

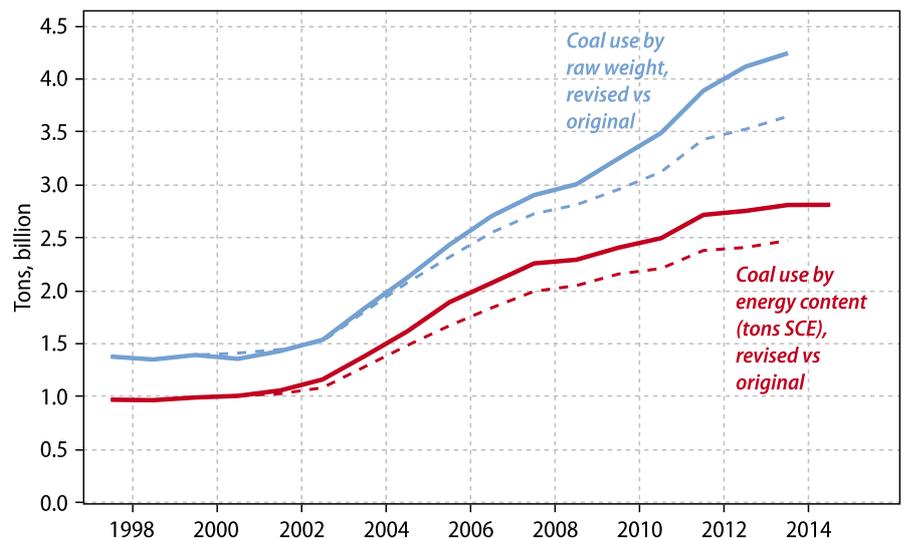
Finding The Missing Coal

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This year China's statisticians decided the country has actually been using about 600mn more tons of coal than they previously estimated. The news is a bit awkward for the government's pledges to restrain the burning of coal and the carbon it emits, as it means national coal use has already reached the 4.2bn tons once planned for 2020. But these new figures in fact only reinforce our conviction that China is near or already past its peak level of coal consumption (see [Peak Coal Is Nigh](#)), even if that peak is higher. Indeed, coal output and imports are both declining in 2015. A sharp slowdown in the energy-thirsty industrial sector is proving much more effective at curbing coal use than government plans and international agreements, and this trend will continue.

China has been burning much more coal than previously thought

China total coal demand, before and after revision, in raw and heat content terms



CEIC, Gavekal Data/Macrobond

Revised statistics show that China's raw coal consumption was 16% higher in 2013 than previously estimated

China has been using much more energy than previously thought, mostly due to this missing coal

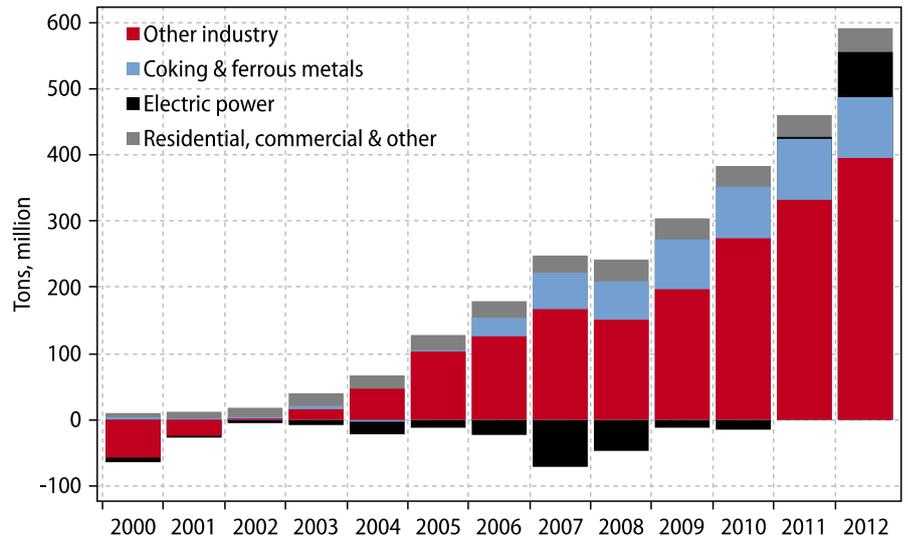
The new figures, released in dribs and drabs over the past few weeks, are certainly eye-catching: in terms of raw weight, coal use in 2013 went up 16%, from 3.65bn tons to 4.24bn tons. In terms of heat content, coal use was 13.5% higher, at 2.81bn tons SCE (standard coal equivalent) compared to the previous 2.48bn tons SCE. Since coal is China's major energy source, the revisions mean that total energy consumption was also 11% higher than previously thought (the data on other fuels was also revised, but by relatively small margins). The revisions show that the "missing" coal use was large and growing over the past decade. And since the revisions are greater in terms of raw weight than in heat content, they mean the "missing" consumption was of lower quality (lower heat content) coal.

