\$10,800 million arrangement to help the country to manage heightened external risks, protect ongoing efforts to effectively respond to the pandemic, integrate migrants, foster inclusive growth, and reduce external vulnerabilities. World Bank<sup>72</sup> approved (June 26, 2020) a US\$ 700 million loan to support response to the pandemic, the operation will help strengthen the health care system, provide income and nutritional support to the poorest, most vulnerable households, and maintain businesses' liquidity and access to financing.

**•Guatemala:**

The effects of COVID-19 have been heavily felt within the Central American region. In this context, the measures to contain those effects have been not enough to maintain the agricultural production activities in Guatemala. Nonetheless, Guatemala is aiming to recover from the pandemic with a sound strategy that aims for a sustainable recovery, enhancing the agricultural sector and improving the actual conditions on employment rates, market demand and exports. Considering that the agricultural share in Guatemalan GDP (2019) is about 10% (7,184.1 Million USD) and the population employed in the sector is the highest within the region (33%)<sup>73</sup>, Guatemala has the opportunity to accomplish many of its development goals and a transition to a net zero-carbon emission economy through a green economical recovery.

<sup>67</sup> IMF. 2020. Press Release: IMF Executive Board Approves Two-Year US\$11 Billion Flexible Credit Line Arrangement for Peru. Online. Available at <https://www.imf.org/en/News/Articles/2020/05/28/pr20224-peru-imf-executive-board-approves-2yr-us-11b-flexible-credit-line-arrangement>

<sup>68</sup> CEPAL. 2020. CEPALSTAT. Base de datos y publicaciones estadísticas. Online. Available at [https://estadisticas.cepal.org/cepalstat/WEB\\_CEPALSTAT/EstadisticasIndicadores.asp?doname](https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/EstadisticasIndicadores.asp?doname)

<sup>69</sup> Ministerio de Agricultura y Desarrollo Rural. 2020. Resolución Ministerial 168 de 2020 "Plan de Reactivación Económica para el Sector Agropecuario en el marco de la Emergencia Sanitaria por la presencia del coronavirus COVID-19 en el Territorio Nacional y se dictan otras disposiciones". Online. Available at <https://www.minagricultura.gov.co/Normatividad/Resoluciones/RESOLUCION%20168%20DE%202020.pdf#search=covid>

<sup>70</sup> MINISTERIO DE HACIENDA Y CRÉDITO PÚBLICO-COLOMBIA. 2020. Por el cual se crea el Fondo de Mitigación de Emergencias -FOME y se dictan disposiciones en materia de recursos, dentro del Estado de Emergencia Económica, Social y Ecológica. Online. Available at <https://dnpresidencia.gov.co/normativa/normativa/DECRETO%20444%20DEL%2021%20DE%20MARZO%20DE%202020.pdf>

<sup>71</sup> World Bank. 2020. Press Release: Colombia receives disbursement from the World Bank to support COVID-19 response. Online. Available at <https://www.worldbank.org/en/news/press-release/2020/04/04/colombia-recibe-desembolso-del-banco-mundial-para-apoyar-su-lucha-contra-el-covid-19>

<sup>72</sup> World Bank. 2020. Press Release: Colombia Will Receive US\$700 Million from the World Bank to Strengthen its Response to the Covid-19 Emergency. Online. Available at <https://www.worldbank.org/en/news/press-release/2020/06/15/colombia-recibira-us700-miliones-del-banco-mundial-para-fortalecer-su-respuesta-ante-la-emergencia-por-covid-19>

<sup>73</sup> CEPAL. 2020. CEPALSTAT. Base de datos y publicaciones estadísticas. Online. Available at [https://estadisticas.cepal.org/cepalstat/WEB\\_CEPALSTAT/EstadisticasIndicadores.asp?doname](https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/EstadisticasIndicadores.asp?doname)

In terms of funding, IMF approved<sup>74</sup> (June 10, 2020) US\$594 million in emergency assistance to help address pandemic, the funds will provide timely resources to counter the economic and social impact of the pandemic and catalyze additional support from other development partners. World Bank<sup>75</sup> approved (June 26, 2020) a US\$ 20 million loan to prevent, detect and respond to the threat posed by COVID-19 and strengthen national systems for public health preparedness in the country.

#### •Mexico:

In terms of the impact of the economic growth for Mexico, due to COVID-19<sup>76</sup>, a contraction of the economy of -5% is expected. This decrease is related to an unprecedented decline in the US economy. There is a wide dispersion of forecasts, and although the government estimates a range between -3.9% and 0.1%, some analysts suggest higher falls. After a deep recession, Mexico is expected to follow a recovery pattern similar to that of 2009. A sharp drop in manufacturing and retail and wholesale trade is anticipated, on the supply side, and a sharp drop in consumption and exports on the demand side. On the other hand, the economy received the crisis in stagnation (growth in 2019 was -0.1%) and a poor performance of exports (which fell 0.6% in 2019).

In the macroeconomic context<sup>77</sup>, it was said that the impact on the economy would be great; however, today we can say that the effects were devastating and the scope and duration are still uncertain. Banco de México's quarterly report January-March 2020 clearly describes the combination of three factors that affect the country's economy:

- **Shock on the supply side:** The stoppages in the production of goods and services have led to a reduction in supply, putting at risk global value chains and the supply of inputs for national production.
- **Shock on the demand side:** The spread of global demand led to lower external demand for goods and services. Likewise, social distancing measures and lower income from companies and households contracted domestic demand.
- **Increase in country risk:** It drove the outflow of capital, increased the cost of financing and led to a depreciation of the exchange rate.

The above described is a bad sign for the agri-food sector that will have lower domestic demand during the remainder of the year and all of 2021. The first problem will come from the lack of income on the part of a part of consumers, and there will be another effect, about consumers who did not lose their purchasing power during the quarantine, but who will now have other consumption habits.

COVID 19 came to radically transform the way in which consumers demand their food. On the one hand, we see a recomposition of demand due to the fall in household income and, on the other hand, we see the change of habit towards healthier foods that improve the immune system. The new task of producers will be to understand the consumer and highlight the attributes of their products, as well as balance their food portfolio, distribution channels and new interrelation with food delivery services at home.

