Sustainable Energy for the UK

A discussion document produced on behalf of the Advisory Group on the Environment, part of the Diocese of Newcastle in the Church of England

The future of energy use and supply in the United Kingdom requires a balanced approach that considers all aspects of both supply and demand. There are no easy answers to the issues this raises, and the adoption of a single-source policy is both unhelpful and unwise.

The United Kingdom needs to have a secure supply of energy, produced in a way that doesn't compromise our stewardship of the Earth - the ability of future generations to live sustainably on the planet. Most of our demand for energy comes from transport (39%), homes (31%) and business (25%), the principal sources of which are gas, electricity, petrol and a decreasing amount of coal.

Much has changed in the last generation. In 1970 47% of our energy came from coal, 44% from oil, 5% from natural gas, 3% from nuclear power and less than 1% from renewable sources. Today 17% is from coal, 21% from oil, 42% from gas, 8% from nuclear and 2% from renewable sources including wind, water, solar, tidal and wave power, and biomass. A target of 10% from renewable sources by 2020 is regarded as realistic, after that new technology and the decline of oil and gas reserves will accelerate the commissioning of alternatives.

All traditional sources of energy are problematic in one way or another. Although there are substantial reserves of coal in the world, this produces significant pollution on combustion, particularly carbon dioxide. Other fossil fuels (oil and gas) also release carbon dioxide, which contributes to climate change, and the reserves of oil and gas are limited. The production of oil, the main fuel for transport, will probably begin to decline within ten years and it will become a great deal more expensive. Gas will last longer, maybe the whole of this century, but will also become more expensive as oil reserves become depleted and gas demand increases. Dependence upon imported oil and gas supplies also introduces an element of insecurity. We now import the majority of our energy needs. Energy prices, and with them the cost of heating and transport, will inevitably rise steeply over the next few years.

While we should welcome the Government's energy and climatic–change objectives of cutting the UK's carbon dioxide emissions by 20% over 1990 levels by 2010 and 60% by 2050, and the social goal of enabling everyone to have a home that is adequately and affordably heated, these pose the inevitable questions as to how to achieve them.

Nuclear power and most renewable sources do not produce carbon dioxide but create their own problems. The only practical form of nuclear power, nuclear fission, has resulted in catastrophic accidents, is linked closely to the production of nuclear weapons, and produces waste which is lethal for hundreds of years and for which no generally agreed safe method of disposal or storage exists. New nuclear power stations also take a long time to plan and build and the available supplies of useable uranium – the essential element in nuclear power – are finite and at best will last as long as gas. Most renewable schemes are either small scale or have significant environmental impacts, e.g. large dams, tidal barriers or wind farms. Another problem we have to face is how we distribute electricity. If we arrange our national grid to carry energy from a small number of big power stations it makes it harder to integrate the smaller levels of output from renewable sources.

Planning a change in the sources of our energy is one aspect of a sustainable policy – energy use is another. Big advances in efficient energy use made by industry over recent years have not been duplicated in the transport and domestic sectors. The drive for better home energy efficiency, mainly through better insulation, has been unsystematic and under-funded. Government could do much more in this area (as has been the case in many European countries) including setting higher thermal efficiency standards for new housing and encouraging existing properties to reach minimum standards and incorporate renewable energy features. This could be done by offering a one band reduction in council tax assessment for energy efficient properties.

Greater support for the development of low fuel consumption cars and substantial incentives for the development of hydrogen-fuelled engines should be encouraged as should better, integrated public transport to reduce the use of private vehicles. Air transport is one of the biggest growth areas, in both use and pollution, but aviation fuel is taxed far less than other forms of energy. Without doubt, road vehicles must become more fuel-efficient and emit cleaner exhausts. A considerable amount of research is already under way to produce effective hydrogen fuel cells, which will be a big step in the right direction, but widespread use of these may be 10 to 20 years away.

So where do we go from here? At a personal and household level we should all try to cut back on the amount of energy we use, whether in the home or in the way we travel. Smaller cars with low fuel consumption, well-insulated homes, and more thoughtful use of electricity, can all have a major impact. We should also consider becoming a little more self-sufficient in energy. Small garden or rooftop wind turbines, solar panels for hot water, and the new breed of gas central heating boiler which also produces electricity can help us to achieve this. Research recently published by Oxford University[1] shows that over half of our electricity needs in the UK can be met by a combination of medium-scale and domestic renewable energy. Alongside Government policy, we can all take some initiative by investing – and for once the word is justified – in efficient, more energy-sufficient, homes and a lower-energy lifestyle.

The application of cleaner fuel technologies to the combustion of gas, oil and coal will undoubtedly have a part to play in the transition to a sustainable energy economy over the next century but may not be sufficient to redress the increases in atmospheric carbon dioxide and consequent climatic changes. The Government needs to be encouraged to do a lot more to support renewable energy as the safest, most secure, sources for the future, as long as these are accompanied by rigorous environmental impact assessments. But Governments don't like getting too far ahead of public opinion so speaking up for sustainable energy and getting others to do so is important. What is vital in whatever energy policy is adopted is that, in securing our energy supply, we do not leave a legacy of environmental damage for future generations.

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[1] www.energybulletin.net/6097.html