Most of the coal use missed in earlier statistics was being used directly by industry, not burned in power plants

Where was all that missing coal going? The detailed statistics on coal use provide some clues. The biggest single users of coal are the thermal power plants that burn coal to generate electricity. Statistics for this type of coal consumption barely changed at all—meaning China’s day-to-day statistics are pretty good at capturing electricity production. What previous statistics turned out not to have captured well was the use of coal by industrial final users. A big part of this is the coal and coke that are burned in blast furnaces to produce steel. But it would also include industrial facilities that have their own thermal power plants to supplement or replace electricity bought from the grid, as well as use of coal as a feedstock for making chemicals. This kind of coal consumption is harder to track, and the economic census of 2013, in which inspectors fanned out across the country to make a detailed check of individual facilities, provided new information incorporated into the revised statistics.

China's "missing" coal use was largely in industry

Difference between revised and original coal use, in raw weight terms, by sector



CEIC, Gavekal Data/Macrobond

The iron and steel sector uses a lot of coal, but there are also lots of “captive” power plants attached to factories

Yet the trend of coal use over time has not really changed, as industry’s direct and indirect use is still the main driver

While the revisions pushed up the level of coal consumption, they have not really changed the trend over time. We previously estimated that coal consumption in heat content terms declined 0.5% in 2014; the revised figures show there was a marginal increase of 0.06%—hardly a big shift. There is not yet an updated figure for raw coal consumption in 2014, but the US Energy Information Administration used the revised data to [estimate](#) that it declined 2%, not far off the 2.9% drop originally recorded. So while China’s coal statistics had been under-counting the level of direct coal use by industry, the “missing” coal demand has not diverged from the overall trend. In fact, this is not surprising since the industrial sector is the main driver of China’s overall coal demand, and was also the main source of the undercounted coal use. If anything, the revised statistics reinforce the driving role of industrial activity in the trajectory of China’s coal demand.

The new data reinforces our view that China is close to or already past its peak level of coal consumption

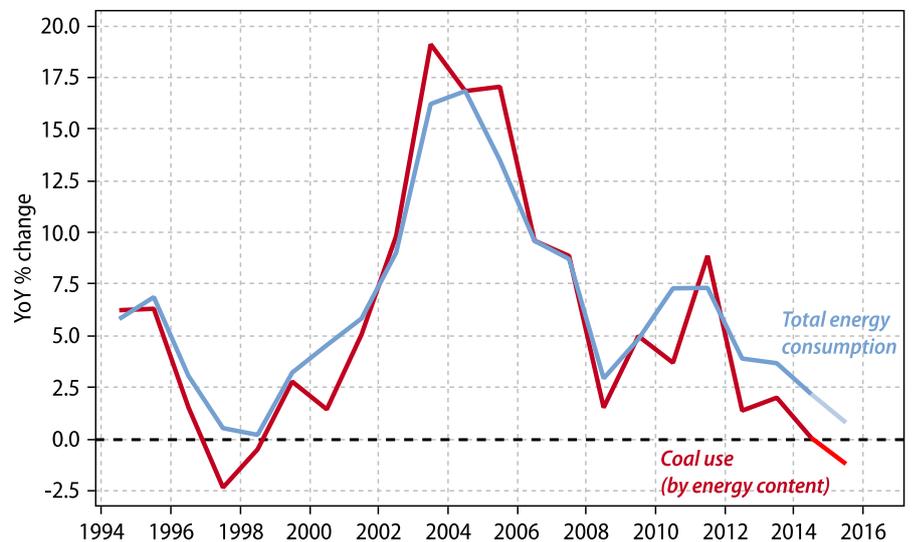
Our belief that China is very close to its peak level of coal consumption is based primarily on our diagnosis of the economic fundamentals for the industrial sector. The sharp economic slowdown over the past few years has been even sharper in industry. The main reason is the unprecedented decline in housing construction, as construction is a huge motor of demand for many raw materials and manufactured goods, and thus for power demand. In the shorter term, the decline in construction is a reaction to overbuilding that led to huge inventories of unsold housing around the country. But in the longer term, we think housing demand is plateauing and will decline, so even after the inventories are worked off, construction volumes are unlikely to exceed their previous peaks.

The peak in housing construction means that demand for power and coal is unlikely to grow much in the future

A peak in housing construction means that industrial demand for coal and electricity is unlikely to grow very fast in the future. And the rising supply of other energy sources, particularly natural gas and renewables, means that new demand could be satisfied without burning much more coal (see [No New Coal](#)). Indeed, 2014 could turn out to have been the year of peak coal: China's total energy use is on pace to rise 1% or less in 2015, after the 2.2% gain in 2014, with coal use in heat-content terms likely to decline about 1% after the meager 0.1% increase in 2014.

