

The economics of sustainable energy: a round table discussion with Horst Feuerstein (European Investment Bank/ DIW) held on Monday, 20 November, 2006 at Watermen's Hall, 16 St-Mary-at-Hill, London EC3R 8EF, from 12.30-2.15pm.

Mr Feuerstein began by rephrasing the question: how competitive are renewables? While coal was the energy of choice of the 19th century and oil that of the 20th century, the consensus had been that gas would be the energy for the 21st century until a sustainable alternative was found, he said. However he warned there was a risk that coal, which has a major impact on climate change, was making a comeback. More significantly he said there was an assumption that the environmental problems would be eradicated by carbon capture and storage. In fact he said no one knew the timetable – 20, 30 or 40 years – or the costs involved. In fact carbon capture is likely to be very expensive and therefore the solution, whether one is looking to find a new energy source or seeking to tackle climate change, is renewable energy.

Before looking at renewables, he passed over a number of related issues. Sadly the West has failed both to pursue a rational use of energy and to make progress in achieving energy savings among consumers, households and the transport industry. Meanwhile nuclear fission power was still viewed with trepidation by the public; only 34 per cent thought it was safe. Nuclear fusion was doomed to permanently be half a century away. He was speaking a day before the European Commission launched a £7bn 35-year nuclear fusion energy research project.

So onto renewables. Mr Feuerstein acknowledged they had earned a bad reputation thanks to misguided subsidies in the 1970s. Now costs of production were dropping and government support had moved away from equipment makers to investors. He said alternatives were divided into weather and geological-based sources and those linked to biomass. Within the first category he said hydro power, solar-thermal and geothermal were either very location specific or were waiting for a technological. The key areas were wind and photovoltaic (solar) power.

Wind power output has risen from 1.4gigawatts in 1994 to 60GW this year as costs have fallen from 20 eurocents per kilowatt hour (pkwh) to 5 eurocents over 25 years. Intriguingly that cost is forecast to fall below 5 eurocents in good inshore locations such as the rural mid West of the United States. The problem elsewhere was visual pollution – some wind turbines are 180m high and 60m across. Offshore turbines were more

politically acceptable but cost twice as much to run. He said the market had reached a stage where it no longer needed a subsidy but warned that recent rises in prices of copper and steel had increased equipment costs. One member said the UK would have to build at a rate of five 6MW turbines a fortnight to meet the Government target of 8 per cent of electricity generation by 2010. Mr Feuerstein acknowledged the EIB had not financed any UK projects. In response to a question about the amount of reserve power a generator would have to hold, he said his costs included a reserve of between 3 and 5 per cent while a 10 per cent margin would add 1 eurocent pkwh.

Photovoltaic power – better known as solar panels – had very high generating costs and traditionally had been used for off-grid supply. In Germany the cost was running at 50 eurocents pkwh while California was cheaper because of the greater sun hours at 22 US cents pkwh. Mr Feuerstein said a technological breakthrough was needed to bring the costs down, pointing to California's Silicon Valley as a possible source. He said it could bring the cost down to 12 US cents pkwh.

Biomass – making energy out of products such as wood and oil – had a great potential. Mr Feuerstein cited a forecast for a potential worldwide market of a third of road transport fuel. However there was a wide range of production costs depending on the type of biofuel. He noted that biofuels generally fell within the ambit of the World Trade Organisation. Mr Feuerstein said biomass was divided into first and second generation sources. In recent years some biofuels have become increasingly competitive, notably ethanol from sugar cane in Brazil and biodiesel from palm oil in the US. A litre of ethanol costs 18 cents to make and biodiesel 40 cents compared with 50 cents for gasoline. Brazil gave heavy backing to the ethanol industry, which now takes up half of sugar cane production, in the face of reports by the World Bank that it was no economic case.

He highlighted one potential issue. Energy producers have to compete with food producers against a background of 800 million people going hungry worldwide. However he said that correct use of state intervention to eliminate price volatility would be a “win-win” for farmers as it would encourage high production. Separately he pointed out that the US currently imposed a 10 cents tariff on bioethanol that could end up at the WTO.

There are two serious commercial ventures aiming to convert wood fibres into liquid fuels:

- Choren in Germany that uses a process to produce synthetic fuels historically only used by embargoed nations such as Nazi Germany and apartheid South Africa. It plans to produce 15,000 tons a year beginning in 2007. He said the cost would be between 50 and 70 eurocents a litre.
- Iogen which uses enzymatic hydrolysis to break down lignocellulosis to produce ethanol. Cost estimates are not known although there was enough surplus supply in Russia, Africa, Australia, India and China to bring the cost down to 45 eurocents.

In conclusion there are promising examples such as ethanol that are highly competitive. He said the world could not afford to do nothing about the lack of alternative energy sources. He said there was an optimal combination of market forces, regulatory frameworks and government support systems that was needed to maximise the potential. Looking forward he said the public debate had moved on from the 1970s anti nuclear vs pro-nuclear to more precise debates over, for example, the need for biofuels and the dangers of deforestation. Asked whether alternative energy would survive a fall in oil prices to \$35 a barrel, he said governments in the US and EU had too much a stake in their success to let them go to the wall.