

Modernity and the Environment: An Analysis of Industrialization, Urbanization, and Political

Incorporation within China

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Introduction

From the theory of modernization stems an issue of great substance, rooted in the desire for economic success by developing nations. The desire to move forward to “higher” states of being has been a key focus by nations from the period of the Enlightenment, and still persists to this day; though this moving forward from what is thought of a “traditional society” to an “advanced society”, does not come without sacrifice. Due to the desire to become economically successful, have an intelligent and knowledgeable population, and develop a national identity (University of Twente, n.d.), nations consistently, and without fault, make an impact on the land they so firmly stand on. The correlations between modernization and environmental degradation are undeniable, evident due to numerous cases in our world’s history, along with in contemporary times. In particular, I will be studying three key elements of modernization, those of industrialization, urbanization, and political incorporation, to see how they have led to the degradation of the environment, with specific reference to the growing and extremely prominent issue of air pollution in China.

Born in 17th century Europe, during the Enlightenment, the theory of modernization established a set of ideals by which a society could strive for advancement. It established the idea that through its progression, a state should work to implement a democratic system of governance (Przeworski & Limongi, 1997). In the desire to to make the shift from a “traditional” society to an “advanced” one, societies began to follow on a generalized path, typically outlined by “industrialization, urbanization, education, communication, mobilization, and political incorporation” (Przeworski & Limongi, 1997). As seen throughout the course of history, many states have made this journey, beginning with England in late the 1700’s and continuing through

the mid 1800's, then with North America, and a variety of other nations throughout Europe. The fact that the theory of modernization was devised in Europe leads to problems of its own, such as the fact that it became increasingly Eurocentric, and therefore when the thought was exported to other, non-Western countries throughout South America, Africa, Eastern Europe, and Asia, the idea could not always be implemented as efficiently (Ley, 2016).

Industrialization and the Environment

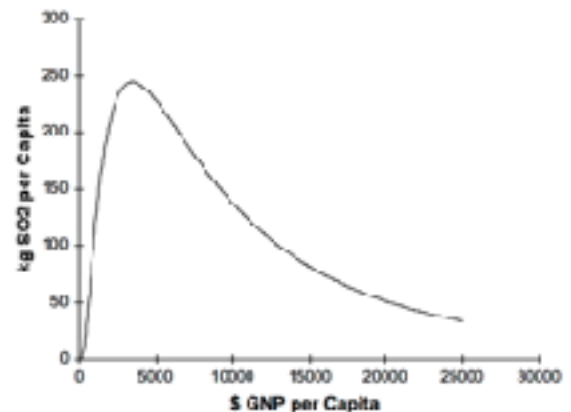
Through their journeys into “better” states of existence, states saw the need to succeed economically, as wealth and economic success would in turn allow them to more easily move forward in their overall development. This mindset materialized in the form of the Industrial Revolution, which eventually led to better living and economic conditions for populations present within these rapidly developing nations (Nardinelli, n.d.). Though, alongside the Industrial Revolution came a visible, yet largely ignored, at least by the masses, side-effect, of which would take many years to become acknowledged. This issue was that of environmental degradation. During this period in time, the environment was set back as a point of interest by both the masses and political leaders, as the main goal established by nations utilizing the theory of modernization was to become a world leader in the realm of manufacturing (Ley, 2016). In the status quo, China exemplifies this progression. An examination of China reveals its attempt to move forward in economic development and its conformity to the stages of industrialization. Looking back 26 years to China's pre-industrial time, 1981, China's GDP per capita was only at \$195.60 current USD. Jump forward in time to the present day, and this number has leaped to

\$7,590 dollars (World Bank, n.d.). This substantial shift in GDP has correlated not only to increased economic success, but also increased environmental degradation.

