Ellie Beatty: Consumption without restraint: Unveiling the impacts of pollution on Public Health and the Environment in China

Breathing is the most fundamental act of life, as humans, we breathe on average 22,000 times a day (Canadian Lung Association, 2014). This means that in severely polluted countries like China, some people are continuously breathing in harmful particles thousands of times a day, everyday, causing devastating health implications and hindering quality of life. China's economic growth has rapidly increased, as have their urbanisation and industrialisation, but at what cost? With this came a rapid increase of air pollution. Despite China implementing the *1994 Environmental Protection Law*, it wasn't until 2010 that specific laws and policies were adopted to combat climate change (Kyriacou, 2022), yet China still faced the Great Smog of 2012 (figure 1). This blogpost will discuss and analyse Chai Jing's documentary, concentrating on the interlinking impacts of PM2.5 on public health and the environment, and what measures can we take to alleviate these ramifications?

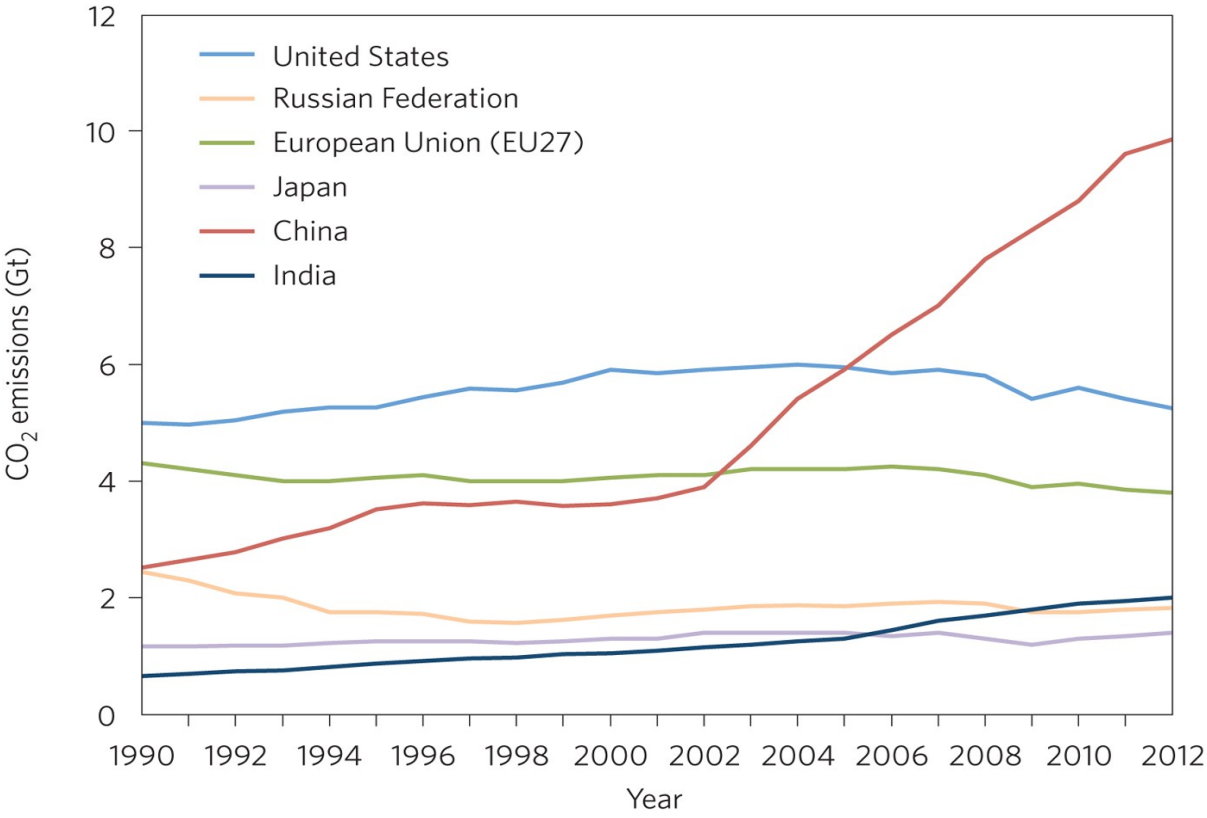

Figure 1.
China's increase of CO_2 emissions from 1990 to 2012 (Sheehan, et al., 2014)

A summary of 'Under the Dome - Investigating China's Smog' by Chai Jing, (2015)
Chai Jing's *Under the Dome* is a TED-style documentary centering on the air pollution crisis in China and its severe impacts on public health and the environment. Chai Jing, a former

investigative journalist, is inspired by the recent birth of her daughter to fight for clean air in a profoundly polluted China, with the interest of her daughter growing up safe and healthy, without inevitably facing critical health conditions caused by the air pollution. *Under the Dome* was increasingly popular, with over 100 million views in less than 48 hours, leading to the documentary being banned in China just one week after its release (BBC, 2015). It's clear from the beginning and throughout that Chai has a personal connection to this matter, as her daughter was diagnosed with a benign tumor and had to undergo surgery immediately after being birthed - Chai claims China's air pollution to be the reason why she did not have the chance to hold her baby after giving birth.

Chai's documentary asks and answers the big questions; what is smog? How is it created? Are there any policies to protect us? She approaches this by highlighting the severity of the smog, which covered 25 provinces and 600 million people in China in 2013 (Chai, 2015). She then knuckles down on Particulate Matter (PM) 2.5, which are 'fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller' (United States Environmental Protection Agency, 2023)., she also conducts her own scientific research, gathering a vast amount of evidence and opinions through conducting interviews with an array of individuals; from regular citizens of China, to experts, scientists, government officials and industry representatives. This incorporation of personal experiences, expert input and policy critiques stresses the complexity and severity of the pollution crisis in China, and how it affects absolutely everyone.

