

# Contribution of Agricultural Research and Innovation in Mitigating the Effects of COVID-19 in Africa

*A CAADP XP4 Issues Paper for regional and continental eFORUM*

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## 1 Introduction

Projection analyses of the effects of COVID-19 on agriculture show that the short-term impact will emanate from containment measures. The widespread lockdowns have led to massive closure in businesses, loss of jobs and income. This has affected demand of agricultural produce from the rural areas. At the same time, disruptions in transport and logistics for agricultural commodities have also affected supply leading to interruptions in input supply and difficulties in accessing markets, as a result of restrictions of movement and border closures, are already threatening the livelihoods of small-scale farmers. The implication is reduction in revenue for smallholder producers due to reduction in demand and disruptions in supply mechanisms. There is also a likelihood of increased post-harvest losses due to shrinkage of market opportunities. Reversing these losses will require interventions that will support the sustainability of the production systems.

While recognizing the increasing number of papers assessing the possible effects of the COVID-19 pandemic on the global economy, continents and countries, most of these assessments focus on the effect of the pandemic on the macro economy. The few that take a micro perspective tend to focus on the health sector and on measures to direct the needed investments and resources to the sector to contain the spread of the pandemic. It is important to emphasize that while efforts at enhancing healthcare systems are commendable, they should be done in tandem with protecting livelihoods and especially in ensuring sustainable food

and nutritional security, as well as food supply systems during and after the pandemic

In addition, critical analysis and modeling, including foresight and collective intelligence gathering to assess the impact of COVID-19 and explore response scenarios in the context of food systems, are necessary to anticipate shocks and disruptions, learn from observations and experiences and ultimately develop strategies to cope with the new scenarios as they unfold.

This paper has been put together by the five CAADP ex-Pillar IV Organizations (CAADP-EXP4), namely AFAAS, ASARECA, CCARDESA, CORAF and FARA, in line with their mandate to facilitate and coordinate supra-national collective actions in agriculture research and innovation. The paper provides an overview of the interventions that Africa's agriculture research-for-development (AR4D) system should prioritize to strengthen the resilience of household, national and regional food systems against the shocks triggered by COVID-19. The interventions are presented under three thematic areas; 1. Technologies for fast-tracking mitigation of food shortages and extending storability of food commodities in view of the disruptions related to the COVID-19 outbreak 2. Promoting short and medium term emergency measures towards sustainable food supply systems, trade, and labour markets in the agri-food sector 3. '*Foresighting*' vulnerabilities in Africa's Food System to build national capacities for the medium to long term planning and addressing shocks to the food system.





## 2 Technologies for fast-tracking mitigation of food shortages and extending storability of food commodities

### 2.1 Main Issues

Engagement among stakeholders has been disrupted making delivery of advisory information only feasible through e-delivery, radio and television. However, there are capacity challenges related to access and competence to use ICT based engagement and delivery processes especially for rural communities.

There is urgent need to keep food systems working, requiring multi-sectoral and multilateral and integrated approaches with a combination of finance, technology, science, human resources, policy and partnerships

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### 2.2 Proposed Intervention areas

The interventions can be viewed in two broad mutually reinforcing dimensions, namely: technical and institutional.

Technical Interventions should focus on rolling out of food (bulk) storage technologies to conserve the harvest. Storage infrastructure on the continent is largely in a state of disrepair lacking

systematic maintenance and functionality. There is also the need to activate the technology scaling strategies alongside ensuring broad based benefits across the continent. The technology roll-out should also give attention to nutritional issues. Post-harvest technologies viz., the processing and storage techniques and facilities need to be compliant with human nutrition requirements and safety standards.

Institutional Interventions should focus on deployment of institutional innovations for scaling out the delivery of technical innovations and organizational flexibility of agricultural enterprises





## 2.3 Proposed Specific interventions

### Immediate – term Interventions

#### Generate Knowledge Products

Deploy experts' network to undertake studies, take stock of experiences and facilitate discussions to generate data and information on;

- Assessment of the effects of COVID-19 on Africa's agriculture and food system;
- Technical options and institutional innovations for strengthening the resilience of Africa's agriculture and food system to COVID-19 and their delivery at scale (calls for a review of the continent's capacity to mitigate bio-risks and shocks)
- Technical options for improving nutrition in response to COVID-19 risks

**Required partnerships:** CAADP-EXP4 Consortium, PAFO, CGIAR centres, FAO, GFAR, FANRPAN, AUC-DREA, AUDA-NEPAD, NARIs, South-South Cooperation partners, Development Partners.

