India's Low Carbon Future

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In Joanna Slater's Washington Post article, "Can India chart a low carbon future? The World might depend on it.", she paints a dramatic picture of India's role in the world as Carbon emitters. They have both some of the largest potential risk and some of the largest potential reward in the world when it comes to carbon pollution. They are a developing country and the world's second-most populous country, so there is plenty of incentive to use fossil fuels to develop a stronger economy, but the danger of climate change might outweigh those incentives. Andrew Light, a climate negotiator for the Obama administration, summed it up when he said "Not only is India one of the world's largest and fastest-growing emitters... but it also faces acute vulnerabilities from a changing climate, including rising sea levels, melting glaciers and extreme weather events." (Slater 2020) Unlike the United States, India has stayed committed to their Paris Agreement goals and are actually on track to meet their goals ahead of time. They are currently the world's third largest emitter, but per person they are ranked 140th in the world (Slater 2020). Although many smaller countries are emitting less carbon dioxide in total, India is on a very positive trajectory considering its size and the incentives to develop and raise many Indians out of poverty.

The melting glaciers of the Himalayan mountains are especially problematic. In fact, the glaciers "are a lifeline for "some 270 million people" and this area is already known for high baseline water stress (Albina 2020). The water crisis in Delhi, which we read about in class, is an example of a city in the Indus Valley which is expanding rapidly and both polluting and draining the nearby Yamuna and Hindon rivers, and there are many more cities and towns on this

unsustainable path. In India there is no legal human right to water, and people take advantage of a combination of legal and illegal access. (Metha, Allouche, Nicol, and Walnycki 2013)

Melting glaciers will not only lead to increased water stress, but also cause floods and health problems associated with water-bourne diseases. (Cloudfront.net 2020) Indian rural communities are already vulnerable to these diseases due to pollution of human waste. Sanitation is a huge problem in India, where there is an "unaddressed gap between the number of people with access to latrines and the number who use them" (WashCost 2012). Although 81% of urban Indian households have a latrine, this is not the case in rural India, where 70% of households "defecate in the open" (Ghosh 2013). Poor sanitation has severe health consequences for people living around these areas, including "bacterial, viral and parasitic infections including diarrhea, polio, cholera and hookworms" (Coffey 2014). Flooding will only further facilitate the spread of these diseases, demonstrating the urgent need for sanitation facilities. India is affected particularly because "open defecation is much more common than in India than in other countries where people are poorer, literacy rates are lower, and drinking water is more scarce." In other words, India has more capability than many other countries to provide latrines, but are not doing so due to low demand. "Open defecation is seen as promoting purity and strength, particularly of male bodies, which is important because men typically decide which large financial investments a household makes." (Coffey 2014) Leaving women out of this decision making process may have drastic affect for them, as researchers found that Environmental barriers, social factors and fears of sexual violence all contributed to sanitation-related psychosocial stress." They said that "sanitation practices encompassed more than defecation and urination and included carrying water, washing, bathing, menstrual management, and changing

clothes" (Sahooz 2015). It seems that while open defecation is "pure" for men, it can be very stressful and problematic for women and causes health problems which will only be exacerbated by flooding from melting glaciers.

Unlike China, which used fossil fuels as a main driver of their economic rise, India is on a quest to develop their economy without further increasing their carbon emissions. They are currently the world's third largest emitter. Slater notes that "measured per person, however, their emissions are ranked 140th in the world. She argues that a big part of this is due to India's low transportation emissions. Especially important has been the popularization of Rickshaws, inexpensive battery-powered three-wheeled vehicles, and Tuk-Tuks, the larger taxi form of this (Slater 2020). Sajal Ghosh published a study in Energy Policy that found that India's decision to invest in a green energy future is a smart one. His study "probes cointegration and causality between carbon emissions and economic growth for India... by incorporating energy supply, investment and employment or time span 1971-2006." His study found that although carbon emissions were related to short term increases in economic growth, there was an absence of long-run causality between carbon emissions and economic growth, implying that India is better off using clean energy, which will not affect economic growth (Ghosh 2010). However, other scientists argue that a "modest" carbon limit could lead to poverty alleviation for many of India's poorest (Ojha 2009). "Under ambitious poverty reduction targets, the annual growth rate of CO2 emissions increases from 4.8% to 5.9%." (Murthy, Panda, Parikh 1997) Many scientists are confident that these emissions can be lowered again, though.

India has many strategies in place to lower their carbon emissions. Of India's 360 GWelectric grid, they hope to make 175 gigawatts of this renewable energy by 2022, including a hundred gigawatts of solar, 60 gigawatts of wind, 5 gigawatts of small hydro, and 10 gigawatts of biomass-based power. (Jaiswa 2019) They have also considered a carbon tax, but research shows that a domestic carbon tax would lead to "lower economic growth and rise in poverty", though this could be minimized by transferring carbon tax revenues exclusively to the poor (Ojha 2009). Ojha argues that it would be preferable for India to instead participate in an "internationally tradable emission permit" system so India could sell their surplus emission permits and use that income for poverty reduction, and he says that "India's policy makers are beginning to see the need to understand the implications for India, of a Kyoto-type emissions trading regime. Another method to reduce emissions is through conservation, with studies showing that reducing CO2 through oil conservation "is a preferred policy for India compared with saving coal." (Murthy, Panda, Parikh 1997).

While many countries like China and the United States used fossil fuels to develop a strong economy, India missed out on the days of carbon pollution with blissful ignorance. For this reason they are historically deserving of less of the blame for our current global temperatures, but they are now a top emitter and are all too aware of the seriousness of global warming and know of the potential dangers they face. The baseline water stress they face will be heightened as the Himalayan glaciers that feed the Indus river continue to melt, and the further global temperatures rise, the faster this will happen. Melting glaciers will also lead to flooding, a disaster waiting in India's already polluted water due to lack of sanitation facilities and the social acceptance of open defecation in rural Indian village life. Because of this rural India is likely to experience the worst effects, while urban India enjoys better sanitation. Despite the precariousness of this situation, India must balance the need to slow climate change with the

severe poverty faced by many Indians today, with many scientists confident they can raise emissions for now in order to do this and then lower them again later. Ahead of schedule on their commitment in the Paris agreement, India would greatly benefit from an international carbon-credit trading system, which would allow them to sell their carbon credits to countries who want to pollute more and provide money to raise Indians out of poverty without taxing their own citizens.

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