Personal reactions

I found this documentary extremely shocking and eye-opening. I was not aware of the extent of the pollution crisis, or the serious lack of enforcement of environmental laws, such as the Atmospheric Pollution Prevention Act of 2002, which Chai states had not been enforced once before 2012, a staggering 10 years later. I found the ambiguity surrounding the laws extremely frustrating to watch, I could only imagine how frustrating this must be for Chinese citizens who want answers and environmental control for their health and safety. When Chai interviews the Chinese public, we see the struggles from a normal person's perspective who has to live through this crisis. There were also some statistics that most definitely stayed with me, *"In the past 30 years, the death rate from lung cancer in China has increased by 465%"* (Chai, 2015). This affected me in particular, as my father has recently been diagnosed with stage 4 lung cancer, there were many potential factors that may have led to this diagnosis, such as smoking and age. However, I could not imagine the frustration and despair I would feel if I knew there was a high likelihood that my dad's illness was caused by air pollution, and no one, including the government, was taking action against this crisis.

What is the impact of PM2.5 on the environment and public health?

PM2.5 is a major contributor of smog, which has reduced the visibility of a vast number of cities in China (Figure 2). Unlike PM2.5 particles, we can see smog with the naked eye, thus smog should be visible proof and show as a warning to the Chinese public about the dangers of air pollution. Unfortunately, the CCP is aware of the fear factor caused by smog, which could potentially evoke a wake-up call for environmental reform, thus the CCP controls news

headlines that describe the smog as ‘fog’, downplaying the situation to the public (Chai, 2015).

Figure 2.
Smog in Lianyungang (Strongin, 2016)

PM2.5 pollution is one of the key components of air pollution thus massively contributing to climate change, for example through black carbon, a component of PM2.5. This can lead to other environmental problems such as drought, as we have already seen in China in 2022, the drought in Sichuan province (Gries, no date). This in turn has an effect on public health by reducing access to drinking water and water-intensive crops (Davidson, 2022).
Another environmental problem is the pollution of rivers. In 2004, 88.4% of the rivers in Shanxi were polluted, are 62% were no longer usable (Chai, 2015), which has not improved but actually seems to be the case in more of China, and despite China’s continuous 5-year plans that include meeting water quality targets, ‘nearly half of the country missed its targets for the period 2011-15’ (Deng, 2018). This puts the public at risk if the only drinking water they have access to is polluted, exposing them to various diseases and illnesses, in fact, 18.9% of infectious diseases reported in China 2018 were water-borne diseases (Shi, 2020). This is the most common way the public’s health is affected by water pollution, but they are also at risk simply through swimming and the consumption of uncooked freshwater products (Lv et al, 2013).

Chai’s documentary highlights the dangers of PM2.5 on public health, showing us a graph that reveals the correlation between the increase of PM2.5 and human mortality rates, which does not seem to have improved since 2015, as the World Health Organisation (WHO, 2024) states that ‘air pollution is responsible for about 2 million deaths in China per year’. These statistics are shocking considering the average PM2.5 concentration dropped by 50 percent between 2013 and 2019 (Huang, 2024). Chai was right to be concerned for her daughter’s health, as studies show that children are more susceptible to the dangers of PM2.5, which can reduce their growth and puts them at higher risk of ‘pulmonary disease including asthma,

developmental impairment, and increased risk of cancer' (Millman et al., 2008). The elderly are also more susceptible to diseases and illnesses caused by PM2.5, so considering China is an ageing population, it is vital that they reduce PM2.5 related deaths, in order to avoid increasing China's already prominent demographic challenges.

What measures can the government and policy makers take to alleviate the impacts of PM2.5?

For the safety of the public, it is necessary that the government keeps them informed and provides knowledge of the situation. Chai was once asked by a mother if they should expose their children to the smog as soon as possible to allow them to adapt, despite no evidence recommending this. The Chinese government should avoid misleading news headlines, and use the news to make the Chinese public aware of the dangers, and give advice on the precautions they should take.

In more recent years, China has acknowledged their high levels of PM2.5 and have begun to take measures to reduce this. China now has several policies and investments aimed at cleaner transportation to reduce harmful vehicle emissions, including electric and hybrid vehicles, which integrates with their launch of several clean energy companies such as BYD and CATL (Institute for Transportation and Development Policy, 2024). China notably improved their fuel quality in 2017 with the China V diesel quality, reducing its sulfur content (Yang, 2020). This is an improvement since 2015, when Chai showed us a graph revealing that China's fuel quality is often 2 or 3 grades lower than fuel from developed countries.

In 2015, only 22% of natural gas reserves in China had been investigated and 900 billion cubic meters had been verified, yet only 100 billion cubic meters had started to be extracted, Chai (2015) responded to this with *"why are we not taking advantage of our resources?"*. Although China is focusing more on natural gas in recent years, a lot of China's plans for natural gas and renewable energy investments are not an immediate goal, with their goals set for 2050, one being oil consumption will be halved from 2027 to 2050 (Lovegrove, 2024). However, this means China is continuing to rely on coal, oil and other polluting resources in the short-term. This delay is contributing to the detrimental effects PM2.5 is causing to China's environment and public health, however it is up to the CCP to make changes, after all, *"who would dare slow down China's economic development?"* (Chai, 2015).

Conclusion

It is clear that the environmental and public health impacts of pollution in China are deeply interlinked, the presence of PM2.5 directly affects public health, and when it affects the environment, it inevitably has an effect on public health again. While China has definitely taken more action against the air pollution crisis since 2015, by implementing notable changes such as improving fuel quality and cleaner transportation, they must adopt more urgent and comprehensive measures to protect the environment and public health.

Word Count - 1648

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