China's Energy Supply and Demand: 2010 and the Five-year Plan

By Philip Andrews-Speed*

The timing of my drafting this column allows me to reflect on the energy statistics from 2010 as well as on the five-year plan for the period 2011-2015 currently under consideration at the annual session of the National People's Congress in Beijing.

The last five years saw GDP growth rates average about 10% per year, with total primary energy demand growing at about 8% per year. The government not only succeeded in bringing down the rate of economic growth from 14% in 2007, but they managed to protect the economy from the worst impacts of the global financial and economic crisis. At the same time they took drastic steps to reduce the nation's energy intensity. The goal of reducing energy intensity by 20% between 2005 and 2010 was 'basically achieved', according to official pronouncements, falling just one percent short at 19%.

The table ajacent shows some of the preliminary data on energy production, consumption and imports for China in 2010, and a comparison with 2009.

		Unit	2009	2010	2010/ 2009
GDP	Growth rate		9.2%	10.3%	
Energy	Consumption	billion tonnes of coal equivalent	3.07	3.25	+5.9
Coal	Production	million tonnes	2960	3200	+8%
Coal	Imports	million tonnes	126	166	+32%
Coal	Exports	million tonnes	22.4	19.0	-15%
Electricity	Generation	TWh	3.66	4.14	+13%
Electricity	Generation capacity	GW	874	962	+10%
Crude oil	Production	million tonnes	189	203	+7%
Crude oil	Imports	million tonnes	203	239	17.5%
Oil	Refinery throughput	million tonnes	374	423	+12.9%
Natural gas	Production	billion cubic metres	83	94.5	+13.8%
Natural gas	Consumption	billion cubic metres	88.7	104.8	+18.2%
Natural gas	Imports	billion cubic metres	7.6	9.4	+23%

A higher rate of economic growth in 2010 saw the rates of energy consumption rise towards levels not seen since the period 2005-2007. Official preliminary statistics show that total primary energy consumption grew by just 5.9%. But this does not appear to be consistent with data for individual fuels which show much higher rates of growth. The production of China's main source of primary energy, coal, grew by 8% and imports rose by 32%. Some 28% of these coal imports took the forms of coking coal. Electricity generation grew by 13%. Construction of additional power generating plants boosted total capacity by 90 GW to reach 962 GW, a rate of growth not seen for four years. Total wind power capacity grew by 16 GW to 42 GW.

Data for oil and natural gas also show significant rises. Assessing actual oil consumption is always difficult. Apparent oil demand rose by 11.4% to 434 million tonnes, or 8.7 million barrels per day. This rate of increase was double that in 2009, and was the highest annual growth since 2004. Domestic oil production rose by 7% after a slight fall in 2009, and 80% of the increase came from offshore fields. Refinery throughput rose faster than total consumption, showing that the continuing construction of new refineries is allowing the country to progressively reduce its requirement for imported oil products, subject to mismatches in the product mix. To fill the growing gap between demand and domestic production, crude oil imports rose 17.5% to 239 million tonnes (4.8 million barrels per day), and imports now account for about 55% of oil consumption. Imports are certain to continue rising in 2011, possibly by as much as 9% to 260 million tonnes. Only a very small proportion of the imports in 2010 were used to fill the growing strategic stock. Official announcements suggest that some 1.6 million tonnes were added in 2010, bringing the total quantity of oil in the stocks to 24.4 million tonnes, with some 8 million tonnes of storage capacity not yet filled.

The production, consumption and import of natural gas all continued to rise rapidly, and 2010 saw the first full year of imports through the pipeline from Turkmenistan and at the LNG import terminals in Fujian and Shanghai.

The government's success at almost achieving its energy intensity target for the period 2006-2010 was due mainly to actions in the energy-intensive industries such as petrochemicals, chemicals, ferrous and non-ferrous metals, electricity and heat production through the closure of old plants, the upgrading of existing plants and the construction of high quality new plants. Over this period, the industries showing the most rapid increase in total energy consumption were construction and transportation.

Preliminary information on the five-year plan for 2011-2015 shows that the

* Philip Andrews-Speed is an independent energy policy analyst based in Dundee, Scotland.

government wishes to keep trying to change the balance of the economy: to encourage household spending, to upgrade the manufacturing sector, to constrain the construction boom and to promote development and urbanisation in the central and western parts of the country. The target for the average rate of annual GDP growth is 7%, but history tells us that real growth is almost invariably higher than the target.

Seven strategic industries have been identified, of which four relate directly or indirectly to energy: energy saving and environmental technology, new forms of energy, new energy vehicles, and new materials. The question remains as to whether the greatest impact of these industries will be felt in the international markets for these products or in the nature and performance of China's own energy sector.

The government has also highlighted the need to further reform the pricing systems for coal, oil, gas and electricity, and to collect dividends from state-owned enterprises at higher rates than before.

Looking ahead to 2015 within the energy sector itself, the draft plans state that total annual energy consumption should be constrained to 4.2 billion tonnes of coal equivalent, reflecting annual increases of energy demand of just 6%. Energy intensity is to be reduced by a further 16-17%. Coal's share in primary energy consumption is to fall from 75% to 63% and a ceiling on coal annual consumption will be set at 3.8 billion tonnes, just 19% more than current annual production. This reflects an aim to increase the share of non-fossil fuels from 8.3% in 2010 to 11.4% in 2015.

The electricity sector will continue to grow. Total power generation capacity is to rise by a further 270 GW to 1230 GW by the year 2015. Within this total, nuclear capacity is to increase from 11 GW today to 40 GW, hydro power to 310 GW, wind power to 90 GW, and solar power to 5 GW. Oil refinery capacity will be boosted by 100 million tonnes, allowing annual throughput to reach 310 million tonnes. Domestic gas production is set to reach 170 billion cubic metres, with annual imports of some 90 billion cubic metres. This will allow natural gas to account for 8% of annual consumption, up from 4% today.

So what does all this mean for China's transition to a low carbon economy? Taken together, the statistics for 2010 and the five-year plan show that China's economy will continue to require ever-increasing amounts of energy and of energy imports, but that the government is doing what it can to constrain the rate of growth of energy demand. What it can do is construct large amounts of new capacity to generate cleaner forms of energy, and close down old, inefficient plant. What it will find much more difficult to achieve is to rapidly change the structure of the economy, to control the rate of growth of the economy, and to constrain the use of energy by millions of small and medium-sized enterprises and by hundreds of millions of households. The path to a low carbon economy will indeed be a long, gradual and tortuous transition.

Oil Wealth and the Resource Curse in Venezuela *(continued from page 15)*

Footnotes

[1] USGS October 2009. This study is based on the three year field study conducted by the geophysics firm Ryder & Scott
[2] USGS, 2009.
[3] Barbieri, E. El Pozo Ilustrado, Ediciones Foncied, Caracas, Venezuela 1998.
[4] Barbieri, Efrain., "La industrializacion Venezolana de los Hidrocarburos en el Siglo XX" Testimonios de una Realidad Petro era, BCV Fundación de una Venezuela Positiva, Banco Occidental de Descuento, Caracas, 2002.
[5] Ibid.
[6] Import figures come from Banco Central de Venezuela, official statistics.
[7] Karl, Terry Lynn, The Paradox of Plenty: Oil Booms and Petro-States, Berkeley, University of California Press, 1997. pp 64-65.
[8] Petkoff, Teodoro, El Chavismo como Problema, Editorial Libros Marcados, Venezuela, 20102010, 54-55.
[9] Ibid, 58-59.