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Tanzania, Factor 4: Animal Health

Tanzania: East Coast Fever and its effects on farm families and economy of the country

Tanzania is a country in East Africa in the African Great Lakes region. It is bordered by Kenya and Uganda to the north; Rwanda, Burundi and Democratic Republic of the Congo to the west; Zambia, Malawi and Mozambique to the south, and the eastern coast is the Indian Ocean. The population of Tanzania is 44.9 million with 51 percent of those below the poverty line.

Today, 80 percent of Tanzanians are employed by the agricultural sector, which accounts for half of the national income and three quarters of the merchandize exports in the country. The average farm size is between 0.9 hectares and 3.0 hectares with 5.1 million hectares cultivated annually, of which 85 percent is food crops. Even those who have access to more land struggle to benefit from it, lacking all but the most basic hand held tools. Main crops grown for domestic consumption are maize/corn, cassava, beans, rice, millet, wheat, potatoes and bananas. The bulk of the country's export crops are composed of coffee, cotton, cashew nut, tobacco, tea, cloves and oil seeds. Cattle, goats and sheep are raised, with cattle meat being the second largest agricultural product after bananas. Fifty-seven percent of households do not have enough nutritious food to eat.

The average family consists of five people with more females than male members, which explains why women compose the primary source of the agricultural labour force in the country. Unfortunately many children in Tanzania still do not have access to a quality education. In 2001 the government abolished school fees for primary schools, but families still have to pay for school uniforms, books, school materials etc., which means education is very often still unaffordable. Secondary schools are not free and the price to attend varies, depending on the school. Many families cannot afford secondary school, especially if they have a large family. Only 69.4 percent of those older than the age of 15 can read and write. Five is the average number of years which students attend school.

Health care in Tanzania is available depending on accessibility and level of income. People in urban areas have better access to private and public medical facilities than those in rural areas. The inefficiency and lack of regulation in the health facilities remain a major concern for quality of health care. Stricter enforcement of user fee exemptions is needed to provide health care to those who cannot afford it, especially pregnant women and children under the age of five. Tanzania also faces a generalized HIV epidemic in adults. Among the 1.4 million people living with HIV/AIDS, 70.5 percent are 25 to 49 years of age, and 15 percent are 15 to 24 years. In young women ages 15to24, there is an HIV prevalence rate of 3.8 percent, as compared to the 2.8 percent prevalence rate among young men in the same age group. More than half of the available hospital beds are occupied by HIV infected people.

Food security and poverty are the main challenges Tanzania faces today. Environmental issues such as deforestation, desertification, soil erosion and air pollution are not given appropriate attention by the government. Small farmers continue to be displaced by foreign enterprises and the countries resources are exploited nearly to depletion. Inadequate and unsustainable policies, inappropriate technologies and insufficient rural infrastructure and institutions, combined with factors such as desertification, deforestation and the high incidence of pests and diseases, have led to increasing poverty, food insecurity and stalled development.

Tanzania is among the world's least developed countries, ranking 128 out of a total of 169 countries in the 2010 human development index. Gross national product grew by six percent in 2009, down from 7.4 percent in 2008, primarily due to the global financial crisis and the 2008-2009 drought, which affected agricultural production, hydro power generation and industrial production. Despite the fact that agriculture employs a huge number of people in Tanzania, for at least 6 years now, no more than 7 percent of the entire national budget has been allocated for the purpose of improving the agriculture sector. According to the (2007) House Budget Survey, about 33.6 percent of mainland Tanzanians lives below the basic poverty line, while 16.6 percent live below the food poverty line. The number of poor people has increased in recent years and the unemployment rate is rising, with approximately 11.7 million people unemployed. The gap between the rich and poor is getting wider.

Land grabbing by state bodies is on the rise in favor of foreign investors. An examples is the signing of mining contracts (e.g. Buzwag and Dowans, and PTL), which have been detrimental to local people who are being forcibly evicted to make room for foreign enterprises.

Deforestation is one of the main environmental problems that threaten the country, with the overall forest cover falling by 15 percent between 1990 and 2005. Soil erosion and pollution are very concerning in mining sites. As an example, North Mara Gold Mines, in January 2008, piled up about 2000 tonnes of toxic debris without any precaution or assessment of its impact on the surrounding communities. When the rains came, the debris was washed into River Tighite, which serves the villages of Nyakunsuru and Weigita in the Mara Region, causing fish and trees to die.