To first understand the reasoning behind why China is going through this later period of industrialization, in comparison to a country such as England or the USA, it is important to first understand the classical division of labour, which split the globe into two sectors, that of the global North, where goods were manufactured and produced, and global South, where raw materials were harvested and sent to the industrial North for processing (Odeh, 2010). Recently, though, this has shifted, and a new division of labour has emerged. This new division sees the global South still as a raw material producing collection of nations, but they now have something else to their name: industrialization and urbanization. As the global North has moved toward a more knowledge and service based economy, the global South has taken its position in regards to industrialism, which allows us to, in real time, watch and analyze the effects modernization has on the environment.

As found in J. Cherniwchan's article, "Economic Growth, Industrialization, and the Environment", as a nation shifts its focus from agricultural, to industrial goods and means of production, the quantity of pollutants they produce in turn increases. This is easily demonstrated on the Environmental Kuznets Curve (EKC), which places a country's gross national product per capita next to its net pollution output per capita, displaying how

Figure 1: Environmental Kuznets Curve for Sulfur Emissions



Source: Panayotis (1993); Stern et al. (1996).

nations in a state of growth in turn produce a much higher quantity of pollutants, until a certain

point, where manufacturing and

production may become more

streamlined and environmental issues

may begin to be taken into effect (Stern,

2004). In specific regards to China, we

can see how the sudden increase in their

economic success has in turn lead to

increased rates of pollution. Looking at CO₂ production rates for China gives us insight into the

levels of air pollution being produced by the nation. In total CO₂ output, China is clocking in at

9,019,518 kilotons (World Bank, n.d.). Compare this to the USA, which is coming in at

5,305,570 kt. Interestingly, only 13 years ago, China was below the United States in their rates of

CO₂ production, and 13 years before that, they were below the European Union and were level

with Russia, at around 2,500,00 kilotons (Olivier et al., 2015). This massive increase in GDP, and

corresponding production of atmospheric pollutants displays the ways in which modernization

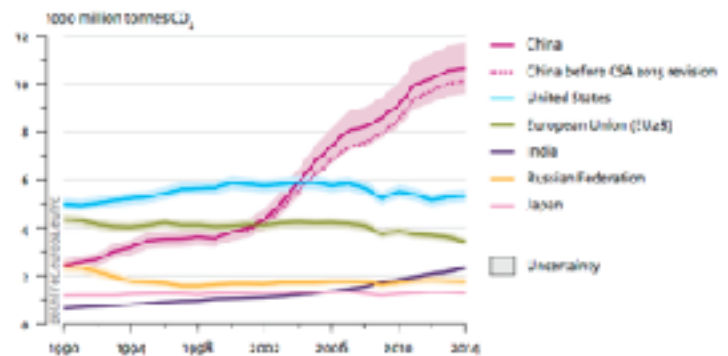
has in turn led to environmental degradation. By looking at the increase in industrialism within

China in the past 30 years, and placing the numbers that correlate with economic status, such as

GDP, alongside the rates of pollution, we can see a direct correlation between the advancement

of a society, and its increase in pollutant output.

CO₂ emissions from fossil-fuel use and cement production in the top 5 emitting countries and the EU



Source: EDGAR 4.3 (RC/PBL 2015) (1990-2012; notably IEA 2014 and NBS 2015); EDGAR 4.3F 2014 (2013-2014); BP 2015; GRI 2015; USGS 2015; ANS 2015

Urbanization and the Environment

Industrialization prompts urbanization, a second element of modernization during which a nation's peoples begin to agglomerate to certain geographical areas, leading to an increase in the quantity of urban landscapes as a nation becomes increasingly industrial and manufacturing based. The development of more urban landscape instigates issues of environmental degradation. However, it is not simply rural to urban migration that increases total pollutant output by a nation though, its actually quite opposite. In his article, "The implications of population growth and urbanization for climate change", David Satterthwaite asserts that people living in rural areas are more likely to produce more greenhouse gases, due to their dependence on personal motorized vehicles, and their less efficient, larger homes (2009). By placing rates of urbanization next to the quantity of pollutants being produced, the fact that rural groups produce more pollutants becomes irrelevant, as it is simply the very presence of urbanization within a nation that can be found to correlate with the rising quantity of pollutant outputs. To provide an example, we can look at the quantity of pollution being produced by a largely urbanized country, such as the United States, which has an 81% urban population producing 5,305,570 kilotons of CO₂, or Japan, which comes in at 93% urban population, with a pollution rate of 1,187,657 kilotons of CO₂, and juxtapose it next to a country with minimal possession of urban landscape, such as Nepal, which has an 18% urban population, and produces 4,334 kilotons of CO₂, or Uganda, which has a 16% urban population, and produces 3,799 kilotons of CO₂ (World Bank, n.d.). These statistics display how modernizing countries who are actively urbanizing, or urbanized, possess a direct correlation to a high production rate of CO₂.

