



CHINA

Executive Summary

Travis Clayton | Spencer Jones | Katy Wang
Edited by: Sarang Shidore

Supervised by: Dr. Joshua Busby
<http://blogs.utexas.edu/mecc/>

Major Economies and Climate Change Research Group

EXECUTIVE SUMMARY

China has overtaken the United States with respect to greenhouse gas emissions (GHG). GHG emissions have been driven by economic and industrial growth, which have historically relied heavily on fossil fuels to meet energy demands. Despite serious efforts that have been made to shift the energy mix in favor of non-fossil fuels, as of 2011, China still requires 50% higher energy intensity than the US. China's proportion of global GHG emissions is projected to rise from 17% in 2005 to 26% in 2030, reaching 16.664 GtCO₂e. China must continue its current emissions mitigation efforts, but it must also take further action in line with a 2 degrees Celsius warming scenario.

CHINA'S COAL DEPENDENCY WILL PERSIST AS IMPORTANT ENERGY SOURCE

- Coal will likely remain the primary fuel source for China's energy production. Dealing with the emissions associated with coal will prove vital to China's internal security as well as its ability to generate sustainable economic growth. As China continues to develop, its citizens will increasingly demand government policy to mitigate pollution and the negative health externalities associated with coal-intensive power production.
- The leadership in China has not set up the necessary regulatory framework for encouraging development of carbon capture and sequestration (CCS) or the deployment of high-efficiency low-emission (HELE) coal plants.
- HELE coal generation technology in the medium-term will help to reduce emissions in pursuit while CCS technology becomes commercially feasible.

THE SHALE GAS REVOLUTION NEEDS ASSISTANCE TO TAKE OFF GLOBALLY

- Currently, the US and Canada are the only countries that commercially extract domestic shale gas, which is ultimately driving the natural gas transition in these countries.
- China possesses large natural gas reserves but currently lacks the infrastructure and regulatory framework to take advantage of it. In the short-term, China will continue to burn domestic coal in order to meet its growing demands for electricity.

INDUSTRIAL STRUCTURE REQUIRES REFORM

- The iron and steel industry poses the greatest source of emissions abatement within energy efficiency. Managing China's enormous steel output must be seen in the context of lower carbon emissions and national stability, as the industry employs a significant number of the Chinese population. As urbanization increases, action must be taken to lock-in high efficiency steel technologies.
- China currently plans to reduce iron and steel overproduction while raising energy intensity targets; however, regulatory overlap, iron ore and coke imports, industry employment, and financial risk can stymie government action in this area.

RECOMMENDATIONS

ENERGY PRODUCTION

- **Policymakers in China should enact clearer regulatory guidelines around the implementation of CCS technology.** This will assure that investors and firms making investments in CCS technology will face more certainty with respect to their potential returns, legal liability, and land use rights. Regulatory certainty will help to speed the development of the technology from current levels of limited deployment and testing towards a mature and practical solution.
- **Policymakers should move towards limiting CO₂ emissions in an effort to spur the adoption of high-efficiency low-emission technology in new coal generation.** This includes increasing supercritical generation capacity while further developing ultra-supercritical and advanced ultra-supercritical technologies. Phasing out legacy, less-efficient coal plants will play a crucial role in reducing emissions. Access to finance to support cleaner coal may be an issue.
- **Continued investment and development of carbon capture and sequestration technology could provide long-term mitigation of carbon emissions from coal-generated electricity.** Further investment will help to speed the development of the technology from its current levels of limited deployment and testing towards a mature and practical solution.
- **The Chinese government should relax rigid electricity market structures that reduce incentives to invest in renewable technologies.** Long-term contracts lock different regions into selling at fixed prices, often at a loss, thus discouraging investment in renewables capacity.

INDUSTRY

- **Adopt scrap steel collection programs and Electric Arc Furnace (EAF) subsidies.** Incentivize greater scrap steel collection and increase adoption of less carbon intense EAF technology instead of the traditional Basic Oxygen Furnace (BOF).
- **Create domestic energy efficiency programs.** Chinese adoption of an energy efficiency program will help smaller sized firms evaluate performance, energy efficient management, and forecast energy demand, facilitating adoption of capital intensive investments.
- **Expand the availability of emissions data.** Access to Chinese industrial level emissions data by international firms can ease joint venture partnerships and the transfer of technologies to less energy efficient firms.
- **Develop local natural gas resources.** Iron reduction can be done through natural gas as a reducing agent, rather than the more CO₂ intensive coking coal.
- **Engage in multilateral and bilateral technology programs.** Further consolidation of international energy efficiency programs that China is a part of can transform foreign assistance into iron and steel emissions reduction projects.