Challenges in the agriculture sector include a lack of appropriate agriculture policies and practices, as well as lack of funding to - and poor utilization of - the agriculture budget. To add to this, agricultural field technicians are unmotivated and inexperienced. Dependence on developing partners is another obstacle to the sustainability of agriculture, since most of the budget for development comes from donors. In fact, for the 2010 budget, all the funds to be allocated came from development partners. Due to this limited budget, farmers and livestock keepers are unable to fight food insecurity, while their very low incomes do not allow them to meet even the minimum standard of life.

The country has a number of policies and laws focused on food security. The Food Security Act of 1991, for example, established a Food Security Department to oversee the establishment and management of a strategic grain reserve. Other institutional mechanisms that are relevant in this regard are the National Food Reserve Agency and the National Food Security Division. The aims of the two are to maintain an optimum national level of food reserves to address local food shortages and respond to emergency food requirements, as well as to guarantee national food security by producing and reserving food stocks in an efficient and cost-effective manner.

Despite all these efforts, the challenge is still looming. For example, in June 2009 the Ministry of Agriculture announced a severe lack of food in the Chamwino district in Dodoma region, with a total of 17,080 households being unable to afford daily food. In order for the district to satisfy its basic needs, 63,501,000 kg of food is required, while the realized production for 2008/2009 was only 12,178,000 kg. This is due, in part, to the inadequate measures undertaken by the institutions set up under the Food Security Act. More reasons include the use of inappropriate technologies, desertification, deforestation and the incidence of pests and diseases; and compared by inadequate rural infrastructure, as well as weak and underfunded rural institutions.

Since 1990 Tanzania has been implementing a sustainable development strategy that pays special attention to environmental issues. A National Environmental Action Plan was established in 1994, leading to the adoption of the 1997 National Environmental Policy and to the drafting of the National Strategy for Sustainable Development in 1998.

Despite this policy structure, the country has not succeeded in coping with environmental challenges. This is due mostly to insufficient institutional frameworks for coordination, limited government capacity for environmental management, and insufficient involvement of local authorities and communities in environmental management and conservation. Poverty is also a key factor. It adds to environmental degradation, though, the use of wood as a source of energy, which contributes to deforestation and soil erosion. Throughout the country, energy utilization is characterized by a high consumption of traditional energy sources such as wood and kerosene for light. In addition, the high cost of power production of more modern energy sources is far too much for the poor country of Tanzania.

To achieve sustainable economic development, the government needs to focus on issues such as rural development, agricultural improvement and economic empowerment of the rural population. Foreign investor contracts need to help and not hinder the local producers and traders. Problems such as unemployment and the widening gap between the rich and the poor, need to be addressed.

East Coast Fever (ECF) is caused by the protozoa *theileria parva*, and is transmitted by the brown ear tick called *hippicephalus appendiculatus*. It kills and makes cattle sick, inducing high fever and swelling of the lymph nodes. ECF greatly affects agriculture productivity in eleven countries found in southern Africa. Annually, it kills approximately 1.1 million cattle and is said to kill a cow every 30 seconds. In Tanzania, it costs the country's economy 43 million US dollars. Calf mortality rates in Tanzania are 40 to 80 percent with ECF accounting for 75 percent of the death toll (GalvMed). The imported breeds that are bigger, have a higher milk yield and produce larger calves are more susceptible. Animals that do recover have less market value, yield less milk and suffer from stunted growth. Cattle may suffer from weight loss, provide less draft power, yield less milk, and demonstrate reduced fertility and delayed maturity. Time and money is also spent on moving cattle to and from dip tanks, where cattle are washed with water and sprayed with chemical to kill ticks that carry the disease. Preventative treatment drugs like acaricide can cost farmers from \$2 to \$20 dollars per animal, which all comes out of the farmer's pocket. For all these reasons, ECF is a major problem in the agriculture sector in Tanzania and other southern African countries.

East Coast Fever also seriously affects household income in Tanzania. The losses from ECF are devastating for subsistence farmers, who rely on what they raise to eat and survive. With calf mortality rates close to 80 percent it is hard for farmers to even think about expanding their herd. With the chance of a whole herd being wiped out in one year, farmers might not even be able to put food on the table. Even if the cattle do survive, household income decreases significantly due to the lost production. With the cost of treatment also being so high, the financial burden on farms is through the roof.

Food availability is a huge concern in developing countries like Tanzania and ECF does not help with that problem. With high death rates in cattle, there is less food for domestic use and for export sale. If an animal is infected, its meat is worth less. Treatment chemicals might also have long term impact on food safety from the residues in the dips being passed onto consumers through consumption of the milk and meat.

