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Likely global impact of COVID 19 on the Agriculture and Research and Development operations

Background

COVID-19 was first reported in Wuhan, Hubei Province, China in the last quarter of 2019, and declared a pandemic by WHO in March 2020. The Early projections on the impact of COVID-19 on Africa by various agencies have been pessimistic. However, real time reporting of infection cases and mortality, indicate relatively low numbers compared to other regions of the world for now, at least, and for now removing Africa from a potential epicenter.

Projected impacts of COVID 19

Health. UN's WHO has warned that the pandemic could kill between **83,000** and **190,000** people in **47** African countries in the first year, depending on governments responses; and the socio-economic impacts could

remain for several years. As of June 1, 2020, the continent has had **4,331** mortalities, a far better outcome than was projected. The indirect consequences beyond health include food insecurity, lack of medical supplies, loss of income and livelihood, difficulties in applying sanitary and physical distancing measures, a looming debt crisis, as well as related political and security risks. They are discussed later.

Economic impacts. According to the International Monetary Fund (IMF), the global economy is projected to shrink by 3.2% mostly due to COVID 19 lockdown effects. In the case of Africa, the region is expected to experience its first recession in 25 years. Given that Africa is fully integrated into the global economy, mostly as a supplier of raw materials, and importer of finished goods, the economic recession portends a period of economic difficulty. Trade will be affected as some of Africa's trading partners intensify sovereignty for food and resourcing supply. Thus, Sub-Saharan Africa's (SSA), 45.6 billion USD import trade of 2018, according to the World Integrated Trade Solution of the World Bank, may reduce. Moreover, declining oil and industrial metals prices (oil down 50%, metals 11% between December and March 2020) will further affect growth of Africa's lead economies - South Africa, Angola and Nigeria.

Agriculture and non-resource intensive economies, may however, be relatively less affected according to the World Bank. Even then, agricultural production is already affected by multiple disasters: Flooding in Eastern and Southern Africa with countries still reeling from effects of tropical cyclone IDAI. The FAO Global Information and Early Warning System (GIEWS) already shows that Zambia, Mozambique, Zimbabwe and Malawi will be affected with increase in cereal imports and vulnerable populations increasing in number. In Eastern Africa desert locusts remain a threat. Sudan has issued a humanitarian assistance request. Drought remains a challenge and cereal production for 2019 that was already -4.3% less than in 2018, implies that the food insecurity situation in SSA may be further exacerbated as local, food supply chains are disrupted due to COVID 19 lockdowns. Yet Africa is a net importer of agricultural

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and food products, with ten basic foods making up 66 per cent of total Africa's food imports and this certainly will reduce as nations focus on food sovereignty and control exports. Indeed, current country annual GDP growths show a reduction that is highly variable for even non-resource intensive economies. Malawi 2020 forecasts growth of less than 3% down from 5.5%; Ethiopia 2020 forecasts are down to 5.5% from 10.8%; Kenya, 2020 forecasts are down to 1.5% from 6%. The resource dependent economies will experience reduction of at least 3%, Republic of South Africa projects a GDP contraction by 2 to -4%, while Angola and Nigeria project GDP contractions of 4.1% and 4% (moderate) to 23% (severe) respectively. It has been noted that, a 1 % point-drop in global GDP could result in an additional 0.7 million stunted children. For SSA, already an additional 9.1% of the population has immediately fallen into extreme poverty as a result of COVID-19, lockdowns accounting for about 65% of the current increase in poverty. About 8 million people (3.6% of population), including 3.9 million of children under 5, are very severely food deprived after 2-month lockdown from March. The main message is SSA economies are already facing economic headwinds and must brace for harder times.

Education and human resource development. The prolonged closure, at all levels of training institutions, combined with wide-spread economic hardship, risk undermining aspirations of young people and is potential driver for widening inequalities. Since the lockdown, in SSA 330 million learners, of all levels, and over 8.5 million teachers, have been unable to learn or teach from home due to closures. Moreover, possibilities for web-based education is under mined by limited access to computers with 90% of students not having access to household computers. Infrastructure challenges such as unreliable power supply, poor internet connection, funding limitation to pay service providers further undermine the impact of existing investments. This will certainly affect Africa's labour markets, reducing outflows (graduations) and skilling for a changed economy.

IMPLICATIONS FOR AFRICA'S AGRICULTURE AND RESEARCH FOR DEVELOPMENT

Winston Churchill while working to form the United Nations after World war two famously said, "Never let a good crisis go to waste." For COVID 19, this too is applicable as this biological crisis can be transformed to a socio-economic challenge/ opportunity to change our world for the better. One silver lining of COVID lockdown has been reduction on greenhouse gasses and improvement in air quality at by up to 60% compared to the same time in severely polluted cities such as Dehli. It is worth noting that carbon-dioxide, a common pollutant and greenhouse gas, concentration decreased by 25% in China and by 6% worldwide during the lockdown. There are certainly other silver linings on this dark cloud hovering over humanity. A key question then is, what is the role of science in proving solutions for sustainable development. Below I share a few insights/thoughts needed to strategically design actions that reinforce economic development and growth.

