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Paul A. Davies and R. Andrew Westgate

China Aims to Boost Investment in Clean Energy

*By Paul A. Davies and R. Andrew Westgate**

China's Green Industry Guidance Catalogue attempts to provide consistent nationwide guidelines for green industries and projects. The authors of this article discuss the Catalogue, which focuses on clean energy, perhaps signaling a step-change in the Chinese attitude toward fossil fuels.

Seven Chinese regulatory agencies have issued the Green Industry Guidance Catalogue (the “Catalogue”) listing “green industries” that are eligible for funding with green bonds. The seven agencies include:

- The National Development and Reform Commission (“NDRC”);
- Ministry of Industry and Information Technology;
- Ministry of Natural Resources;
- Ministry of Ecology and Environment (“MEE”);
- Ministry of Housing and Urban-Rural Development;
- The People’s Bank of China; and
- The National Energy Board.

China’s environmental revolution not only entails implementing a robust, modern policy framework, but also a significant rearrangement of the economy itself—rendering the revolution a priority for both ecological and economic development reasons. As a result, in recent years, all provinces and directly-administered municipalities within China and departments within the Chinese government have introduced policies and measures to promote green industries. However, these policies and measures have been hampered by a lack of uniformity and the application of differing standards in different regions.

The Catalogue introduces a uniform set of standards for green industries and aims to stimulate energy-saving, environmental protection, clean production,

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and clean energy industries. This stimulus will occur through investment, pricing, finance, and taxation measures and policies geared to strengthen green industries in line with regional investment priorities.

Of particular interest is the focus on clean energy, which is of great importance to China's future plans. Significantly, clean coal is mentioned in the introduction to the Catalogue, simultaneously acknowledging China's reliance on coal and signaling a step-change in the Chinese attitude toward fossil fuels.

CLEAN ENERGY VERSUS CLEAN COAL

Clean energy is a broad category that includes renewable energies (such as wind, solar, hydro, and geothermal), and potentially also nuclear energy and some types of biogas (for example methane capture). Clean energy is efficient energy, largely from renewable sources, with minimal greenhouse gas emission during production. Clean energy is the counterpoint to non-renewable fossil fuels that produce carbon-intensive "dirty energy" that is accompanied by combustion pollutants.

Clean energy may also, depending upon the breadth of the definition used, extend to the clean and efficient use of traditional sources of energy. Coal, the first fossil fuel in widespread use, produces harmful by-products and gas emissions such as sulphur dioxide ("SO₂"), carbon dioxide ("CO₂"), and nitrogen oxide ("NO_x"). CO₂ and NO_x react with water droplets in clouds to form sulphuric and nitric acids, which fall as acid rain.

Clean coal technology, on the other hand, reduces environmental impact by cleaning the coal, containing or reducing emissions, and lessening environmental impacts. Clean coal technologies include:

- Flue gas desulphurisation systems (also known as wet scrubbers), which spray flue gas with water and limestone to chemically react with the SO₂ to create gypsum;
- Gasification, which creates syngas—a mixture of carbon monoxide and hydrogen that can be used to create electricity via gas turbines;
- Flue gas separation, which removes CO₂ from flue gases and condenses CO₂ into a commercially viable product; and
- Carbon capture and storage ("CCS"), which captures waste CO₂ from fossil fuel power plants, transports it to storage sites, and deposits it in places where the gas will not enter the atmosphere, often underground in exhausted oil and gas fields or deep saline aquifers.

Emission control measures can make coal much cleaner, but, in all forms, coal remains one of the most carbon-intensive electricity sources available.

Despite improvements in clean coal technology, other sources of fuel, such as natural gas, are much cleaner. In addition, CCS has proven difficult to implement in power plants for several reasons: the technology is expensive, energy-intensive, and requires complex equipment covering acres of land.

CHINA'S RELIANCE ON COAL

In part due to the explosion of the Chinese manufacturing economy between 2000–2010, China significantly relies on coal, which accounted for over 60 percent of the country's national energy mix as of 2017. However, this figure indicates a drop from 80 percent in 2010, despite a national goal to reduce coal to 58 percent of China's energy mix by 2020.¹ The National Energy Administration Notification of Energy Work Guidance, published March 7, 2018, states that the total Chinese national energy consumption was around 4.55 billion tons of coal in 2018. Furthermore, the Catalogue states that coal accounts for more than 60 percent of primary energy production in China.

China holds the world's third-largest coal reserves (behind the United States and Russia), but ranks 10th in natural gas reserves. Part of China's One Belt, One Road Initiative ("BRI") focuses on access to Central Asian gas and oil supplies to support China's smaller natural gas reserves. While BRI may be successful in improving access, China will be reluctant to become heavily dependent on energy imports.

CHINA'S CLEAN ENERGY EFFORTS

China has made strident efforts to reduce the aforementioned reliance on coal via the following measures:

- Action Plan for Clean and Efficient Use of Coal (2015-2020), which clarified reduction targets and intended to speed up the clean and efficient use of coal;
- Energy Development Strategy Action Plan (2014-2020) to cut coal consumption;
- Interim Measures for Coal Consumption Reduction Replacement Management in Key Areas (2014), which proposed coal consumption reduction replacement targets and programs;
- Program to Strengthen Total Coal Consumption Control in Key Air Pollution Control Cities (2015), which provided that cities with the poorest air quality should achieve negative growth in total coal consumption compared with the previous year;

¹ http://english.gov.cn/policies/latest_releases/2017/01/05/content_281475533980163.htm.

- Interim Measures for Commercial Coal Quality Management (2014) to improve coal quality and consumption efficiency; and
- Implementation Plan for Coal-Fired Boiler Comprehensive Energy Conservation and Upgrading Project (2014) to ensure the economic operation of coal-fired boilers and reduce emissions.

The Catalogue is China's latest measure to promote cleaner energy, but the first to state categorically that the country must try to stimulate green energy via green loans, bonds, funds, and related assets. China's classification of clean coal as a clean energy in a green industry seems at odds with the commonplace global definition of clean energy (as noted above). The global definition encompasses truly clean methods of energy production such as wind, solar, hydro, and geothermal, but China's extreme reliance on coal requires fresh thinking and a twist on familiar definitions. While not strictly "renewable" technologies, these projects generate real, measurable environmental improvements.

China cannot, and does not intend to, remedy its dependence on coal and production of harmful emissions overnight. The reclassification of clean coal as clean energy is arguably a necessary and practical step to help revitalize and refit older subcritical and supercritical coal plants, and to ensure that future coal plants are of the ultra-supercritical variety that yield more energy and less pollution per unit of coal.

The result of the Catalogue initiative will be a continuing reliance on coal, but a cleaner form of coal producing lower emissions in line with government targets until truly clean energies reach a tipping point and become mainstream energy producers, in turn reducing coal consumption to more manageable levels.