The mental toll on a typical farm family is immense. With the chance of all your income being wiped out in one year from the epidemic, the worry over losses can break people down.

The present status of ECF is that it is killing cattle at an alarming rate. It is spreading quickly, approximately 30km per year, endangering more and more cattle. There was a vaccine developed approximately 15 years ago, with successful outcomes in trial studies. Despite the success, Tanzania has not felt the full benefit of the vaccine because the vaccine must be stored in liquid nitrogen and be administered with antibiotics. The vaccine is also very expensive and difficult to access. The total cost to immunize an animal is approximately eleven dollars. In Tanzania there are over 12.5 million cattle. To vaccinate all the animals would require a substantial amount of money that the individual

farmers, and even the government of Tanzania cannot afford. To this day, ECF is worsening. Trial studies have shown that ECF could be successfully treated with immunization but this remains an unviable option for most farmers without the support of the organizations to help offset the cost and problematic delivery of the vaccine. At this point in time, the majority of cattle remain unvaccinated.

If the impact of ECF is reduced, it would greatly improve the way of life in Tanzania. When the vaccine was used in trial studies, calf mortality rate dropped to 2 percent. The animals remained healthy and more productive, which translated into increased profits, less stress for farmers and stability to grow their herds. Many farmers used the increase in profits to pay for education for their children. Farmers were able to buy the better imported animals without the fear of ECF. They also did not have to spend money on dips and acaricides.

The effects of climate change on livestock production and health could be an additional significant burden to the already existing problems that hold back the livestock development in Africa (Van den Bossche, 2008). Climate variability will have a serious effect on pastoralists whose livelihood depends upon livestock for food, economic security and cultural preservation. The impact of climate change increases the problem of water scarcity as well as pasture land shortage and disease dynamics. Diseases in livestock result in severe effects on livestock survival, marketability, animal health and livelihoods (Gardner, 2012).

The Human Development Report states that human use of water is mainly allocated to irrigation and agriculture. In developing areas, such as those within Africa, agriculture accounts for more than 80 percent of water consumption. Since the majority of Africa remains dependent on an agricultural lifestyle and 80 to 90 percent of all families in rural Africa rely on producing their own food, water scarcity translates to a loss of food security.

One way to affectively address ECF would be to implement a nationwide immunization program. Unfortunately at this time the government appears to be unable to develop, implement and fund such an initiative. Also after decades of battling ECF, most cattle owners are unable to afford to cover the cost of such an initiative on their own. In essence this then leaves the burden of combating ECF to groups like GalvMed (Global Alliance for Livestock Veterinary Medicine) and the Bill Gates Foundation, whose objective is to save human life by protecting livestock. Currently such groups are working to pressure and help fund pharmaceutical companies to develop a more efficient vaccine. They are also trying to develop distribution and delivery systems for use with the current vaccine. Without the participation of NGO's and funding from foreign countries the nationwide immunization program would not be plausible.

In the past, local residents have been cautious to participate in new practices like the suggested immunization program. However, the positive feedback from local residents who participated in the trail studies previously offered by NGO's could be used to overcome any such barrier. Local cattle owners who have benefited from participation in the studies could become spokesmen advertising the benefits of the vaccination program. Usually, when cattle owners see someone similar to themselves benefit from a new practice they are themselves more willing to try it.

As a cattle producer in Canada, I was unaware of the devastation caused by ECF in Tanzania. I believe that any lack of action and support by ordinary Canadians is reflective of a lack of knowledge on the subject and not of a lack of desire to help. Increased awareness in developed countries would result in ordinary citizens pressuring their governments to fund needed foreign aid programs as well as NGOs who are working to address the problems. Currently there are many programs that exist that allow citizens to donate money to adopt animals or municipal works projects in developing countries. I would like see the development of programs set up similarly that would allow citizens to support the cost of immunizing cattle for ECF. Even the use of microloans would be beneficial. I know the economic impact of losing an animal and would be willing to sponsor vaccines programs elsewhere to help other cattle producers worldwide.

In conclusion, ECF is a tick born disease that is ravishing Tanzania and surrounding countries. It is killing more and more cattle each day despite the existence of a known vaccine. The impact of ECF is crippling the Tanzanian government and its local residents. The loss of income caused by ECF prevents proper nutrition, healthcare, and education. ECF is holding back many from reaching their full potential, and as a result is it holding back countries from reaching their full potential as well.

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