#### •Uruguay:

In the case of Uruguay<sup>78</sup>, the economy will go through a recession in 2020, a significant real depreciation of the Peso (local currency) will be expected with a higher inflation will be recorded. All of this will have negative effects on employment, income, poverty and inequality. Although the measures adopted, at the moment, go in the right direction, in light of what has been international experience and the restrictions that the country faces, they are still insufficient to compensate for the activities affected and mitigate the impact on the most vulnerable population. Notwithstanding the foregoing, the central challenge will be to enhance the economy's ability to reproduce forward

<sup>74</sup> IMF. 2020 Press Release: IMF Executive Board Approves US\$594 Million in Emergency Assistance to Guatemala to Help Address the COVID-19 Pandemic. Online. Available at <https://www.imf.org/en/News/Articles/2020/06/10/pr20241-guatemala-imf-executive-board-approves-us-594-million-in-emergency-assistance>

<sup>75</sup> World Bank. 2020. Press Release: Guatemala COVID-19 Response Project. Online. Available at <https://www.worldbank.org/en/news/press-releases/2020/06/27/guatemala-covid-19-response-project>

<sup>76</sup> IADB. 2020. El Impacto del COVID-19 en las economías de la región Centro América, Haití, México, Panamá y República Dominicana. Online. Available at [https://publications.iadb.org/publications/spanish/document/El\\_impacto\\_del\\_COVID-19\\_en\\_las\\_economias\\_de\\_la\\_region\\_Centroamrica.pdf](https://publications.iadb.org/publications/spanish/document/El_impacto_del_COVID-19_en_las_economias_de_la_region_Centroamrica.pdf)

<sup>77</sup> GCMA. 2020. El impacto económico del COVID 19 en el agro mexicano. Parte IV. Online. Available at <https://gcma.com.mx/el-impacto-economico-del-covid-19-en-el-agro-mexicano-parte-iv/>

<sup>78</sup> UNDP. 2020. Impacto social y económico del COVID-19 y opciones de políticas en Uruguay. Online. Available at <https://www.uy.undp.org/content/dam/uruguay/docs/Covid-19/undp-uy-impacto-social-economico-Covid19-2020.pdf>

growth or, in another way, to shore up its productivity. This is essential to prevent the profound disruption of the pandemic from having permanent effects on potential GDP and from eroding the capacity to face the immense challenges that lie ahead. Achieving this will require the deployment of an important set of structural reforms, which must be based on a broad consensus and proper management of dissent, with the understanding that we are facing one of the greatest challenges in our history.

Primary activities, would be the least affected by the supply shock that arises from the current state of emergency. In this sense, the measures of social isolation dictated so far do not imply difficulties for the continuation of the productive processes of a biological nature and the supply of food. In any case, the continuity of cash flows in some items is equally threatened, as in the case of meat production, which depends on the operational continuity of the refrigeration phase, an activity that does involve high concentrations of people and that it could be affected by quarantine or social distancing measures. At the same time, it should be assumed that global demand would weaken in the short term, especially in markets such as the European Union. This is an element that could slow down the traction of an export outlet such as that experienced in 2004 or 2009.

IADB (March 24, 2020) concrete support to Uruguay to face the COVID-19 pandemic<sup>79</sup>, with immediate availability of US \$ 50 million to finance the Banco de la República credit program for small and medium-sized companies under special conditions, and availability of an additional US \$ 75 million in the short term with the same objective. In May 5, 2020 CAF<sup>80</sup> approved a USD 50 million loan to Uruguay to help curb the spread of the COVID-19 epidemic and mitigate its effects on the nation's public health and economy. The funds will help reinforce authorities involved in the management of the health emergency, laying the groundwork to ensure effective compliance with lockdown measures. This loan is in addition to CAF's USD 400,000 grant to Uruguay on April 3 to help curb the spread of the pandemic and mitigate its impact on public healthcare and the economy. IADB<sup>81</sup> (September 02, 2020) approved a \$125 million loan for Uruguay to help ensure minimum living standards for vulnerable people amid the health crisis triggered by the COVID-19 pandemic. The plan will support basic levels of income and employment for people affected by the pandemic, both now and in the post-crisis recovery period.

#### •Bolivia:

Bolivia benefited for almost a decade from a favourable macroeconomic context, which led it to achieve growth rates of up to 5% of GDP<sup>82</sup>, however, it was not exempt from the spread of the COVID-19 pandemic. The pandemic arrived in Bolivia on March 10, in a context of social and political fragility derived from the crisis unleashed after the failure of the 2019 General Elections and the consequent transitional government model. In the same way, the macroeconomic context was already fragile as a result of a slowdown in economic growth since 2015, which put the sustainability of the social progress achieved in the previous decade to the test in its attempt to continue reducing poverty and consolidating the recent widening of the stratum medium.

Ministerio de Desarrollo Rural y Tierras presented the Response and Rehabilitation Plan for the Agricultural sector in the face of the effects of COVID — 19<sup>83</sup>, whose strategic lines are aimed at guaranteeing food security, food production and trade, supporting family farming and assist in the generation of employment opportunities.

To do this, five actions will guide a series of measures and actions in the coming months.

- Reactivate the production of items in the basic food basket in order to guarantee the availability of food (boost to production, food security).
- Facilitate trade, supply and distribution of food from the basic food basket, to satisfy the demand for these products by the country's population (food security and economic dynamism).
- Boost the demand for national agricultural products and the reactivation of internal and external markets (boost to production and trade, economic boost).
- Promote the production of export items and agro-exports as mechanisms to contribute to the reactivation of the Bolivian economy (boost to production and trade).

<sup>79</sup> IDB. 2020. News Release: BID concreta apoyo a Uruguay para enfrentar pandemia del COVID-19. Online. Available at <https://www.iadb.org/es/noticias/bid-concreta-apoyo-uruguay-para-enfrentar-pandemia-del-covid-19>

<sup>80</sup> CAF. 2020. News: CAF to Lend Uruguay USD 50 Million for COVID-19. Online. Available at <https://www.caf.com/en/currently/news/2020/05/caf-to-lend-uruguay-usd-50-million-for-covid-19/>

<sup>81</sup> IDB. 2020. News Release: IDB helps Uruguay protect vulnerable population amid COVID-19 crisis. Online. Available at <https://www.iadb.org/en/news/idb-helps-uruguay-protect-vulnerable-population-amid-covid-19-crisis>

<sup>82</sup> UNDP. 2020. COVID-19 en Bolivia: En la senda de la recuperación del desarrollo. Online. Available at <https://www.latinamerica.undp.org/content/dam/ibac/Policy%20Papers%20COVID%2019/undp-ibac-CD19-PDS-Number22-Bolivia-ES.pdf>

<sup>83</sup> FAO. 2020. Bolivia cuenta con el Plan de Respuesta y Rehabilitación para la agropecuaria, ante los efectos de la COVID-19. Online. Available at <http://www.fao.org/bolivia/noticias/detail-eventos/c/1294508/>

- Contribute to the objectives of the Employment Plan promoted by the National Government to facilitate that families have income derived from primary activities, transformation, distribution and marketing of agricultural products (economic revitalization, job creation).