To see the correlations between modernity, urbanization rates, and pollution rates, we can again take a close look at China. In the past 25 years, China has experienced a vast and speedy rate of urbanization. If we step back in time to 1981, the percentage of Chinese people living in urban areas comes in at 20%, and the amount of CO₂ emissions came in at 1,451,501 kilotons. This quantity of urbanization is extremely low by today's standards. Looking forward from that point, the percentage of the population living in urban populations began to steadily rise, hitting the point of 54% now, with the Macau SAR and Honk Kong SAR coming in at 100%. For a more detailed example, in this period, Beijing experienced a population growth from 5.37 million to 20.38 million in 2015 (Statista, n.d.). As of 2011, China had a polluting rate of 6.7 metric tons of CO₂ per capita, with a net production of 9,019,518 kilotons. Again, the path of modernization of which China is following can serve as an example to provide insight into the ways higher rates of urbanization in turn has a direct correlation to the increased quantities of produced greenhouse gases.

State Capacity and the Environment

The theory of modernization possesses a final goal, that of "political incorporation" (Przeworski & Limongi, 1997), of which, in the minds of Enlightenment thinkers, was thought to materialize in the form of an ideal government: democracy. As nations attempt to make their way to this point, they typically go through a variety of other forms of governmental control, such as authoritarianism, totalitarianism, and rule by dictators. Looking again at China, we see a form of authoritarian regime where a small group of individuals is in charge of the state, and has the potential to listen, or not listen to the people of their nation's desires. Interestingly, as

countries make transitions through different forms of government, correlations can be drawn between their type of state control, and increases or decreases in the amount of environmental policy.

A study done by Quean Li and Rafael Reuveny on the effects of democratic styles of government on environmental degradation found that they, on average, have a net negative effect on damage done (2006). This means that when democracies are instated within a nation, they are commonly accompanied by an increase in environmental policy that in turn, benefits the environment. This study can be contrasted to another conducted by Hugh Ward, Xun Cao, and Bumba Mukherjee, in which it is found that authoritarian regimes, in most cases, have a net positive effect on their damage to the environment, as the amount of environmental policy present decreases with the increase of the states capacity (2014).

These studies provide us with a more in depth understanding as to why developing nations in turn have a larger negative effect on the environment while in a state of advancement, than do nations already past their industrialist, possibly authoritarian or totalitarian stage. With specific reference to China, we can see how the prominent issue of air pollution has roots within the authoritarian government in place. The interesting thing to observe will be the shifts in both environmental policy/pollutant output as future forms of government become instituted.

Conclusion

As a nation, such as China, moves forward in its path of progress towards a “better” state of being, while experiencing facets of modernization, such as industrialization, urbanization, and shifts in governmental control, direct associations between the theory of modernization and

issues regarding the environment become apparent. With common thought being that as nations we need to maintain our path of advancement to continue on our way to better states of being, the question of the effectiveness of this advancement arises, when the correlations between modernization and environmental degradation have become very clear. Are we doing the right thing by continuing forward, or is it finally time to look back, and make shifts in our goals? Which is more rational in the long term; economic success, or environmental success? Maybe an element will be added to the traditional following of the “industrialization, urbanization, education, communication, mobilization, and political incorporation” path; that of environmental improvement.

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