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Peru, Factor 2: Water Scarcity

Water Scarcity Impacts Agriculture in Peru

In the last decade Peru has been one of South America's fastest growing economies. Since 2005, Peru has seen a dramatic decrease in poverty due to programs such as the World Bank's Country Partnership Strategy and improved practical economic policies. Due to Peru's climate and geographical features, agriculture has a critically important impact on every aspect of life. From domesticating Andean animals to the timber industry, agriculture is the way of life for most people.

Agriculture represents thirteen percent of the GDP and employs thirty percent of the nation. In recent years though, foreign investors have shown interest in Peru due to the vast mineral wealth of the country. Throughout many parts of the country, the ground is laden with valuable minerals such as copper, silver, zinc, and gold. In addition to minerals, there are many untapped oil wells located in the ground. Rural populations have been in staunch opposition to allowing foreign investors to mine these minerals for three main reasons. The first reason is that historically speaking, rural communities do not see the economic benefit that comes from mining-especially when foreign companies or organizations are in charge.¹ Secondly, mining has caused pollution that interferes with rural family's abilities to grow fresh produce and sell excess produce at market. The final, and most important reason to be cautious about mining, is the scarcity of water throughout the entire country of Peru. In April of 2015, the Southern Peru Copper Corporation planned to mine the Tía María, a \$1.4 billion copper and gold mine. Though the Mexican Corporation says they would generate thousands of jobs and dramatically increase Peru's imports, a month long protest began. Local farmers against the pollution of the rivers that would ruin their livelihoods. With the violent protests leading to death of many, Southern has redesigned their project to include a \$95 million desalination plant so they would not have to use river water. Although Peru's president, Ollanta Humala Tasso, approved this project, Southern is waiting for a new government to take office in 2016. In all, 1,553 have been wounded or killed by social conflicts mostly being related to the extractive industries. The mining brings no benefit to Peru, only leaving it with poverty, serious environmental harm, and human rights violations.² The issue of water scarcity not only impacts agricultural growth and development, but all facets of life in rural communities throughout Peru.

A typical rural family's day begins at dawn with chores such as cutting eucalyptus firewood and animal care. Due to different climatic regions, farm size varies greatly depending on the region and the financial status of the family; however many farmers farm on less than 5 hectares of land.³ Women's roles in the settlements cover a wide variety of tasks, including hauling water from corner spigots and beginning the daily preparation of food over kerosene stoves. They also stay busy spinning local llama wool to be sold at local markets. Local markets are essential for life in Peru, providing a place to buy and sell things such as clothing, food, and tools. At such local markets, families can be seen walking single file led by the head of the house.⁴ In Andean peasantry, families will make, repair, invent, and adapt most of their tools

¹ Vera, Raul R. "Peru." *Food and Agricultural Organization of the United Nations*. 12 Dec. 2006. Web. 19 May 2016.

²"From Conflict to Co-operation." *The Economist*. The Economist Newspaper, 06 Feb. 2016. Web. 19 July 2016.

³ Vera, Raul R. "Peru." *Food and Agricultural Organization of the United Nations*. 12 Dec. 2006. Web. 19 May 2016.

⁴ Davies, Thomas M. "Daily Life and Social Customs." *Encyclopedia Britannica Online*. Encyclopedia Britannica, n.d. Web. 19 July 2016.

and will live on a diet consisting of mostly things they have grown or raised-such as potatoes, corn, chiles, and meat.⁵ Rural families-especially families located in the “highlands” of the Andes mountains-have an average family size of approximately five people to help with all of the chores and tasks the family faces. In a survey, author Carlos Aramburu showed the correlation that the poorest and most rural areas had the highest dependency on the children to assist with daily chores and tasks. Consequently, the loss of youth to migration to coastal farms, cities, and cuts deeply into the productive capacity of hundreds of families and their communities. The absolute decline in workforce numbers has left a third of the houses empty, fields in permanent fallow, and irrigation works in disrepair; losses which Peru could ill-afford in view of its declining agricultural production and great dependency on imported foodstuffs, even in rural areas.⁶ However, there are distinct differences in the daily lives of rural and urban peruvian families. A social structure is much more present in the cities of Peru, as well as more traditions like the mid-day siesta and having a family meal very late at night. The rural poor are not able to cater to these customs with such labor intensive jobs. But the cities are not ideal for many, in metropolitan Lima, 47 percent of its population lives in squatter settlements, with the whole family living off of small salaries.⁷

While modern technology is often lacking in rural households, the essential education youth and families need to be brought out of poverty is also lacking. Not too long ago in 1996, the government of Peru passed some education reforms that extended free school education for children five through sixteen. However, the secondary school is out of reach for many students due to lack of resources. Although the government provides twelve years of public school for free, with more than seventy children to a classroom, the educational standards are not in-line with many other countries, leaving these children with less of an education than most in comparison.⁸

The key factor that impacts Peruvian farmer’s ability to provide adequate food for their families and livelihoods is water scarcity. In the highland region of Peru, there were one hundred total days of rain with an average yearly rainfall of approximately 1,500-1,800 mm recorded nationwide.⁹ While this amount of rain would normally be more than adequate to produce fresh and nutritious produce, the average does not take into account the different regions of Peru. For example, the city of Machu Picchu only receives approximately 725 mm of precipitation each year. Most of the precipitation occurs during the months of January, February, March, and December.¹⁰ One of the major crops that is produced in the highlands is potatoes. Potatoes originated in Peru and as a tuber crop that can be stored for a long duration, has become a major staple in Peruvian culture. While there are many different potato varieties, Peruvian farmers have developed crop rotation schedules and understand the value of leaving “field” fallow to replenish the nutrients. Many recent developments regarding disease resistant potatoes and farmer education is a benefit of the Centro Internacional de la Papa (CIP, International Potato Center). Peru harvests over 1.4 million tons of Canchan potatoes annually-a variety that was developed by the CIP

⁵ Richardson, Jim. "Finding the Faces of Farming: A Peruvian Potato Harvest." *National Geographic*. National Geographic Society, 28 Apr. 2014. Web. 12 May 2016.

