

Increasing Food Security and Productivity in Guinea-Bissau in Cooperation with West Africa Countries

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No one knows exactly how many of the world's people are undernourished today because there is a lack of reliable population counts from many countries. But, even in the absence of appropriate data collection and analysis, there is general agreement that the number of people who are severely affected by hunger and malnutrition is extremely large. According to a World Food Program estimate, hunger affects one out of seven people on the planet. The World Bank estimated that more than one billion of the world's people do not have enough food to lead healthy and productive lives. Most of them—800 million—live in developing countries in Africa, Southeast Asia, and Latin America. For most hungry people, food shortages are a fact of everyday life.

According to the Food and Agriculture Organization (FAO), 840 million of the world's 1.1 billion poor live in rural areas, where 15 million die each year from starvation and related diseases. Estimates range anywhere from 54 to 80 countries that do not produce enough food to feed their populations. Sub-Saharan Africa produces less food per person today than it did 30 years ago. These countries also are unable to afford to import the necessary commodities to make up the gap. Nearly one of every four human beings alive today exists only on the margins of survival, too poor to obtain the food they need to work, or adequate shelter, or even minimal health care.

Hunger is not simply a matter of the quantity of food available. It is also one of distribution and imbalances brought about by international trade, which affect developing countries. Food tends to go to the countries that derive profits from trading and, in turn, to the people who have the most money.

No country in the world has managed to develop its economy and increase standards of living for its people without first significantly increasing its food security and agricultural productivity.

Guinea-Bissau is one of the countries in the world that faces food shortage. It is located in western Africa, and is one of the smallest countries in continental Africa. Its size is nearly 14,000 square miles with an estimated population of 1.6 million in 2008.

According to the 2007 United Nations Development Program Human Development Index, Guinea-Bissau ranks 175 out of 177 nations as it relates to poverty. This makes it the third poorest country in the world. Of the total population, 65% live under the poverty line of less than two US dollars per day.

Agriculture is the basis of Guinea-Bissau's economy. Farming is mainly for food crops such as rice (the country's staple food), sorghum, corn, plantains, millet, sweet potatoes, beans and cassava, most of which are produced by subsistence farmers. Cashew nuts and groundnuts are the main export crops while tobacco, coconuts, sugar and palm kernels are also grown for export. Agriculture employs more than 90% of the local work force. However, even with this agricultural economy, self-sufficiency in food has still not been reached.

The majority of Guinea-Bissauans (about 70 percent) live in rural areas. Most people belong to farming or fishing families in small villages. Since the economy is basically agricultural, the vast majority of residents live off what they and their neighbors grow. Villagers depend on funds from emigrant workers. Urban government workers at all but the highest levels depend on their village kin for food.

The size of lowland rice farms per farmer is generally small (from few hundred to few thousand square meters). Land preparation for lowland rice is done either manually or with animal traction.

Transplanting is the main method of crop establishment. Farmers generally apply little fertilizer to rain fed lowland. However, moderate to high rate of inorganic fertilizers is usually applied to irrigated rice. Weeding is generally done manually, although the use of herbicides is increasing in irrigated rice. Farmers do not have adequate appropriate tools and equipment for harvesting and threshing of rice.

In the villages, children herd livestock, and young people work collectively to weed or prepare fields. In some regions, women perform agricultural tasks that once were done by their husbands. Most Guinea-Bissauans desire large families. Three generations usually share a household.

Many people in Guinea-Bissau eat only one or two meals a day. In rural areas, a main meal consists of rice or millet and some type of sauce (peanut, palm oil, sorrel and okra, or tomato) served with fish or meat, if available. While fish is plentiful in coastal areas, people who live farther inland do not often eat it. Tropical fruits (mangoes, papaya, and bananas), vegetables (manioc, corn, squash, and sweet potatoes), and peanuts are eaten in season.

Life expectancy is low and the infant mortality rate is very high. Life expectancy in males is 44 and in females, 48. Major causes of death include malaria, gastrointestinal infections, and AIDS. Bilharzia and tuberculosis are widespread. Malnutrition is a serious problem in many parts of the country.

In 2007, according to the United Nations World Food Program (WFP), 43 percent of people in the rural areas of Guinea-Bissau did not have adequate food and some 20 percent of the population of 1.6 million received food aid.

Guinea-Bissau has excellent natural conditions for the development of agriculture, as the country has good soils and high rainfall. Yet, even while the country of Guinea-Bissau is known to have good agro-ecological conditions, there is weak capacity to produce the food that is needed to sustain the people throughout the agricultural growing season of the year. There is poor infrastructure to bring the goods to market, coupled with ineffective agricultural practices that make food security very dependent on things such as world commodity prices and the weather of the country. The country is also faced with low productivity of their crops and this hinders the ability to experience economic growth within the country.