Economy:

- i. **Re-engineering to tap diversification of supply chains.** As economies begin to reopen, we expect to see changes in demand and supply of various commodities as nations work to diversify especially supply chains. For Africa, this is an opportunity tap into the diversification of supply chains especially for agricultural commodities. There will a need to focus on value added agriculture as Africa works to attract new market opportunities. African countries could position themselves better to attract manufacturing activities as global manufacturing firms seek to diversify geographically the sources of supply. Research and innovation that supports

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agricultural value addition has now an expanded opportunity given Africa's relatively large youth population that could also provide cheap labour markets for outsourcing opportunities.

- ii. **Agriculture:** This critical sector needs strategic economic focus as it is key to livelihood of the vast majority of Africans and economies. Designating this sector essential, and that must continue, regardless of pandemic-related emergency restrictions will reduce impacts of the pandemic. This special status will ensure strategic investment to secure smallholder agriculture, R4D and postharvest handling and storage as well as food imports. Key areas to address in agricultural research are actions targeting:
 - **Food security:** The disruptive impact of the COVID-19 pandemic on Africa's food supplies underscores the need for renewed efforts to boost sustainable food systems and trade. R4D must develop new production systems designed with agrifood systems framework.
 - **Complementary investments and research.** For food security we need investments in irrigation, storage, transport, and agri-processing systems to boost production, reduce postharvest losses and volatility in the supply and price of food.
- iii. **The promise of Africa's youth:** The future of Africa is with its youth. At least 60% of the Africa's population is under 25. Educating and providing youth with necessary skills will provide the continent with a driving force for its economic and social development. Africa's education systems will need to think hard and strategically as they conduct curriculum reform to deliver more open and online based systems. They will need to, among others, address and or develop
 - **Energy infrastructure-** such as solar to secure power supply,
 - **Internet access, and technology** use in education, including exploring reduced cost-effective opportunities with mass media.
 - **Support massive education.** Development of effective massively open parallel education systems.
 - **Intensify diversity and inclusivity programming.** Women's entrepreneurship, leadership, and the percentage that women's trade in the informal economy contribute to the overall economy, are avenues for recovering stronger and faster.
- iv. **Research and development for the new normal state of affairs**
 A science focus to underpin policy and investments in planning response, recovery, and resilience is critical for the new normal way of doing things.
 - **A focus on green economic growth and production systems** is core for the immediate future. We will need more resilient systems, production systems for a reconfigured urban and rural lifestyle, resource use efficient production and climate change mitigation, integrated production systems, among others in agriculture.
 - **Systems research** is key for better multi-ecosystem integrated economies. There is need to rethink how our agri-food systems operate. We must recognize, plan and engage diverse production to market value chains drivers from farm to fork.
 - **Zoonoses.** COVID 19, Ebola and other wild- life originated diseases, all emphasize one issue, the need to frame our livestock and human disease research around the One

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world one health concept. This approach recognizes the linkages between humans, animals, and environmental health. It is particularly critical for Africa that has many economies dependent on tourism. Universities are best placed to address such complex systems as they are endowed with diverse science disciplines.

- **Policy integration:** Development of inclusive public programmes for food security and nutrition and improved future resilience will secure planning and inform timely and relevant investment to thwart threat and unlock opportunity.

CONCLUSIONS

The COVID 19 pandemic is an opportunity for the continent to refine its planning for the immediate and medium term. Agriculture is still key as a sector for focus due to its pivotal role in both household and national economies. A broader look at this sector particularly how it integrates with other employment sectors such as tourism and food industry will secure the continent as country's world over intensify their food sovereignty planning. The education and research fraternity should see this as an opportunity to provide science solutions that will enhance resilience of the production systems. An integration with policy will inform wider national and even continental planning and investment, allowing a resurgence of the economy learning from the 2008 global economic crisis. Finally, the African University has been mostly silent, sometimes working behind the scene to provide solutions to the ongoing epidemics. Now is the time for greater unity and integration of Africa's science agenda that must adopt system wide integration across sectors, medical, agriculture, veterinary, zoology, engineering and other STEMs, sociology, economics and agribusiness on one hand, and emergent sciences including ICT space science for the continent to deliver for its peoples today and in the future by 2063.

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About the Author

Dr Patrick Okori is a Ugandan national who obtained his PhD from the Department of Plant Breeding and Forest Genetics at the Swedish University of Agricultural Sciences in Uppsala in 2004. He obtained a BSc. Agriculture and MSc Crop Science from Makerere University in Uganda. Patrick is currently a Principal Scientist with ICRISAT based at the Malawi Station in Chitedze outside Lilongwe the capital. At ICRISAT Patrick leads the groundnut improvement activities in partnership with National Agricultural Research System Partners in East and Southern Africa (ESA). His team also undertakes technology delivery activities and food system research in east and southern Africa, focusing on improving last mile delivery to Africa's rural farming populations.

Before joining ICRISAT, Patrick was an Associate Professor at Makerere University, in the School of Agricultural Sciences where he was also Dean. Patrick led a multi-disciplinary team called the Cereals' Research Group in the Department of Agricultural Production. Patrick's former research group worked on unlocking the potential of cereals (maize, sorghum) as income, food and nutrition security crops to underpin livelihood strategies of farmers. The team developed several resilient and high yielding speciality sorghum and maize lines with single or combined (high amylose and high lysine). They also pioneered the use of molecular markers in breeding and population studies of maize and sorghum and their pathogens in Uganda; and new human food and animal/ fish value added products. Patrick is widely published and graduate over 50 PhD and MSc students.

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