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Bolivarian Republic of Venezuela, Factor 6: Sustainable Agriculture

Venezuela: From Urban to Agriculture

Transportation, the gateway of travel. In the U.S., there are numerous ways of getting from point A to point B; metro transit, personal vehicles, semi-trailers, airplanes. For these machines to travel they need gas. Venezuela is the largest exporter of petroleum in the western hemisphere, exporting 128 billion dollars of crude petroleum in 2013 (Venezuela OEC). Venezuela is located in Northern South America, on the coastline of the Caribbean Sea and the Atlantic Ocean. Neighboring countries include Columbia, Brazil, and Guyana. Occupying 912,050 sq. km and inhabiting close to 30 million people, Venezuela ranks as the sixth largest country in South America. The Venezuelan economy is based highly on oil revenues from the export of petroleum. Recent inconsistencies of oil prices has rendered the county's economy unstable, increasing the inflation of goods to 275% by the end of 2015 (The World Factbook: Venezuela), importing more than is being exported. People of Venezuela have been experiencing shortages of numerous consumer goods, creating a nightmare of grocery shopping. Using only 7% of the workforce on agriculture not only leaves an inadequate production of food to feed the country but it has also created a high dependency on other countries. In order to obtain food security for the people of Venezuela, they need to increase productivity of land by means of sustainable agriculture. By increasing self sufficiency, it will provide more affordable goods, granting access to adequate nutrients of all income levels in Venezuela.

As tradition is a respected practice in Venezuelan culture, it is very prominent in the Venezuelan household. In parallel to western culture, women are expected to carry out the domestic responsibilities of a household, particularly attending to the children. As women are relegated to the home, men take on the more physical demanding employment, usually relating to the oil industry dominating the workforce. Concerning the rural families, both male and females are subjected to physical labor commonly relating to subsistence farming; needing all the hands that can help to sustain their families. Unlike the stereotypes of developing countries, Venezuelan children are able to receive a free education. For Venezuela, education prevails as a priority of the citizens, providing free education from preschool to university. It is compulsory for the ages 5 to 17 to attend a public school. Required is one year of preschool followed by nine years of elementary education. When students have completed elementary school they then move on to complete two to three years of secondary education (Venezuela; Clark). According to the Worldmark Encyclopedia of Nations, the typical Venezuelan housing usually consist of, on average, 4.4 members. It is common for extended families to live with or in the same proximity of the rest of the family. Frequently urban poor families will live under one roof while the more financially stable families will live in the same proximity of each other. Unlike the priorities of the education of children, health care is not the top concern for the Venezuelan government. On many accounts hospitals have experienced supply scarcity and shortages, requiring patients to provide their own medical supplies such as needles to administer IV fluids, pharmaceuticals, and other basic necessities health care providers should have on hand. A majority of patients are "wait-listed" for life saving surgeries the hospitals can not conduct due to the lack in imperative equipment and supplies to run the equipment (Lohman).

Purchase of food is a whole different story. Venezuela, being the largest export of petroleum in the Western Hemisphere and centered around the extraction and production of petroleum, leaves deficient regulation of production and a poor independent source of food for the country, resulting in high amounts of imported goods from the US to compensate for the substantial gap of local stock and increasing demand (Venezuela: Prospects for U.S. Agricultural Exports). In addition to the high rates of imported goods, such as food, the dropping of oil prices has "exacerbated domestic macroeconomic imbalances and

balance of payment pressures” (World Economic Outlook: Adjusting to Lower Commodity Prices). As grocery shopping is a must to obtain food in urban cities, it is also a nightmare for Venezuelans according to John Otis, experiencing firsthand accounts of the lengths Venezuelans have to carry out to purchase food with the shortages and the complicated rules about when and where people can buy certain items. Alongside the food shortages comes efforts and regulations of the government to control food purchases and to attenuate the black market. Requiring customers to comply with fingerprint scanning to prove identity and restrictions of two of each item. To purchase baby items, Caracas residents must have a birth certificate ensuring that the customer actually needs those items, such as diapers (Otis). Many situations have occurred where the grocery store supplies are completely depleted from previous customers who have emptied the shelves. With only certain days to purchase food, countless families are forced to wait till the next date and are expected to live on left overs and rations from previous trips for up to a week. Even when parents have made it early to the store, Venezuelans frequently experienced lapses in certain foods, not seeing certain types of food for weeks on end. Citizens have turned to the black market, as that is their only option to acquiring a sufficient amount of food in most cases.