Numerous challenges create the difficulty of sustainable food production in Guinea-Bissau. Among the major concerns in the country that have been identified are the following:

- Drought in upland areas and drought and flash flood in rain-fed lowland (or inland swamp) and tidal wetland (or mangrove forests) areas due to irregular weather.
- Acidity and salinity in tidal wetland (or mangrove) areas.
- Inadequate and irregular input supplies such as seeds, fertilizer and credit to the farmers.
- Lack of good farm equipment especially for post-harvest operations.
- Poor maintenance of developed swamps.
- Poor drainage and iron toxicity in undeveloped swamps.
- Poor maintenance of dikes and salt water intrusion.
- Lack of effective farmer organization and co-operative.
- Lack of a well-defined rice policy.
- Poor road networks and poor marketing systems.
- Weak research and extension support.

These problems, along with the existing poor infrastructure and severely limited cooperation with global markets, undermine the country's ability to attain food security.

At least one factor that needs to be addressed in Guinea-Bissau is providing the energy and water resources needed to increase agricultural productivity and provide for the need of a large population of an expanding economy.

Food insecurity is present in rural areas, because of the bad management of the cycle production/consumption throughout the year. Energy and water resources are not being properly utilized. This is in spite of agro-ecological conditions favorable to the rise of potentially healthy agriculture.

Rice production, the staple food in Guinea-Bissau like in many African countries, is decreasing. The main reasons for this have been identified as (1) a traditional production system - the cropping techniques are archaic, backward and manually done; (2) land tenure problems; (3) a strong diminution of the available work force mainly for mangrove rice production system; (4) an insufficient mastery of water combined with uneven rain distribution over time, and (5) the controversy within the rice - cashew exchange method in the market system.

Since rice is the primary staple food crop, sustainable rice production in Guinea-Bissau depends greatly on an enhanced food policy to provide farmers with support in inputs supply (such as seeds, fertilizer and various types of chemicals to control insects and pests). They also need more efficient marketing of products and improvement of the infrastructure to link rural areas with markets. Improved access to credit for purchase and profitability for crops is an important part of the food policy that needs to be developed in the country. Improvement of the water supply and control of water in rain-fed and tidal wetland rice production is also essential to the efficient and productive development of the agricultural sector in the country, which would be inclusive of improved access to water and control of water use.

Food security is in a precarious state because Guinea-Bissau imports or receives in aid a significant proportion of the food domestically consumed. The subsistence agricultural production is constrained by the rudimentary technology utilized by smallholders. The survival strategy of these groups involves the utilization of indigenous technology for food production (e.g., low land and mangrove rice), traditional social organization and communal modes of resource allocation. Rural poverty and population pressure on cropped lands have led to the abandonment of some traditional farming practices, in some regions, and to reduced fallow periods of traditional slash-and-burn agriculture, in others, thus making worse the land degradation /deforestation and the deterioration of the fragile ecological environment.

A range of strategies and policies for increasing agricultural production and productivity have been considered in the various parts of Africa and by development institutions. In its agriculture comeback report of 2008, the World Bank noted that for agriculture to develop as the basis for economic growth, an agricultural revolution in the productivity of small-scale producers is required. Meanwhile, member countries of the West African Economic and Monetary Union (WAEMU) stressed the need to increase production and productivity, while ensuring the sustainability and the preservation of the natural resource in their common agricultural policy.

In Guinea-Bissau, there is a need to develop seed banks and give farmers greater access to credit. Agricultural policy should be developed within the country to provide for modernization of production systems through the introduction of efficient machinery where required; and increasing the use of mineral and organic fertilizers to provide nutrients to the soils and boost yield.

Energy is an essential aspect of agricultural production. It is required directly as a fuel to operate agricultural machinery such as tractors and harvesters as well as for operating irrigation systems and pumps running on electricity, diesel or other sources of energy. Energy is also required in processing and conserving agricultural products, and in transportation and storage. Therefore, energy is a critical factor in adding value in the agricultural sector. Indirect energy use occurs through the production and application of mineral fertilizers and chemicals required to improve crop yields. Guinea-Bissau needs new energy sources to do well in sustaining and increasing agricultural productivity.

A range of crops could be used to make bio-fuels – sugar cane, sugar beet, maize, sorghum and cassava for ethanol production – while peanuts, jatropha and palm oil can be used to produce biodiesel. There are many opportunities to generate new sources of energy that can be integrated into existing production patterns within the agro-forestry sector and to meet rural energy needs.

According to Cornelis van der Waal, an industry analyst with Frost & Sullivan — a South Africa-based consultation company providing advice on development policies — Africa has great biofuel potential due to its vast arable land and workforce. He says, "Africa is by no means a current participant in the biofuels race compared to the rest of the world, but could potentially become the most important contributor to alternative fuels."

