

2017

Environmental degradation and the progression of inequality between urban and rural China: A literature review

Summer Smith

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Environmental degradation and the progression of inequality between urban and rural China: A literature review

Abstract

Research has found that the inequality gap throughout China has been perpetuated by environmental degradation that has maintained and contributed to the various factors influencing inequality between urban and rural residents. In order to promote economic growth, institutions meant to regulate corporate enterprises have had less authority. This research focuses on the consequences and contributing factors of environmental degradation as well as its impact on the inequality gap between rural and urban the rise in infertility, the population burden, access to healthcare, access to education, the gender gap, political participation, occupational perceptions, and the international response. Secondary sources suggest that through the establishment of township enterprises and industrialization, the economy grew significantly in accordance with pollution, exploitation of the environment, and the inequality gap between urban and rural residents. The prospect of economic growth has given financial incentive to ignore environmental regulations and maintain inequality within China and worldwide. Seeing as the inequality gap is widening between the rural and urban areas globally while the environment worsens, China's influence and position on the environment is having a significant impact throughout the world.

Degree Type

Open Access Senior Honors Thesis

Department

Sociology, Anthropology, and Criminology

First Advisor

Xianghong Feng

Second Advisor

Megan Moore

Keywords

Gender Gap, Education, Infertility, Political Participation, Occupations, Healthcare

Subject Categories

Anthropology

ENVIRONMENTAL DEGRADATION AND THE PROGRESSION OF INEQUALITY
BETWEEN URBAN AND RURAL CHINA: A LITERATURE REVIEW

By

Summer Smith

A Senior Thesis Submitted to the

Eastern Michigan University

Honors College

in Partial Fulfillment of the Requirements for Graduation

with Honors in Anthropology (SAC Department)

Approved at Ypsilanti, Michigan, on this date April 3rd, 2017

Xianghong Feng
Supervising Instructor (Print Name and have s

Megan Moore
Honors Advisor (Print Name and have signed)

Julian Murchison

Summer Smith

Independent Study ANTH 499

Dr. Feng

Environmental Degradation and the Progression of Inequality between Urban and Rural

China: a Literature Review

ABSTRACT: Research has found that the inequality gap throughout China has been perpetuated by environmental degradation that has maintained and contributed to the various factors influencing inequality between urban and rural residents. In order to promote economic growth, institutions meant to regulate corporate enterprises have had less authority. This research focuses on the consequences and contributing factors of environmental degradation as well as its impact on the inequality gap between rural and urban the rise in infertility, the population burden, access to healthcare, access to education, the gender gap, political participation, occupational perceptions, and the international response. Secondary sources suggest that through the establishment of township enterprises and industrialization, the economy grew significantly in accordance with pollution, exploitation of the environment, and the inequality gap between urban and rural residents. The prospect of economic growth has given financial incentive to ignore environmental regulations and maintain inequality within China and worldwide. Seeing as the inequality gap is widening between the rural and urban areas globally

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Introduction

As a result of evolving climate change encouraged by human activities, the inequality gap between urban and rural residents world-wide is significant. Seeing as wealthier nations have the ability to deal with a certain extent of climate change impacts, their population is harmed less by these activities. In order to promote environmental justice, it is necessary for adaptation and mitigation tactics to be implemented and enforced. These tactics require adaption to prepare for pollution consequences and mitigation to promote sustainability. A nation with a high percentage of people in poverty will not be able to recover from a social, economic, and political standpoint as quickly if at all from natural disasters. Although the entire population is impacted by natural disasters and environmental degradation, the poor are in a position that is significantly more vulnerable than financially stable civilians. Although China has a significant economy, the funds produced are not generated back into working class communities. Environmental injustice and inequality has resulted from the decision to endorse industrialization over the environment which has especially weakened rural communities (Johnston, 1995). The inequality gap within China has made China one of the most unequal countries in the world in terms of distribution of wealth. Since most rural communities use a higher percentage of their income on food, there is little room

for other necessities or entertainment. In response to the unequal distribution of wealth, the People's Republic of China announced an income inequality reform plan. The 12th 5 year plan aims to double personal income by 2020. In an attempt to limit corruption, part of the 5 year plan included limiting the income of government officials. As a result of the decline in health care, China has attempted to implement more social safety nets for the nation's poor. Although majority of the population is covered by healthcare, the out-of-pocket costs have made this service unaffordable. Despite government efforts to eradicate poverty, the lack of land rights has helped maintain this inequality gap. In addition to doubling household income, the Chinese Government aims to have an affordable healthcare system operating as well as a pension system for rural residents by 2020. The implementation of pensions and an adequate healthcare system would be a significant improvement since China only spends 5.7% of its GDP on social safety net programs. Compared to western and industrialized countries this is relatively low. Seeing as there is no notion of private property in China, rural workers are reliant for government assistance. Since property is government owned and they can reclaim this land, it is estimated that the Chinese Government confiscates land from approximately 4 million rural residents per year. Seeing as the government as well as the local government has made significant revenue from the sale of seized land, the government has encouraged the system of inequality despite the appearance of eradicating pollution and inequality. In addition, much of the land confiscated from rural residents has been sold to multinational corporations that have created and maintained the environmental crisis (Salidjanova, 2013).

