# Africa can feed itself in a generation: Study

EurekAlert

**IMAGE:** [1] Lead author of the study, Calestous Juma, is a professor of international development at Harvard Kennedy School's Belfer Center for Science and International Affairs.

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Africa can feed itself. And it can make the transition from hungry importer to self-sufficiency in a single generation.

The startling assertions, in stark contrast with entrenched, gloomy perceptions of the continent, highlight a collection of studies published today that present a clear prescription for transforming Sub-Saharan Africa's agriculture and, by doing so, its economy.

The strategy calls on governments to make African agricultural expansion central to decision making about everything from transportation and communication infrastructure to post-secondary education and innovation investment.

The approach is outlined in an independent study, "The New Harvest, Agricultural Innovation in Africa," led by Harvard University professor Calestous Juma.

And it is gathering political momentum, with Tanzanian President Jakaya Kikwete to launch the report at a retreat of East African Community (EAC) Heads of State in Arusha, Tanzania, Thurs., Dec. 2. Following a presentation by Prof. Juma, President Kikwete will chair a discussion with Presidents Paul Kagame of Rwanda, Pierre Nkurunziza of Burundi, Mwai Kibaki of Kenya, and Yoweri Museveni of Uganda, on policies and strategies to address persistent food insecurity in the East Africa in light of climate change. (See also an EAC news release online at www.eac.int/about-eac/eacnews/520.html?task=view [2])

Preliminary results of the study, financed by the Bill and Melinda Gates Foundation, were adopted earlier this year by the 19-member Common Market for Eastern and Southern Africa (COMESA), the continent's largest trading bloc.

"African agriculture is at the crossroads," says Dr. Juma, a professor of international development at Harvard Kennedy School's Belfer Center for Science and International Affairs, and recognized globally for his work in applying science and technology to sustainable development.

With its vast untapped resources, Africa enjoys tremendous potential and opportunities but remains characterized by persistent food shortages, which may be worsened by climate change unless efforts to change direction are stepped up.

"We have come to the end of a century of policies that favored Africa's export of raw materials and importation of food. Africa is starting to focus on agricultural innovation as its new engine for regional trade and prosperity," he says.

[3]
**IMAGE:** [3] Africa can feed itself in a generation, Harvard professor Calestous Juma says in a new study.

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[3]

"Yet Africa has abundant arable land and labor which, with an agreed common approach and sound policies, could translate into greater production, incomes and food security."

"The plan would combine the use of modern science and technology, infrastructure expansion, improved technical education, and stimulation of business development. By focusing on women and rural prosperity, Africa would create a more inclusive agricultural revolution."

Key elements in the transition include:

- Use of modern technologies (including modern biotechnology) and investment in geographical sciences for improved natural resource

management;

- Continued expansion of basic infrastructure (telecommunications, transportation, energy, and irrigation);
- Improved technical education, especially for women and provision of experiential education;
- Creation of new enterprises, especially in fields such as seed production, farm mechanization, food storage and processing;
- Harmonization of trading practices that extends regional markets;
- Close cooperation between government, industry, academia and civil society in policy formulation and implementation;
- Leadership by presidents and prime ministers to coordinate critical input involved a diversity of powerful ministries dealing with finance, infrastructure, education, trade and industry, and regional cooperation.

"An African agricultural revolution is within reach, provided the continent can focus on supporting small-scale farmers to help meet national and regional demand for food," Prof. Juma says.

Political support is strong and growing as African presidents start to pay attention to the importance of agriculture in overall economic transformation. "They are also benefiting from exemplary leadership provided by Malawi's Bingu wa Mutharika who until recently also doubled as the country's agriculture minister.

And, Prof. Juma notes, China, India, Brazil and others are recognizing Africa's overwhelming potential with a rising level of strategic investment.

Originally intended as a series of monographs for African leaders, the work has attracted such widespread interest it is being published in book form by Oxford University Press.

According to "The New Harvest," global agriculture over the past 40 years has been characterized by per capita food production growth of 17 per cent and total production up 145 per cent. African agriculture in that time has gone in the other direction: Production of coffee, cocoa and other export commodities has grown, but food production has dropped 10 per cent since 1960 because of low investment in

the sector.

Agricultural yields, farm incomes and poverty rates were stagnant and in some cases worsened during those four decades. Although 70 per cent of Africans are engaged in farming, production is so low that nearly 250 million people, one-quarter of the population, are undernourished - a figure that has risen by 100 million since 1990. One-third of sub-Saharan Africans are chronically hungry, while drought, soil degradation and disease appear endemic.

Only four per cent of the continent's cropland is irrigated. Fertilizers, pesticides and high-quality seeds are expensive and in short supply. Only a small minority of farmers uses machinery that's commonplace in Europe and North America. Deforestation is spreading as farmers seek to replace exhausted fields.

