

Research Focus

Energy, environment and economic growth in China

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Growth of Chinese energy demand is possibly the most important single factor in the global energy market today. Total energy consumption in China is forecast to rise to a possible 2.1 billion tons of oil equivalent (TOE) by 2020, and 2.7 billion TOE by 2030. The International Energy Agency (IEA) forecasts significant increases in China's oil demand, to be met predominantly by imports, placing considerable stress on international markets. For 2006 IEA expects 38 per cent of the increase in world oil demand to be from China.

How reliable are these projected energy demand scenarios, and what factors are likely to affect the pace and structure of Chinese energy demand in the coming decades? What will be the environmental impact of the growth of Chinese energy consumption and what strategies can China put in place to ensure harmony between energy security, economic growth, and environmental sustainability; 'the three Es'?

Energy security

Energy security is used as a justification for government intervention in energy markets. This particular justification for market intervention relates to two elements of energy risk, supply risk and price risk.

Price security is usually taken to mean attempts to maintain low energy prices. But a strategy that tries to maintain low energy prices will, rather than ensuring energy security, guarantee supply shortages and over-consumption of energy. Price strategies must focus not on low prices, but on prices that accurately reflect expected long-term marginal costs in the world market.

Supply security relates to worries about disruptions to supply. Strategies trying to address this problem typically focus on fuel type and supplier diversification. China is investing large sums in alternative energy sources, especially hydro, nuclear and clean coal technologies. It is also trying to enhance its diplomatic relations with a variety of oil exporting countries.

China's international procurement of energy has become an international diplomatic issue as Western governments fear a Chinese national strategy directed at tying up international energy supplies. But Chinese energy firms appear more intent on procuring technology and maximising profits, taking advantage of whatever subsidies are available in the process.

Growth and energy demand

There is considerable uncertainty about the direction of China's energy demand over the next few decades. Under alternative scenarios, demand is forecast from 1.7 billion TOE by 2020, to as much as 2.1 billion TOE. Whatever scenario turns out to be right will have major implications for China's energy intensity (the energy required to produce a unit of GDP) a measurement which the Chinese government takes extremely seriously. Its eleventh five-year plan sets the target of reducing energy intensity by 20 per cent from 2005 levels by 2010.

Reaching that target depends crucially on the pace and structure of economic growth. The government target of, over the next decade, doubling the level of GDP in the year 2000 requires a 7.2 per cent annual GDP growth.

Advancing economic integration in East Asia

The next in the series of regular meetings associated with Advancing Economic Integration in East Asia project will be held in Manila on 23-24 November. The theme of this conference is the micro economic foundations of economic performance in East Asia. Presentations will include papers on the sources of East Asian economic growth, the institutional determinants of growth, and the institutional context of economic policy reforms in a number of East Asian countries, including China, Indonesia, Vietnam and the Philippines. Mr Hiroshi Watanabe, Vice-Minister International, Ministry of Finance, Japan and Mr Haruhiko Kuroda, President of the Asian Development Bank will also address the conference.

Events

23-24 November, *Micro Economic Foundations of Economic Performance in East Asia*, conference, Manila

29 November-1 December, *Transformations in Governance: Capacity Building in Australia and the Asia Pacific Region*, GovNet International Conference, Canberra

Updates

9 November, Pacific Islands-Australia Update, Brisbane

13 November, Executive seminar in Vila

14 November, Vanuatu Update, Vila

16 November, Vanuatu Update, Santo

27 November, Pacific Islands-Australia Update, Sydney

7 December, Pacific Islands-Australia Update, Canberra

With this rate of growth, reducing energy intensity by 20 per cent may be feasible. But recent studies forecast growth of up to 9.2 per cent, which will make achieving the targeted reduction in energy intensity considerably more challenging.

China needs to find a way of de-linking economic growth from energy consumption if it wishes to meet both the economic growth and energy-use targets proposed in the eleventh five-year plan.

Environmental sustainability

Energy use in China is not just a Chinese issue: it impacts local, Asian regional and global environments as well.

Abundant endowments of coal provide the majority of China's energy. However, coal is pollution intensive and much Chinese coal is unwashed, containing high sulphur components, and is a large producer of carbon emissions.

A successful sustainability strategy must include two approaches: fuel substitution and technological progress.

China has focused considerably on substitution, promoting high-profile hydro-power projects (notably the Three Gorges Dam). However, most of China's hydro resources are in the south-

west, far from major consumption areas in the east. Gas will also play a crucial role in providing sustainable energy, especially as a substitute for oil. But 96 per cent of China's known fossil fuels are in the form of coal, and coal will therefore continue to play a key role in China's energy strategy well into the future.

China must invest heavily in international collaboration, the acquisition of technology from abroad as well as its own R&D if it is to become a world leader in clean coal technologies. Creating effective incentives to stimulate the necessary investments requires establishing the right pricing mechanism. Investments in clean coal technology and fuel substitution will only occur in sufficient magnitude when greenhouse gas emissions and other pollutants are covered by tradable long-term permits.

Conclusion

Energy security, economic growth and environmental sustainability all depend in one way or another on the effective operation of energy markets.

China is currently making serious, deliberate, and positive moves toward implementing effective energy price and market mechanisms. While increasing reliance on international markets (including for coal) is reducing

domestic resistance to price reforms, the response of the rest of the world to these efforts is also important. Choosing to perceive China as an energy threat will be at the expense of opportunities to capitalise on the vast potential market in China, both from energy diversification (especially the expansion of nuclear and gas markets) and from new technologies (especially clean coal and coal liquification) which can lift both energy efficiency and sustainability.

While much work needs to be done (particularly on fuel substitution, technological transfer and development), the right efforts on all sides will lead to more favourable outcomes for energy security, environmental sustainability, and economic development.

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Publications

The Turning Point for China's Economic Development, Ross Garnaut and Ligang Song (eds)

Power and Pork: the political life of a Japanese politician, Aurelia George Mulgan (forthcoming)

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