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Towards Sustainable Development in Kenya: Education of the Family Farmer

Kenya faces many problems in gaining a local and national farming system geared towards sustainable development. The government of Kenya, national organizations, and other national governments need to step up, to help Kenya reach sustainable farming practices in many different ways. Many of the problems lie in the education of the local subsistence farmers in their treatment of the environment, pollution, erosion, soil run-off, how crops are grown, what crops are grown, how to maximize crop growth, the use of chemicals, water safety, proper diet, and more.

A typical subsistence farming family in Kenya is fairly small but produces enough food for the family and also some to sell for local and regional markets and even for export. Entire families often live together in the same house, in houses right next to each other, or in the same settlement, depending on poverty level. Some family members live in nearby cities and come to the farm to help with the work. Nomadic families of herders travel together. Entire families work together on the farms with help from others, and at times multiple families will share and work the same land and crops. Families consist of a mother and father, often times aunts, uncles, cousins, or grandparents, and an average of four to five children. If the children are adults they often have spouses and children of their own as well.

The per capita income is \$271 per year. This is an average of the poorest and the richest. Subsistence farmers fall into the poor end of the spectrum. They make much less than \$271 per year. In a subsistence community they earn enough to survive but not thrive. This income often cannot pay for housing, clothing, school supplies, home supplies, and medical needs, as well as crop seeds, livestock care, and luxuries such as pesticides or proper fertilizers for crops. Income comes from selling crops in the local markets, selling goods produced in the home, such as clothing, and renting out plots of land to other families. Needed items are often not purchased but traded with local families and merchants.

Seventy-four percent of children in Kenya attend primary school, but only 24% move on to secondary school. Kenya has an 82% literacy rate. Children of impoverished subsistence farms often do not attend school due to the necessity of their help on the farms. The more money a family has the higher likelihood the children will attend school. There are public schools in both urban and rural areas for the children to attend. There are fewer schools in rural areas than in urban and many in the rural areas are not the highest quality. 64% of the population is located in rural areas.

Family farms in Kenya grow corn, manioc, beans, sorghum, fruit, coffee, tea, potatoes, sisal, wheat, pyrethrum, coconuts, pineapples, cashews. Of these crops corn, beans, potatoes, and wheat are the most commonly grown largely for eating while the others are sold. Tea and coffee are Kenya's main exports. Families often sell their crops in local markets. While farming the land a family may also raise pigs, chicken, and cattle receiving dairy goods and eggs as well as meat from them. Some families are nomadic raising cattle and moving with their herds across the country. They move according to seasonal pasturage. Cattle herding groups may grow subsistence crops, but they depend on herd animals. Most of rural Kenya has herders, not crop farmers, because of climate. Farming will not work in much of the country. Others, living along lake Victoria, rely mainly on fishing. The settled families eat a diet of corn, wheat, and bean products along with fruits and a smaller amount of meat and eggs. Many of the foods eaten are harvested directly from surrounding areas, found growing wild. Families do not often slaughter their animals for food so meat consumption is fairly low.

Each farm is fairly small, producing enough food to feed the family and some to sell. There are main crops grown in larger fields while smaller fields exist to grow smaller amounts but larger varieties of foods for the family to eat. Only 17% of Kenya's consumed food is imported to the country and that is mostly for the upper class citizens.

The average per capita calorie consumption is 1,886 kcal per day. This is less than the average per capita healthy amount of 2,000 calories to be consumed. This shows that the people struggle with providing themselves with enough food and face malnutrition. Some very impoverished families live near starvation. Also, only 57% of the water consumed is considered safe to drink. This poses many health problems with water-borne diseases.

Major barriers to improving food and nutrition security include issues dealing with farming practices, farmers' ignorance of sustainable actions to take, and variations in the weather. Over-cropping takes place, which leaves the land choked, degraded, and often infertile. Farmers often grow the wrong crops in the wrong places causing low rates of crop growth and problems with soil degradation. Droughts cause problems because virtually none of the small subsistence farms have other ways of irrigating crops other than the rain. Also, in some areas, nonstop rain drowns fields and farms. Erosion has carried away much of Kenya's fertile topsoil. Lake Victoria has been clogged with this soil, killing many fish. Nomadic cattle herders travel great distances seeking pasture, and their animals trample large areas of land.

A subsistence farmer in Kenya cannot produce crops on a large scale if he does not know how to do so. It is hard to prevent problems such as soil erosion and degradation without knowing what to do to stop it. One also cannot eat enough if they do not know how much enough is or other things such as what foods provide how much energy. Also, one cannot eat enough nutritious foods if one does not know what foods are high in certain needed nutrients. There is also the problem of sheer lack of enough food. If a family farm was educated on how to grow enough food to eat as well as sell they would have enough income in order to meet their needs by purchasing food and other things.

Environmental problems are caused by farmers' lack of education on how they are polluting the environment. Water is polluted by run-off from fields fertilized with straight manure and from pastures where cattle graze. Lake Victoria and some other lakes and rivers are clogged with dirt killing plant life and fish. Soil has been losing its quality due to erosion caused by improper planting. Natural plants and animal habitats have been destroyed in order to grow crops. Economic policies need to be put in place in order to stop the harm to the environment. Subsistence farmer education funded by the government needs to be put in place as part of an economic policy in order to help the environment, family farms, and the over all well being and income of the country.

There has been little effort towards education of the family farmers. In the cities there are resources available in order to educate a farmer but it is not accessible to many rural citizens. There has been no centralized effort to educate the majority of farmers on sustainable development issues.

