

# Can China really reach its ambitious goals for clean energy?

Andrew Leung says China's second gas deal with Russia is another part of Beijing's ambitious push to use cleaner energy, to ultimately create an eco-civilisation

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President Xi Jinping invoked a vision of "ecological civilisation" for a "beautiful China" through quality, efficient and low-carbon development.

Russian President Vladimir Putin was not prominent at the Beijing Apec summit. Instead, what was probably on his mind was a second energy deal with China in the face of a looming "second cold war" with the West.

China's first deal with Russia in May is for up to 68 billion cubic metres of gas per year, worth US\$400 billion. The gas will come from undeveloped fields in eastern Siberia, requiring substantial infrastructure. The Crimea crisis gave China leverage to negotiate preferential prices.

The second deal is for 30 billion cubic metres of gas per year from mature fields in western Siberia servicing Europe. Prices have not been agreed but are likely to be even more in China's favour as gas prices have plummeted and the Russian rouble is tumbling due to Western sanctions.

While Russia supplies a quarter (160 billion cubic metres per year) of Europe's gas needs, the two deals by no means signal Beijing's energy dependence on Moscow. They only add up to 17 per cent of China's gas needs by 2020, and natural gas is expected to account for just 10 per cent of China's energy mix.

Nor do they mean that Russia and China are forming an Eastern bloc against the West. Aside from balancing America's dominance, the world has become so interconnected and interdependent that rigid blocs no longer work. What is more, Russia and China are by no means all-weather friends. Russia's sparsely populated east is exposed to the influence of Chinese settlements and trade. The history of its Tsarist annexation from the Middle Kingdom remains vivid.

China is alive to threats to regime stability posed by energy supply and transit security, hence the development of overland pipelines through Central Asia and global energy footprints. It also partly explains China's more assertive stance in the East and South China seas.

However, overdependence on energy undermines economic and social sustainability. Overcoming the "middle income trap" necessitates balanced and higher-quality development. Thus, a reduction of energy intensity has repeatedly featured in recent five-year plans.

At the Apec summit, China undertook to cap carbon emissions by 2030. Its confidence in this target is founded on reasonably solid ground.

According to the Pew Charitable Trusts, China was the global leader in wind energy last year. It aims to install over 100 GW of wind energy capacity to power 100 million households by 2020. With current wind energy costs at 0.4 yuan per kilowatt-hour, wind energy could displace 23 per cent of China's coal-generated electricity, equivalent to 0.62 gigatonnes (9.4 per cent) of carbon dioxide emissions.

China was also the second-largest investor in solar energy last year, with projects worth US\$22.6 billion, aiming to reach 50 GW of capacity by 2020.

Hydroelectric power, under the 2011-2015 five-year plan, is to increase from 220 GW to 290 GW. By the end of last year, capacity had already reached 280 GW, equivalent to 22 per cent of China's power capacity. As for nuclear energy, in addition to 21 existing reactors, 28 more are under construction. Capacity is expected to increase tenfold, to 400 GW, by 2050.

By comparison with coal and oil, the use of gas leads to far less carbon emissions. According to the International Energy Agency, China is embracing the global "golden age of gas", representing half the increase in global demand for the rest of the decade.

The agency estimates that China has 1,275 trillion cubic feet of technically recoverable shale gas reserves, compared with 862 trillion cubic feet in the US. However, China's reserves are in much more difficult topography. Moreover, existing hydraulic fracturing technologies are less advanced in China, are highly water-intensive and subject to aquifer contamination risks. In any case, shale gas may serve as a bridging lower-emission fuel only if supported by low-carbon technologies, pricing and tax policies, and the highest environmental safeguards.

Washington has indicated a willingness to share advanced shale technologies and Beijing is introducing subsidies for shale gas production. Nevertheless, China remains cautious in exploiting its reserves, lest renewable energy targets are sidelined, let alone problems of water scarcity, and soil and air pollution.

China's urban air pollution has become so serious that the State Council has issued an action plan to tackle it. This holds local and regional governments to account for emission targets, clean-energy restructuring, industrial upgrading, energy saving and environmental protection. Also included is a programme to switch all vehicles to much cleaner engines by 2017. China is in the race to develop cars of the future, in addition to reducing private vehicle usage through better public transit systems and "intelligent" cities.

According to the Chinese Academy of Social Sciences, China will build some 200 eco-cities in the coming years, with many linked by high-speed rail and smart power grids to capture the full potential of irregular natural energy. Last year, China spent more on smart grids than the US, investing US\$4.3 billion, accounting for almost a third of the world's total.

Some 70 per cent of the Chinese population are expected to be urbanised by 2030. Last year, President Xi Jinping invoked a vision of "ecological civilisation" for a "beautiful China" through quality, efficient and low-carbon development. A joint report by the Chinese Academy of Social Sciences and the UN Development Programme explored how this vision may be realised through building sustainable and liveable cities.

All in all, the pudding remains to be tested. With a fifth of the world's population, how well China manages its energy dynamics is likely to define not only its future, but also its relations with other countries, and with the planet.

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