Was 2014 the year of peak coal?

Total energy use and coal use; own estimate for 2015



CEIC, Gavekal Data/Macrobond

Coal consumption is on pace to decline in 2015, in terms of both energy content and raw weight

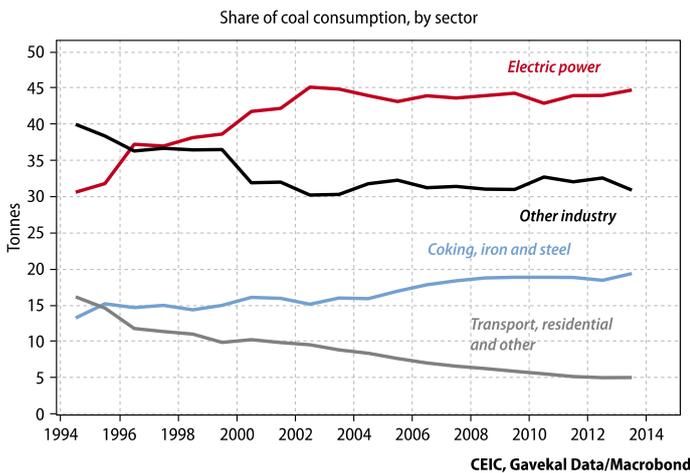
The newly-discovered “missing” coal use could even decline more sharply than other types of demand because of structural changes. About half of China's annual coal use is consumed directly by industry, rather than being burnt in power plants—an extremely high share by international standards. The big increase in the use of in-house or captive power generators shown in the revised data was probably encouraged by the periodic waves of power shortages in over the past decade (2004-06, and again in 2011), and by the electricity grid's poor coverage. But a wave of power plant construction has made shortages a distant memory, and deficiencies in the

The direct use of coal by industry could decline, as it did in the US, as factories switch to buying power from the grid

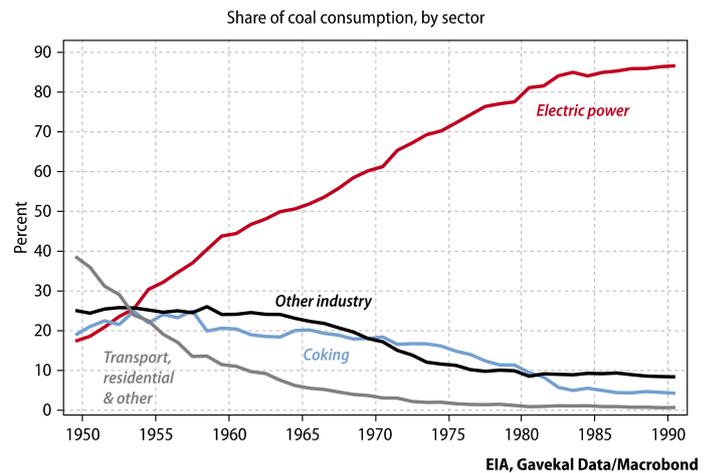
grid are also being addressed by new investment. Therefore over time industry should increasingly switch to buying electricity from the grid rather than generating it in-house. And since power plants are more efficient users of coal this switch could actually reduce coal consumption. This is particularly true as the revised data show that industrial users tend to consume very low-quality coal. A decline in industrial coal use could be further accelerated if the steel industry starts to shift away from blast furnaces and toward electric arc furnaces (only 6% of China's steel output is from electric arc furnaces, against a world average of 26%).

China today is in some ways comparable to the US around 1960, when electric power accounted for about 45% of coal consumption and direct use by other sectors the remainder. Direct industrial use was gradually replaced by indirect use through electricity, and today electric power accounts for 93% of US coal consumption and industry only 5%.

Direct industrial use accounts for a large share of China's coal demand



The US shifted toward less direct use and more power generation



Forecasts of China's future coal use have already been revised down, but peak coal is still not a mainstream scenario

Therefore, we conclude that the more precise picture of China's coal and energy use available in the latest statistics actually reinforces the case for peak coal. The de-coupling of GDP growth and energy use over the past couple of years has certainly changed a lot of minds. For instance, the International Energy Agency has over the past year downgraded its forecasts for China's future coal demand, and now sees it growing only marginally over the next two decades. But its core scenarios do not show a sustained decline in China's coal demand until after 2030, and it sees a near-term decline only if there is a major policy shift to reduce energy consumption. By contrast, we think a near-term decline in coal use, driven mainly by economic factors and only secondarily by policy changes, is extremely likely. This is becoming a more mainstream viewpoint, and the IEA's latest *World Energy Outlook* does acknowledge a near-term decline in coal use as a possibility, if an "uncomfortable" one for the coal industry. That's putting it mildly.