#### ii. Disseminate Information

- Dissemination of information on effects of COVID-19 on Africa's agriculture and food system.
- Dissemination of information on technical options and institutional innovations for strengthening the food system's resilience to COVID-19 including technologies for reducing post-harvest losses.
- Dissemination of lessons learned in improving resilience to COVID-19 including how to carry on with research activities under lockdown conditions.

- Sensitization of Policy makers on the impact and options for the reinforcement of systemic resilience against shocks (an expansion of the conversation of the systemic preparations for climate-related shocks).
- Dissemination of high yielding short season crop variety seeds for planting under constrained conditions of COVID-19. This includes dissemination of drought tolerant crop varieties where necessary.
- Linking technology adoption with financial incentives to enable increased yield and optimum productivity (e.g. use of modern diseases resistant crop varieties).
- Dissemination of tutorials and production guidelines through various communication mechanisms (e.g. print, internet, radio, TV, ICT, etc.).

#### Required Partnerships

Communication units of CAADP-EXP4 Consortium, PAFO, FAO, AUC-DREA, AUDA-NEPAD.

The CAADP EXP4 consortium will leverage its experience and knowledge in the innovation systems approach building on past experiences with the SSA-CP and the ongoing experiences from the TAAT program. It will deploy its Knowledge Management System (FARADaInforMS) and specifically leverage the contacts with functional IPs on the FARA-hosted Innovation Platform and Agribusiness portal (IPAbP). FARA will assemble available listing of technologies from the PARI project database and identify post-harvest



based or commodities preservation technologies.

### **Short to medium-term interventions**

#### **i. Partnerships and Networking to facilitate collective action**

- Linkages to NARS, NARIs for technology sourcing and dissemination
- Linkages to existing Innovation platforms and participating organizations
- Linkages with Ministries of Agriculture at country levels
- Linkages with IARCs.

**Alliance with new projects.** Facilitate linkages with ongoing and new initiatives to intervene and reduce the impact of COVID-19 on food and agriculture

#### **ii. Provide tools, models and instruments for implementation**

Develop new initiatives for implementing solutions at regional, sub-regional and country level through the following platforms and approaches:

- Facilitating multi-stakeholders grouping at different levels to ensure smooth value chain development and business.

Leveraging the Innovation Platform Agribusiness Portal (IPAbP) and the knowledge base on innovation systems and taking technologies to scale will help in this regard.

- Sourcing proven technologies with scalable potentials for various needs including post-harvest management. Technology documented by PARI and other repositories are primary sources.
- Facilitating right pricing of commodity is a major institutional action to protect the livelihood of the smallholder farmers at this time, e.g. the use of the Livelihood compliant pricing model for commodities.
- Capacity building of agricultural stakeholders to maintain business continuity through embracing innovative automation and ICT-based delivery of services including extension, education and dialogues/ meetings.

#### **Required Partnerships:**

CAADP-EXP4 consortium, CGIAR centres, PAFO, Ministries of Agriculture, Development Partners e.g. WB, FAO, IFAD, AfDB, Afrexim Bank, EC, DfID, BMZ, and South-South and Triangular Cooperation partners





### 3 Promote sustainable food supply systems, trade, and labour markets in the agri-food sector

#### 3.1 Main Issues

One of the major effects of COVID-19 is the disruption of supply systems including food collection and distribution mechanisms as a result of the lockdowns. Though necessary these measures have directly affected both the supply of food and agricultural commodities as well as their demand.

On the production and supply side, the disruptions have constrained: (i) access to productive inputs (seeds, fertilizers, etc.) including labour; (ii) capacity to transport agricultural inputs and produce from rural areas where production takes place and its distribution to various processing and market centers for sale; and (iii) shortage in labour supply with possible severe postharvest losses especially for labor-intensive postharvest activities.

The demand side, on the other hand, featured panic buying which created temporary shortages of food stuffs and price hikes. This increase in demand in the urban centers is the short term reaction to the lockdown. Also, gluts in rural areas where production takes place are likely to occur in the short run due to disruptions in transport, logistics and retail outlets.

The closure of national borders has further worsened the impact on both the supply and demand side due to disruption of trans-boundary transport of food commodities and agricultural inputs.

In response to these challenges, agribusinesses have demonstrated the ability to innovate by resorting to e-commerce platforms for handling supply orders; packaging essential food items for delivery or pick-up. These reflect the



organizational flexibility of agricultural enterprises to adapt to the changed environment and highlight their innovative approaches to keep the supply chains operational.

