

Profiles

Coal supply challenges for China

‘Demand for coal will grow to possibly 4 Gt by 2020’

China is an industrialising nation for which rapid and sustained economic growth is predicted to continue for the foreseeable future, with the expectation that this will be achieved through the continuing extensive use of fossil fuels, particularly coal. Thus, despite the nation’s economic restructure, technological innovation and energy-saving efforts, demand for coal will continue to grow, with projections for 2010 of 2.9 Gt and possibly 4 Gt by 2020. This demand is currently driven by the continuing growth in the electricity sector, steel and construction materials industries, with the expectation that the emerging coal-to-chemical and coal to liquids (CTL) sectors will further increase requirements in the near to medium term future. However, the energy demand–supply balance remains a problem, with underlying issues in China’s coal sector that need to be addressed in order to ensure long term supply security. Therefore, the need to balance shorter-term needs with longer-term sustainability, while not unique to China, is a major concern due to the sheer scale of the energy needs in the

‘China will see coal imports rise significantly’

country with such a rapidly growing economy.

Coal production has increased from close to 1 Gt in 2000 to 2.3 Gt in 2006. However, this has not been achieved in a controlled manner, which will have serious consequences for the longer-term sustainability of the coal sector. Thus while it is believed that China has massive reserves of coal, the level of proven exploitable reserves appears to be dangerously low. The increased production was achieved in part by a very extensive increase in production from the small mines where the coal extraction rates can be as low as 10% and there are major environmental and safety concerns, thereby further exacerbating the problem. At the same time, China has increasingly had to mine coal from sources ever further from the major industrial centres, with an ever-growing need for infrastructure investment to transport the coal to those centres. Indeed, during this period of rapidly growing coal demand, there were major power blackouts with associated disruption to industry. In part this was caused by the shortages of coal supplies to meet demand before China

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could increase production rates but also by the inability of the rail transportation system to get enough coal from the mining regions to the end-users.

Previously, management of various industries had been devolved from the State Government to the provincial level, with the enterprises concerned having considerable autonomy. However, that approach had not worked well, with the provincial authorities often pursuing courses of action in direct contradiction to the national requirements. Therefore, in a reversal of policy, the Government has reinforced its macro-management approach, with the intention that this will ensure strategic direction of several key sectors, including coal and power, in accordance with the remit of the Five Year Plan.

Under the new arrangements, the State will assume total control over the restructuring of the coal production sector. It will also provide the finances necessary to establish large industrial groupings with significant asset bases, better equipped to meet the future economic and environmental challenges. The approach includes establishing the

Chinese coal production

Year	Production, Mt			
	Key state-owned coal mines	State-owned coal mines	Township and village coal mines	Total
2000	560	200	260	1020
2001	610	210	260	1080
2002	720	260	420	1400
2003	810	280	540	1630
2004	920	280	730	1930
2005	1000	280	820	2100
2006	1070	280	950	2300

major coal bases in Northwest China, with the focus on large-scale modernised mining units. It is also expected, since most large industries are State owned, that the Government will in due course form integrated energy companies, based on coal production, power generation and CTL.

The Government's central planning function does not appear to be robust. All the near to medium targets for coal demand have been or are close to being reached years ahead of the plan. At the same time, while the coal-based economy is continuing to grow, it is not doing so on the predicted steady basis. Rather, it appears to show periods of very rapid growth followed by periods of more steady growth and, certainly in the last decade, the coal production sector has been unprepared to meet these demand surges. Alongside the production issue, getting the product to the end-user remains a major problem and the solution will be entirely dependent on the success of the Government's plans to expand and integrate the railway network and to upgrade the port facilities. In consequence, to date, the macro-management approach has been short-term focused, and reactive rather than proactive in nature. As the situation in 2007 is still not stable, the macro-management approach will need to be very robust if it is to succeed.

One of the Government's declared aims is to match domestic coal demand with domestic coal supply. In practice, as the two numbers are so large, it seems likely that there will at best be a 5% variance. This means that, over a period of a few years, China could see coal supply being some 100 Mt either in excess or in deficit of demand. Contrary to the Government's intention, the use of imports could assist in ensuring China's security of coal supply as it provides a means to supply regions of China that are far from domestic coal reserves and as such are at the limit of the national transportation system from the major coal sources. Looking towards 2020, it seems likely that China will see coal imports rise significantly in absolute terms and possibly as a proportion of total consumption. In contrast, it is likely that China's involvement in the export market from the North is at best likely to be volatile. If the variance in coal demand and supply proves to be cyclic, then China will almost certainly look to offload surplus supplies when

demand is less than the available capacity and to choke off exports when internal demand is greater than supply. However, the lack of any consistency in Chinese export supplies would create considerable uncertainty in the Asian market region

The near to medium term financial requirements to establish large efficient coal mines, with an effective coal transport system to ensure reliable supply, backed up by a rigorous programme to monitor coal production so that it meets all regulatory and legislative standards, while also closing down small, inefficient production units, will be significant. While the State has declared that it will fund this major capital investment programme and also address the social implications of closing the small mines, it is not at all clear how this will be paid for and how, if at all, such costs will be recovered in the price of coal. Certainly, it seems that the State will in effect have to provide a massive subsidy to the coal production sector, presumably on the grounds of national energy security.

In summary, the Chinese economy is far too dependent on using coal to maintain economic growth but for the time being that situation will not be changed. All that can be done is to establish and implement a more sustainable means of using coal, while resisting as far as possible the short-term actions that actually create additional problems. There is also a need to continue to take steps to drive forward the use of alternative energy sources, such as nuclear and, where applicable, renewable sources. In many respects, the government's 11th Five Year Plan recognises and is attempting to meet these requirements. It remains to be seen how successful China will be.

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