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Burundi, Factor 20: Farm to Market

The Republic of Burundi is a landlocked country located in East Africa with a population of ten million. The climate of Burundi is tropical highland, with irregular rainfalls, often leading to drought conditions and difficulties in crop yield. Ranked 167th out of 177 countries in the Human Development Index, Burundi is characterized by high rates of birth, infant mortality and maternal mortality, among the worst in Africa. Family sizes tend to be large, consisting of six, seven, or even eight children. The majority of families support themselves through subsistence farming with a diet composed of beans, corns, millet, sorghum, cassava, sweet potatoes and bananas. With 80% of the population under the poverty line, meat is rarely consumed due to cost. (CultureGrams. Web)

Education is free and mandatory for children ages 7-12. However, only 50% of the youth attend school, instead choosing to work on the farm to help feed the family. (CultureGrams. Web) Gender roles are present and rigidly defined. Women are responsible for housework while children and men are in charge of the land and farm. The sons of the family inherit the land while the daughters are expected to find a husband and marry.

The healthcare system in Burundi is in poor condition. Although most provinces have a central hospital and several health care centers are present, there is an acute lack of doctors and nurses. Receiving medical services is too costly for the typical Burundi families. Malaria, influenza, diarrhea, measles and AIDS/HIVS are spread throughout the population. Malnutrition is very common, with over two-thirds of the youth population medically undernourished. (CultureGrams. Web)

Due to civil unrest, irregular rainfall, and lack of fertilizer, only 43% of Burundi's land is arable, leading to violent land disputes and consistent food shortages. The average plot size per household is a quarter hectare plot. The primary exports are coffee and tea. Local crops grown include manioc, beans, bananas, sweet potatoes and sorghum (IRINews. Web).

There are major barriers to improving agricultural productivity, employment, and gaining adequate nutrition. Conflict, drought, and deteriorating soil conditions have all contributed to the poor agricultural productivity. Soil erosion is a common problem due to the hilly landscape.

While there a variety of other factors, the biggest barrier to attaining healthy levels of agricultural productivity is the weak, decrepit infrastructure present in Burundi. Infrastructure plays a vital role in a family's ability to produce food for its members. Weak infrastructure creates a blockade between rural, agricultural areas and urban markets. With urban markets linked with global trading markets, it creates difficulties for the economy and lack of profit for farmers.

Out of the 14,480 kilometers of road, only 1,028 kilometers of these roads are paved. Overall, there are 19,000 passenger cars and 12,300 commercial vehicles (Exegesis Consulting/Strategic Management

Concepts Inc. 15). Typically, only the wealthy own cars while the middle class and poor travel by foot or on bicycles. Public transportation is limited with only 90 public buses, few of which are operational. Only one of the eight airports has a paved runway. There is no railway infrastructure. An indirect effect of infrastructure can be shown through decreasing water supplies in Lake Tanganyika. As the supply decreases, the issue may threaten the populations of surrounding countries, such as Tanzania and the Congo, and create conflicts between nations.

One of the main causes for the lack of development in Burundi can be attributed to the ethnic conflict that arose between the Hutus and Tutsis from 1993 to 2005 (Lemarchand 34). During World War II, Burundi was regulated by the Belgian military. Belgium strongly reinforced the hierarchy present between the Hutus and the Tutsis. After the independence of Rwanda and Burundi, Burundi chose to maintain the social hierarchy previously enacted by Belgium. Over the years, this ethnic tension increased to a breaking point on October 21st, 1993, when Melchior Ndadaye was murdered by Tutsis extremists, who did not see him fit to rule. This created a 10+ year feud between the two, which resulted in over 300,000 casualties.

Infrastructure is measured through performance and GDP. This includes measurements in electrical outages per month, kWh per capita etc. Other measurements include increases in kilometers of road and amount of transportation mechanism present such as cars, trucks, and buses. An increase in these measurements would indicate that the economy is growing hence more employment and poverty reduction.

These indicators indicate an increase in infrastructure in the past ten years. Economic growth increased from 4.5% in 2013 to 4.8% in 2014 along with a decrease in inflation. In March 2012, inflation was at 24%, but decreased to 3.5% in October 2014 (World Bank. Web). From 1990 to 2008, there was an increase in improved sanitation facilities (% of population with access) along with improved water source (% of population with access). In 1990, the improved sanitation facilities were 42%. It increased from 42% to 46% in 2008. In 1990, the improved water source was 69%. It increased from 69% to 74% in 2008 (World Bank. Web).