⁶ Hudson, Rex A. ed. *Peru: A Country Study*. Washington: GPO for the Library of Congress, 1992. "Potato Facts and Figures - International Potato Center." *International Potato Center*. 11 Feb. 2013. Web. 12 May 2016.

⁷ Rex A. Hudson, ed. *Peru: A Country Study*. Washington: GPO for the Library of Congress, 1992. "Family Life"

⁸ Clark, Nick. "Education in Peru - WENR." *World Education News and Review*. 06 Apr. 2015. Web. 19 May 2016.

⁹ "Average Yearly Precipitation - Peru." *MECOMeter*. World Bank- World Development Indicators. Web. 10 May 2016.

¹⁰ "World Weather & Climate Information." *Weather and Climate: Machu Picchu, Peru, Average Monthly, Rainfall (millimeter), Sunshine, Temperatures (celsius), Sunshine, Humidity, Wind Speed*. World Weather and Climate Information. Web. 15 May 2016.

nearly twenty years ago.¹¹ In addition to the technical practices above, an important challenge many highland farmers deal with is the uneven, sloping terrain. This creates additional challenges and causes scarce water resources to become even more unavailable as much of the precipitation runs-off the slope. Farmers try to combat this issue by utilizing a technique known as terrace farming. The overflow of water, that would otherwise run down the slope of the mountain, will now be caught by the terraces. These terraces help the conservation of soil and water that the farmers need. They reduce the amount and velocity of water traveling across the surface of the soil, which helps with soil erosion. Ultimately these terraces allow intensive cropping that would otherwise be impossible and unsustainable. The upkeep for the terraces include annual maintenance like removing debris from outlets and smoothing out the channels. Also the constant usage will eventually wear down the terrace ridges requiring occasional rebuilding.¹² The problem of scarce water resources will only continue to worsen as records indicate that the climate in Peru is still rising. As the climate rises, Peru's glaciers have shrunk by twenty percent in the last three decades and water scarcity and management will be critical to food production.¹³

Improving access to the scarce water supply would dramatically improve agriculturalists' ability to increase family income as well as improve access to more healthy and nutritious foods. A scarce water supply limits the diversity of vegetable and fruit crops that can be grown in otherwise favorable climates. Improving access to water, by utilizing rain barrels or rebuilding the terraces once used by the Incas would have a dramatic impact on the entire population of Peru. A development charity called Cusichaca Trust renewed 163 hectares of canals and terraces near Cuzco, Peru. This site successfully improved access to water which increased the region's agricultural production. Today, local families maintain the systems and continue to be able to produce a sufficient number of crops to both feed their families and barter/sell at local markets.¹⁴ The project of renovating the canal and terrace systems should be expanded. If this project were expanded to all of the highland regions, farmers would be better able to utilize precipitation and related to that, produce additional crops.

By addressing the issue of water scarcity, every family in Peru would benefit and be able to utilize this precious resource. Clean and available water will allow urban families to better clean and sanitize utensils or latrines and rural families would have better access to both drinking water and irrigation water. Peruvian citizens need to be proud of their country and should have the initiative to change their water scarcity problem themselves. As shown with the 2011 Kenyans for Kenya fundraiser movement, the people can kick start the solution. This fundraiser raised millions of dollars to combat starvation.¹⁵ These individual communities still cannot cure water scarcity alone. One unifying force that has the power to bring the whole country and all the communities together is the government. Unfortunately, their main focus is not the water scarcity crisis. The government should make a point of the issue, and act on it instead of supporting the harmful mining operations.¹⁶ The Peruvian government should be involved in this project by offering financial assistance and recruiting foreign investors for this initiative; this would

¹¹ Hudson, Rex A. ed. *Peru: A Country Study*. Washington: GPO for the Library of Congress, 1992. "Potato Facts and Figures - International Potato Center." *International Potato Center*. 11 Feb. 2013. Web. 12 May 2016.

¹² Wheaton, Rolland Z., and Edwin J. Monke. "Terracing as a 'Best Management Practice' for Controlling Erosion and Protecting Water Quality." *Purdue University*. N.p., n.d. Web. 20 July 2016.

¹³ Graber, Cynthia. "Farming Like the Incas." *Smithsonian*. Smithsonian Institution, 6 Sept. 2011. Web. 10 May 2016.

¹⁴ Graber, Cynthia. "Farming Like the Incas." *Smithsonian*. Smithsonian Institution, 6 Sept. 2011. Web. 10 May 2016.

¹⁵ "Kenyans for Kenya Initiative Launched." *ReliefWeb*. N.p., n.d. Web. 19 July 2016.

¹⁶ "From Conflict to Co-operation." *The Economist*. The Economist Newspaper, 06 Feb. 2016. Web. 19 July 2016.

allow charitable organizations-like the Cusichaca Trust- to provide the volunteers and educators to teach local communities on how to rebuild and then care for the terraces.

Peru is a country of invaluable natural resources and can play an important role in helping to feed the world population by 2050. With three major climatic zones, a decade of economic growth, and a commitment to improving the agricultural sector, Peru is poised to take center stage in the Hunger Initiatives; this is if it can overcome the issue of water scarcity. The strides to rebuild the historic Incan terraces and capture as much precipitation as possible is a step in the right direction. Through continued education of farmers, improved access to water, and a collaborative effort from communities, the government, and charitable organizations, this country will overcome its obstacles and thrive throughout the 21st century.

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