### 3.2 Proposed Intervention Areas

#### i. Short Terms interventions (Improved markets structure and strategy)

- The ensuing poor pricing of commodities will be to the detriment of the smallholders. The need to activate the commodity pricing modulation is critical and can serve as proof of concept across the countries. This is largely a policy action that stipulates what the baseline price of different commodities should follow a comprehensive analysis of cost of input and livelihood compliant income base for the smallholder. A number of countries have variants of these models tested already for export crops like cocoa, rubber etc.;
- Facilitate continuous transportation and distribution of agricultural inputs and produce within regions in countries and across borders;
- Stimulation of feed production and slaughter enterprises to accelerate production in order to restore and increase the effective supply of livestock and poultry products;
- Provision of instruments for quality standards and price to create the appropriate balance for the producer and supplier to find a new market;
- Establish and activate channels or platforms of exchange and encourage the private sector and market to decide and try out different options;

- Rapid assessment, deployment and application of information communication technologies (ICT) (e.g. mobile phone, internet etc.) to facilitate linkages, partnerships, trade among value chain actors and financial services to enable transactions.
- Generate evident to support policy on various incentives to enable affordability of food, such as zero VAT rating, elimination of customs duties and other taxes on basic food; incentives on energy inputs (e.g. diesel rebate, investment into renewable energy etc.).
- Review of agriculture trade regulations to enable increased agriculture production, improved productivity and market access.
- Review of phyto-sanitary systems for facilitated access to essential foods (e.g. advanced pest risk analysis, harmonized regional regulatory systems for trans-boundary trade etc.).
- Targeted recruitment and deployment of skilled personnel (e.g. scientists, veterinarians and engineers) with appropriate performance incentives.

#### ii. Medium-term interventions

- Design appropriate social safety nets to protect vulnerable actors in the agri-food sector through measures such as guarantee buying and storage of produce through collaborative private-public partnerships as part of national food security measure. This may include special financing arrangements by governments to support agribusiness to help sustain their operations and reduce the impact on job losses. Establishment of functional regional/national IT-based





food reserve and warehousing systems in conjunction with national/regional food markets.

- Develop agribusiness capacity for processing, storage, logistics and wholesale functions, within African countries, to increase incomes, employment and improve resilience to global shocks in the medium to long term.
- Stronger focus on value addition within Africa to increase inter-regional trade and contain price fluctuations;
- Strengthen capacity for innovation and development of products by neighbouring regions and countries for incorporation into local imports
- Coordinate information communication technologies (ICT) to facilitate linkages, partnerships and trade among value chain actors and activate channels or platforms of exchange to encourage the private sector to try out different market options. This should include development and promotion of e-market/traceability and pack houses to mobilize produce from producers, store

and make the necessary preparation for marketing

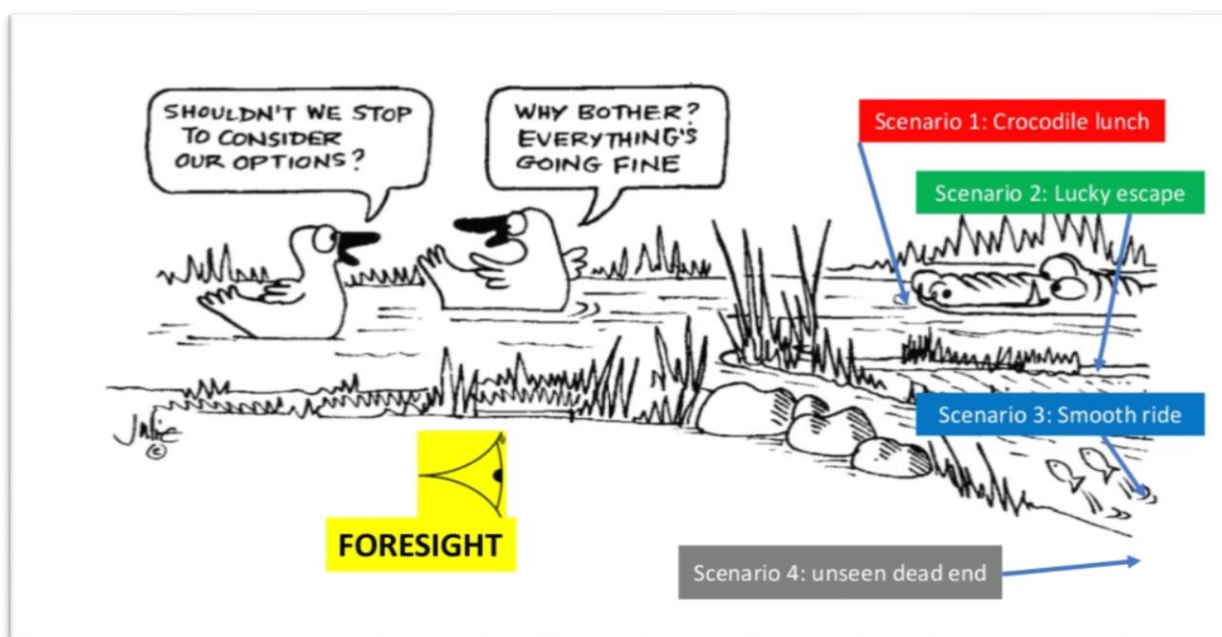
### **3.3 Proposed Advocacy activities**

