

Coal

The fuel of the future, unfortunately

A cheap, ubiquitous and flexible fuel, with just one problem

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WHAT more could one want? It is cheap and simple to extract, ship and burn. It is abundant: proven reserves amount to 109 years of current consumption, reckons BP, a British energy giant. They are mostly in politically stable places. There is a wide choice of dependable sellers, such as BHP Billiton (Anglo-Australian), Glencore (Anglo-Swiss), Peabody Energy and Arch Coal (both American).

Other fuels are beset by state interference and cartels, but in this industry consumers—in heating, power generation and metallurgy—are firmly in charge, keeping prices low. Just as this wonder-fuel once powered the industrial revolution, it now offers the best chance for poor countries wanting to get rich.

Such arguments are the basis of a new PR campaign launched by Peabody, the world's largest private coal company (which unlike some rivals is profitable, thanks to its low-cost Australian mines). And coal would indeed be a boon, were it not for one small problem: it is devastatingly dirty. Mining, transport, storage and burning are fraught with mess, as well as danger. Deep mines put workers in intolerably filthy and dangerous conditions. But opencast mining, now the source of much of the world's coal, rips away topsoil and gobbles water. Transporting coal brings a host of environmental problems.

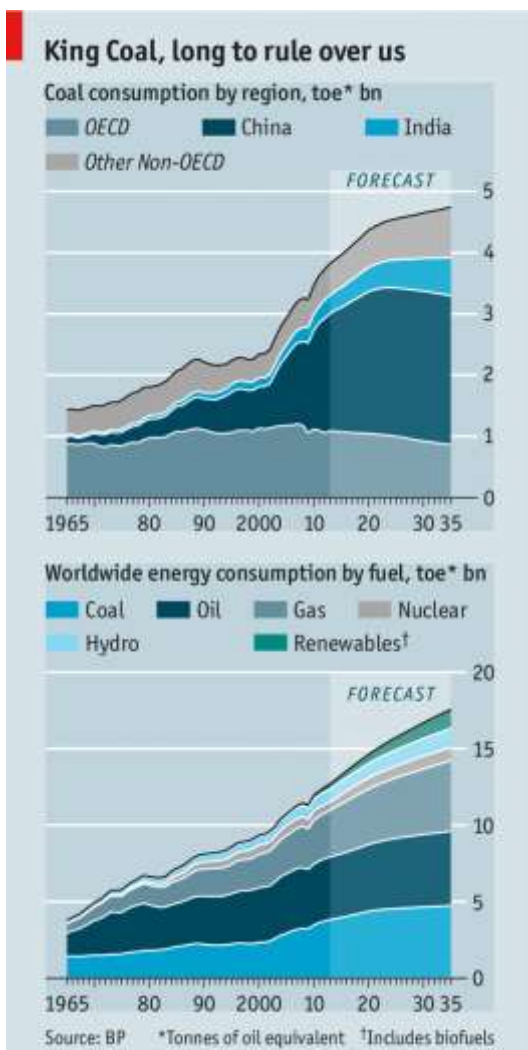
The increased emissions of carbon dioxide from soaring coal consumption threaten to fry the planet, as the Intergovernmental Panel on Climate Change reminded everyone in a new report this week (see [article](#)). The CO₂ makes the oceans acid; burning coal also produces sulphur dioxide, which makes buildings crumble and lungs sting, and other toxic chemicals. By some counts, coal-fired power stations emit more radioactivity than nuclear

ones. They release tiny, lethal particulates. Per unit generated, coal-fired stations cause far more deaths than nuclear ones, and more even than oil-fired ones.

But poverty kills people too, and slow growth can cost politicians their jobs. Two decades of environmental worries are proving only a marginal constraint on the global coal industry. Some are trying to get out: in America Consol Energy is selling five mines in West Virginia to concentrate on shale gas. Big coal-burners such as American Electric Power and Duke Energy are shutting coal-fired plants. Yet despite America's shale-gas boom, the federal Energy Information Administration reckons that by 2040 the country will still be generating 32% of its electricity from coal (compared with nearly 42% now).* The International Energy Agency has even predicted that, barring policy changes, coal may rival oil in importance by 2017. As countries get richer they tend to look for alternatives—China is scrambling to curb its rising consumption. But others, such as India and Africa, are set to take up the slack (see chart).

America's gas boom has prompted its coal miners to seek new export markets, sending prices plunging on world markets. So long as consumers do not pay for coal's horrible side-effects, that makes it irresistibly cheap. In Germany power from coal now costs half the price of watts from a gas-fired power station. It is a paradox that coal is booming in a country that in other respects is the greenest in Europe. Its production of power from cheap, dirty brown coal (lignite) is now at 162 billion kilowatt hours, the highest since the days of the decrepit East Germany.

Japan, too, is turning to coal in the wake of the Fukushima nuclear disaster. On April 11th the government approved a new



energy plan entrenching its role as a long-term electricity source.

International coal companies face two worries. One is that governments may eventually impose punitive levies, tariffs and restrictions on their mucky product. The other is the global glut. Prices for thermal coal (the kind used for power and heating) are at \$80-85 a tonne, which barely covers the cost of capital. Some Australian producers are even mining at a loss, having signed freight contracts with railways and ports that make them pay for capacity whether they use it or not.

One answer to that is cost-cutting and efficiency, much stressed by companies such as BHP Billiton. Unlike oil and gas, coal is geologically simple and does not require a costly array of drills, platforms and pipes. If the price is too low, companies can decide to stop production and await better times. But thriftiness with capital has its limits: the cost of mining is going up, as the easiest coal seams are worked out.

Some companies have tried to switch efforts to “met” (metallurgical) coal, which fuels smelters. This was thought to be scarcer and more profitable. But that theory has suffered. Supplies of met coal have proved more abundant than expected.

Perhaps the biggest hope for all involved in the coal industry is technology. Mining and transporting coal will always be messy, but this could be overlooked were it burned cheaply and cleanly. Promising technologies abound: pulverising coal, extracting gas from it, scrubbing emissions and capturing the CO₂. But none of these seems scalable in the way needed to dent the colossal damage done by coal. And all require large subsidies—from consumers, shareholders or taxpayers.

A \$5.2 billion taxpayer-supported clean-coal plant in Mississippi incorporates all the latest technology. But at \$6,800 per kilowatt, it will be the costliest power plant yet built (a gas-fired power station in America costs \$1,000 per kW). At those prices, coal is going to stay dirty.

Correction: This article wrongly stated the current and forecast figure for the share of American power generated from coal. Sorry

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