Despite well-established national agricultural research centers across Africa, there is little research to improve crops to yield more ethanol and biodiesel. Current biofuels research also focuses too much on increased production efficiency rather than quality products. There are opportunities for many other biofuel products and applications besides ethanol and biodiesel. For instance, home-use fuel, such as paraffin, wood and coal, could be replaced by ethanol gel, made by mixing ethanol with a thickening agent and water. The gel fuel burns without smoke, and so does not cause respiratory problems associated with current fuels used in the home.

The important contribution that irrigation can make to food security has to be recognized, especially given that rain fed agriculture, which currently accounts for the bulk of agricultural production, is highly vulnerable to climate change. If lower yielding and extensive rain fed production can reliably meet demand in food staples, then stabilizing rain fed production, particularly small-scale, should be the most economic means of achieving food security

African research institutions are pioneering new forms of irrigation that could transform the way staple foods are cultivated, fertilizers are available that can feed nutrient deficient soils, modern crop varieties can dramatically increase yields and new farming techniques can make processes significantly more efficient.

Investment programs must be designed taking into account the food, energy security and climate change adjustments; but they also need to include economic development, health care, education and environmental objectives in general. Factors such as population density, the vulnerability of the population to climate variations, the types of agricultural producers and the options available for both public and private intervention in the matter of energy and agriculture need consideration.

A project is now being implemented in the eastern part of Guinea-Bissau to encourage rice production in fresh water fields all year round. Two other Rural Development Programs have been carried out to assist the rural population, by encouraging farmers to form producers associations, by providing improved seeds and introducing horticulture, and by raising awareness of the important role that both savings and credit play in development.

For water resources, irrigation must be integral to any strategy to sustainably increase agricultural output in order to satisfy increasing food demand. Irrigation should therefore receive the means and investment required to increase its efficiency and the productivity of water. This will not only improve peoples' food security but will also release vast quantities of water for other uses.

With regard to energy security, work must begin on framing appropriate policies and strategies, stressing the diversification of energy sources and the development of renewable energy sources.

A program now in place to help subsistence farming serves as a current model of success in Guinea-Bissau. ADPP Guinea Bissau started the Cashew Plantation in 1987. It is one of the biggest plantations in Guinea Bissau. In 1999 the project was transformed into a commercial to communal farmer's program.

The Commercial-to-Communal (C-to-C) project trains communal, subsistence farmers to become commercial farmers in conjunction with the cashew plantation. The farmers train at the plantation where they do all the practical lessons. The farmer's train for three years and upon completion of their training they embark on their own production using their knowledge.

The plantation provides an ideal training center for the farmers. The farmers carry out practical lessons in seed selection, plant maintenance exercises like pruning using the correct tools and doing it the right way, weeding the plants and making fireguards to protect the cashew plants. The farmers learn technical skills like spraying and disease control mechanisms, which assist them to increase their production levels.

The farmers learn and practice general hygiene for them to spearhead healthy living lifestyles in their communities. They dig rubbish pits, latrines and wells for safe drinking water. The farmers attend training sessions on mobilizing people against diseases like malaria, HIV/AIDS, tuberculosis, cholera and diarrhoea. The farmers take action in construction work at the plantation, thus acquiring the skills necessary when they leave the plantation. Adult literacy classes help the farmers to develop their reading and writing skills.

Lessons in environment cover erosion, land degradation and deforestation. Through practical demonstrations and actions the farmers learn to prevent erosion and restore degraded land. Rice fields have been protected from siltation by erecting control boulders in the riverbanks.

There is also a program called Farmer's Club in an area of the country called Oio. This program helps local farmers who want to transform their farming practices from communal to small-scale commercial farming. The farmers engage in the best agricultural practices using the available resources to transforming their farming system. The farmers together negotiate for good selling prices for their produce and buy inputs in bulk. The local farmers in the club have started peanut production to generate income in 11 areas around Bissora.

Partnering with the World Bank, the Food and Agricultural Organization of the United Nations (FAO) has also launched a two-year project in May 2009 through the European Union Food Facility to help the government of Guinea-Bissau reduce the burden of high food prices on its people.

With funds from the European Union, vulnerable farming families will receive seeds, fertilizers, tools and training to increase their output during the main growing season and off-seasons. Funds also go

towards the rehabilitation of the country's agricultural infrastructure, including rice fields and market garden plots.

In cooperation with the Ministry of Agriculture and the National Institute of Agronomic Research (INPA), FAO also is supporting the training of 50 farmers in seed multiplication activities in a bid to strengthen their understanding of the entire production cycle, from the supply of seed stocks to the marketing of certified seeds. FAO is also focusing on building the capacity of the INPA to control the quality of seeds produced.