One of the substantial impediments of urban settlements is the inability of self sufficiency for producing their own food. With 89% of the population inhabiting urban cities, only 11% of the population is farming the 24.5% of land that is arable; diminishing the agricultural productivity. Even for the farmers who are cultivating the land, a majority are subsistence farmers, farming only enough food to feed their families. Thus the reason for the inadequate production of food to feed the country resulting in the importation of edible goods, increasing the dependency on outside countries for food, such as the United States. Venezuela is the 13th largest market of US exports of agriculture, spending on average \$1.7 billion annually to import foods such as corn, soybean meal, wheat, oils, and rice (Venezuela: Prospects for U.S. Agricultural Exports). Furthering the urbanization, the Worldmark Encyclopedia of Nations states that minimum wage paid to urban workers was \$220 while a rural worker only made \$198. Encouraging urbanization and industry labor rather than agricultural practices and sustainability. Accompanying industry labor includes extensive knowledge of oil extraction, production, and mechanics, generally lacking in agricultural education. After the failed Agrarian Reform Law of 1960 in part by mass migrations of rural families to urban cities, it suppressed the growth of agricultural productivity as a result of inadequate farmers unwilling and unable to expand the cultivation of the land (Venezuela). Including the commercial crops being exported and subsistence farmers only able to grow for themselves, there is an inadequate source of food grown in Venezuela able to create a sufficient food market and deliver satisfactory amount of nutrition to the urban families of Venezuela.

As of current standings, agriculture in Venezuela is close to not existent, mainly including cash crops that are to no benefit of Venezuela. Venezuelan agriculture encounters a substantial amount of challenges already, especially the scarcity of farmers. But if sustainable agriculture could be implemented, the citizens and economy would have an opportunity to realize the benefits. Sustainable Agriculture would inevitably produce a reliable income of citizens who partake in farming, ensure food security among the country, and lower the cost of imports by decreasing dependence of foreign countries to feed the Venezuelan population and ultimately improving the economy by reducing the reliance on the ever volatile petroleum market. Improving the factor of sustainable agriculture is in the best interest of Venezuela because of the positive outcomes it entails.

Considering the current economic structure of a significant reliance on petroleum leaves only limited allowance of agriculture. As a result of the 94% oil revenue, any fluctuations in oil prices directly impacts the country, rendering the economy fragile and defenseless (Lenzo). The present dilemma of Venezuelan food security is by reason of poverty hindering the urban poor the ability to purchase the inflated grocery prices, consequently diminishing adequate nutritious food and their sources for entire families. The role of sustainable agriculture is to aid ample production of food, conclusively lowering the prices of food and

delivering acceptable nutrition to families who can now afford to participate in the economy of Venezuela.

By improving sustainability of agriculture in Venezuela, Venezuelan smallholder farmers are capable of increasing food production while accommodating the environmental challenges. Using the learned techniques, farmers will be able to combat inconsistency of soil, weather, and water availability. With the implementation of sustainable techniques, smallholder farmers are also able to increase the productivity of the land generation by generation, keeping the farm land fully functioning and at adequate income levels. Other beneficiaries would be the urban residents. If the smallholder farmers are able to produce consistency in crop production, residents of urban cities could opt out of accepting inflation of goods prices. Instead they have the option of buying local, affordable produce; ending in prosperity of both farmers and urban dwellers.