- Continued research support and surveillance on animal health to ensure the food and nutritional security.
- Analyses of the need to allow food transportation and value chain activities amidst lock down at the country level.
- Analysis on the provision of input subsidies and use of effective distribution models
- Evidence to support coherence of actions and policies within and across countries

### ***Required Partnerships***

African Union Commission (AUC), AUDA-NEPAD, Regional Economic Communities (RECs), CAADP-EXP4 consortium, National Research Institutions (NARIs), Extension Services, Ministries of Trade and Industries (MoTIs), National Bureaus of Standards; PAFO, Agribusiness associations, Civil society organizations





Credit: Foresight4Food, 2019

## 4 'Foresighting' vulnerabilities in Africa's Food System to build national capacities for innovation

### 4.1 Main issues

Responding to the threats posed by COVID19 pandemic on Africa's food system should be guided by forward-thinking and collective intelligence-gathering process to assess and explore response scenarios. A number of interventions have been highlighted by key players including AfDB, AU, IFPRI, etc., on the inevitable consequences of COVID19 pandemic on the continent's food systems. The CAADP-EXP4 consortium is building on these perspectives and leveraging on its existing partnerships within the global community of foresight practitioners and network including Foresight4Food to advance systems thinking in tackling existing vulnerabilities that may be exacerbated by the pandemic.

It is important to highlight that the food system is contending with the following additional risks:

**Distraction from established threats:** An obvious impact of the pandemic is that it has the potential to distract stakeholders from addressing pre-existing threats, such as climate change and change in ecological dynamics. With countries manage focusing all the attention the crisis, they are bound to be diverted from long-term strategic goals such as CAADP and the SDGs. This may cascade into unintended negligence of clear and existing threats to food and nutrition security. For example, the first quarter of 2020 saw the number of malnourished people around the world rising due to conflicts and climate change particularly in Sahel region.

In addition, the ongoing threat posed by desert locusts in East Africa remains real as swarms have been projected to grow later in the year.

**Responding to Systemic Shocks:** Africa's macro-economic settings are reliant on the price and export of primary resources, including agricultural products. Thus, addressing the potential food shortages and food price spikes, by the COVID19 pandemic requires the consolidation of agriculture into a system with vertical integration locally or within the region. While COVID19 is not an agricultural pandemic, it involves the humans within the agricultural system, which is not a traditional scenario of disaster preparedness in the agricultural sector.

**Lack of participatory alignment:** The COVID19 pandemic will engender shocks that integrate all sectors. Thus, policy makers, agricultural value chain actors and small-scale producers alike will be affected with unprecedented challenges. This however presents an opportunity for the application of tools, instruments and processes that are generally used for good planning, to foster participatory alignment that will lead to innovative solutions.

**Risks arising from interactions between agriculture and wild life:** Africa as a whole is rich with biodiversity that provides good ecological systems for increased agricultural production and productivity. This biodiversity includes a close interaction between agricultural and wild crop species as well as livestock and wild animals. While this provides a balance within the ecosystem, it is not without risks. In many instances, wild animals resident in ecosystems on the African continent serve as reservoirs for exotic and unknown viruses. Most of these exotic or unknown viruses are transmitted from wildlife to domestic animals or livestock in various ways without causing diseases. However, some virus transmissions result in genetic

transformations (e.g. mutations, adaptation etc.) that cause disease in the infected host animal with debilitating effect/s on livestock production and consequently adverse impacts on livelihoods. Transmission of exotic viruses to domestic animals poses a potential risk for further infections to human populations, which in turn presents a public health problem (e.g. Rift Valley Fever, Ebola, MERS, and SARS etc.).