FAO is also working with the World Food Program to support 300 school gardens that will benefit around 24,000 students. The aim is to teach students gardening skills while boosting their nutritional intake. About 40 percent of the produce will be sold in local markets.

In July 2008, FAO launched a Technical Cooperation Program project to provide quality seeds, agricultural tools and technical assistance to 5,000 vulnerable farmers to boost their off-season food production. With FAO support, and in collaboration with the Ministry of Agriculture and non-government organizations, farmers have planted rice, niébé, peanut, cassava and sweet potato crops. Harvests have been good and local markets have seen an increase in the variety and availability of produce, while farmers have managed to harvest seeds to sow during the next planting season.

FAO is also implementing an emergency project to enhance the food security of households affected by the cashew nut marketing crisis. The aim is to increase incomes resulting in a more efficient and safer transformation of cashew nuts and fruit locally, and to boost the nutritional status of women and children who consume cashew by-products, such as juice.

Many other international supporting agencies work together to promote sustainable agricultural productivity in Africa and Guinea-Bissau, in particular.

Several international supporting agencies are presently in a cooperative venture to promote one particular model program of success called Farming First. This program includes supporting organizations such as International Council for Science (ICSU), International Federation of Agricultural Producers (IFAP), International Fertilizer Industry Association (IFA), CropLife International (CLI), World Federation of Engineering Organizations (WFEO), International Institute of Refrigeration (IIR), International Seed Federation (ISF), International Plant Nutrition Institute (IPNI).

The Farming First program basically seeks to return farmers to the center of policy decisions. It promotes an integrated approach which is more than agriculture. Focusing on farming is a key mechanism to foster economic and social development for millions of individuals and food security for all. The Farming First program is utilizing important agricultural and marketing focuses to increase and sustain agricultural productivity.

It emphasizes that natural resources must be safeguarded. Land and water management are improved through the widespread adoption of sustainable practices of land use, including conservation tillage and other techniques.

Sharing information is put in place as an improved mechanism for extension services – which are neither “top down” nor “bottom up” but truly collaborative. Demonstration projects work at harmonizing global research and best practices with existing local knowledge, including that of indigenous people and the subsistence farmers.

Building local access ensures that subsistence farmers have access to resources to manage their production more efficiently with emphasis on capacity building, with the support of appropriate infrastructure – particularly roads, ports, and existing technology – to make supplies available in rural communities and to allow access to markets.

Protecting harvests is critical to success in subsistence farming. In many of the poorest countries, 20 to 40% of crop yields are lost because of inadequate pre- and post-harvest support. One of the most important ways this is being done is improving productivity by minimizing losses through local storage capacities and transportation mechanisms. It also provides for risk management tools to protect farmers in the face of climate variations and market failures.

Subsistence farmers are being helped to become small-scale entrepreneurs. Linking farmers to markets is essential if they are to become real entrepreneurs. Farmers need to be able to get their produce on to the market and receive equitable price treatments for it. Non-government organizations and local authorities are working together in places to develop fair markets.

Once products have been sold, the cycle needs to continually improve. Achieving sustainable agriculture requires applied research and available, appropriate technology, prioritizing locally relevant crops and farmers' needs, stewardship techniques, and adaptation to climate change. This ensures that farmers' needs are taken into account and that they benefit from continuously updated and improved tools and knowledge to enable them to successfully achieve all the other steps of the process.

We live in a world characterized by hunger, poverty, and increasing disparities. It is a world of disturbing contrasts—with hunger in some lands and waste of food in others—and with the disparity between many of the rich and poor nations widening constantly. We also live in a world of interdependence. This global interdependence has inescapable political and economic dimensions because boosting agricultural production in developing countries can stimulate commercial trade for developed countries. Likewise, security and peace for developed countries also depend on peace and stability in the developing countries. This is one planet. What happens to the least of us happens to the rest of us. It should therefore be acknowledged that poverty is no longer a problem contained within the borders of the developing world alone. The problem has substantial effects on domestic policies, international markets, and world peace.

Unless there are dramatic new and appropriate strategies for bringing about collaborations among all countries, rich and poor, on a much larger scale and through better approaches than have existed in the past, the global problems of food insecurity and resource degradation, particularly in poor countries, will be considerable and enduring.

Ajay Vashee, the President of the International Federation of Agricultural Producers, speaking at a press conference in New York in February, 2009, said, "Agriculture is the only basis we have for feeding humanity. If our agriculture is unsustainable, then we, as a species, are unsustainable. It is time that we come together again to put farming first."

In the end, the only way food security can be realized is within the framework of sustainable resource management.

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