

AGR 1110 Final Paper: Canadian Export Technology

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Agriculture in Nepal

Agriculture is the major sector of employment in Nepal (Government of Nepal, 2014). Sixty-six percent of the population is employed in agriculture and it contributes to approximately thirty-nine percent of the gross domestic product of the country (Government of Nepal, 2014). Thus, the national economy is directly connected to the agricultural industry within Nepal (Government of Nepal, 2014). The main problems in the country of Nepal are high population growth, limited land, and growing poverty (Government of Nepal, 2014). Nepal is landlocked and has a population of approximately twenty-seven million people (Joshi, 2012). The total area of Nepal is approximately 147 000 kilometers squared (Joshi, 2012). Nepal consists of three major geographic regions including the Terai and the inner Terai, the Hills, and the Mountains (Joshi, 2012).

The Terai and the inner Terai are the most suited areas for agriculture because they lie at the lowest altitude (Joshi, 2012). The climate in this area is subtropical warm and humid (Joshi, 2012). This climate is suitable for growing three crops per year (Joshi, 2012). Since the Terai and the inner Terai are most suited for agriculture, most of the population (forty-eight percent) is located here, and it has fifty-six percent of the country's cultivated land (Joshi, 2012). The Hills are second compared to the Terai and inner Terai, with approximately forty-three percent of the country's population and thirty-seven percent of the country's cultivated land (Joshi, 2012). The Mountains only has 7.3 percent of the country's population and also only seven percent of the country's cultivated land (Joshi, 2012).

Nepal is considered a poor country because one fourth of the population in Nepal still lives below the poverty line (Kandel, 2013). The agricultural industry must change through implementing new technologies as necessary that will enhance the lives of Nepalese farmers (Kandel, 2013). Through enhancing the agricultural industry, it also enhances two-thirds of the population of Nepal. Agricultural enhancement will result in less people that live below the poverty line and it will better the country's economy (Kandel, 2013). A new technology that is presented to Nepal that would benefit the country and its people is a produce washing and drying machine produced by the Canadian company Weening Brothers Manufacturing. It is targeted to improve the lives of farmers and to be shared among a community. It is the first step in helping Nepal pull itself out of poverty and to improve the lives of the average Nepalese farmer.

Part I: Product Info

Technology Description

The technology that is being explored as a potential export to Nepal that will benefit both Canada and Nepal is a produce washing and drying machine, specifically the Drying Tunnel Wyma (WBM, 2014). The produce washing and drying machine is produced by the Canadian company Weening Brothers Manufacturing, located on Highway 88 in Bradford, Ontario (WBM, 2014). WBM produces post-harvest technologies on a global scale (WBM, 2014). A washing and drying machine reduces degradation, bacterial growth, and disease initiation of the produce (WBM, 2014). In WBM's customer testimonials, customers from across the

globe, including Holland and Denmark, have left comments on the equipment bought from them (WBM, 2014). This provides more certainty for the possibility to export to Nepal through the use of the company's already existing export resources.

Market Opportunity

An entire community of farmers would use the produce washing and drying machine. They would have to purchase the technology as a community and place it somewhere where the entire community can have access to it. The reasons for this are because the produce washing and drying machine is an expensive technology and because it is able to support an entire community.

There may be problems with having a Nepalese community purchase a produce washing and drying machine from Canada because the average annual income for the average Nepalese farmer is approximately \$180 per year (Nepal: Poverty and Incomes, 2011). Therefore, even if the entire community were to combine this money, they still would not be able to afford the technology. After all, the money they make per year is needed to purchase food and to support families. The only way a Nepalese community would be able to purchase this technology is by means of government funding. The government would have to purchase the produce washing and drying machine for the community and the community would have to already have access to electricity, shelter for the piece of equipment, and an individual who knows about the mechanics.

Farms in the Mountain region of Nepal are too far away from Nepal's power grid line (Handwerk, 2012). This makes it impossible to export the produce washing

and drying machine to this region of Nepal (Handwerk, 2012). However, other regions of Nepal, specifically the Terai and inner Terai are located within the power grid of the country and have a better chance at implementing a produce washing and drying machine from Canada (Handwerk, 2012). Therefore the market opportunity is going to be mostly in the Terai and Inner Terai region of Nepal. The technology would be shared within a community of farmers through the help of government funding for the technology. Some issues related to government funding will be mentioned later.

Inputs Required

Electricity

The produce washing and drying machine needs electricity as a source of power. A potential issue with exporting the technology to Nepal is that it needs to be able to run on the electricity in Nepal and have the proper input of electricity. However, since the company has shipped the technology to other parts of the world, it is able to deal with the different electricity components of different countries and should not have a problem adjusting to the electricity of Nepal. The percentage of Nepalese people that have access to electricity as of 2009 is 43.60% (Access to Electricity, 2014). This means that only the wealthier parts of the country will be able to purchase the technology. This is not necessarily a problem because even if there is only one farm in a community with access to electricity, the produce washing and drying machine would be stored at this location for the entire community to use.