The lack of environmental enforcement has not only contributed to a decline in biodiversity and environmental prosperity, but it has sustained the inequality gap between urban and rural citizens. This inequality gap determines the opportunities and accessibility available to different groups of people. Although majority of China's residents reside in rural settings, urban residents have more opportunity for political participation. In fact 70% of China's population lives in rural areas while only 30% live in urban areas. A study conducted in 2012 found that deaths among rural residents were significantly higher than it was for urban residents. Although this mortality rate was caused by a variety of factors, the inequality in terms of accessibility is apparent. Seeing as there is a lack in adequate health care as well as accessibility in rural communities. In addition, a gender gap is relevant as well seeing as women have an even lower access to adequate health care than their male counterparts (Liu, Zhang, Li, Kong, Shen, Guo, Zhang, 2012). As multinational corporations relocated to China and Township Enterprises were established, the environment and therefore the well being of citizens were sacrificed for economic prosperity. The prominent environmental issues throughout China are air and water pollution. Seeing as the urban class is vocal about air pollution, the rising issue of water pollution in rural areas is largely ignored. In addition, two thirds of air and water pollution is emitted from China's rural sectors as a result of rapid industrialization. This level of pollution continues despite the initiative towards sustainability. Since the to shift to privatization and industrialization remains vital for government revenue, adapting to sustainable energy and limiting carbon emissions is challenging to enforce (Tilt, 2007).

As a result of government-initiated industrialization, employment in rural areas has shifted from agricultural production to industry employment. Industrialization is a primary emitter of pollutions and has contributed to the decline in physical health. In order to resolve the issue of environmental degradation and its relationship with income and health inequality, it is significant to understand the perspectives of those who are directly affected by this growing epidemic. Tilt's work in the Sichuan province has concluded that there are differences in the perceptions of these risks among different occupations. Seeing as different occupations depend on various factors, risk perceptions were less prominent among industrial workers since the effect is less noticeable. Farmers who depend on the environment saw obvious degradation as a result of their inability to perform their jobs adequately. Although it was concluded that industrial workers are directly affected from breathing in fumigations, they were less concerned with their health (Tilt, 2007).

World Systems Theory is relevant to this issue considering this theory revolves around social hierarchy. Traditionally, a significant aspect of Chinese culture and the philosophy of confucisim is the structure of social classes. The core, periphery, and semiperiphery are the three social structures that represent the social order and the dominant structures. From a global perspective, China is a semiperiphery state. Seeing as multinational corporations and township enterprises have been significant contributors to China's pollution problems as well as the inequality gap between the rural and urban class, China is intact in the world social order. Through an ecological

perspective of World System Theory (Hornborg, 1998) the various inequalities throughout China is explored. This perspective displays the social and economic relationships that have divided the rural and urban communities. The relationships with external actors such as multinational corporations have perpetuated the unequal distribution of wealth and opportunities. In addition, the concept of environmental justice seeks to use ecological relationships to ensure equal treatment of all people while developing and respecting environmental regulations. When environmental regulations are not enforced and industries are not restricted, they deter human rights and sustainability. The modes of production within a society reflect the social, economic, and political relationships. These modes of production have induced periphery and semi-periphery states to become economically dependent on core states (Hornborg, 1998).

Although industrialization has managed to reduce poverty for many residents through urbanization, this has compromised personal health and the environment. The multinational corporations which include the service industry, the fossil fuel industry, and the production industry, are typically from core states such as the United States or Europe. These industries were allowed to flourish with little consequences for a violation of environmental regulations so China's economy could prosper. Although World Systems Theory is relevant from a global perspective, it can also be used to analyze China from within. This form of World Systems Theory is referred to as internal colonialism. Through internal colonialism, inequality between the urban and rural communities have been maintained.

Although living standards have increased for both communities and the gap has slightly narrowed as a result of the push for urbanization, this gap continues to divide opportunities and accessibilities. For instance, the average income for a rural resident in 2014 was 10,489 yuan while the average income for urban residents 29,381 yuan. Despite the increase in income among both communities, the urban community remains in a wealthier position (Wanli, 2015). The dependence on social structures has continued through China's phase into industrialization and urbanization. The urban class is often times representative of the core states while the rural represent the periphery states. Despite the fact that there are certain pollution issues that affect social classes differently, everyone is affected by environmental degradation. Although prominent pollution problems persist in urban areas, they have more access to necessities and opportunities than those in the rural settings, making them the people to be impacted harshly by climate change and the decline of the environment. Through globalization, multinational corporations have not only increased urbanization, but it has increased the tourism industry, thus promoting the service industry and the production industry for external actors. This relationship with external actors has jeopardized the health of China's citizens in accordance with the decline of the environment. The lack of enforcement until recent conflict with urban Chinese citizens and the international community has displayed the power relations and use of space in China.

The Chinese Government and the Ministry of Environmental Protection is more responsive to citizen's perspectives of risks rather than what is factually a prominent

risk. Although the issue of air pollution in urban areas is a prominent issue, water pollution in rural areas is less regulated because there is less political opportunity in addition to mistrust of the government. Seeing as the Chinese Government with the help of the media has omitted and failed to report environmental epidemics, rural residents in particular have less faith in their credibility. Although residents are aware of health risks, many are unaware that the health decline has resulted from industrialization and lack of government regulation. Since rural residents have less political opportunity and many attribute health decline to traditional beliefs, it is less likely that they will make demands for environmental regulation like in urban settings (Shen, 1995).

The scarcity of clean fresh water has increased dramatically since the dawn of industrialization. Although there are severe water shortages in both urban and rural settings, the rural residents are reliant on water for more than just personal necessity. Seeing as China has a small percentage of the world's fresh water source while carrying the largest population and majority of the water they do have is severely polluted, the power dynamics are evident. Environmental injustice deprives humans the right to a clean environment as well as the deprivation of a sustainable future for the planet. This leaves certain groups of people more vulnerable to deprivation and inequality than others (Johnston, 1995).