Water and energy supplies are often inadequate. Poor roads make it difficult to bring supplies and expertise to farms and get their produce to markets. Government policies, lack of investment, bloody conflicts, the HIV-AIDS epidemic and the global financial crisis all add to the problem.

In turn, agriculture's poor performance hamstrings the rest of Africa's economy.

Prof. Juma says it's important to see past the problems to recognize Africa's immense land, water and energy resources. It is the only continent with arable land readily available to expand agriculture. Southern Sudan alone could feed all Africans if properly developed, he says.

And the continent is not universally poor and underdeveloped. Some countries are doing well, advanced technology is widespread and strategies that the report recommends are being attempted, most notably in Malawi.

In very general terms, the plan would see African farmers to increase production of traditionally popular foods to be sold on the continent. Eventually, as production increased, exports would follow, spurring development of non-farm businesses.

Farming would be viewed as a knowledge-based industry that marries technology and local indigenous techniques and experience.

The process would be both top-down and community-oriented, Prof. Juma says. Central governments would set production goals and standards, and provide infrastructure, investment capital and technical help. Local groups would decide how best to achieve the goals and support their farmers.

All of the ingredients are crucial, Prof. Juma says.

- Communications: In Africa, effective, affordable communications are transforming life - arguably to a degree greater than anywhere else on Earth. Whereas communication has traditionally involved difficult travel, more than 60 per cent of Africans now have access to mobile phones and

instant messaging, through which, technical advice is more readily available on how to improve yields, weather, market prices, input costs and disease surveillance. Ordering seeds or supplies, communication with buyers, and even money exchange using airtime credit as a currency are also all far more easily accomplished thanks to mobile devices.

Notes Prof. Juma: "One way for Africa to foster inclusive economic growth is to apply innovation in agriculture which employs the majority of the people. This is also a way to address concerns that technology widens the gap between the rich and the poor. The use of module phones in rural Africa show the promise of more inclusive innovation strategies."

- Infrastructure: "The importance of providing an enabling infrastructure for agricultural development cannot be overstated," the report says. In fact, the difficulty of transportation causes some peasant farmers to reduce production even when soil and weather conditions would allow better yields. "Without access to markets, farmers can't use what they could produce, so they produce only enough for themselves to eat," Prof. Juma says. "Farmers are smart enough not to grow crops if they are going to rot on their farms."

- Water: More than 40 per cent of Africa's rural population lives in arid or semi-arid conditions and tens of millions live in areas with absolute water scarcity. Only four per cent of the arable land is irrigated. But the continent's many lakes and rivers could supply water to the many areas that have high-quality soil but too little moisture.

- Energy: Africa has too little electricity but vast amounts of untapped hydro and solar potential. Building dams and other generating infrastructure would be relatively inexpensive; the major impediment is constructing transmission grids to move the power to where it's needed.

All of the infrastructure needs are connected, Prof. Juma notes. Plans for a hydroelectric generating station, for example, might be hampered, or scuttled, because a bridge on the route to the project can't handle the weight of a turbine unit or other component. Instant information about prices isn't helpful if there's no way to get farm products to markets.

To develop its infrastructure, Africa will need to train an army of engineers, Prof. Juma notes.

- Science-based agriculture: Scientific advances have the potential to

revolutionize agriculture, the report says.

Nanotechnology, for one, could be used to quickly and effectively detect and treat crop diseases, and for water purification - a critical issue given that 300 million Africans lack access to a clean supply.

Prof. Juma notes the use of improved seeds through biotechnology could dramatically increase farm yields. South Africa, for example, had 2.1 million hectares of biotechnology-improved corn in production in 2009, up 18 per cent over the previous year. From 2008 to 2009, Burkina Faso's cotton producers recorded the world's fastest adoption rate of a genetically improved crop.

- Regionalization: African nations have begun to develop regional organizations to remove barriers to trade and promote economic expansion, and that process must accelerate the report states. Many of the countries are either relatively small or landlocked, thereby lacking the financial resources needed to invest in major infrastructure projects. Their future economic prospects depend on being part of larger regional markets.

- New relationships: Farming areas would be recognized as "clusters" in which growers, supported by governments, would work together to develop crops and markets. "As farmer productivity is often constrained by lack of relevant technology or access to best-practice knowledge, inputs, and services, clusters may be able to provide pronounced benefits," the report says.

There would also be new strategies and relationships for spreading information and promoting adoption of new techniques.

"Communities (once) developed local leadership structures to encourage participation and the ideal use of what limited resources were available," the report says. But, "in the past few centuries, colonial intervention and the push for modern methods have often caused these structures to fail as a result of neglect or active destruction. However, these traditional organizational mechanisms can be an important way to reach a community and cause its members to use innovations or sustainable farming techniques."

Finally, the recognition of agriculture as a knowledge industry requires a new generation of universities that combine research, training, commercialization and farmer outreach under one roof. There are many examples of such models, pioneered by EARTH University in Costa Rica which trains young people to learn how to create agricultural enterprises.

SOURCE [4]

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