The present status of sustainable agriculture is deficient. As mentioned earlier, 89% of the population is inhabiting urban cities, such as Caracas, meaning very little of the people are working in the field of agriculture, constituting a lack in farming practices. Additional challenges facing sustainable agriculture are water and air pollution, deforestation and soil erosion. (The World Factbook: Venezuela). As these issues are dominant in the degradation of the environment, they foresee bigger problems to the environment; they anticipate climate volatility and water scarcity. Air pollution of industries directly impacts climate change by emission of greenhouse gases and altering the atmospheric concentrations, contributing to the global warming epidemic (Greenhouse Gas Inventory). Accompanying the inflicted climate volatility of Venezuela is the water scarcity brought on by unpredictable droughts and water pollution. Various water sources are contaminated by untreated industrial waste, commercial farming runoff, and urban sewage (Venezuela). Droughts in correlation with climate volatility are only increasing the severity of environmental alterations. Likewise, the deforestation of trees is creating a considerable amount of obviated soil erosion. Missing trees constitute rainfall to wash away the topsoil used in agriculture. Removed topsoil seizes beneficial nutrients for plants, counteracting the efforts toward sustainable agriculture.

To advance the agricultural aspect of Venezuela, farmers will have to effectively adapt various sustainable agricultural practices. By carrying out the technique of no till, cultivators would be able to reduce the environmental impact of soil erosion on their part of acreage. In conjunction with no till, Venezuelan farmers would also be able to plant cover crops after harvesting. Cover crops are essential to ensuring adequate soil and land for next seasons harvest. For one, cover crops reduce the wind and water erosion between planting. It is known that cover crops will also improve soil quality by reducing nutritious leakage from the land. In efforts to reduce the water pollution, cover crops would protect the ground water from extra nitrogen seeping into the ground. Another use of cover crops, if the farmers acquire livestock, they can double up the land as a grazing area. Depending on the chosen crop, it can be very nutritious feed for the animals (Minnesota Department of Agriculture).

In addition to cover crops, windbreakers will also help with water flow, wind erosion and the deforestation of trees. For the obvious, windbreakers will break the wind restricting the wind from blowing the soil away, but by planting trees they also help with the deforestation of trees by replenishing the population. By repopulating trees, it will decrease the impact of water flow caused by the heavy rainfalls in Venezuela by the roots stabilizing the topsoil reducing the amount washed away. Windbreakers don't necessarily have to be trees, with the limited budgets of Venezuelans, they can also opt for fences if available. Another idea to create the effect of a windbreaker would be to plant a taller crop around the perimeter of the acres to protect the inside, smaller plants. One more advantage of windbreakers would be the attraction of certain beneficial bugs creating an intergraded pest management system, reducing the need for pesticides and the possibility of agricultural runoff polluting any nearby water sources.

While farmers may specialize in a certain crop, considering a reliable income, cultivating one type of plant over time will diminish the productivity of the land by only taking certain nutrients out of the soil. For long term sustainability, farmers should consider crop rotation. Rotation of crops being grown would give the soil time for recovery to replenish the nutrients without slowing down the production of crops. The soil would be able to replenish the missing nutrients and provide key nutrients for the new crop that the previous crop did not need or use. Much like how Iowan farmers will rotate between corn and soy beans each year because they both prosper in the climate but require different nutrients. With the beneficial soil quality of crop rotation, farmers specializing in multiple crops would expand their knowledge of cultivation and eventually receive a higher income because they will learn how to effectively cultivate various types of plants. The Venezuelan farmers can begin to grow food according to the demand and overcome the fluctuation of the economy.

Acknowledging the percentage of arable land is only 24.5%, Venezuelan's should consider alternative uses for the land of low productivity such as Fish Farming. Even though farmers may not be able to cultivate crops for food, they would be able to sustainably raise fish to compensate for the lack of agricultural fertility. Fish farms would also, in turn, control and prevent over fishing of the Caribbean Sea on the boarder (Food and Agriculture Organization of the United Nations). Another use of the non arable land would be to establish CAFOs: Contained Animal Feeding Operations. This would allow livestock farmers to increase amount of animals being raised. CAFOs are considered a very controversial subject because of the high amounts of waste product is created and the attraction of pests. One reason for the attraction of pests is the lack of proper disposal of animal waste. A way to reduce this problem would be to coordinate with local crop farmers willing to engage in a trade. Livestock farmers would dispose of the excess animal waste by converting it to manure and sell it off to local farmers or partake in a trade; livestock manure for crops to feed their animals. Inevitably increasing revenue into the community or expanding community accord.

