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## Urbanization and Population Growth The Impact on China

Urbanization is defined as the process by which people and the amount of production in a particular rural area relocate to a city setting. Since China's reform in 1978, the country has experienced dramatic urbanization and economic growth. Consequently, with a population of approximately 1.3 billion, China is faced with many challenges, one of which is an extensive food shortage (Wen, Guoming...). Because China has such a rapidly growing population, cultivated land is decreasing considerably due to the development of many cities. In addition, China's water supply has also been affected, creating unforeseen conflicts in the agricultural industry. The expanding population is taking a toll on rural farmers and the quality of farmland, and the increase of urban population has caused negative changes in China's land due to an Urban Heat Island Effect (Jishe, He...). Currently, 100 million workers in rural China are unemployed, reeking havoc along the lines of poverty (Xie, Windy...). Numerous organizations are trying to stabilize many poor communities by providing food aid, but additional steps must be taken to ensure that the detrimental effects of urbanization and fast population growth will not cause permanent distress to the livelihood of millions. Research and education are exceptionally beneficial to many citizens and encourages different forms of urbanization. Although China's government has taken monumental steps towards ending poverty and reducing hunger, the remote areas of China are still suffering.

In the mid 1990's, China seemed to accomplish its goal of promising food production nationally. However, food insecurity is still a critical problem, affecting many of China's poor citizens. Multiple impoverished citizens live in the northern, northwestern, and southwestern parts of upland China. Although these citizens have land rights, the production of crop is very limited. The land is of low quality and growing crops that will support them and their family is unachievable (World Hunger-China...).

Many of the problems that occur in the agriculture industry can be attributed to Urban Heat Island Effect. This occurs when too many people are in one place at one time. Localized urbanization has caused greenhouse gases, contributing to global warming. The increase in global temperature will cause the sea level to rise, the melting of polar ice caps, and extreme weather that will affect China and the rest of the world. Furthermore, urbanization is causing an increase in surface temperatures that is damaging agricultural production (Shoener, Kate...). Recently, a team led by Zhou Liming from Georgia Institute of Technology, have been monitoring the temperature increase in China, finding a direct relationship between the growth of the population and a temperature increase. The team used a Diurnal Temperature Range, which takes the daily maximum temperature minus the daily minimum. They found that in Southeast China alone, the temperature, on average, raises .05 C per decade (Jishe, He...).

Compared to Europe and America, China is behind in urbanization. As a result, the Chinese government has allowed many farmers to move into cities, hoping to accelerate the process. As a result, farmers are relocating at such alarming rates, the operation is causing numerous consequences; China is not only suffering politically, but also economically and socially. The process of urbanization needs to be carefully planned and involve compatibility with education, security, transportation, and infrastructure (Wen, Guoming...). Many peasants from rural areas of China leave their homes in search of labor but are often disappointed and leave without the assurance of a stable income (Baiping, Zhang...).

Urbanization alone is not the only concern to the well being of the Chinese citizens. In the next 20 years, China's population will increase by 10 million, and urbanization will grow by 1 percent a year (China to Increase...). The total urban population in China has increased from 18.96 percent in 1990 to 37 percent in 2001. At this particular growth rate, The National Statistic Administration believes that the rate of urbanization will increase to 45 percent in 2010 and 65 percent in 2050. China holds approximately 7 percent of the world's arable land. Moreover, large amounts of this farmland have been industrialized, jeopardizing the livelihood of farmers; many have become unemployed and homeless. Although the government has provided some compensation for these farmers, their help is not adequate in supporting the farmers and their families (Baiping, Zhang...).

Because China contains only 7 percent of the world's arable land, it is imperative that farmland does not become industrialized. Additionally, China's scramble to urbanize cities is causing farmland to be consumed by an urban sprawl. For example, Lieu Binyan, former Chinese journalist and Perry Link, professor of East Asian Studies at Princeton University, found that China is actually losing precious farmland at an annual rate of .5 percent. Much of this loss can be credited to the construction of buildings, roads, and erosion. In a writing published in 1998, Link and Binyan stated with warning, "China now has two thirds of the arable land it had four decades ago, and 2.3 times as many people." This has produced a huge decrease in arable land. In fact, since 1996, China's farmland has diminished by 6.7 million hectares (Seth, S.P...). Another study suggests that the increase of 18 million people annually will eventually take over 1.4 million hectare of land just for development alone. (Bin Lou...)