In terms of international financial facilities, Bolivia is receiving or negotiating in specific: with the World Bank<sup>84</sup> US \$ 254 million to mitigate the economic impact of Covid-19 in Bolivian households, with the aim of supporting the country in financing temporary transfers to poor and vulnerable households, with children and young people of school age, people with disabilities, older adults and informal workers affected by the measures adopted to contain the pandemic through the "Project of Social Protection Nets for the Emergency in the Covid-19 Crisis". The Executive Board of the International Monetary Fund (IMF) approved<sup>85</sup> Bolivia's request for emergency financial assistance of approximately US \$ 327 million under the Rapid Financing Instrument to help the country face balance of payments needs derived from COVID-19, support necessary medical expenses and relief measures to protect the welfare of the population. CAF granted a loan of USD 50 million to Bolivia<sup>86</sup> to attend the health emergency caused by COVID-19. The financial organization previously donated USD 400,000 to the country to support its contingency plan for preparation and response for the prevention and control of the virus.

<sup>84</sup> World Bank. 2020. Press Release: El Banco Mundial aprueba US\$254 millones para mitigar el impacto económico del Covid-19 en hogares bolivianos. Online. Available at <https://www.bancomundial.org/es/news/press-release/2020/05/15/impacto-economico-hogares-bolivianos>.

<sup>85</sup> IMF. 2020 Press Release: IMF Executive Board Approves US\$327 Million in Emergency Support to Bolivia to Address the COVID-19 Pandemic. Online. Available at <https://www.imf.org/en/News/Articles/2020/04/17/pr20170-bolivia-imf-executive-board-approves-emergency-support-to-address-covid-19>.

<sup>86</sup> CAF. 2020. News: CAF otorga crédito de USD 50 millones a Bolivia para atender la emergencia sanitaria ocasionada por el COVID-19. Online. Available at <https://www.caf.com/es/actualidad/noticias/2020/04/caf-otorga-credito-de-usd-50-millones-a-bolivia-para-atender-la-emergencia-sanitaria-ocasionada-por-el-covid-19/>.

Table 5. Relevant climate and agriculture policies in targeted countries and the linkage with specific objectives under this regional proposal

Country	Policy Instrument	Regional Readiness Proposal "Post COVID-19 Green Recovery for Food, Health, and Water Security strengthened by financial and technological innovations in Latin-American countries" specific objectives		
		a) Strengthen policies, frameworks, and institutional capacities to foster public-private partnerships inside a regional innovation and financial ecosystem that identifies and promotes technological innovation for sustainable intensification of food production, availability, access, utilization and stability at local, national and regional levels	b) Increase the identification of innovative and financial opportunities related to low emissions, climate resilient, and technologically intensive sustainable food security for medium and smallholder farmers at national and regional levels.	c) Enhance knowledge and digital platforms for sharing, learning, financing and scaling up intensive technologies for food and nutritional security, including dissemination of innovative mechanisms of collaboration, co-creation through Innovation Hubs.
Bolivia	NDC	<p>Actions proposed by the country with potential for innovation:</p> <ul style="list-style-type: none"> <li>• Rainwater harvest for various domestic uses, as well as the reuse of gray water from showers, sinks, laundries and downspouts, for various domestic purposes, except for human consumption.</li> <li>• Broader use of water harvesting technologies, conservation of soil moisture and water more efficiently (irrigation and livestock) (such as when there are shortages and stock up as store when there are plenty).</li> <li>• Strengthening of environmental functions and the productive capacities of agricultural and agroforestry systems.</li> <li>• Measures of agricultural and livestock production insurance to include additional conservation actions, making resilient</li> </ul>	<p>Bolivia prioritizes forestry sector as provider of livelihoods for communities and small producers and their environmental functions promote and contribute to the living well of urban and rural populations. Bolivia faces the challenge of expanding the area of food production in areas with agricultural potential mindful of environmental functions and promoting community and small farmer's production. It is expected that the contribution to Gross Domestic Product (GDP) growth of 5.4% in 2030, will be boosted by agricultural and forestry production complementary to conservation. In addition, contributing to an increase in Gross Domestic Product (GDP) of 5.4 % in 2030, furthered by agricultural and forestry production, complementing conservation efforts.</p>	<p>Bolivia promotes the elimination of patents on technologies and recognition of the human right to science and technology of life as a structural solution to climate change. The country has developed a Climate Justice Index, which considers the Technological capacity measuring the ability of countries considering their technological development based on expenditures on Research &amp; Development and industrial performance of each of them, considering their capacity to produce and export goods with high technology.</p>

		agricultural and forestry production systems.		
	ECC - National Forest and Climate Change Strategy	In its intervention mechanisms, the Strategy indicates the need to adapt the legislation and institutional structure, to adapt the institutional and normative structure referring to forests, land and environment, including the mechanisms of adaptation and mitigation to climate change.	In its intervention mechanisms, in the sector of Public Technology Transfer, it consists of bringing climate change-related innovations and technologies closer, particularly mitigation and adaptation, to the public domain, so that practical knowledge of sustainable processes on these issues is efficiently transferred to those affected by the impacts of Climate Change.	Direct funds for people. Financial resources, as a result of Climate Debt, to address the impacts of Climate Change, must reach the local population as efficiently as possible, under mechanisms of participation and transparent social control.
Brazil	NDC	The National Adaptation Plan (NAP) aims to implement knowledge management systems, to promote research and technology development for adaptation, to develop processes and tools in support of adaptation actions and strategies, at different levels of government.	In the agriculture sector, the country intends to strengthen the Low Carbon Emission Agriculture Program (ABC) as the main strategy for sustainable agriculture development, including by restoring an additional 15 million hectares of degraded pasturelands by 2030 and enhancing 5 million hectares of integrated cropland-livestock-forestry systems (ICLFS) by 2030.	Recognizing the complementary role of South-South cooperation, on the basis of solidarity and common sustainable development priorities, Brazil will undertake best efforts to enhance cooperation initiatives with other developing countries, particularly in the areas of: -Forest monitoring systems; biofuels capacity-building and technology transfer -Low carbon and resilient agriculture -Restoration and reforestation activities -Management of protected areas -Increased resilience through social inclusion and protection programmes -Capacity building for national communications and other obligations under the Convention, in particular to Portuguese speaking countries.