Mechanic

Another aspect to exporting produce washing and drying machines to Nepal is the need for a mechanic. The produce washing and drying machine needs maintenance so it remains in running condition. Without a mechanic, in case of technology failure, there would be no way to restore the technology. However, the need for a mechanic may lead to more people receiving an education in the field.

Shelter for the Washing and Drying Machine

Another input that's required is a space where the washing and drying machine is sheltered away from water and direct sunlight/heat. The technology will not be able to withstand the weather without protection of some kind, for example a roofed building where it cannot get wet from heavy rainfall or where it can overheat from direct sunlight. Nepal is known for its extreme weather patterns. Depending on the region, temperatures in the summer could exceed thirty-seven degrees Celsius (Climate, 2012). This would cause overheating of the technology. During the Monsoon season, which is from June to September, could reach an average rainfall amount of 3,345mm (Climate, 2012). The produce washing and drying machine would have to be located under a good shelter so the water does not destroy the technology. Also, when temperatures get very high, the washing and drying machine must be stored in the shade to prevent it from overheating.

Benefits to Canada

Main benefits to Canada are for the Canadian Company Weening Brothers Manufacturing. If the produce washing and drying machine produced by this company were to be exported to Nepal, it would significantly increase production

and lead to an increase in the size of the company. There would also be benefits to Canadians living in the area of the company because of a greater availability of jobs. Canadians would move to this area, causing an increase in size of the city of Bradford. This would also help Canada's economy, as unemployment rate would decrease and exports from Canada would increase.

Environmental Sustainability for Manufacturing in Canada

The Weening Brothers Manufacturing Company relies on mining for their resources to build different technologies. It is unclear whether or not the company receives their raw products from a Canadian mining company or a mining company located elsewhere. Either way, the increased amount of mining that would be required to allow the company to produce more technologies would have a negative impact on the environment. Mining destroys landscapes, wildlife habitats, and forests. This causes soil erosion and destruction of agricultural land (Mining Impacts, 2010). The increase of production of the Weening Brothers Manufacturing Company has many benefits to Canada's economy but also negative implications to the Earth. However, since the produce washing and drying machines will be shared among communities there will not be a great number of them needed by the country. Therefore the amount of mining required to manufacture the produce washing and drying machines is not significantly more.

Part II - Export Potential to Nepal

Transport Logistics

The most logical approach to export the produce washing and drying machine to Nepal is with the use of a plane. A plane is the most useful way of

transporting the technology because Nepal is landlocked and it has an airport. Tribhuvan International Airport is the only international airport in Nepal (Airports in Nepal, 2014). It is located in the capital of Kathmandu (Airports in Nepal, 2014). The export would leave Canada from the international airport located in Toronto because this is located closest to Weening Brothers Manufacturing. Once it gets to Nepal, it will get to the communities through the use of transport trucks. The transportation network is weak, especially in the hill areas (Sharma, n.d.). Therefore only the Terai and Inner Terai are the most logical regions of Nepal to ship the produce washing and drying machine to.

Cost Analysis to Achieve Profitability

The company does not release the cost of its products unless the contactor is a potential buyer. The cost of production for the produce washing and drying machine in addition to the cost of transporting it with airfare to Nepal is significant compared to the profit. However, the company has exported its technologies to different parts of the world before and therefore there is a greater potential for this to work for Nepal as well.

Needs and Benefits to the Importing Nation

The export would benefit many of the Nepalese women as they are getting more involved in agriculture (Center for International Forestry Research, 2014). It is becoming more common for Nepalese men to start working overseas to make better wages and women are left at home to take care of many labour-demanding jobs (Center for International Forestry Research, 2014). There are too many tasks

and not enough labour in these situations (Center for International Forestry Research, 2014). The accessibility of a produce drying and washing machine would decrease the amount of labour for women and increase their time to work on other jobs.

Reduce Post-Harvest Waste

Nepal's economy is very dependent on the agricultural sector but faces struggles with the sector's sensitivity to climate change (Colebourn, 2012). Nepal's agricultural sector's vulnerability to climate may result in times of insufficient yield. Hence, it is important that none of the produce is wasted. In an attempt to decrease post-harvest food waste in Nepal, the export idea of a washing and polishing machine is presented. A washing and polishing machine reduces degradation, bacterial growth, and disease initiation of the produce (WBM, 2014).