Prominent Pollution Problems

There are various environmental issues throughout China that have divided the urban and rural classes. Although the air pollution is the most obvious since it is visible, there are other factors contributing to the inequality gap that are just as significant if not more. Water pollution, deforestation, soil erosion, population growth, the loss of biodiversity, and the increase in cancer villages have not only damaged the environment, but these issues have contributed to the preservation of inequality. The Environmental Protection Agency recognizes that a pollution rating above 300 means the air is unsafe to breathe. In Beijing, a significant urban area, it is not unusual for the pollution rating to pass 500. Air pollution is prominent throughout China but predominantly affects urban areas. The use of coal is a direct result of the smog filling the skies of urban areas. The establishment of township enterprises has expanded these issues to rural areas as well. The dominant issue within rural China is water pollution. Seeing as rural areas are heavily dependent on water to sustain agricultural activities, their health in addition to their economic well being is jeopardized. In fact 40% of China's farmland is dependent on the underground water source (Lallanilla, 2013).

Some of the corporations that have been cited as significant violators of environmental regulations include American Standard, Panasonic, Pepsi, Nestle, and Microsoft. Despite promises and announcements of abiding by regulations, these companies as well as various other multinational corporations were publicly exposed for their violations and hypocrisy. The violations include toxic waste dumping as well as

significant air pollution. Seeing as much of the public was unaware of the damage inflicted by these enterprises, this exposure has put internal and external pressure of the People's Republic of China to resolve their environmental epidemic (<http://www.worldwatch.org/node/4764>). Although the Yangtze River is the longest river in China, it has become severely polluted over the last 50 years. In fact, there's been a 73% increase in pollution within the Yangtze River. The pollution problems within China display the dominant social relationships with internal and external actors. Seeing as this increase in pollution occurred in the same time period as industrialization and urbanization, it is evident that environmental decline has impacted the rural and urban communities. Those who are dependent on the Yangtze River are impacted by the increase in pollution. With 25 billion tons of sewage in the Yangtze River, there has been a severe loss of biodiversity that has weakened opportunities, health, and finances of working class citizens. The amount of sewage in the Yangtze River is 42% of the sewage dumped in China. This waste is produced by multinational corporations that illegally dump waste and are not persecuted. Seeing as this is a significant transportation river, much of this discharge is from shipping. Ammonia nitrogen and oxidizing compounds have dramatically reduced the safety of the drinking water and the level of biodiversity in the river. In addition to factory pollution, rural industries have contributed to the environmental decline as well. Although multinational corporations contribute majority of the pollution to the Yangtze, agricultural pollution has had an impact. China's agricultural industry is reliant on the Yangtze River as a water source. Since 40% of China's freshwater is in the Yangtze River and water is becoming

increasingly scarce, the prosperity of this river is significant for all communities in China. In addition, 40% of China's GDP is reliant on the Yangtze while it is needed for 70% of the country's rice production, 70% of the fishery productions, and 50% of the grain production.

(http://wwf.panda.org/about_our_earth/about_freshwater/freshwater_problems/river_decline/10_rivers_risk/yangtze/yangtze_threats/). Since 90% of underground water is polluted and 60% is severely polluted, it is clear environmental enforcement in both rural and urban areas is a necessity and the strengthening of local government is a necessity. These pollution problems have created cancer villages throughout rural China. Cancer is not uncommon because the people who live in these communities are poor, they have limited access to health care and have high exposure to pollution (Lallanilla, 2013).

Although many are aware of the pollution problems, it is commonly believed that other factors such as drinking and smoking are the primary cause. Rural residents are less likely to politicize their voices if they are unaware of the true causes of cancer villages. Smoking and drinking may be a significant factor, but pollution damages the community, not just the individual. In addition, rural residents are often mistrustful of the media seeing as it reflects the values and opinions of the People's Republic of China. Air pollution is typically given the most attention because it is the most noticeable and is a priority to the urban population. In this regard, inequality is maintained through lack of access to education and political participation from the rural class. They are often mistrustful of the government and don't believe their opinions and complaints will be

heard. The active political participation of the urban class against air pollution has led the Ministry of Environmental Protection to announce plans to reduce air pollution even if there are other pressing environmental issues occurring in rural areas (Wainwright, 2010).

Since the rise of industrialization, China's residents have become less trustful of their government officials. Seeing as the rural residents are impacted in various sectors from government regulations or lack thereof, they tend to be more mistrustful of the government and the media. Although urban residents are growing more mistrustful as well, they are impacted in different capacities than those in rural settings. A research study has concluded that 84% of Chinese citizens believe corruption to be a problem while 44% believe it to be a significant problem. Following corruption, air and water pollution are perceived to be significant threats with 76% identifying air and 75% identifying water. Despite the significant attention given to air pollution, the issue of water pollution is being taken seriously as well since it is a relevant issue in urban settings. In addition, 75% agree that the inequality gap is an issue throughout China. Food safety, healthcare, education, quality of manufactured goods, and medicinal safety are all significant concerns the people of China have claimed to be relevant (Wike, Parker, 2015).

Although these issues are not solely caused by environmental degradation, it is a contributing factor. In fact, environmental degradation has maintained a cycle of inequality between the urban and rural residents. Seeing as corruption has allowed the environment to be exploited in exchange for economic achievements, it is necessary to

change the current pattern. Since 56% of the population believes corruption will either get worse or stay the same, there is little optimism for the environment and therefore the narrowing of the inequality gap. Despite the concerns surrounding the consequences of industrialization, 96% believe they have a higher standard of living than their parents generation. If 96% believe this, then it is less likely that they will protest the industry they believe has benefitted them. Although standards of living have improved and the inequality gap has recently narrowed as a result of the growing attention it is receiving, this gap continues to exist even with the economic improvements. Unless China's citizens are dedicated to preserving the environment and promoting equality that multinational corporations have deteriorated, then the situation will remain the same or worsen as many have predicted (Wike, Parker, 2015).

