Life Under the Dome

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On February 28th, 2015, former Chinese state television reporter Chai Jing published *Under the Dome*, a self-funded 'Inconvenient Truth-style' documentary film on air pollution in China. Within 48 hours, the documentary went viral online, attracting over 100 million views across mainland China.

Key Facts

- Chinese air quality standards are less stringent than World Health Organization standards, yet only 8 out of 74 major cities in China meet even the national standards.
- In China, the primary contributors to air pollution are exhaust emissions from motor vehicles, coal boilers, cement factories, residential coal burning and local construction dust.
- China accounts more than 50% of global coal consumption, and more than half of the coal consumed in China is unwashed. Unwashed coal contains as much as 50% more ash than washed coal. Almost all coal consumed in western countries is washed.
- The quality of China's petroleum lags western standards significantly and produces meaningfully more air pollution. These lower standards are partially driven by the fact that industry representatives (executives from state owned enterprises) dominate the quality control committee.
- Environmental protection programs have no "real teeth." Implied pressure from local employers and banks means local departments have been powerless to order polluting factories to cease operation.

The Path Forward

The Chinese government has begun to take some steps forward in the fight against pollution. For example, in April 2014 the National People's Congress (NPC) committee approved a revised Environmental Protection law – the first revision to the law in 25 years. The new law focuses on defining government accountability, improving information transparency and imposing higher penalties for illegal discharge or misconduct. At local levels, more provinces and cities have included environmental quality standards and pollutant discharge or emission standards as part of their performance targets for coming years. (e.g. In 2014, Beijing closed nearly 400 pollution-causing factories and removed about half a million cars from its roads.)

More recently, China's Premier, Li Keqiang, announced that higher environment standards and increased enforcement will become part of "the new norm," and the Chinese Government assigned a new minister to the Ministry of Environmental Protection and afforded him more power to discipline factories that don't obey bylaws. Additionally, it announced the investment of RBM1.2 trillion for a new 94,000 km ultra-high voltage electric grid network, which would allow greater usage of renewables and more efficient use of electricity currently generated in the country.

While these moves are positive, clearly, much more progress will be needed to resolve China's enormous pollution problem. It's interesting to note that Under the Dome was first published on the government's website, implying official approval despite the fact that the film criticizes the government's handling of the environment. We view this as a sign that the government realizes the seriousness of the issue and plans to further its efforts to address it. In addition, given the emotional pull of the film and its broad audience, we expect Chinese citizens to become more vocal in demanding cleaner energy sources, higher efficiency energy plants and greater environmental standards and enforcement. However, it is likely to take China decades to fully solve its environmental issues, as has been the case in other regions (such as London and Los Angeles) that faced similar circumstances.

Investment Implications:

2015 is likely to be a turning point as new Chinese emission standards (some of the strictest in the world) come into effect. Given that the 10 worst air-emission provinces contribute ~60% of China's total GDP, there is likely to be an adverse impact on China's economic growth during the transition to cleaner energy. In fact, Premier Li has announced a targeted growth rate of 7% for 2015, the lowest target in more than 15 years, which is consistent with the message that the Chinese government began to deliver earlier this year: China does not need double-digit growth; it needs to optimize its economic structure and promote better quality, sustainable economic growth.

China has traditionally been a key contributor to global economic growth, so slowing Chinese growth is likely to have wide-reaching effects. However, in addition to the obvious environmental benefits from transitioning to cleaner energy, we also see possibilities for investors to potentially benefit as changes filter through to associated industries. For example, we see the potential for:

- **Steadier steel prices:** We expect that the government will begin to systematically shut down factories that are inefficient and high polluters, which will also give the government an opportunity to address over-supply in some sectors, particularly domestic steel production, which could potentially stabilize steel prices.
- **More renewable energy:** Currently, coal contributes over 65% of China's power generation, but coal consumption is expected to peak before 2018, and over the next decade, renewable energy is expected to become an increasingly important component of China's power mix. China has already begun to make strides in the area of renewable power installation, particularly in the areas of wind and solar power. For example, in Shanxi province, formerly one of China's most polluted provinces and the center of China's coal industry, wind has now become the 2nd largest source of electricity.
- **Increased demand for cleaner sources of energy and energy efficient technologies:** With coal no longer a popular option to feed China's insatiable demand for energy, we expect to see an increase in its importation of liquid natural gas. We also expect

to see more demand for energy efficiency technologies (e.g. coal washing plants, electrical cars, catalytic converters for vehicles and refinery plants to improve gasoline grades).

- **Additional electrical vehicle (EV) subsidies:** We expect more government incentives for EVs through purchase tax removal and generous cash subsidies (from both the central and local governments), which is likely to lead to more electric vehicles, including e-taxis/e-buses on the roads. This could benefit EV producers, such as Tesla, BMW and BYD.

In the week following the debut of the documentary, many environmental stocks in China generated double-digit gains. Companies that benefitted from speculation over the potential for a greener China included those engaged in pollutant treatment, waste management, air quality monitoring, green energy (e.g. wind, solar and gas) and green technology (e.g. EV makers, waste management plants). While it remains to be seen if the government reforms do in fact take hold, it will certainly be interesting to watch the developments, and potential investment opportunities, unfold.