With 64% of the people living in rural areas, and 80% of these practicing subsistence farming or cattle herding, the situation of food insecurity is severe. The people living in the urban areas are those that raise the general standards per capita with wage income and calorie consumption. Those in the rural areas, in general, receive less than the average of the per capita measurements. This means that nearly 52% of the population does not earn enough money, eat a well-balanced diet, or receive enough calories. Each person in the country is falling about 115 calories short of the average requirement human beings each day. The average income of each person is very low on the global scale and does not provide for many needed or very helpful supplies in the home or food wise. The poor in Kenya also receive less protein and other nutrients needed for good health.

Women in the country are not, for the most part, at a disadvantage to men. Women help on the farms as much as men do and are treated equally in work done. In fact, women in Kenya have started a safe water committee of sorts in an effort to improve water quality and keep their families drinking safe water and teach others to do the same. Both men and women have an equal opportunity at receiving education.

Rural poor are at a great disadvantage to receiving education. They have little money to find needed resources for knowledge and live far from cities where that knowledge would be available. Urban poor are at a disadvantage, but much less than rural, because they are near the information. The poor also cannot afford to spread the knowledge to other farmers and cannot afford to attend college which would give adequate information on sustainable development. Even some in urban areas may have no access to information about sustainable practices because there are no libraries or institutions of higher learning in the cities.

The trend for rural subsistence farmer education is a small jump in the amount of education being offered to the farmers. Education of the people is measured by looking at private and public movements as well as economic, environmental, and agricultural policy issues concerning a move towards sustainable development. However, by looking at the average income per capita, the average calorie consumption per capita, percentage of unsafe water being used, and environmental damage caused by farming, can developers accurately assess view on how much citizens know about farming and feeding themselves?

There is more education for subsistence farmers occurring in Kenya, but not on a large scale. Kenyans have been offered education on expansion of horticulture and access to credit and business services by USAID, which has led to a small increase in rural incomes. USAID has also trained 6,350 teachers in the Northeastern and Coast Provinces in order to educate children in public schools in those areas, which will give the young a base of information to draw from. This may help with sustainable development in the future. USAID is helping communities manage their resources in more sustainable ways. The program set up by USAID focuses on community-based wildlife management, forestry and environmental management, and coastal zone management. 770,000 hectares of land are being put under improved management, \$652,000 U.S. dollars in revenues from nature-based businesses has been earned, and 1,200 new jobs have been created to deal with the many issues. Parliament has enacted an environmental bill and is working on a land policy review process and forestry and wildlife bill.

The average annual per capita income of a citizen of Kenya in 1992 was \$378. Today it is \$271. The income has been steadily decreasing. There are few private or public efforts to educate communities in Kenya on sustainable development and also little activity in Kenya's Parliament on this issue. Fifty-seven percent of the available water that is used daily is potentially unsafe. Environmental damage is occurring without strong countermeasures. The average calorie consumption per capita is under 2,000 per day, coupled with nutrient deficits. Due to all of the factors of decline, and the lack of education towards sustainable development, the situation in Kenya with lack of food and poor nutrition is getting worse.

The local farmers need to be educated in order to run more productive farms. Without knowledge of when and where to plant certain crops for the highest productivity, farmers cannot get the best yield. Citizens also need to be taught what to grow in order to be healthy. Nutrient and calorie deficient diets lead to health problems and could be helped by teaching people what to eat and how much. Citizens could be taught crop rotation to preserve soil tilth or ways of breeding hybrid crops in order to produce more food. Proper use of the land should be taught so that soil erosion and degradation does not occur on such a large scale. The use of fertilizers and pesticides to help plants grow and hinder insect infestations could also help.

Education of local farmers towards sustainable development would help increase the amount of food, the nutrition received, and the income made by each family. The environment, including plants, animals, and the land and water quality would not get any worse in the future if farmers were taught how to sustain it. Also, small farmers would have an improved quality of life along with other citizens in the country.

There are many steps that could be taken in order to improve food security in Kenya, although costly. Kenya's national government, the United Nations, World Bank, volunteer organizations, private citizens, and other countries' national governments need to work together in order to help Kenya. The help given needs to be integrated into rural Kenyans' former knowledge in order to prevent alienation of the citizens and ensure that the development will not fail. Research suggests that economic development schemes fail about twice as often if the affected people are not included in planning and policy making.

The World Bank needs to make reforms to its Structural Adjustment Programs in Kenya in order to stop pushing the country into further debt. The World Bank and the United Nations could forgive Kenya of much of its national debt in order to bring it out of the third world. In this way the national government of Kenya could focus on the internal issue of food security rather than its place in the international community. The World Bank being more lenient on Kenya would allow government services to continue, rather than redirecting government income to debt repayment.

Private citizens and civic or private organizations could raise funds to donate to education programs in Kenya. Volunteer groups could make trips to Kenya to teach them new farming practices and donate items such as fertilizer and pesticides. These groups could teach such concepts as crop rotation and proper diet.

The national government of Kenya could set up settled farms for nomadic herders in order to keep their cattle confined. This way more land could be used for crops in order to feed these cattle and less land would be trampled by the herds. Also, the national government could spread education of proper diet and environmentally friendly farm practices. Regulations could be put in place in order to protect the environment.

Farmers need to be taught how to maximize crop growth by using proper planting practices. The government could encourage or even dictate land areas for certain families according to their ability to farm it to its full capacity and give them the equipment and knowledge necessary to farm this land properly. Soil erosion and chemical run-off into rivers and lakes need to be stopped by planting vegetation that holds the soil or building tiles.

Water sanitation plants need to be set up in order to treat local water sources and make them safe to drink. The United Nations could help Kenya to set up these institutions and the government could employ people to work in them.

In conclusion, a concentrated effort needs to be made in order to improve food security in Kenya. Education of the local family farmer is a key part in gaining food security. The national government needs to step in setting up programs and educational opportunities for the people. The entire world could join hands in order to bring Kenya out of its food crisis.

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