The Chinese Government's association and trading agreements with external actors have also contributed to this mistrust and the image of corruption in the government. Although the modern ways of life are being adapted and preferred often times by the younger generations, the loss of cultural values as a result of these external actors are still significant concerns. As a result of these unsustainable forces that drive modern life, 79% believe traditional values must be protected from foreign influence. (Wike, Parker, 2015). Seeing as these external actors have contributed a significant portion of pollution to the country, they have not only disrupted nature, but they have disrupted cultural lifeways. When the environment in which people live is destroyed, the cultures and traditions that accompany them are often destroyed as well. Traditional industries such as farming are disrupted, while urbanization increased. Since

the environment in rural areas has been degraded to the point where the farming industry has been disrupted, people are often forced to migrate to urban areas for employment (Lallanilla, 2013). In addition to the change in cultural lifeways, the need to urbanize is for financial reasons, meaning the environment needed for farming has been harmed, and therefore the inequality gap has widened (Wike, Parker, 2015).

The lack of biodiversity has decreased agricultural activity and therefore economic prosperity. Smog and soot cover trees and plants while chemicals released in the water kill fish and wildlife (Tilt, 2007). In addition, overuse of the land has resulted in soil erosion occurring in Northern Hebei. Industrialization of Hebei has increased in accordance with pollution as well as China's population. Although the One Child Policy has maintained their population, they have continued to grow. The increased population increases the need and desire of expanding economic opportunities. These economic opportunities have led China to ignore environmental regulations to pursue profit. Following the rise of industrialization, the province of Hebei became one of the most polluted provinces in China. In fact, 7 of the 10 most polluted cities in China are located in Hebei province, making it evident that inequality and environmental degradation play a significant role there. These cities include Xingtai, Shijiazhuang, Baoding, Handan, Hengshui, Tangshan, and Langfang. All of which have a pollution rating that exceeds safety levels. Although the Ministry of Environmental Protection claims to have immersed themselves in the "war on pollution", these regulations have not been strictly enforced, and have been flexible for multinational corporations. They have concluded

that the city of Baoding is not only Hebei's most polluted city, but it was also China's most polluted city in 2015 and continues to maintain that title (Yiyi, 2015).

The various consequences and contributing factors of China's pollution epidemic on both the environment and the inequality gap is explored throughout this review. The Infertility Crisis, Population Growth, Access to Education, Gender Inequality, Access to Health Care, Political Participation, Occupational Perceptions, and the International Response are all factors that will be further explored. Seeing as many of these issues would be less critical without the pollution epidemic, it is evident that they have worsened inequality. Although it is unlikely that all these issues would be non-existent without pollution, the extent of inequality would be less severe without its intrusion. For The solutions and efforts to promote sustainability and preserve the environment will also be explored to highlight reduction tactics. In order to enforce solutions to these intertwining issues, the areas that divide China's rural and urban class are significant to the reduction of pollution and inequality.

The Infertility Crisis

Although China implemented the One-Child Policy in 1979, the fertility rate has declined significantly as a result of the pollution problem instilled through industrialization. The rise in cancer and infertility in the pursuit of economic growth has left the rural community particularly vulnerable. Between 1970 and 1992 the fertility rate decreased from 5.75 children a family to 2 children (Shen, 1995). It is true that the

One-Child Policy has limited China's population, but this decline in rural and urban areas has also been the result of a physical inability to have children. The migration of rural residents to urban settings for work has perpetuated the increase in cancer, diseases, and infertility (Wainwright, 2010). Working in urban settings in low paying occupations are typically more profitable than options in rural communities. Many low paying positions are in production and manufacturing industries that result in high exposure to toxic chemicals. Since air pollution is more prominent in urban settings, the migration from rural to urban increases these risks. Although cancer, diseases, and infertility are significant issues in rural areas as well, the migration to urban settings increases these effects. Seeing as the infertility rate has risen by over 12% since the dawn of Chinese industrialization and the establishment of township enterprises, it is certainly not a coincidence. The exposure to harsh chemicals in factories as well as the exposure to these chemicals in the agricultural industry has maintained health risks. Despite the One-Child Policy and the rise in infertility, it is still believed that China's population will continue to grow at a rapid rate (Shen 1995). In addition, there has been a significant rise in birth defects in both urban and rural areas. This phenomena can be explained through air pollution, the lack of access to health care as well as traditional healing beliefs that discourage rural residents from visiting a hospital even if they did have access.

As a result of car emissions, coal burning, and factory pollutants, birth defects have increased by over 70% since the emergence of industrialization. A child born in an area with rampant pollution is 3 times more likely to be born with a birth defect. Since

nearly 80% of China's population resides in rural settings, this is a prominent issue for the majority of the population (Bienkowski, 2014). Those in urban areas especially migrant workers, are more vulnerable to these impacts since they have less access to maternal care. Despite maternal care being more available in urban areas, the unaffordable costs of these services leave the urban poor with little options (Shen, 1995). Although this issue is relevant to rural residents, urban residents surprisingly have a higher percentage of birth defects. Air pollution in urban settings has played a vital factor in the rise of birth defects seeing as there are more vehicles and industries. The expansion of these industries to the countryside have worsened this issue in both settings (Bienkowski, 2014).

According to the Ministry of Health, China's annual birth defect rate has risen to 900,000 per year. The air pollution limits the nutrients vital to an unborn child's survival, resulting in premature birth, low birth weights, physical disabilities and mental disabilities. Expecting mothers are not even safe from air pollution while indoors. Charcoal, kerosene, and coal are commonly used in China and developing nations for cooking purposes, resulting in women and children having the highest exposure to these common household items. The province of Hebei remains among the worst polluted urban areas that has spread air and water pollution problems throughout China. Since this phenomenon of low fertility and birth defects have occurred more dominantly among urban residents who are more vocal in politics, resolving air pollution in urban settings has been significant in China's war on pollution. Although there has been a

decrease in the use of coal and mercury since the declaration, this issue continues to impact both urban and rural communities (Bienkowski, 2014).

