



SPECIAL REPORT

THE FUTURE OF COAL

Energy producers want it, environmentalists oppose it. The economy cannot do without it, the climate cannot do with it. It is undoubtedly one of the biggest dilemmas faced by policymakers today. Should we or should we not welcome back what was not so long ago the black sheep of the energy family? In this special section of EER, our correspondent report from across Europe on how each country tries to solve its own “energy mix” puzzle. One thing is clear: no one has found the answer yet.

Coal revival

Whitewashing the black sheep of energy

Coal-fired power, long the black sheep of the power generation sector, is making a comeback. Environmental activists are up in arms, but governments and utilities say they cannot do without it. They promise “clean coal” and “capture readiness” to placate the protesters.

| by *Monique Smits*

While climatologists are pressing for drastic reductions in carbon dioxide emissions to halt global warming, coal-fired stations are being built all over Europe. In Civitavecchia in Italy, for instance, Enel has recently put the first unit of a 3-unit coal-fired station into operation, despite a referendum which saw locals vote against it. Enel says the plant in Civitavecchia will be the cleanest in Europe and will drastically reduce the emission of CO₂. Italy's coal-generated power is expected to increase from 14 to 33 percent in the next five years.

It is not just Italy that is returning to coal power. High oil and gas prices, security of supply worries and continuing resistance to nuclear power, are leading many countries to take another look at old King Coal. Some sixty new coal-fired power stations are expected to be built in Europe in the next five years. To be sure, many of these power stations are intended to replace ageing production capacity. Some 70% of coal-fired power capacity in Europe is older than its typical half-life. Many old power stations will be closed in the coming years (see page 26).

The International Energy Agency (IEA)

predicted last year in its World Energy Outlook (WEO) that coal-fired power capacity in the EU will decrease from 191 GW (Gigawatts) now to 186 GW in 2015, to subsequently rise to 226 GW in 2030. That amounts to a net increase of 35 GW (about 35 large power stations) in 20 to 25 years.

Magic word |

In Germany, construction has started on the first of two RWE coal-fired stations in Hamm, Westphalia. Chancellor Angela Merkel of Germany wants to build both coal-fired power stations and nuclear power stations ‘as we do not want to be dependent on foreign energy suppliers,’ she has said. Merkel wants the German energy industry to be able to meet Germany's power demands and ‘ensure that Germany remains a leading industrialised nation’.

In the Netherlands, RWE is also in the process of building a new coal-fired power station. The company states that these coal-fired power stations will emit two and a half billion tons less CO₂ than its older coal-fired stations. ‘They will be the world's most modern coal-fired power stations, requiring 20 percent less coal to

produce the same amount of energy,’ says RWE, echoing Enel's claims.

“Clean coal” is the magic word for the big European utilities. However, clean coal is a term which was invented by the industry ten years ago to refer to new technologies to reduce the amount of sulphur dioxide and nitrogen oxides. This technology has minimal effect on the emission of carbon dioxide (CO₂). The technology the energy industry is counting on to reduce CO₂ emissions (carbon capture and storage) is not yet available for commercial purposes. No one knows whether this technology can be implemented cost effectively and on a large scale. (See story on page 24.)

The revival of coal has raised the alarm among environmental organisations, which have started up “quit coal” campaigns. They believe clean coal is a delusion when it comes to CO₂.

As a prelude to the UN climate negotiations in Poznan, Poland in December, the Greenpeace flagship, Rainbow Warrior, has visited eleven Mediterranean and European countries to send out the “Quit Coal” message.

'All those coal-fired power stations are being built with the excuse that new technologies will soon capture and store CO₂,' says Joris Thijssen, project leader of the Quit Coal campaign. 'But our False Hope report shows that the problems and challenges are so great that a solution cannot be expected within the next fifteen to twenty years. Once that technology has arrived, the question will be: at what price? I do not believe that installations will be retrofitted to catch CO₂ once a coal-fired power station is built. We are in danger of locking in an enormous production capacity for a long time to come.'

