

## **Europe's energy crunch**

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**25<sup>th</sup> January 2007**

The energy sector has a habit of creating surprises. Back in the 1980s and 1990s, when oil prices touched \$10 a barrel, and there was excess capacity in most European countries, nobody worried much about security of supply, and bothered even less about climate change.

All that changed at the end of 1999: oil prices started their continuous upwards growth, to peak at around \$70 a barrel before falling back, power cuts periodically reappeared, and a number of European countries had very close shaves with their capacity margins. Aging assets, which had been sweated hard in the low price-excess supply world of the 1980s and 1990s, began to fail, most starkly with the British nuclear plants, but more widely outage rates started to go up. In refineries the asset sweating took its toll too, with the most dramatic effects witnessed in BP's Houston plant.

The replacement challenge

Europe is now facing a massive investment requirement to replace its aging energy assets. Both Britain and Germany face large gaps from around 2015 onwards – in the former, at least 15GW and in the latter perhaps as much as 25GWs will need replacing quite quickly from the middle of the next decade. The youngest British coal plant dates from 1974 (DRAX) – the rest are between 30 and 60 years old. Almost all Britain's nuclear plant will be closed by around 2025, and Germany is politically committed to phase out its nuclear industry. The replacement requirements are Europe wide, because the last great investment wave took place in the 1970s in the shadow of the OPEC oil shocks, and against the assumptions of a continuing heavy manufacturing sector. France's nuclear programme, British "plans for coal" and further nuclear capacity plans, and the German nuclear and lignite coal plans fitted into this picture. These are the assets we have today.

Dependency and the external threat

Replacing so much capacity would be a hard call in any circumstances, but these are not ordinary times. Europe's domestic energy resources are drying up. There is very little economic coal left to dig in Europe, and Britain (especially) and the Netherlands have used up much of the North Sea oil and gas. Europe as a whole is rapidly becoming import dependent, relying significantly on Russian gas and indeed also oil. Other sources of gas are available, but they all have their peculiarities. The Norwegian reserves are large, but there are only a few million Norwegians, so there is little incentive to pump the gas out rapidly in the way the British did (and in the British case at what have turned out to be historically low prices). Norway will enjoy the price umbrella created by Russia and Gazprom. North African gas can help, especially for Spain and Italy, but it is some distance from the Northern European markets and the supplies are limited. LNG helps too, but pipeline gas is almost always cheaper than LNG, so it is a price cap more than a base load supply source.

Which leaves Gazprom in a pivotal position, sitting on the world's largest natural gas reserves. Recent events have called Russian reliability into question: last winter Ukrainian gas supplies were interrupted, and this winter Belarus oil suppliers were also threatened. Gazprom has meanwhile been picking off European countries on a bilateral basis, Russia having refused to sign the Transit Protocol. A "special relationship" has been built up with Germany, with the Baltic pipeline set to cement Germany's role as the hub for Gazprom's exports, controversially bypassing Poland and the Baltic states. Deals have been done with Italy and now France is in the negotiating frame. In every case, Gazprom has been interested in pipelines as well as long term contracts, and increasingly it shows an appetite for downstream assets too.

Gazprom is indeed well on the way to become possibly the biggest company in the world. Thanks to Putin, it now has monopoly control over all gas pipelines in Russia, thereby putting it in a strong position to deal with any independent gas producers. Shell and its partners have felt the pressure over Sakhalin II, and the Shtokman gas field to the north has been brought back in house. BP's Russian interests are quite possibly next in the pipeline. Taken together, Gazprom (and the Russian government with which it is deeply entangled) has built up a formidable position to maximise the rents to Russia from its oil and gas reserves.

Yet Europe looks set for another dash for gas....

Given this dependency, the rising political tensions between the EU and Russia, and the democratic setbacks in Russia (Gazprom may even provide the next President when Putin formally relinquishes the post in 2008 – and it owns key media assets too), it might be thought

sensible for Europe to diversify away from gas, and within gas away from Russian sources. This indeed is the intention in the major “January package” of measures which the Commission proposes to put to the next EU Summit in March, under Germany’s chairmanship.

But such a diversification policy would need a major initiative to develop alternatives. As the replacement cycle bites in the next decade, coal and nuclear will come off the system. In the absence of radical action now, the capacity gap will be filled with gas. Coal’s problems are environmental – it is one of the worst environmental ways to produce energy. Coal mining is energy intensive, and leads to methane emissions (a very powerful greenhouse gas). A lot of energy is used to get coal to power stations, where half or more of the energy is lost in burning, a process which emits not just CO<sub>2</sub>, but SOX and NOX too – thereby creating acid rain and other consequential damage. Then there is the water required, and ash has to be disposed of.

The combination of the EU Large Combustion Plant Directive (which bites hard on coal stations from 2008), the Kyoto targets and the EU Emissions Trading Scheme mean that the future of coal in Europe should lie (if the EU takes climate change seriously) with carbon sequestration and storage, not convention coal plant, and these are probably two decades off deployment. That leave nuclear as the base load alternative, but there is little enthusiasm yet to get on with this option in Germany or – in practice – in Britain.

So unless renewables and energy efficiency can make up the very large scale capacity gap quickly (and this is unlikely) gas is the default option.

#### Shoring up Europe’s defences

This reality has begun to dawn on the Commission, and to its credit there are a number of very sensible steps it is proposing to build in resilience. Completing the European energy grids makes sense on a number of levels. Interconnections not only allow members to come to each others’ aid in crises, but they give access to each others’ capacity margins, and thereby create an insurance portfolio effect. The costs of security thereby fall.

The problem here is that incumbent utilities have been less keen on interconnections – for the very good reason from their perspectives that connecting wires bring competition into segmented markets. Unbundling the networks in ownership terms should make it much easier to get on with European cooperation and building up the European system capabilities. (The effects of unbundling on competition – which is what the Commission has actually concentrated on – are less obvious).

Finally, the Commission has suggested that strategic storage of gas might be required. Much of industry dislikes this, since excess capacity creates a market overhang and depresses prices. But then security of supply requires excess supply – something the market would not willingly do of its own accord. It is simply not a profit maximising strategy. Therefore it has to be created by energy policy, and here capacity markets and strategic gas storage auctions are the most market-driven ways of creating and sustaining the incentives.

#### The financial implications

There can be little doubt that financial capital will be injected on a large scale into Europe's energy markets. Politicians cannot walk away from meeting Europe's needs. But it is also likely that politicians will drag their feet, creating a potentially very tight market in the next decade. That makes existing assets valuable – security of supply considerations will mean that – whatever the environmental concerns – many will still need to run to keep the lights on. The policy pressures will be on to push renewables very hard too – and they will probably come on stream more slowly than policy makers want – again creating a scarcity value.

The lesson in all this is that, as the excess supply-low price years have given way to a much tougher energy world, policy – and politics – are becoming a much bigger feature of the markets. Kremlin watchers, once an endangered species – have a new lease of life, and investors who ignore the emerging European energy policy frameworks are likely to be taking unnecessary risks. Energy is no longer a boring subject. Unless the Europeans get their act together, a major energy – and environmental - crunch is on its way.

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