As the farmland decreases, the need for food will naturally increase. This occurrence is not because of population growth alone; the urban middle class' diets have changed. They are eating more expensive, richer foods such as beef, causing an unforeseen conflict. The slaughter of cattle requires a great deal of water, which is unfortunately becoming a scarce resource in China. According to Lieu and Link, "In the 1950's the water table in Beijing was sixteen feet below the surface. By 1998, it was more than 150 feet down" (Seth, S.P...). Because water is becoming increasingly deficient, the quality of agriculture is lacking because of its reliance on water and irrigation. A growing number of livestock is taking up a great deal of land better used for cultivation. Floods, declining irrigation systems, and water logging also threaten water supply. (Rural Poverty in China...)

A typical rural household affected by scarce water supply may consist of three to four children. Although the government limits the number of children in one house to two, families may pay an additional 497 dollars per extra child. Because families must work incredibly hard to support one another, everyone in the family works. Children often sacrifice an education to work in fields, growing potatoes, corn, Chinese cabbage, and the main economic product, knock (mushroom used in medical supplies.) Traditional homes are poorly constructed and assembled with mud and stones. An average income for a rural farmer is \$225 to \$312 a year, but can decrease substantially if, for example, the men leave to find work in cities, leaving the elderly and women behind to support their families and cultivate their farms (Xie, Windy...). Poor households in China often make the mistake of consuming more food than what is being produced. The poor are faced with challenges such as seasonal and persistent food gaps but are usually supplied with some relief by the government. This help, however, is a disadvantage; it does not promote self-reliance because it only addresses their current needs. On average, the total of undernourished citizens in China is approximately 11 percent. Similarly, the average number of malnourished children under the age of five is 9.6 percent (World Hunger-China...).

In order to relieve much of the poverty in rural China, in the late 1970's the Chinese government introduced the Household Responsibility System (HR.) to hopefully inspire further economic growth. This system concentrates on building productivity in rural areas of China. To promote self-reliance, China's government has allowed many households to work on an individual basis and make many of their

own decisions in how land and resources are used, rather than with one collective effort. Gradually, the government has loosened its grip over markets as well. China has seen a positive outcome in economic growth. Many incomes have more than tripled by 2001 and the amount of people affected by poverty and hunger has decreased considerably from 260 million to 30 million (Rural Poverty in China...).

Although rural farmers have been affected positively from the HR., many still live in widespread poverty especially in the remote areas of China. Annual Incomes are extremely unequal between eastern and western China. The gaps between rural and urban citizens have widened so much since the late 1970's; some urban incomes are as much as three times greater than an average rural income. To decrease such a significant gap, the government is taking serious measures to improve this issue by investing in rural areas, education and irrigation (Rural Poverty in China...). By investing in infrastructure, water control, and power grids, the government has boosted its antipoverty campaign (Rural poverty approaches...). Taxes have also been cut for many farmers, allowing their annual income to gradually stabilize. Hopefully, this action will eventually create a well-balanced society (Rural Poverty in China...).

Additionally, China's extreme poverty and hunger can improve through education, promoting self-reliance. Many families can cope with food shortages by being prepared. Preparation can be attained by food aid from the World Food Programme, which does not only address current nutrition needs but also provides assistance that remains for long periods of time. This frees household incomes and allows other areas to be addressed for their personal benefit such as receiving an education and improving life skills, both of which will directly increase their self-reliance in providing for one another (World Hunger-China...).

There are numerous organizations working towards sustainable improvements for China's poverty level. One of these dedicated organizations is the current Country Programme (CP). One of the main goals of the China CP is to provide food security to approximately 1.7 million impoverished households during the years 2001-2005. The organization has focused on several ways to promote self-reliance. The three main priorities of China CP include: 1. To empower poor households by allowing them to invest in human capital with training and education. 2. To pay particular attention to women, and 3. To permit poor households to preserve and gain personal resources, and permit poor households that are usually dependent on deficit resources to shift to more acceptable livelihoods regarding food security (World Hunger-China...).