In the past few years, there have been attempts to improve the infrastructure. On September 24, 2014, the Board of Directors of the African Development Bank Group (AfDB) approved a \$29.49 million grant to help fund the Nyakararo-Mwaro-Gitega Road Improvement and Asphalted Project in Burundi, covering 95% of the total cost. (African Development Bank. Web) This project attempts to boost trade by creating easier pathways to import and export goods. It also helps local farmers access roadways and increase marketing for their produce through the improvement in socio-economic infrastructure.

On March 31st, 2015, the World Bank approved a \$25 million grant by the International Development Association with the goal of drainage infrastructure and inter regional roads (World Bank. Web). The grant is meant to create stability in Burundi's competitiveness and increase economic growth.

The World Bank also established the Multisectoral Water and Electricity Infrastructure Project on May 13th, 2008 (World Bank. Web). The stated objective was to increase reliability and accessibility in water supply and electricity services. This will be done through two investments. First, there will be investments towards electrical systems which will reduce the supply and demand gap towards zero.

Second, there will be investments to increase water access and rein enforce water systems. Overall, the economic rate of return will be 13.0 percent. The results were miraculous. 126 out of the 130 pipes are operational, providing a number of people in urban living spaces with sanitized water (World Bank. Web).

There is a strong relationship between infrastructure development and economic growth. Adequate and accessible rural infrastructure is a prerequisite to stable increases in agricultural output in the overall community, which would increase farmers' profits and decrease poverty levels. In Burundi, the agricultural sector produces 50% of the overall GDP, making agriculture the core of the economy. Thus, agriculture development provides the stepping stone for future development in non-agricultural industries. This stepping stone is shown in almost every high/middle-income with the exception of Singapore and Dubai.

Physical infrastructure can be divided into two groups. First, water supply and sanitation. Second, irrigation, energy, telecommunication, and transportation. There is a causal relationship between water supply and sanitation and health condition and productivity. An indirect effect from water sanitation leads to a poverty reduction because it improves living conditions and life expectancy as well as conditions for farming and production.

Bourguigon writes, "Infrastructure also reduces poverty directly by providing and supporting the delivery of key services, such as access to safe water and basic sanitation, especially in the very early stages of development" (187)

Second, an increase in development of irrigation, energy, telecommunications, and transportation strengthens access to markets and trade, which in turn creates profit for rural farmers.

There is strong empirical evidence of the strong relationship between infrastructure, economic growth, and improved agricultural productivity.

First, Fan and Zhang presented an econometric analysis on the effect of infrastructure on Agricultural Productivity and Output in China in 1997. There was a control in endogeneity (correlation between variable and error term). An investment in irrigation created a 1.88 increase in agricultural GDP. An investment in roads created a 2.12 increase in agricultural GDP. An investment in electricity created a .54 increase in agricultural GDP. (Bourguigon 179)

Second, in India 1984, Antle performed a study between irrigation and rice production 100kg per farm. There was a .28 increase in overall production. However, this study was not controlled for endogeneity. (Bourguigon 179)

Third, in Thailand from 1977 to 2000, Fan, Jitsuchon and Methakunnavat performed a study between the investment of irrigation and agricultural output. There was a .71 increase in agricultural output (Bourguigon 179). This study was controlled for endogeneity.

As of 2015, the population of Burundi is 9.2 million people. However, with a growth rate of 3.1%, it is expected to become 13.7 million by 2050 (Bourguignon 179). Population growth puts a strain on physical infrastructure. Basic needs such as housing and water supply are on the line.

This is shown in a case study of Nairobi in 2012. Due to the deteriorating conditions of roads from high population growth, traffic congestion is created. The status of the original roads also contributes to the condition. They were built to be 5.5 metres because they were intended for a small population and single dwelling units. As the population grew, it became too expensive for the City Council of Nairobi to maintain them. (Asoka 42)

The most effective long term solution that should be established would be the startup of a core infrastructure program. This project would aim to establish basic infrastructure through the course of twenty years. It would orient itself around establishing a power grid, international airport, telecommunications along with a national highway system. The national airport should be centered in Bujumbura, as it is the capital and is one of the only two developed cities. Although power would be established in all cities eventually, the start of the project would begin at key farming locations and slowly work its way to ports- which would also most likely be Bujumbura.