	National Adaptation Plan to Climate Change. Volume I: General Strategy. 2016.	<p><b>Specific objective 1.</b> Guide the expansion and dissemination of scientific, technical and traditional knowledge in support of the production, management and dissemination of information on climate risks, and develop capacity-building measures for governmental bodies and society in general.</p> <p><b>Specific Objective 2.</b> Promote coordination and cooperation among public bodies for climate-risk management, by means of public-participation processes, with a view to fostering continuous improvement of climate risk-management actions.</p>	<p>Within the <b>specific objective 3</b>, to identify and propose measures to promote adaptation to and reduction of climate risk, the NAP proposes in the thematic strategy for agriculture, to develop and deploy and Agricultural Risk and Vulnerability Monitoring and Simulation System, and Establish a Centre for Climatic Intelligence for Agriculture, for application of climate risk analysis in Brazilian Agricultural Policy.</p>	<p><b>Goal 1.4.</b> Establish and deploy a strategy to expand and strengthen the Brazilian Research Network on Global Climate Change (Rede Clima). <b>Goal 1.5</b> Prepare and deploy a data-integration project for monitoring and observation of the impacts of climate change - SISMOI. <b>Goal 2.3.</b> Publish a study with systematized information on funding and economic incentives for adaptation. Development and delivery to society of an online platform for management of knowledge on adaptation.</p>
Colombia	NDC	<p>According to the means of implementation it is proposed the creation of climate change innovation clusters, through the promotion of private investment, public private partnerships and foreign direct investment, with special emphasis on the scientific research and the knowledge and technology transfer. Also, an agenda which would promote research, innovation and technological development in topics related to climate change.</p>	<p>defined country focus its efforts to 2030 jointly with other global targets that contribute to increasing resilience one of the strategic lines is the Strengthening of institutional capacities. Since 2013 the country has been working on developing a system for monitoring, reporting and verification for GHG emission reductions and climate financing. To this date, Colombia has advanced in defining the objectives, mitigation measures and principles of the system. The country is committed to continue working in this direction, especially in identifying and developing legal, technical and institutional tools to facilitate monitoring progress towards achieving the NDC.</p>	<p>Colombia has been making progress in the identification of financing sources and the definition of a climate finance strategy. However, it is recognized that financial resources are limited, which is why there is a need to increase the resources for financing adaptation and mitigation, as well as the development and transfer of technologies and the construction of institutional capacity at the different government levels.</p>
	National Climate Change Policy. 2017.	<p>In its specific objective is established: Create enabling conditions of science, technology, information and innovation necessary to advance a path of</p>	<p>Colombia states that stimulating innovation in technologies, business models and social practices can lead to growth and emissions reduction. Advances in digitization, new materials, biological sciences and production</p>	<p>The policy includes a point of information and analysis capacity for decision-making: the design, monitoring and evaluation of adaptation and mitigation measures, as well as policy, policy, regulatory</p>

		<p>climate-resilient and low-carbon development.</p> <p>Its policy developments include a point of innovation and efficiency in the use of resources, which states that climate change management must recognize that innovation in decisions associated with technological development. Strategy design includes production processes and private sector business strategies, as well as those associated with the efficient use of resources. The strategic line 7.3 Information and analysis capacity for decision-making: the design, monitoring and evaluation of adaptation and mitigation measures, as well as policy, policy and financing recommendations that are generated, will depend on the quality and continuity of knowledge that on economic-population-ecosystem-climate relations are generated. Information and institutional and society capacity to contribute to the analysis for the design of mitigation and adaptation alternatives will be the basis without which climate change management is not possible.</p>	<p>processes have the potential to transform markets and reduce resource consumption drastically. In the line of Action 1. Low-carbon rural development and Climate Resilient. Agricultural and fisheries production systems more adapted to high temperatures, droughts or floods are promoted to improve the competitiveness, income and food security of vulnerable populations. Line 5 indicates to incorporate in agricultural technical assistance systems the evaluation and promotion of technologies and adaptation and mitigation options in the main agricultural, livestock, agro-industrial and biofuel subsectors.</p>	<p>and funding recommendations that are generated, will depend on the quality and continuity of knowledge that are generated on the economic-population-ecosystem-climate relations. Information and institutional and society capacity to contribute to the analysis for the design of mitigation and adaptation alternatives are the basis without which climate change management is not possible. In the line of Action 2. Low-carbon rural development and Climate Resilient, are set as a priority: Generate and disseminate strategic agro climatic information for both the development of climate-resilient agriculture, climate insurance development, and early warning and prediction systems for the adequacy of planting schedules and crop loss prevention.</p>
Ecuador	NDC	<p>Ecuador establishes as a priority line the food oversteer, agriculture, livestock, aquaculture and fisheries. The design and implementation of public policy to strengthen the climate resilience of agri-food systems. Promotion of responsible governance on land use and management that ensures sustainable and resilient agricultural</p>	<p>In the areas of action, it is proposed to develop research and the generation of information systems to strengthen climate change management in the agricultural sector. Promote sustainable livestock development at the national level. Climate-smart livestock practices (promoting climate-smart livestock management. Integrating land degradation reversal</p>	<p>Ecuador establishes in its NDC the strengthen of local capacities of the agricultural sector (including sustainable land use), through participatory learning methodologies with an approach to environmental sustainability and resilience to climate threats, as well as the strengthen of capacities and scientific research for the generation</p>