Population Burden

Seeing as China's population has exceeded 1.3 billion people, their carbon emission rate has contributed significantly to environmental degradation. Although pollution has contributed to the rise of infertility and birth defects, the population continues to grow. Since the One-Child Policy has been replaced with the Two-Child Policy, it is apparent that China's immense population has strained the environment needed to support this quantity of people. In accordance with population growth, China's economy has had to maintain the demands of its' citizens. In order to do so, the environment was sacrificed for economic prosperity. To sustain the growing population, not only has the agrarian sector impacted the environment, but the industrial sector has blossomed to meet the needs of Chinese citizens, as well as supply products to China's trading partners (Albert, Xu, 2016). The extensive use of the land has resulted in soil erosion, in addition to the chemicals polluting and endangering agrarian prosperity. It is estimated that the Gobi Desert is expanding through western and northern China by 1,900 square miles each year. In fact, a quarter of the country which is disproportionately rural is desert, displaying the extent of inequality. Since the rural areas that were ecologically diverse are the first to be consumed by the expanding desert, those dependent on the environment are in a vulnerable situation. Unless the

destruction of the land and soil is contained through adaption and mitigation tactics, the desert could worsen and eventually reach urban areas (Economy, 2007).

Not only is it necessary to feed a population of this quantity, but obtaining fresh water becomes even more significant as the population rises and the environment declines. China maintains 20% of the world's population and only 7% of the world's fresh water. The water containing harsh elements is located in both rural areas and urban areas. This means when there is a fresh water shortage, the rural residents will have less access to assistance while the poor urban class will be disadvantaged as well. As of 2014, there were 17 million new cars entering China's roads. This contributed to the 154 million cars owned by Chinese citizens compared to the 27 million cars owned in 2004. This increase in car ownership displays the impact on air pollution and carbon emissions in China and throughout the globe. Although a significant portion of the population resides in rural settings, the Chinese government continues to encourage rapid industrialization and urbanization. They aim to have half of the country's population living in cities by 2020. As a result of migration and the Chinese government's push for urbanization, China's urban class is surpassing the rural class in population. In the past, majority of Chinese citizens resided in rural areas. Industrialization has reversed this scenario to reflect the desires of the government and external corporations. Although the People's Republic of China claims to be fighting the war on pollution, rapid industrialization and urbanization has been a major contributor in environmental degradation and therefore the health-wealth gradient (Albert, Xu, 2016).

Occupational Perceptions

Seeing as there is a difference in perceived risk based on occupations, there is a difference in perceived risk between the rural and urban class. The significant immigration from rural sectors to urban sectors has created divisions even within communities. In the province of Sichuan, a study was conducted to determine the awareness of environmental risks between differing occupations. The Sichuan province can be compared to the Hebei Province seeing as industrialization and urbanization has contributed to economic prosperity in both regions. This divide between occupations has pertained this form of internal colonialism. Seeing as pollution and therefore the factors influencing inequality have been created by industrialization and urbanization that have been largely influenced by external factors, internal colonialism has been maintained through the various occupations associated with rural and urban communities (Hornborg, 1998). Although there is a general awareness of the risks associated with pollution caused by industrialization, people were generally concerned about the wellbeing of their income rather than their health. During this study, residents in the town of Futian Sichuan were asked to rate the level of importance for certain factors caused by pollution and environmental degradation. The three groups being studied are farmers, industrial workers, and service sector workers. They were asked to rate these factors on a scale of little or no risk to high risk. The factors include direct health effects, damage to plants or crops, damage to visibility or scenery, threats to

animal health, economic losses, effects on the food chain, and threats to longevity (Tilt, 2006).

Although all of these factors were determined to be significant among all of the groups, certain factors were more relevant within each occupational group. Economic losses was the factor that all parties were most concerned with. Damage to plants and crops, threats to animal health, and direct health effects are issues that impact rural farmers more than people in urban communities who are more likely to work in the service and industrial sectors. These factors were important to industrial and service sector workers, but were less significant seeing as they didn't impact them as harshly as those who are more dependent on the environment. Surprisingly, direct health effects was less of a concern for industrial workers than the other occupations. Since industrial workers are exposed to harsh chemicals on a daily basis, it would seem that direct health effects would be a primary concern. Among these groups farmers have the lowest income, followed by service sector workers while industrial workers earn the highest income. Many industrial workers are migrants from rural areas, making industrial occupations the most appealing occupation in terms of economic profit. Although they are aware of the direct health effects, it may be easier to ignore these impacts for financial incentives. Industrial and service sectors workers were concerned with damage to scenery, (Tilt, 2006). In addition, people were more vocal in regards to pollution issues that could be easily identified such as air pollution. Those employed in the agrarian sectors were primarily concerned with damage done to plants and animals since they are dependent on those assets for economic survival. Damage to plants and

animals was less significant to industrial workers since they are not dependent on the agrarian sector (Tilt, 2007).

Although industrial workers determined this had a negative impact on the ecosystem, it was not personally significant to them. Surprisingly, industrial workers were less concerned with threats to personal health despite being exposed in close range to harsh factory chemicals on a daily basis. Seeing as Industrial workers earn a higher wage than farmers, they may be able to ignore the health risks since they have more financial security (Tilt, 2006). This was true in Hebei as well since the workers in urban settings were primarily concerned with pollution that was visible. In addition, they were also more concerned about issues that could impact their financial status rather than their health. Although everyone is at risk of pollution, the ways in which the various occupations perceive these risks determines the course of action the government will pursue (Yuheng, 2011).