That coal-fired power stations currently being constructed are said to be "CCS ready" means nothing, according to Thijssen. He refers to a new coal power plant that is being built by Eon in Rotterdam, which the company says is CCS-ready. 'They have a test installation for capturing CO₂, that's all. This can capture 0.03% of the emissions. This is supposed to make us feel confident that the enormous station will be OK as far as CO₂ is concerned.' The technology for CCS just does not exist, says Thijssen. 'It is available for natural gas extraction and at lab level, but not for a 700 Megawatt coal-fired power station.'

Eon is therefore subject to a Greenpeace-organised boycott in the Netherlands. Dutch consumers can make an online appeal to Eon to halt its projects. If the company refuses, Greenpeace will appeal to customers to change supplier. Eon has already received 'some thousands' of email complaints from customers, says a spokesperson. But the company has no intention of giving up its coal project. 'We tell everyone that Eon does more than build coal-fired power stations. We also explain why we opted to build a coal-fired power station at that location. The reason is because it will enable more polluting power stations elsewhere to be phased out.' The spokesperson does concede that 'the technology to capture all CO₂ will not be ready in 2012.'

On the spot |

Thijssen says that the campaigns against

coal-fired power stations are increasingly leading people to associate climate change with coal power. As a result, governments have been put on the spot. In the UK, the Minister for the Environment and the Minister of Energy fell out over Eon's proposed new coal-fired power plant at Kingsnorth. The Environment Agency, an advisory council of the British government, has come out against coal, saying that coal-fired power must be restrained until CO₂ emissions can be captured and stored safely. The chairman of the Environment Agency, Lord Smith, is of the opinion that any station built without CCS technology is 'unacceptable'.

Power companies like Enel and Eon say they have little choice but to build coal-fired power stations as a result of high oil

'To build a coal-fired power station that cannot be retrofitted for CCS is a big risk'

and natural gas prices. Even though coal prices have tripled in the last few years, coal is relatively cheap compared to oil and natural gas. It is available in many "reliable" countries and not subject to production cartels. Brian Ricketts, Coal Energy Analyst for the IEA, understands the increased interest in coal. 'What will be interesting to see is how governments manage the environmental performance of all new coal-fired stations. There are some very old power stations in Europe – both coal and nuclear. They need to be replaced.'

Ricketts says that the politicians who made increasingly strong commitments with regards to reducing CO₂ emissions are now being tested on the fulfillment of those promises. 'Constructing unabated coal-fired power stations is clearly not going to help achieve 20% emission cuts by 2020.' The problem is, says Ricketts, that no one has really defined what it means for a power plant to be "capture ready". 'This is more of a political decision than a clear-cut technical one. A political definition must be created that holds out the promise that new

coal-fired power stations will be retrofitted for CCS at some point in the future, if construction is to go ahead at present.'

The Dutch Energy Council, an advisory body to the Dutch government, does not have a negative opinion of coal. 'We have to achieve our power delivery objectives and keep our dependency on imported natural gas down,' says chairman Peter Vogtländer. Vogtländer does not want to take sides. 'I can understand Greenpeace when they say: "CCS, we'll have to see it to believe it". I can also understand that the industry says electricity must be produced, because demand is increasing.' Vogtländer has recently advised the Dutch government to build coal gasification stations, which can produce both electricity and gas as desired. Vogtländer: 'It is cheaper to capture and

store CO₂ through coal gasification than in a regular coal-fired power station.'

According to EU Energy Commissioner Andris Piebalgs, coal will continue to play an important role in the supply of energy in Europe. 'We need to make coal cleaner through the use of CCS in order to meet our long-term environmental targets', says a spokesperson of Piebalgs. The European Commission believes that it is important that all new coal-fired power stations are indeed "CCS ready", so that they can be retrofitted with CCS technologies once this technology becomes commercially viable from 2020 onwards in a functioning carbon market.

Barbara Helfferich, spokeswoman for EU Environment Commissioner Stavros Dimas, adds that the operator of any new coal-fired station 'should think very seriously about the way it will operate in a carbon-constrained world. To build a coal-fired power station that cannot be retrofitted for CCS is a big risk and bringing that to the attention of the public is a good thing.' ■