Although addressing food security through education and other means of promoting self-reliance is particularly important in directing the current situation in China, there must be additional ways to approach the major urbanization crisis. Because the process of urbanization has been poorly constructed, rapidly growing cities are affecting various aspects of agricultural production through global warming, costing China valuable land and resources. There needs to be an array of monitoring techniques and enhancements in urbanization research. The government needs to assign specific programs throughout China to monitor economic and industrial conditions and the speed of development throughout China. By researching the speed of urbanization and its effect on China's economic and industrial conditions, the rate of urbanization can be regulated accordingly by adjusting the stages of development (Wen, Guoming...).

In addition, educating farmers in rural areas of China about the effects of urbanization will better prepare them for the future. Established education programs will provide essential skills for farmers who want to leave their agricultural lives and move to cities. By having some knowledge of what to expect and skills needed to obtain a job will allow farmers and their families to successfully adapt to a new environment. Creating a better transition for farmers will possibly ensure a secure income and better food security. If farmers do wish to leave their farms and move to cities, the transition will be gradual. The

development of small cities is imperative to the natural growth of China. Small cities are actually an invention of farmers and have grown at a rapid pace over the past 20 years. Small cities benefit the Chinese economy and lessen the effects global warming. Furthermore, urbanization will accelerate in a positive way because the increased population can be evenly dispersed throughout China (Wen, Guoming...).

The World Bank is also taking steps towards fighting hunger in China; their two main initiatives include the lending and the non-lending programs. Since 1985, the World Bank has financed more than 35 urban environment projects in China. The non-lending program carries out advisory and analysis activities in China at a national government level as well as a local level. These services are provided for urban and urbanization restructuring, wastewater management, and studies on helping the lowest income population. The lending program creates investments for water supply, sewage treatment, solid waste management, and air pollution abatement. By investing in ways to limit the detrimental effects of these problems, farmers and their families will be able to eat and drink knowing the water they consume is safe. By making clean water more plentiful, agriculture will also thrive (Urban Development...). The Xingjiang Uygur Autonomous Region has invested \$1.29 billion in the management of pollution and the extensive treatment of the Tarim River. Two million dollars have been pledged by the government for the loss of grains due to urbanization; farmers' incomes have risen dramatically despite the shrinking farmland (Baiping, Zhang...).

He Kang, The 1993 World Food Prize Laureate and former Minister of Agriculture of the People's Republic of China sought to enable China to become more self sufficient in food necessities. By increasing education and China's agricultural science and enforcing a family unit of production, family farming was renewed. He Kang also greatly supported the growth of enterprises in rural areas to provide economic advantages within rural communities. This not only improved the life for countless citizens but also discouraged farmers from migrating to cities, slowing down the process of urbanization (He Kang...)

In conclusion, finding a solution for the massive results of rapid urbanization and population growth is not a simple task. The complicated process of eliminating some of the effects will better the quality of life by means of income, nutrition, and health in general, for millions of people in China. Because China's cities are becoming overpopulated, arable land is shrinking, therefore, making it difficult for farmers to cultivate enough land to inhabit and generate an income that adequately supports their families. Many farmers are encouraged to move to cities, but are not equipped with any skills that will help them succeed in an urban environment. Moreover, on a global level, urbanization is causing The Urban Island Effect which is heating the environment causing agriculture to suffer and creating global warming that will not only harm China but the rest of the world. Because the Chinese population is 1.3 billion and expected to increase by 10 million within the next 20 years, food and water supplies are becoming limited especially for the rural, poor households. Farmers have to work extremely hard to support their families, and children often work in the fields without receiving a proper education. Families are also consuming more than they are producing and the aid provided by the government is not promoting self-reliance. Through the HR., the Chinese government has encouraged productivity in many rural areas. Further action needs to be taken. Education is imperative to the livelihood of the citizens of China and needs to be readily available to everyone. Farmers need to be learning about urbanization and its effect it will have on them personally. By promoting awareness, farmers will be able to predict and plan accordingly. Farmers should also be provided with skills that will help them succeed in an urban environment, but moving to large cities should be discouraged. The Chinese government should advocate the creation of small cities and towns, which will slow the growth of urbanization and create a better transition for farmers and their families. Further productivity and enterprises also need to be encouraged in the rural areas of China, which will directly benefit farmers and increase their incomes, eventually lessening the gap between urban citizens and rural farmers. The rate of urbanization has to be monitored

continually. Various organizations still should to provide aid to ensure food and water security; however, this aid must be in the best interest of the recipients. This aid should not be given just to address their current situation, but should be present through long periods of time until farmers receive an education and can better support themselves and their families.

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