To effectively implement sustainable agriculture in rural Venezuela there needs to be a change in farming practices. Not just the techniques used in farming, but change in the farmers. To achieve food security means to have access to affordable, nutritious foods at a reliable rate. To successfully attain food security, Venezuelans will have to catalyze the farming industry. Urging as many urban citizens as possible to up and move out of the city and take up subsistence farming, but especially the families who are not as successful in the city should consider changing their ways of income. A way to motivate city residents to commence in cultivating the land would be to reenact the Agrarian Reform Law of 1960 and to introduce educational programs offered to the families receiving land intended for production of food. The Agrarian Reform Law was designed to increase the productivity of land, giving compensation to families able to inhabit the area and use it to the fullest potential (Venezuela). As for the educational programs, the school districts should incorporate agricultural education into their curriculum to teach the students while they are young and give a background of knowledge for future generations to prosper.

While small changes may seem insignificant, it's the little things that make the most impact. Even if it's only one family initiating the transition from urban to agriculture, that is more food been cultivated, more innovative minds being added to the faction, a better chance at constructing a self sustaining country. If the knowledge and appreciation of sustainable agriculture can be planted in the minds of the people, then we just have to let it grow into something great.

Works Cited

- Clark, Nick. *Education in Venezuela: Reform, Expansion and an Uncertain Future*. 1 May 2013. World Education Services . March 2016. <<http://wenr.wes.org/2013/05/education-in-venezuela-reform-expansion-and-an-uncertain-future/>>.
- Food and Agriculture Organization of the United Nations. *Fisheries and Aquaculture Department*. 2016. August 2016. <http://www.fao.org/fishery/countrysector/naso_venezuela/en>.
- Greenhouse Gas Inventory*. 2014. U.S. Department of State. March 2016. <<http://www.state.gov/documents/organization/218991.pdf>>.
- Lenzo, Krysia. *Food Inflation: It's Getting Hard for Venezuela to Feed Itself*. 13 October 2015. March 2016. <<http://www.cnbc.com/2015/10/13/food-inflation-its-getting-hard-for-venezuela-to-feed-itself.html>>.
- Lohman, Diederik. *Venezuela's Health Care Crisis*. 29 April 2015. The Washington Post . March 2016. <<https://www.hrw.org/news/2015/04/29/venezuelas-health-care-crisis>>.
- Minnesota Department of Agriculture . *Cover Crops*. 2016. August 2016. <<http://www.mda.state.mn.us/protecting/conservation/practices/covercrops.aspx>>.
- Otis, John. *The Nightmare of Grocery Shopping in Venezuela* . 10 November 2015. March 2016. <<http://www.npr.org/sections/parallels/2015/10/29/452636462/the-nightmare-of-grocery-shopping-in-venezuela>>.
- The World Factbook: Venezuela* . n.d. March 2016. <<https://www.cia.gov/library/publications/the-world-factbook/geos/ve.html>>.
- Venezuela*. 2007. 2016. <<http://www.encyclopedia.com>>.
- Venezuela* . 2013. Marco Connections. March 2016. <<http://atlas.media.mit.edu/en/profile/country/ven/>>.
- Venezuela: Prospects for U.S. Agricultural Exports*. 09 March 2013. March 2016. <<http://www.fas.usda.gov/data/venezuela-prospects-us-agricultural-exports>>.
- Vulnerability, Assessment, Climate Change Impacts, and Adaptation Measures*. 2014. U.S. Department of State. March 2016. <<http://www.state.gov/documents/organization/218994.pdf>>.
- World Economic Outlook: Adjusting to Lower Commodity Prices*. Washington : International Monetary Fund , 2015. PDF. <<https://www.imf.org/external/pubs/ft/weo/2015/02/pdf/text.pdf>>.