Access to Education

Although industrialization has encouraged the People's Republic of China to reduce the education gap between the urban and rural class, this gap continues, thus ensuring economic and environmental inequality. Seeing as there is a shortage of schools in rural areas, people must send their child to a school located in an urban setting. After 1978, the number of years a rural child attends school increased from 4 years to 8 years. For urban children, the number of years attending school increased

from 7 years to 12 years. Despite the improvement in number of years attended, it is apparent that the urban community is still further ahead in their education than the rural community (Tilt, Qing, 2010). This displays the impact the lack of environmental justice has within communities. Since human rights is directly correlated to the environment and it is evident that this relationship is maintained through social relationships. These social relationships have limited opportunities for advancement among the working class. Those who are financially strained by environmental degradation have less access to education and economic opportunities (Johnston, 1995). In addition, this creates a gender gap within the education system. Since the cost of school is unaffordable for many rural residents, families often chose to send their son to school instead of their daughter. The patriarchal system has ensured that girls are trapped in rural settings without access to education. Instead, it is expected that they work in order to assist their brother in attending a school. Although gender inequality was created by the existing patriarchal system, it has been maintained through pollution (Tilt, Qing, 2010).

This form of inequality has been perpetuated by environmental degradation seeing as the establishment of township enterprises and industrialization has weakened opportunities available to China's poorest residents. The poorest residents who are most dependent on the environment typically live in rural areas. Since many rural residents are financially dependent on the environment, its decline has impacted their ability to send their children to school. As a result of the existing patriarchy that has been encouraged by industrialization, parents who cannot afford to send more than one

child to school typically send their son over their daughter. This tradition of sending sons over daughters is not solely the result of environmental degradation, but it has allowed this tradition to continue. It is less likely that people will vary from tradition when they are limited financially (Tilt, Qing, 2010).

Environmental degradation has resulted in limited finances particularly in rural areas, therefore maintaining gender inequality and inequality between the urban and rural residents. Although the One-Child Policy had opened doors for urban girls, those in rural settings did not have these advantages. Prior to the institution of the Two-Child Policy, urban daughters had the advantage of being an only child and therefore receiving the attention from their parents that would have been given to a son had they had one. Being located in the city gave them the advantage of being close to schools and having parents who were more likely to work in a profitable field. Although many migrant women have moved into the city for work, it is often to assist their family and their brothers' education. This lack of access to education has left rural residents questioning the honesty and intentions of their government (Tilt, Qing, 2010).

Table 1 displays the gap in education between the rural and urban communities before and after 1978.

Table 1 (Education gap between rural and urban residents)

	Before 1978	After 1978
Urban	7 Years	12 Years
Rural	4 Years	8 Years

Gender Inequality

In addition to the gap in access to education, women in rural China have less access to necessities in general than women from urban China. The high levels of stress imposed upon women have resulted in a high suicide rate as well as high mortality and illness rate for women in China. Women in urban areas experience high stress levels from patriarchal values as well, but have more opportunity. In rural settings, education is viewed as the only means of escape. For many women that opportunity has long passed, increasing their stress level and dependence on their environment. Seeing as men often seek higher paying occupations, women in rural areas are expected to operate the farm and continue their household chores (<http://www.china.org.cn/english/China/141286.htm>). In addition, husbands and wives are often separated for work, straining family relations. Like many of the factors that are consequences of environmental degradation, gender inequality is not solely caused by pollution, but it is instead a contributing factor (<http://www.who.int/bulletin/volumes/87/12/09-011209/en/>).

The gap in education is a result of the patriarchal system that has not improved as a result of environmental degradation that has limited opportunities for social change. The suicide rate in China accounts for 26% of the world's suicides and is the fifth leading cause of death in China. Although China has a large population, this rate of suicide indicates there is a significant inequality gap. In addition, these suicides are

largely induced by females from rural settings and remains the leading cause of death for young women in China. (<http://www.who.int/bulletin/volumes/87/12/09-011209/en/>). People in rural settings are also 5 times more likely to commit suicide than rural residents. Seeing as most western countries have suicide rates that are higher for men than women, this reverse effect in China displays the oppressive impacts of patriarchy combined with pollution. Since women in rural settings have few options other than self-sustainability, they are reliant on the environment. When that environment is impacted by pollution, the land necessary to sustain themselves is compromised, therefore increasing the level of stress and depression (<http://www.china.org.cn/english/China/141286.htm>).

Healthcare

Although everyone in China is impacted by environmental degradation, the rural community is particularly disadvantaged seeing as they have less access to health services. Since 2009, China has been in the process of implementing the Guidelines for Deepening Health Services Reform. This reform is aimed at establishing universal coverage for all of China's citizens. Prior to 1980, China's healthcare system provided basic services to nearly all of China's residents. Following the rise of industrialization in the 1970's this system was changed to reflect the desires of private enterprises. These changes made health care inaccessible and unaffordable to a significant portion of rural and urban residents. Through this program, China has increased healthcare access to

the rural population as well. The increase of rural migration to urban areas has also increased the number of residents vaccinated. Although over 90% of China's children have been vaccinated, it is still evident that those in wealthier regions have a higher percentage of children vaccinated than those in poor rural regions (Meng, Tang, 2010).

Despite this improvement in child health care, there is still a significant gap between the urban and rural communities in terms of maternal health care. While 97% of eastern province residents have access to maternal health care, only 43%-61% of people in middle and western provinces have access to postnatal care and maternal care (Meng, Tang, 2010). In addition, the illness rate for women in rural areas is 5% higher than for men in rural areas. A village survey concluded that 60% of women suffered from a form of long term illness and had to visit a doctor significantly more than their male counterparts. The low maternal care and access to women's healthcare has resulted in high gynecological illnesses. In fact, these diseases impact 70% of the women in Houhe Village in the Sichuan Province. The increased stress on women combined with the lower access to healthcare has resulted in a high illness and high mortality rate (<http://www.china.org.cn/english/China/141286.htm>). In accordance with rising healthcare costs, chronic illnesses rose as well. Since 2005, there has been a 19% increase in cancer in urban settings and a 23% increase in rural settings. It is believed that this increase is a result of increased air and water pollution (Economy, 2007). Through the use of New Cooperative Medical Schemes (NCMS), majority of the rural residents are covered under this program. Seeing as this program is reliant on financial incentives, this service is often times unaffordable for the residents it aims to

serve. As a response to the high costs associated with NCMS, the Medical Assistance Program (MFA) was established in 2003 to assist with these rising costs. This program covers both urban and rural residents from financial burden. Although the decline in health has been evident since the commencement of industrialization, rural residents have more use for this program since they are in a disadvantaged position in terms of location and likelihood to have financial stability (Meng, Tang, 2010).