		production for the effects of climate change. The contribution is expected to be gradually integrated into Ecuador's development planning at the cross-sectoral and local levels, taking into account measures, "aligned with or inserted into" policies, strategies, plans, programmes, projects, processes and initiatives of a social, economic, environmental or other nature, that are developed in the country.	and reducing desertification risks in vulnerable provinces). The country encourages the development of consumption-oriented initiatives responsible for agricultural production that are resilient to the effects of climate change. Development, promotion and implementation of sustainable and resilient agricultural production models and technologies for the purposes of climate change.	of information related to agricultural production resilient to the effects of climate change.
	Ecuador's National Climate Change Strategy. 2012 – 2025.	Ecuador proposes to strengthen its policies to take steps to ensure priority and priority care groups access to resources that contribute to strengthening their capacity to respond to the impacts of climate change, as well as, implement measures to increase the responsiveness of human settlements to address the impacts of climate change.	The National Participatory Technological Innovation and Agricultural Productivity Programme is established, which seeks to maintain the performance levels of the agricultural sector, this programme has begun its implementation and has taken into account criteria of adaptation to climate change, clean production and sustainable development in its design.	6.5. National Plan for the Creation and Strengthening of Conditions. To raise Ecuadorian awareness of the challenges of climate change, through knowledge management. Develop and strengthen human and institutional capacities to address the challenges of climate change in Ecuador. Facilitate the use of mechanisms, technological tools and financing for climate change adaptation and mitigation activities
Guatemala	NDC	Guatemala in its climate change framework law dictates the national guidelines of the public investment planning and programming process to integrate the climate change variable and mandates the development of the national adaptation and mitigation action plan, in coordination with various public and private actors. Based on this Plan, the law mandates the development of strategic institutional strengthening plans, for the reduction of vulnerability, adaptation and mitigation to climate change linked to	Implementation of the irrigation Policy with an integrated approach to water resources. Sectors of the national economy with the greatest need for support for implementation of emission reduction policies and strategies are: forests, agriculture and transport. On the issue of agriculture and food security, the crop monitoring system coordinated between government and private sector programmes and focused on nutrition food security and international cooperation agencies, prioritizes actions that have a direct effect on food production, mainly self-	Guatemala, through its national climate change information system, which contains information on mitigation and adaptation issues. The National Climate Change Fund (FONCC) as an important financial instrument for the implementation of the plans, together with the National Conservation Fund, FONACON and the National Fund for Disaster Reduction, are tools for channeling national and international resources needed to prevent and/or address the effects of climate change.

		national planning and the nation's budget.	consumption and subsistence in priority areas.	
National Climate Change Policy 2009.	It is set out in specific Objectives: 1. <i>Development of National Capacities in Climate Change</i> a. Strengthen and develop national capacity, including the institutional transformation required, to address the issue of adaptation and mitigation to Climate Change. b. Strengthen traditional indigenous and local community systems focused on positive practices for adaptation and mitigation to Climate Change by enabling their active participation.	The Nacional policy promotes that the productive sector develops and applies, in the different areas of domestic production, appropriate, clean and environmentally friendly technologies and with the ecological and biophysical conditions of our country taking into account variability and climate change, as well as the conditions of the different regions, including the appropriate traditional and ancestral knowledge of its inhabitants. El Ministry of Environment and Natural Resources, as a governing body on the subject of environmental and natural resources, coordinate and generate synergies with other government institutions, the municipalities and other actors linked to the problem of Climate Change. This ensures compliance with the Climate Change Policy reorients and aligns the resources needed for the implementation of policy-derived strategies.	Specific objectives: 1. <i>Development of National Capacities in Climate Change</i> v. Promote research, educational development, socialization and use of technological alternatives to make adaptation and mitigation to Climate Change more viable and efficient through awareness raising with key actors in society. d. Incorporate climate change prevention, adaptation and mitigation strategies into socio-environmental and economic processes at the national and local levels.	
Framework law to regulate the reduction of Vulnerability. mandatory adaptation In the face of the effects of climate	The framework law on climate change created, at the political level, the national council on climate change aimed at ensuring the implementation of this law. In addition, specialized technical units have been created in the Ministries of Environment, Agriculture, Energy and Mines, Finance, Foreign Affairs and other units such as: National Council of Protected Areas, National Forest Institute, Institute of Seismology, Volcanology, Meteorology and Hydrology.	Most of the population is linked to the agricultural sector and there is a need to provide producers with the necessary tools and technology to address climate change and variability in the sector that promotes good adaptation practices that promote the adjustment of agro-productive systems in the face of the changing climate environment and its derivations.	It is established that all funds must have the contributions determined in the State Revenue and Egress Budget. Notwithstanding the above, state budget resources are not sufficient to fill the wide and deep gap to international address the effects of climate change and achieve international commitments and SDS targets by 2030, capacity building, adaptation, vulnerability reduction and mitigation.	

	change and GHG mitigation.			
Mexico	NDC	Mexico recognizes that the implementation of the actions proposed for the period 2020 – 2030 requires the continuous development and strengthening of Mexico's capacities. Therefore, it is imperative to consolidate platforms for the exchange of knowledge and information related to adaptation at the three levels of government, as well as to strengthen the networks with academic institutions and civil society.	The Mexican Government has identified a series of areas where technology transfer could be of benefit of the country for adaptation, including through: -Access to information systems in order to monitor hydro meteorological events in real time and thus consolidate and enhance early warning systems -Availability of methods and tools to assess climate impacts, vulnerability and adaptation in specific sectors and regions -Water technologies for savings, recycling, capture, irrigation and sustainable management for agriculture purposes - Transportation technologies that are resilient to the adverse effects of climate change in particular for roads and massive transportation -Technologies for the protection of coastal and river infrastructure.	Capacity building requires both cooperation from developed countries to developing countries as well as south-south cooperation. Furthermore, Mexico requires international support for the development of its own technologies as well as for technology transfer and innovation to increase its adaptive capacity. For Mexico, the increase of investment in disaster prevention is of utmost relevance, as well as the development of an insurance market against hydro meteorological and catastrophic risks, in which the private sector is invited and expected to play a relevant role.
	National Climate Change Strategy.	Politics in Pillar 1. <i>Q1 Having cross-cutting, articulated, coordinated and including climate policies and actions, states that effective implementation of national climate</i>	Politics in Pillar 1. <i>Q2 Develop climate-focused fiscal policies and economic and financial instruments. P2.1 Design a national policy of economic, fiscal, financial and market instruments to</i>	Lines of action: <b>P2.8</b> Privilege funding for research and development of national technologies for climate change adaptation and mitigation. <b>P2.14</b>