Through the establishment of basic infrastructure, it would be able to create a foundation to increase agricultural output. Often times, those that rely on subsistence farming do not have access to ports. With the establishment of roads, these farmers would have access to international markets. More goods could be exported and imported due to development of an international airport, creating a preliminary step to addressing Burundi's land lock situation.

In terms of cost, the estimated total would be around 4.6 billion dollars. This money can be acquired through three main sources: the Government of Burundi, donor parties, and private sectors. Because of the limited financial ability, the Government would provide 27.3% of the overall funding, with majority of the funding centered on power (African Development Bank 87). It is vital to provide a large portion of funding towards this sector. This is because it has the most potential to grow substantially due to its high probability that its customer base will always be expanding.

The second source of funding comes from donor parties, foreign powers that contribute funding to developing countries. In its current position, Burundi receives 450 million dollars a year from these donor parties. This allows the donor party to provide 56% of the total funding (African Development Bank 87). This funding would center on transportation infrastructure, specifically roads. This is because it is the only source that would have adequate funding in setting up a road system. If the private sectors or Government of Burundi backed this sector up, there is a stronger chance of experiencing lack of funding.

The last source, private sectors, would fund the remainder portion- 16.7%. (African Development Bank 87) These funds would be used to "fill in the gaps" in the other two sources. Thus, the funding would be split towards the more important sectors, such as power, to enhance roads or provide roads to cities that are not of immediate value- aren't seen as a farming core, do not produce much output, etc..

Because of the time it takes for this infrastructure to develop, the people of Burundi would be able to make a slow transition from their current way of living to a shift in modernity. Farmers would decrease their amount of subsistence farming as more and more roads are built, giving access to ports to sell goods. This shift would not take place overnight, but rather over the course of months and years. The government would also be able to slowly build up more and more responsibility in handling finances, which can be dealt with through skilled workers and a dependency for people- which is not present in the status quo because families tend to operate individually (subsistence farming). This unity could also cause a rise in nationalism overall in the country.

A primary issue that could arise in the development of this project is the degree to which the government is corrupt.

The Government of Burundi enacts politics in the realm of neopatrimonialism. This practice was common in the colonial period of Burundi's uprising as a country. Those that were in power, would provide monetary funding to those of the lower class in order to create balance and decrease in tension between the classes. However, in modern times, this method continues to fail. This is because the bourgeoisie class now enact these form of politics as a way to dictate and control the actions of the proletariat. In exchange for monetary funds for living, as 80% of those in Burundi suffer from levels of poverty, the proletariat continue to support the bourgeoisie, creating an endless cycle of power. It is difficult to measure the effects because of its secrecy and how the government is able to dictate what information is sent and received.

A short term solution that could address both the issue with infrastructure and the corruption of the government would be to increase the ability for countries to privatize within Burundi. In its current state, 90% of private companies have 50 people or less (International Crisis Group. Web). This is largely due to two factors. First, lack of projects. Second, the ability to create profit is weak. If the government was able to give the companies the ability to privatize, it would give the company owners an incentive to create profit, progressing infrastructure as a whole. It would also address government corruption because it creates dependency between the two, rather than one having the upper hand. The private companies would need profit, which only the government could provide and the government would need those that can develop this infrastructure in a rapid manner- people that would be able to put it as their priority- unlike the government, which has to deal with a multiplicity of issues at a time.

However, this short term solution would create a further division between the Hutus and the Tutsis. This is because in the status quo, the Tutsis have the upper hand in wealth and business control. This would most likely cause a greater divide between the workers and the owners of the private companies. Thus, it would be wise to have a mediator, such as the leader of each of the ethnic groups to constantly meet and resolve conflicts in a gradual manner rather than allow the tensions to build up over time, which would eventually cause a breaking point.

In Burundi, infrastructure has taken a grand toll in the overall development of the country, especially its ability to produce funds. A long term solution that should be enacted is the startup of a core infrastructure project which would aim to improve the basic infrastructure of the country. This would allow unity to develop, allowing farmers to transition from subsistence to commercial farming because of access to ports and roads. However, government corruption puts this project at risk. A possible short term solution that could emerge is the increase in privatization for private companies. This would give companies more incentives to produce goods that could increase the overall GDP of the country along with improvements in infrastructure. A risk this solution takes is the ethnic tension that would result because of the status of power the Tutsis' would possess.

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