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China, Biofuels and the Fate of the World

China has always, until recent times, been one of the world's most advanced civilizations, but it has always been plagued with the task of feeding its enormous population. China has had many major famines killing millions of people, with the most recent famine in China's history being caused by Mao Zedong's Great Leap Forward which ended in 1962. In that famine it has been estimated that anywhere from 10 to 40 million people died of starvation and malnutrition. (Butterfield, Fox) China has had over 1800 famines (not all of them nation wide) through its history. With new biofuels, fuels that can potentially be made from food crops, becoming available, China may once again slip in its ability to produce food for its people. The purpose of this paper is to explore whether China can ensure food security¹ for its massive and growing population, while at the same time providing sufficient energy for its rapidly growing economy. This paper will also look at some possible consequences of China's rapidly growing economy and its energy demands. Ensuring food security is an enormous challenge because China has over 22% of the world's population, but less than 7% of the world's arable land.

China's official name is the People's Republic of China, and it is a communist state. Its capitol is Beijing, and the controlling party is the Chinese Communist Party. Despite being controlled by a communist party, China's economy is largely capitalistic. China's economy has experienced rapid growth; this is due to the fact that the government has allowed private business to run the economy instead of controlling it itself. China's growth is also due to the fact that there is so much room to improve. In 2006, China had the world's second largest economy, behind only the United States', but the farmers and other rural people are still relatively poor. This is because there is a large difference between annual income in rural and urban areas. The average money earned before taxes for an urban household in 2006 was 28,850 Renminbi (\$3,842.31 USD) while the rural number was only 11,500 Renminbi. (\$1,531 USD) (Tao Wu)

China borders 14 countries and has a land area slightly smaller than the U.S. Its environment ranges from tropical to sub-arctic and its topography includes mountains, high plateaus, deserts, plains, deltas, and hills. Slightly less than 15 percent of China's land is arable. According to the CIA World Factbook there are over 1.3 billion people living in China based on its July, 2007 estimate. The CIA World Factbook also states that China has a population growth rate of 0.606%. (CIA World Factbook)

Agriculture in China differs from that in the West in that the average Chinese farming family actually owns no land. Families only possess rights to use and develop the land. These rights can be taken away without prior notice or consent. China's communist government owns all the land, and it gives the right to distribute it to the local village governments, which then in-turn allocate the land among the farmers. The land is distributed based on the number of people in the family, the quality of the land, and the population density of the village. Smaller villages with the same amount of land as a larger one will have farmers with larger plots of land as it is not split up as much. (Bryan Lohmar, et al) China's farmers produce a wide range of products which include rice, wheat, potatoes, corn, peanuts, tea, millet, barley, apples, cotton, oilseed, and pork. (CIA World Factbook)

¹ Food security exists when people do not live in hunger or fear of starvation. Food insecurity exists when people are undernourished as a result of the physical unavailability of food, their lack of social or economic access to adequate food, and/or inadequate food utilization. This definition is that given by the World Food Prize.

If China's economic and population growth continue at their projected rates, by 2031 the average Chinese citizen will earn as much as the average American did in 2004. If the average Chinese person in 2031 consumes as much materials as an average American did in 2004, China's projected population of 1.45 billion people will drain the world's resources mercilessly. If China follows our Western throwaway style economy, the world is in for some major trouble. ([OneWorld US](#))

For example, China's meat consumption in 2031 would reach over 276 pounds per person, which was four-fifths of the world's total meat production in 2004. If China's population owned three cars for every four people, as was the case in the United States in 2004, China would have over 1.1 billion cars in 2031. There are currently less than 800 million cars in use worldwide. If the People's Republic begins to use oil at the 2004 American rate, China's enormous automobile fleet will consume over 99 million barrels a day, while the world's production level is never expected to exceed the current level of 79 million barrels per day by any significant amount. In 2031, China will consume grain amounting to two-thirds of the entire world's grain production in 2004. China will also burn in excess of 2.9 billion tons of coal, more than world production level of 2.5 billion tons. Similarly, China will also consume twice the amount of paper that the world produced in 2004. (*OneWorld US*)

One example of China's attempts to limit their enormous population has been China's child policy, which limits the number of children a family can have to one; this impacts farmers in a huge way as it places an extreme limit on the amount of help a family has available for farm work. China's government does allow exceptions for ethnic minorities and limited exceptions for rural farmers. Also families that sign a one child pledge will get rewards in the form of reduced housing costs and better educational and occupational choices for their children.

China has begun to adopt various strategies to manage the conflict between its need for food and its need for energy. For example, China's State Council (China's equivalent to the United States' cabinet) has in principal approved a "long term renewable energy development plan." As part of that plan, Chinese officials have announced that China will be going away from corn-based ethanol, and also will not allow other food-based crops to be used for ethanol production. The plan stated that only biofuels made from grasses, corn stalks, and other plant masses would be eligible for use in producing ethanol because in many developing nations, including China itself the production of ethanol from food grains has raised the price of those commodities. According to a report this summer in the Beijing Youth Daily, the cabinet also stated that feeding China's 1.3 billion people takes priority over producing ethanol produced by food crops. The fact that China is working on such a plan shows that China's government is seriously considering how China's energy consumption will affect the nation's food security. (XFN-ASIA)

One way to avoid using food crops to make ethanol is to generate energy in other ways. Due to China's enormous energy needs, and flooding which has caused several major famines over the centuries, China recently constructed the Three Gorges Dam. This dam has an electrical production capacity of 18,200 Megawatts, which gives it the most potential hydroelectric energy output of all dams in the world. The energy produced by this dam is equivalent to the burning of 50 million tons (100,000,000,000 pounds) of coal a year. The dam is expected to provide electricity for about 3% of China's population. The dam is approximately as long as the Golden Gate bridge and is over twice as tall. (Three Gorges Dam - San Xia)

The most important ability of the dam is not to produce electricity, but to control flooding. Millions upon millions of people have been killed in China over its history due to flooding, both directly and indirectly by wiping out crops and grain supplies, causing enormous famines. Thus, the dam both helps China meet its energy needs and simultaneously promotes food security. The dam is a double-edged sword, however, since without flooding the farm land will no longer receive the silt that made it so fertile

to begin with. The dam will also increase the amount of erosion down stream. This is an issue because lost soil will no longer be replaced. The dam also raised great environmental concerns, but China's government decided to proceed anyway. (Three Gorges Dam - San Xia)

China must consider its priorities when deciding what to do in regards to the food-over-fuels stance it has taken. If China does not use its resources wisely, then millions of people are at risk of malnutrition and starvation. China's choices will not only affect its own people, but people worldwide will feel the side effects of its choices. Perhaps only the Cold War and the weapons it has left behind have had greater potential to impact the sheer number of human lives that China's decisions will. China has recognized the problem and is taking steps to prevent it, but it is still to be seen whether these policies will work. One example was China's recent "No Car Day", where China banned cars from driving in major cities and tried to get people to walk or take mass transit, in an attempt to clean Beijing's air for the 2008 Olympics. This event was largely ignored by the public, and until the facts are in no one can say if these policies will work or fail.

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