Despite the improvements and efforts to provide healthcare to all of China's residents, there is still a gap in accessibility and quality of service. The medical services provided in rural areas have limited options seeing as majority of doctors in village clinics have no formal training or education. The focus of the medical system has been on both preventative and curable treatments as well as inpatient and outpatient services. In order to promote preventable disease methods, not only does the health care system need to focus on patients rather than finances, but the government needs to pay attention to the environmental impact. The rise in chronic diseases since industrialization is intertwined with environmental degradation. In order to promote public health and safety, the environment in which people live must be a higher priority than financial incentive (Meng, Tang, 2010).

Table 2 represents the maternal health care coverage throughout China. From this chart it is evident that Eastern Provinces that are typically urban have more access to healthcare. Western and middle provinces are more rural and have less health care coverage.

Table 2 (Differences in access to maternal healthcare between eastern urban and rural middle and western provinces)

Healthcare	Total	East	Middle	West
Pre-natal	94.4%	97.6%	94.9%	91.5%
Post-natal	56.9%	62.7%	43.0%	61.2%

(Meng, Tang, 2010).

Political Participation

Despite the influence of rural-urban migrants on the economic prosperity of China, there continues to be a gap in political participation between the two classes. It is believed in many rural communities that the government as well as the media controlled by the government has covered up various environmental incidents to avoid the demand for environmental enforcement throughout the region. Restrictions on organizations opposed to the People's Republic of China have deterred political participation significantly for people who are in vulnerable positions. In addition to the

media, there are restrictions on Non-Governmental Organizations (NGO's), local officials, and courts. Seeing as China has industrialized relatively recently, the changes and impacts of the environment have been noticeable for Chinese citizens. These drastic changes have led the urban community to voice their concerns to the government and the world (Economy, 2007).

In 2005, over 51,000 pollution related protests occurred throughout China in response to financial burden, health issues, and inequality issues maintain by pollution. Although these issues received attention due to vocal urban residents, small village protests have received less attention globally and internally. The intolerance for opposition to economic interests discourages political participation among the rural community that would benefit the environment and promote equality. (Economy, 2007). Political Participation is significant to provinces such as Hebei since it is among the most polluted provinces and has led the war on pollution. Although China deters opposition, the environmental crisis is relevant to urban areas that receive increased international attention. The noticeable pollution as well as its impacts have led urban citizens and the international community to demand sustainability. This war on pollution has been largely influenced by the urban community who continue to advocate on behalf of the rampant air pollution plaguing major cities (Lallanilla, 2013).

Although the issue of air pollution should not be taken lightly, the issues within rural communities have largely been ignored and will have significant consequences if they continue to be ignored. Seeing as 60% of China's underground water is classified as severely polluted, this is an issue that should concern both the urban and rural classes. Despite recent increased attention to the rural water issues, the war on pollution was focused on the demands of wealthier citizens who are centralized into the

political environment (Lallanilla, 2013). Although the rural class is more economically dependent on water, the urban sector and the entire population of China are dependent on a scarce water source for survival. Since there has been water shortages in major urban centers throughout China, this issue should be a top priority. Air pollution and smog continue to be a dominant issue since it is a noticeable factor (Buckley, 2016). As discussed in Tilt's study, industrial workers were primarily concerned with pollution that was easily identifiable such as damage to scenery and soot (Tilt, 2010).

Since urban residents typically earn higher wages, they have less to worry about than someone who is economically dependent on the environment. Urban residents have vocalized their complaints on air pollution which has launched the Chinese government to enforce environmental regulations to a certain extent in areas where there are complaints. Seeing as rural residents are not located in areas where they can politicize their voices, they have less opportunity. In addition, many are uneducated and are in financially unstable situations, making them less likely to have the confidence to speak out. Often times people are uninformed on who is causing the pollution problems as well as what could be done to stop environmental degradation. In addition, rural women are the least likely to politicize their voices. In rural villages women only make up 12.5% of political figures. Although there are matriarchal minorities in China, rural women in particular have low decision making at home while also being heavily relied on. This heavy reliance on women is a result of the patriarchal society as well as the decline of the environment. Those most vulnerable in rural China are women and children. The decline of the environment has further maintained this inequality and reliance on women that have weakened their opportunities (<http://www.china.org.cn/english/China/141286.htm>). Mistrust of the government as well

as the media has led to a common belief that they will not be heard even if they tried. Many rural residents blame health problems on smoking, drinking, and harsh physical labor. Although these activities may certainly play a factor, the continuing environmental epidemic is underestimated. When there are other factors at fault besides the lack of environmental enforcement, it is less likely that rural residents will vocalize their complaints in the same way urban residents do even if they had access to do so (Wainwright, 2010)

Table 3 displays the level of risk and access the rural and urban communities have with each factor associated with environmental degradation.