	<p>Vision 10-20-40-2013.</p>	<p>change policy requires cross-cutting coordination between sectors and actors, revision of the legal framework in order to avoid conflicts and inclusion of all social groups. The articulation of these actors and instruments is indispensable for implementing the adaptation and mitigation policies and actions indicated in the National Climate Change Strategy. <b>Lines of action:</b>  <b>P1.2</b> Implement the National Climate Change System as a coordination mechanism between the public, private and social sectors and as a planning platform articulated between government orders. <b>Q1.3</b> Implement a platform for research, innovation, development and adequacy of climate technologies and institutional capacity building  <b>P3.1</b> Create and operate an information platform that makes publicly available progress in relation to national climate change research.  <b>P3.9</b> Encourage the improvement of technologies related to the monitoring of weather, weather and hydrometric conditions.</p>	<p>encourage mitigation and adaptation actions. This includes using targeted subsidies, eliminating or decoupling inefficient subsidies, and creating public and private financial instruments.  <b>Q2.2</b> Establish the mechanisms needed to turn the Climate Change Fund into an efficient and effective platform for channeling resources from other funds, including international ones. <b>Q2.6</b> Link available public and private financial resources to funding priorities in the implementation of mitigation and adaptation actions.</p>	<p>Ensuring the incorporation of climate change criteria into development banking guidelines to promote projects involving renewable and clean energy and promoting the transition to less carbon-intensive technologies. <b>P3.13</b> Create and strengthen climate change training schemes in the three government orders, as well as in the legislative and judicial powers.  <b>P3.14</b> Strengthen authorities' capacities in all three-government orders to access national and international sources of funding.  <b>P3.15</b> Train sectors in all three-government orders for the use of effective mitigation and adaptation planning tools.  <b>P3.16</b> Strengthen capacities for territorial management at the landscape level, for example through the creation of local technical actors, local development agents and new participatory management spaces.</p>
<p>Peru</p>	<p>NDC</p>	<p>In regard to the agricultural sector, the NDC prioritizes to protect the sector and its contribution to the economy, and includes attending the most vulnerable groups (small and subsistence farmers). FISHERIES Considers protecting the sector and its contribution to the economy, and includes attending the most vulnerable groups (artisanal anglers).</p>	<p>Reduce the vulnerability of the fishery and aquaculture sector to Climate Change. Reduce the negative impact of climate change on the agrarian activity (agriculture, livestock and forestry).</p>	<p>Promotion of private investment in adaptation - evaluate the introduction of innovative mechanisms to encourage private investment that increase the resilience of vulnerable systems. In addition to governmental efforts, the participation of the national and international private sector, as well as the access to new financing sources and to international support,</p>

				will enable that the level of expected emissions reduction, as well as the socioeconomic and environmental co-benefits related to the mitigation efforts.
And National Strategy for Climate Change. 2015.	<p>The national strategy in Obj 2 sets out. <i>The population, economic operators and the state conserve carbon reserves and contribute to the reduction of GHG emissions.</i></p> <p><b>Products:</b> •Establishment of institutional arrangements and mechanisms necessary to articulate the multisector platform of work in emission reduction management and carbon reserve and capture. • Strengthening national capacities in GHG emission reduction management and in negotiation to position Peru's interests in international agreements and synergies. Articulation of initiatives and establish synergies with actors to promote efficiency in emissions management.</p> <p><b>Means of implementation:</b></p> <ul style="list-style-type: none"> <li>•Strengthen and promote policies and regulation in various sectors that incorporate measures for the management of GHG emissions.</li> <li>•Strengthen sectors and levels of government to incorporate cc into their GHG emission management, carbon capture and reserve increase tools.</li> </ul>	<p>Objective 2. Products: • Promotion of economic instruments and incentives for the implementation of programmes, projects, GHG emission reduction and carbon capture activities and increased reserves. • Promotion of low-carbon and CC-resilient technologies.</p> <p><b>Means of implementation :</b> • Create scientific research lines, within the framework of the Scientific Research Agenda in CC, and promote academic and technological development in CC, in universities and research centers that reduce GHG emissions, improve carbon capture and increase sinks and in the measurement of forest carbon. • Promote the development or adequacy of innovative technologies for GHG emission reduction, carbon capture and increase of sinks.</p> <p><b>Financing:</b> • Evaluate and promote appropriate market mechanisms for ecosystem services related to carbon capture and storage. • Promote and disseminate economic opportunities, instruments and incentives for low-carbon development. • Articulate international financial supply with the potential for emission reduction, carbon capture and sinking projects.</p>	<p>Objective 2 Means of implementation: • Raise public awareness of the benefits of measures to promote GHG emission reduction, including carbon capture and increased reserves. • Raising awareness among civil society and the private sector of participating in the co-benefits of programmes, projects and activities that reduce GHG emissions capture carbon and increase reserves. • Strengthen public sector capacities for the formulation of programmes and projects, including financing management, sectoral and multisectoral, and at different levels of government for GHG emission management.</p>	

Uruguay	NDC	<p>Uruguay intends to enhance strengthening of public institutions from the three levels of government, and private, academic, and organized civil society institutions, as well as of the existing institutional arrangements, for the participation and coordination of measures planning and implementation.</p> <p>Through the National Agricultural Information System, the country seeks to facilitate decision-making processes and climate risk management. In addition, several index insurance facilities have been developed as risk transfer instruments.</p>	<p>Uruguay's commitments includes the adoption of good practices of natural grasslands management and management of breeding herds in livestock production in 1,000,000 ha (10% of grasslands), including the supply of forage, regenerative management and appropriate nitrogen management towards 2025.</p> <p>Actions with potential for innovation:</p> <ul style="list-style-type: none"> <li>-Use of zero discharge technologies for rivers and streams and/or application of good practices of effluent treatment and/or recovery of nutrients and minimization of methane emissions in at least 40% of dairy farms</li> <li>-Introduction of intermittent irrigation technology with alternate wetting and drying (AWD) of soils in at least 10% of the rice crop area (16,000 ha) by 2025.</li> </ul> <p>Adoption, by 2025, of good practices of natural land management and management of breeding herds in livestock production in an area ranging from 1,000,000 to 3,000,000 ha (10-30% of grasslands), including the supply of forage, regenerative management and the addition of supplements in times of drought, enhancing extension and livestock innovation mechanisms for that purpose.</p>	<p>Section IV, point i. Context relative to capacity building and knowledge creation on climate change in Uruguay. Development and implementation of strategy for training, education in formal and non-formal ambits, and awareness, as appropriate, aimed at different target audiences (on management, communication and decision-making and on the institutional, political, productive and social issues, among others), that shall contribute to the implementation of the different measures and to risk-management empowerment of the population.</p>
	National Climate Change Response Plan. 2010.	<p>Uruguay promotes the strengthening of its policies, as mentioned in specific policy: Establishing preventive adaptation policies that help protect biodiversity and ecosystems and reduce the vulnerability of the population to climate change. For its part, the</p>	<p>In specific policy(s), it is proposed to take action to mitigate climate change by taking advantage of the opportunities generated by the external framework for technology transfer, investment and access to the carbon market.</p>	<p>Proposals on Innovation and Scientific-Technological Training in relation to climate change should be oriented under the principle of national convergence, seeking coordination and synergy with other R&amp;D transformations that are launched in the country, within the</p>