#### 4.2 Proposed Intervention Areas

The interventions are broadly aimed at galvanizing collective action for long term planning, prioritization through the use of foresight instruments, development of the necessary capacities, building the required partnerships and mechanisms for sharing information and knowledge.

Multi-disciplinary teams that link analysis of climate change impacts on agriculture should enable early warning and foresight towards appropriate policy interventions.

##### i. Short-term interventions on foresight

- Establishment of virtual food system foresight to introduce stakeholders to basic concepts and ideas of foresight to assess the impact of COVID-19 and explore response scenarios. This will also involve mentoring and demonstration of methodologies for analysis and rapid collective intelligence gathering process on emerging impacts and responses;
- Convene participatory foresight analysis involving modelling community to reflect and analyze main trends;
- Support the development of foresight models to simulate scenarios of the long-term impact of the outbreak on



FSN in Africa based on food availability, access, utilization and stability;

- Share foresight tools to support countries in developing strategies for absorbing shocks to supply and demand for food and how they affect food and nutrition security;
- Provide leadership in considerations of gender dynamics in the agri - food supply chains, who are the least represented in AR4D decision making with future implications on Africa's food system;
- Facilitate reflective training activities involving policy and technical experts to sharpen their existing set of skills to learn from past experience, postulate and simulate solutions for the future;
- Actively involve and engage youth in the search and application of solutions

### **Medium term interventions on foresight**

In the medium term, the following are imperative

- Stimulate the capacity of the system to innovate while facing the new challenge, that itself may disrupt the environment within which the system operates;
- Advance one-health concept by equipping policy makers with relevant Agricultural Innovation System skills to innovate in facing the virus pandemic;
- Sensitization on capacity audit exercises and facilitate application of the principles of strengthening capacity to innovate, already accessible through the Tropical Agriculture Platform Common framework. This can be achieved through online series of discussions on strategies used by different countries;

- Knowledge and information sharing on gender dynamics and implications on Africa's food system in light of COVID19.

### **iii. Interventions to mitigate risks from interactions of agriculture and wild life**

These involve the effective management of the biosecurity in agricultural systems and include:

- Biosecurity surveillance of pest and diseases within the ecosystem, including surveillance of viruses in wildlife;
- Disease characterization;
- Development and deployment of diagnostic tools;
- Vaccine development and deployment for endemic diseases
- Developing and retaining scientific skills for laboratory research and development, diagnostic services, vaccine development, wildlife disease surveillance etc.
- Appropriate biosecurity and biosafety infrastructure (e.g. laboratories, equipment, other appropriate road and communication systems etc.) that is functional to provide the necessary services will be necessary to provide insights towards the current and future interventions.

**Partnerships Required:** Foresight4Food, CAADP-XP4 consortium, Global Forum on Agricultural Research (GFAR), CGIAR centres, NARIs, Development Partners, Foundation for a Smoke-Free World, AUDA-NEPAD





The CAADP-XP4 consortium will bring to bear its experience, networks and knowledge base in facilitating the strengthening of capacity for foresight among professionals in African AR4D institutions and private sector in four key areas: i) sensitizing stakeholders about the relevance of foresight; ii) developing competencies in conducting foresight and interpretation of foresight results; iii)

offering technical assistance to enable regional and national organizations to participate in foresight initiatives and apply results from past /ongoing foresight, and iv) document and share experiences on foresight.

FARA and Foresight4Food are setting up virtual food system foresight initiative to support Africa in responding to the crisis.

## 5 Next Steps

1. Engage key supra-national AR4D partners notably FARA, CORAF, ASARECA, CCARDESA, AFAAS; the CGIAR system and National Agricultural Research and Innovation (NAIS) partners towards the inclusive finalization of the AR4D strategy for responding to impacts of COVID-19. – *(This is Ongoing)*
2. Undertake e-consultations to identify and validate priority interventions for deployment of science and innovation to mitigate the impacts of COVID-19 on food and nutrition security in Africa- *Webinar on 20<sup>th</sup> May 2020 followed by a blog to continue the discussion on issues raised highlighted by the webinar.*
3. The key partners in collaboration with development partners, AUC, AUDA-NEPAD and end users at the national level are to jointly develop 2-3 continental initiatives / programmes to mitigate COVID-19 impacts *(June –August 2020)*
4. Assemble and disseminate information (through online posts and forums) on how specific research and innovation and the associated partnerships are being mobilized to respond to COVID-19 impacts in African agriculture, and the lessons learned. *(This is Ongoing – Continuous)*
5. Implement the joint initiatives in an integrated and coordinated approach. *(From October, 2020)*

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