Future Studies Required to Properly Evaluate the Export Potential

Each community must find an appropriate place to store and provide shelter to the technology where it cannot be affected by the weather patterns of Nepal. However, it must also be within walking distance of the Nepalese farmers so that they are able to walk to the machine. It must be within walking distance of the machine because the majority of families do not own a vehicle (This is because of their low income as mentioned before).

If Nepalese farmers are using the machine to wash and dry their produce they must also have access to plastic bags so that the dried and washed produce stays good for a longer period of time. If the washed and dried food is not stored in a

dry and clean environment, there is no point in washing and drying the produce. The food will go bad fast without proper ways of storing the produce after it has been washed and dried.

Another problem is the availability of electricity for the average Nepalese farmer. The percentage of Nepalese people that have access to electricity as of 2009 is 43.60% (Access to Electricity, 2014). This is not a very high number, however there only has to be one place within the community with electricity where this machine can be stored.

Marketing Strategy to Sell in Nepal

To inform the Nepalese people about the produce washing and drying machine, employees from the WBM Company would travel to Nepalese communities. They would go around from farm to farm and tell people about the potentials and benefits of the technology. This would also provide benefits to Canada's economy because WBM would have to hire more people, resulting in a decrease in the number of unemployed Canadians. This idea would cost the WBM Company a significant amount of money because of having to hire more people and having to pay for travel expenses to Nepal. However, if the idea works and the Nepalese communities are interested in the technology and the government is willing to support them financially, the WBM company will still be able to make money.

Regional and Global Competition

Nepal is one of the poorest countries in the world and is listed as 157th out of 187 in the United Nations Development Programme's Human Development Report 2013 (Rural Poverty in Nepal, 2014). Nepal is not developed enough as a country to have the money and resources to support large industries such as one that produces a produce washing and drying machine. Therefore there is no competition with any industries within the country itself.

However, there may be some global competition, especially with China. China is a leading producer of many technologies and products globally. China is the world's largest industrial producer (China has overtaken the US to become the World's largest industrial producer, 2013). China's industrial production in 2011 was \$2.9 trillion and the industrial production of the United States was \$2.4 trillion (China has overtaken the US to become the world's largest industrial producer, 2013). China is located right beside Nepal, and is therefore large competition for the export of the technology. However, China is focusing mostly on producing many of its products and technologies for developed countries rather than developing/poor countries (China leads the world in renewable energy, 2014). In conclusion, China is a threat for Canada when looking at exporting the technology to Nepal in terms of its industrial production. However, China is focusing on developed countries rather than poor countries and therefore the potential for this export idea is still reasonable for Canada.

Government Funds

There is much suspicion that there is corruption within the Nepalese government and where the money designated for funds ends up (T.B., 2011). An example of corruption with government funding is of the construction of a local school in the capital city of Kathmandu (T.B., 2011). The school was supposed to be built from funds that were provided from the Nepalese government (T.B., 2011). The funds were stolen before the project could be finished (T.B., 2011). Even if governments were willing to fund the produce washing and drying machine for communities within Nepal, there is a risk of corruption. Perhaps the idea of exporting a more expensive piece of technology is more suited for Nepal when the country pulls itself out of the poverty and when corruption is not as big of an issue anymore.

Recommendations

A produce washing and drying machine would provide many benefits to Nepalese communities. It would be perfect for Nepal in terms of helping women with completing their chores on the farm and reducing the amount of hard labour. The reduced produce waste will help farmers make a better income and this in turn will help better Nepal's economy. The idea is possible and only possible if the government provides enough funding. This is perhaps the biggest issue in regards to exporting the produce washing and drying machine. The Nepalese communities do not make enough money to be able to purchase the technology and must rely on government funding. However, if the government was willing to fund Nepalese communities so that they can purchase the technology, there is a risk of corruption.

The major issue with exporting the idea is cost, mainly the cost for Nepalese communities and the cost for the Canadian Company Weening Brothers Manufacturing. Another issue is getting the technology from Canada to Nepal. The most efficient way of transporting the technology to Nepal is by plane because the country is landlocked. However, shipping large technologies by plane is much more expensive than shipping by boat. An alternative method of transportation will be required to minimize the cost for Weening Brothers Manufacturing. If the technology were shipped by boat, there would have to be trucks available upon arrival at the harbour that would transport the technology to its correct destination.

In conclusion, the technology is currently not an ideal export to Nepal. However, in the future if Nepal pulls itself out of poverty and the economy and government improves, the produce washing and drying machine has the potential to provide Nepalese communities and farmers with many benefits. Benefits include an improved education in mechanics due to the need for mechanics to maintain the technology. Women will have less labour demanding chores, providing them with more time to focus on the needs of their family and community. There will be less post-harvest food waste, increasing the income for families and also increase exports out of Nepal.

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