	<p>plan is based on the management of the National Climate Change Response System, which must move towards the consolidation of an institutional structure with management capacity that allows it to maintain its crosscutting coordination role and its capacity for integration. It must have a permanent and stable minimum team and an allocated budget to ensure the effectiveness of its management.</p>	<p>Uruguay determines that the agricultural sector has significant potential to contribute to climate change mitigation through the management of greenhouse gas emission and removal flows, constituting the only productive sector with carbon sequestration potential. Promoting good management practices in Uruguayan production systems can maximize that potential.</p>	<p>framework of the National Plan of Science Technology and Research (PENCTI). Given the urgent need to establish basic improvements in information and knowledge development in various aspects related to climate change adaptation and mitigation, it is proposed to establish a National Climate Change Research Fund that provides for different sources of funding, both national and international.</p>
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### 3. LOGICAL FRAMEWORK

Outcomes	Baseline	Targets	Outputs	Activities (brief description)	Deliverables
<p><b>Outcome 1.3:</b> Relevant country stakeholders have established adequate capacity, systems, and networks to support the planning, programming, and implementation of GCF-funded activities.</p>	<p>The capacity, systems, and network to support technology innovations and food security for medium and small farmers is weak in regional and national levels, and non-responsive in actual and Post COVID-19 recovery scenario.</p>	<p>Improved country stakeholder's capacity, systems, and networks to support technology innovations for food production green recovery planning, programming, and implementation in the Post COVID-19 recovery scenario.</p>	<p><b>Output 1.3.1:</b> Mapping of innovation systems and training activities completed to support of planning, programming, and implementation of GCF-funded activities through a prospective analysis of Green Recovery Post</p>	<p><b>Activity 1.3.1.1:</b> Conduct a mapping exercise of the key innovation system actors in Latin America and their roles in strengthening the response to COVID-19. The study will assess how the inter-related types innovation support actors (i. agriculture education and research, ii. bridging institutions, iii. business and enterprises), can provide responses in the COVID-19 context for Food, Health and Water Security from medium and small farmers.</p>	<p><b>Deliverables 1.3.1.1:</b> Scoping study report on innovation and financial actors in Latin America and types of support that can provide solutions in the context of COVID-19 Green Recovery for Food, Health and Water Security, targeting small and medium farmers.</p>
				<p><b>Activity 1.3.1.2:</b> Design digital communication and training instruments for agribusinesses and</p>	<p><b>Deliverable 1.3.1.2:</b> Workshop reports, including pre-and post-training</p>

			<p>COVID-19 of Food, Health, and Water Security sectors.</p>	<p>producer organizations. This will include:            five (5) workshops, five (5) e-courses and one (1) short Radio Series (5 chapters) implemented through remote learning to raise awareness of the impact of COVID-19 on food, health and water security targeting medium and small farmers.</p> <p><i>Workshops, e-courses and radio series will have as content the development of the quantitative and qualitative impact of the pandemic in each country's farmers, considering the demand and supply of agribusiness. Likewise, the analysis of strengths, opportunities, and weaknesses that technological innovation offers to the agricultural sector and related sectors will be developed to deploy a green recovery.</i></p>	<p>surveys for participants; e-course module developed, and radio series produced</p>
<p><b>Outcome 2.2:</b>            GCF recipient countries have developed or enhanced strategic frameworks to address policy</p>	<p>The enabling environment for the Food Security has high sensitivity to climate change impacts and not prepared</p>	<p>Provide updated and contextualized regional and national strategic frameworks &amp; expertise to guide GCF</p>	<p><b>Output 2.2.1:</b>            Impact on and opportunities for climate resilient agriculture strategies and plans analyzed considering</p>	<p><b>Activity 2.2.1.1a:</b> Perform desk analysis and report of the impacts of COVID-19 and economic stimulus measures on the climate change strategies and plans for the medium and small farmers Food, Health, and Water Security sectors, which includes inputs from stakeholder interviews.</p>	<p><b>Deliverable 2.2.1.1a:</b>            Diagnostic analysis report on COVID-19 impacts and opportunities in the Food, Health, and Water Security sector targeting medium and small farmers</p>

gaps, improve sectoral expertise, and enhance enabling environments for GCF programming.	for pandemic COVID-19 consequences and recovery needs.	and regional investments on technological and financial innovations for food security in the Post COVID-19 recovery scenario.	the importance of food production and availability	<b>Activity 2.2.1.1b:</b> Develop a national inventory/database for each country on public and private storage facilities/ collection centers closer to producers (where farmers can deliver their produce without the need to go to markets), consumption trends and consumption channels, analysis of traceability systems for E-Commerce including available cooling infrastructure and map out and assess cold chains that can be used for emergency storage of perishable/semi perishable goods.	<b>Deliverable 2.2.1.1b:</b> National database/inventory of facilities, channels and trends of key food products for target country.
				<b>Activity 2.2.1.2:</b> Stakeholder interviews and meetings on opportunities for aligning the country's climate change agenda with the economic green recovery agenda for Food, Health, and Water Security for medium and small farmers to be included in the report produced in activity 2.2.1.1	<b>Deliverable 2.2.1.2:</b> Report on the outcomes of the stakeholder consultations, with list of participants.
			<b>Output 2.2.2:</b> Regional food and agriculture sector strategy for climate resilient recovery developed and adopted by NDAs.	<b>Activity 2.2.2.1:</b> Undertake stakeholder interviews and meetings to identify a range of measures (regulatory, fiscal, financing/investment, etc. in the food and agriculture sector of participating countries) to maximize climate, economic and social benefits.	<b>Deliverable 2.2.2.1:</b> Report on the outcomes of the stakeholder interviews