Table 3 (All factors that influence urban and rural communities)

	Urban	Rural
Infertility	Highest Risk	High Risk
Population Burden	High Risk	High Risk
Occupational Perceptions	Most Influential	Least Influential
Access to Education	Highest Access	Lowest Access
Gender Inequality	High Risk	Highest Risk
Access to Healthcare	Highest Access	Lowest Access
Political Participation	Highest Participation	Lowest Participation

International Response and Implementation of Environmental Policies

As a result of rising carbon emissions and water pollution, the international community has responded with concern for public safety, the global rise in inequality, and the continued sustainability of the environment. Neighboring countries such as Japan and South Korea have displayed concern for their environment as a result of China's pollution crossing international borders. The international community has collaborated with the People's Republic of China to encourage and implement adaptation and mitigation tactics. As discussed earlier, adaptation refers to the notion that a country should adapt and prepare for the changes in the climate and therefore the decline of the environment. Mitigation refers to the limiting of greenhouse gas emissions. This solution requires core states who are the largest greenhouse gas emitters, to change their production methods of polluting to a more sustainable industry such as the solar, wind, or waterpower methods. An example of a mitigation tactic includes the international and domestic response to the pollution occurring at Lake Poyang in the rural Jiangxi Province. As a result of the textile corporations dumping toxic waste into this water source, Lake Poyang is no longer China's largest freshwater source. This location once known for ecological diversity has severely low water levels and has even dried up in certain areas (Kahn, Yardley, 2007).

Seeing as this lake is located in rural China, the loss of the water source has immensely hindered the necessities needed and the opportunities available to millions of poor rural residents. In order to raise awareness and therefore encourage

sustainability, the United Nations Development Programme (UNDP) has collaborated with the All-China Environment Federation (ACEF). The ACEF is China's largest non-profit organization that is government sponsored. This organization along with the UNDP, seeks to raise awareness of the inequality created and maintained through environmental degradation as well as the drastic impacts on the planet. In order to both adapt and mitigate, it is significant to strengthen local rural communities to ensure proper enforcement. Seeing as rural communities are impacted harshly by environmental decline, it is necessary to change enforcement levels in addition to preparing and preventing for the consequences associated with pollution (Kahn, Yardley, 2007). Since majority of the production in China is exported to core states, it is evident that China's global status as a semi-periphery state has maintained internal colonialism between rural and urban communities. In addition to strengthening local communities, it is necessary for Chinese citizens to benefit from the production companies within their country (Salidjanova, 2013). By informing the public of the situation, the government is pressured to enforce environmental regulations. When environmental lawyers have an informed public seeking environmental justice, it gives the cause for sustainability a significant backer. In addition, the UNDP and the ACEF have been able to file environmental lawsuits. These actions display mitigation tactics seeing as they are interested in reducing pollution rather than having nations adapt to environmental decline (Kahn, Yardley, 2007).

Despite the efforts and support for sustainability on behalf of the Chinese Government, the initial challenge of reducing pollution and therefore the inequality gap continues to be in enforcement. China has made agreements with their neighboring countries to reduce their carbon emissions in order to stop the spreading of poor health

domestically and internationally. In addition, the U.S. Government has expressed concern seeing as China's pollution has spread to the west coast of the United States. As a result of sulfur dioxide and nitrogen oxides used to maintain China's coal industry, acid rain has spread over South Korea and Japan while particle pollution originating from China has been impacting Los Angeles (<https://www.epa.gov/international-cooperation/epa-collaboration-china>).

Although industrialized nations such as the United States grew their economies and their societies through the exploitation of the environment, environmental degradation is now a growing concern. Seeing as China's industrialization era began in the 1970's, they are creating their economy in a similar fashion as previous empires have done. As a result of China's population, the reliance on coal has hindered the global environment. Seeing as China burns more coal than the United States, Japan, and Europe combined, their impact on the health-wealth gradient and environmental degradation is significant (Kahn, Yardley, 2007).

In order to improve environmental regulations that have not always been enforced, the Environmental Protection Agency has collaborated with China on a variety of environmental issues. This issues include air pollution, water pollution, sewage and toxic waste disposal, environmental organizations, as well as prevention and preparation for an emergency response in the event of a national or environmental emergency. The growing environmental crisis as well as the growing inequality gap domestically and internationally has been a significant motivator for environmental enforcement (Albert, Xu, 2016). The Environmental Protection Agency (EPA) collaborates with the National Development and Reform Commission (NDRC). The use of cookstoves as well as the monitoring of corporate waste have been solutions that

have contributed to the reduction of China's pollution epidemic. This type of international cooperation is needed to promote sustainability and the prosperity of all citizens.

(<https://www.epa.gov/international-cooperation/epa-collaboration-china>).

Discussion and Conclusion

All of these sections display the various impacts the environment plays on the inequality gap between China's rural and urban class. Many of these factors are intertwined to reveal that justice within social classes can begin to be resolved through environmental justice (See Table 3). In order to have equality between social classes, there must be environmental justice. Human rights are directly associated with the environment and its degradation is a result of human intervention. This human intervention is why this relationship with the environment is a social relationship. As long as the rural class is dependent on the environment while the government and multinational corporations continue to exploit it to promote urbanization and industrialization, that is the social class that will be disadvantaged. Despite recent efforts to improve healthcare access and access to education, the rural community is still not located within the vicinity of many educational institutions or hospitals. Given the fact that the mortality rate is higher among the rural community than the urban, it is evident that the lack of hospitals in the region is a significant aspect in this phenomena. In addition, the cost of education with increased poverty has promoted gender inequality, as well as a gap between the urban and rural communities in terms of

education. Seeing as the decline in the environment has decreased income among those in the agrarian sector, families have less money for education or healthcare. Those dependent on the environment for a living are particularly vulnerable to health, economic, social, and political factors. Despite the variations in impact, all the consequences of environmental injustice are experienced by the entire population in one form or another. The ecologized version of world systems theory explains the social relationships that have created this intertwined relationship. Seeing as China is a semi-periphery state advancing to a core state through industrialization, this form of internal colonialism involves external actors. In order to continue receiving economic profit and developing, environmental regulations have not been enforced. Although certain factors may not be solely caused by pollution and environmental degradation, the decline in the environment has maintained the social relationships between the rural and urban communities in China.

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