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SUBJECT : Response from Fuel Cell Power

INTERIM RESPONSE TO STERN REVIEW

From Fuel Cell Power

The future wealth of the UK depends upon our ability to find secure, sustainable energy sources, with overall costs competitive with those in the world markets. Fossil fuels are under-priced, not covering their full resource costs, so the market is distorted and irreplaceable chemical feedstocks are being wasted. At the same time we are damaging natural ecosystems and holding back the technological solutions which could enable us to avert dangerous climate change.

We need an energy audit to find cost effective ways to change our dependence on fossil fuels. We can reduce our need for thermal energy by good building practices, by generating electricity on site and making use of the heat by-product and by developing on-site renewable energy.

The UK is only responsible for a small percentage of the world's carbon dioxide emissions from fossil fuel sources, so in order to avoid dangerous climate change we must achieve large scale production of clean energy technologies for export to the developing countries, which will otherwise be the main source of increasing CO₂ emissions.

Urgent need for Investment in UK Developments

"They do not understand the need for development!" said Dr F T Bacon, OBE, FRS, the developer of the world's first practical working fuel cell. While £billions have been invested in refining the internal combustion engine over the past century, the fuel cell has been starved of funding. British engineers developing advanced batteries, hybrid vehicles and renewable energy technologies are also held back by lack of private or Government support.

Japan has taken the technological lead with energy saving and renewable technologies, partly because they have had to import their oil. The UK should reverse the trend of previous decades and begin to rebuild its engineering capacity. British engineers are as good as their Japanese counterparts if they are given the chance. There are many excellent prototypes waiting for development but innovative companies can only get Government funding for the first one and private financiers are only interested when the product is ready for market. There is also opposition to innovative technologies from the lobbies for existing industries which do not want to lose market share. Fuel Cell Power was advised that the more successful we were in promoting hydrogen fuel cells and renewable energy, the more these lobbies would 'drown us out'!

Government policies concentrate on helping the global energy industries. Under the Renewables Obligation (RO) £1billion per annum will be given to the electricity generators by 2010, mainly for huge wind turbines. People will not have a choice as the RO only supports technologies which contribute to the grid, not the most efficient form of generation, which is combined heat and power. Solar power is obviously more efficient if it is used in the building where it is generated rather than if it supplies the grid. The UK Government does not consider that solar power will be commercially viable before 2020 although the Japanese are starting volume

production of solar panels later in 2006. Innovative energy saving and renewable technologies have to compete against mass produced, established technologies which are not paying their external costs.

Discounting distorts

It also discriminates against developers of renewable energy when the long term value of renewables is discounted by economists on the basis that wealth will continue to grow exponentially so that long term benefits will be insignificant. This may not be true as the Millennium Ecosystem Assessment found that *'progress is unlikely to be sustained if most of the ecosystem services on which humanity relies continue to be degraded.'*¹ Also, as pointed out by the authors of Natural Capitalism, *'Industrial capitalism does not fully conform to its own accounting principles. It liquidates its capital and calls it income. It neglects to assign any value to the largest stocks of capital it employs – the natural resources and living systems, as well as the social and cultural systems that are the basis of human capital.'*²

The cost of mitigating global warming could be largely offset by the commercial opportunities offered by new energy technologies. Although existing energy suppliers may experience reductions in profitability, if they diversify now into new energy technologies they could avoid catastrophic future losses as prices rise and customers change to imported technologies. According to Vijay Vaitheeswaran, The Economist's Environment and Energy correspondent, it is sudden changes which are most damaging to the profitability of investments.³

Recommendations

The Stern Review should cover all potential cost effective energy saving and renewable technologies. For instance, the Grünhaus database (reference 16 Fuel Cell Power Response 9/12/2005) includes electricity generating schemes which could be incorporated when flood defences are built. Grant funding will be required for a series of different prototypes and for world patenting rights.

The Renewables Obligation (RO) creates a distortion in favour of the grid rather than more efficient combined heat and power systems. Customers will pay about £1 billion per annum in 2010 to cover the additional cost of renewable energy, mainly large wind turbines. According to the Energy White Paper a million UK households buy new boilers every year. The additional £1 billion per annum paid by customers under the RO could be used to contribute £1,000 each towards a million CHP units per annum with renewable energy and or hydrogen fuel cells. However, the aim would be in due course to offset the additional costs by energy savings. E.ON UK plc stated that half the households in the UK could cover the cost of conventional gas powered CHP in five years. (reference 11 Fuel Cell Power Response 9/12/2005)

An alternative way ahead could be for customers to cover the external costs of fossil fuels which would make energy saving and renewable technologies more competitive. A study in Germany indicated that if the external costs were taken into account, then the retail price of electricity would double.

There would be benefits to the UK economy as technologies would become self financing when large scale production was reached and there would be growing income from worldwide sales, particularly to developing countries.

Integrated public passenger transport systems incorporating hydrogen and fuel cell powered buses and light rail will be essential if we are to reverse the trend for growing CO₂ emissions from the transport sector.

Finally, the public is very confused by different promotional lobbies and Government support is essential to provide full and accurate information and to involve the public in the implementation of energy saving and renewable technologies.

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- (3) *Power to the People*, Vijay Vaitheeswaran, reviewed Fuel Cell Power No. 19, Winter 2004-05 Earthscan Publications Ltd 2005, ISBN 1-84407-176-6