				<p><b>Activity 2.2.2.2:</b> Conduct modeling exercises to optimize and prioritize different measures (based on 2.2.2.1) including projections of food stocks and yield forecasts to identify any gaps or surpluses that can arise due to import bans or shortages, particularly in key international trade partners.</p>	<p><b>Deliverable 2.2.2.2:</b> Updated economic and fiscal models and projection scenarios for food stocks and yield forecasts</p>
				<p><b>Activity 2.2.2.3:</b> Undertake regional stakeholder consultations to validate priority measures on activity 2.2.2.2 and a proposal of regional food and agriculture sector strategy for green resilient recovery and plans for the participant countries</p>	<p><b>Deliverable 2.2.2.3:</b> Report(s) of consultation workshops and list(s) of participants demonstrating a balance of stakeholders, which includes women, civil society and private sector participants.</p>
				<p><b>Activity 2.2.2.4:</b> Develop a regional green resilient, agriculture investment strategy and plan for the participant countries, for priority measures, in consultation with public and private investor. The investment plan will encourage the deployment of innovative financial instruments (equity, guarantees, grants), which do not add a further debt burden to countries fiscal space.</p>	<p><b>Deliverable 2.2.2.4.:</b> Regional Green resilient agriculture recovery strategy and investment plan document for the participant countries.</p>
			<p><b>Output 2.2.3:</b> Defined enabling conditions (</p>	<p><b>Activity 2.2.3.1:</b> Conduct a barrier analysis of the enabling environment for developing technological and financial</p>	<p><b>Deliverable 2.2.3.1:</b> Barrier, enabling conditions and addressing opportunities report for the technological</p>

			barrier analyses, technological and financial potential innovations and cluster forecasting) for climate resilient Recovery	innovations of food, health, and water security, supported by innovation and regional financial ecosystems.	and financial innovations of food, health, and water security systems, including virtual consultations and workshop reports.
				<b>Activity 2.2.3.2:</b> Stakeholder interviews and meetings for determining roles and opportunities of youth and young entrepreneurs on green recovery agenda and participation in forecasted regional agri-food production clusters.	<b>Deliverable 2.2.3.2:</b> Report on the outcomes of the stakeholder consultations, with list of participants.
				<b>Activity 2.2.3.3:</b> Identify regional agri-food production clusters <sup>87</sup> with higher scaling-up potential of technological and financial innovations to develop Green recovery entrepreneurship and employability, considering youth and young entrepreneurs.	<b>Deliverable 2.2.3.3:</b> Report on regional agri-food production clusters with higher potential for technological scaling using innovative financial instruments, including virtual consultations workshop reports, with specific focus (chapters) on the role of youth and young entrepreneurs.
<b>Outcome 4.1:</b> An increase in the number of quality project concept notes	The support and process for preparing high-quality regional GCF	Submit to the GCF one (1) high-quality regional and eight (8)	<b>Output 4.1.1.</b> Defined new mechanisms on innovation management	<b>Activity 4.1.1.1:</b> Execute an assessment of collaboration and co-creation mechanisms to encourage public-private investment inside intensive	<b>Deliverable 4.1.1.1:</b> Report on innovative collaboration and co-creation mechanisms and promising technologies to build investment

<sup>87</sup> An Agri-cluster can be defined very broadly to include crop production and services, livestock, food processing, agricultural machinery and equipment, as well as agricultural-related transportation and distribution. Clusters can be an array of linked industries and other entities important to competition. They include, for example, suppliers of specialized inputs, such as components, machinery, and services, and providers of specialized infrastructure. Clusters also often extend downstream to channels and customers and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies or common inputs. Many clusters include governmental and other institutions, such as universities, standard-setting agencies, think tanks, vocational training providers, and trade associations that provide specialized training, education, information, research and technical support. FAO. 2010. *Agro-based clusters in developing countries: staying competitive in a globalized economy*. On line. Available at: <http://www.fao.org/3/i1560e/i1560e.pdf>

developed and submitted.	concept notes do not include focus on technology innovations and/or financial instruments for food, health and water security. Actually, 16 national and 3 regional Concept Notes are registered for targeted countries.	nationals Concept Notes [as a determination of each engaged country] focused on strengthening technology innovations for food, health, and water security.	for collaboration and organizing for post-COVID-19 Green Recovery solutions for food, health, and water security.	technology innovation use agri-food production clusters.	proposals in solutions for technologically innovation for agri-food production clusters, including virtual consultations reports,
			<b>Output 4.1.2:</b> Regional and National Concept Notes developed and validated by each NDA	<b>Activity 4.1.1.2:</b> Provide a proof of concept report about the adaptation and validation of three (3) disruptive technologies innovations including ICT for food traceability and E-Commerce, GIS and weather monitoring platforms for food, health, and water security, and management for medium and small farms.	<b>Deliverable 4.1.1.2:</b> Report of the developments in the field of proofs of concept that include at least two digital platforms (E-Commerce and Water monitoring), as well as the methodologies and technological digital tools for the application of GIS for food, health, and water security, and management for medium and small farms.
				<b>Activity 4.1.2.1:</b> Develop Regional Concept Note and National Concept Notes linked to priority measures defined under output 2.2.2 and aligned with CPs and NDCs.	<b>Deliverable 4.1.2.1:</b> One (1) Regional and eight (8) National Concept Notes drafts in concordance with the GCF Programming Manual (2020)
<b>Activity 4.1.2.2:</b> Design and implement process (online consultation) for review, comment, feedback and validation of Concept Notes in Regional and National levels	<b>Deliverable 4.1.2.1:</b> NDAs Validated one (1) Regional and eight (8) National Concept Notes				
<b>Outcome 5.2:</b> Partnerships established to foster	There is no regional partnership to develop and	Operationalize one (1) regional innovation hub	<b>Output 5.2.1:</b> Innovative partnership and	<b>Activity 5.2.1.1:</b> Develop a report that design the implementation of a regional innovation hub/platform that organize actors for	<b>Deliverable 5.2.1.1.:</b> Appraisal for the constitution and operation of a regional innovation hub/platform that

development and dissemination of methods, frameworks, and information systems for enhanced climate finance programming at subnational, national, and regional levels.	disseminate technological innovations agriculture solutions and financial instruments in Post COVID-19 context.	for technological innovation solutions for food, health, and water security, health and water management in participant countries.	collaboration framework implemented for Food, Health, and Water Security in targeted countries for improving access to mitigation and adaptation climate knowledge and funding for the agricultural sector.	technological innovation solutions for food, health, and water security, health and water management from a climate-resilient and low emissions or Green recovery perspective, including workshop reports.	organize sustainable actors, technologies, and co-creation of technological innovation solutions for food, health and water security from a climate-resilient and low emissions and Green recovery perspective.
				<b>Activity 5.2.1.2:</b> Implement the operation of one (1) regional innovation hub for COVID Green recovery based on deliverables 5.2.1.	<b>Deliverable 5.2.1.2:</b> Reports on implementation of one (1) regional innovation hub/platform for COVID Green Recovery in the participant countries into operation.