

# Why Nuclear Power is Needed in a Low Carbon Economy

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Carbon dioxide levels are now about 40% higher than at any time in the past 740,000 years at least, and due to the inertia of the global system further warming will occur over the next few decades regardless of action on emissions reduction. Current warming is already having its effects: sea ice is melting, glaciers are receding, sea levels are rising and the oceans are becoming more acidic. What's more, in the past 30 years the number of strong hurricanes, the equivalent category to Katrina, has doubled.

We now face serious challenges from pressures on natural resources and the environment. The science of climate change is becoming more certain by the day and the causal link to increased greenhouse gas emissions largely caused by the use of fossil fuels is now well established.

There is no single solution to reducing emissions. We, like any country, need a full complement of mitigating actions, covering all sectors and addressing the key issues of low carbon energy, fuel poverty and security of supply.

It is certainly not a simple question of deciding between "nuclear vs renewables vs energy efficiency". I believe we need every tool in the bag, including a step change in the rate of energy efficiency improvement, a much greater contribution from renewables, major progress in the transport sector to stabilise and start to reduce emissions, and the large-scale demonstration and deployment of carbon capture and storage for fossil fuels. I am also a fan of maximising the contribution of combined heat and power,

decentralised energy and so called "micro-generation" technologies, which can operate at the scale of an individual household.

I believe strongly that a "stabilisation wedges" approach can be a valuable framework in scoping the scale of the challenge and in providing a strategic framework for future planning and delivering on our low carbon economy.

Energy efficiency is clearly a win-win option for all of us; it addresses both our carbon and security of supply goals. The projected growth in energy demand will currently cancel out any efficiency savings made. Energy efficiency is a theme that cuts across all sectors. In the domestic sector, we must move quickly to ramp up new housing standards. More challenging is achieving improvements in existing buildings. Action to raise the profile of energy efficiency in the business and public sectors is also a key issue for both buildings and products. Crucially, the proposals must encompass both heat and electricity – too often the focus is placed on the former at the expense of the latter. The savings we make on energy efficiency will reduce the number of new power stations we will have to build during the next 40-50 years.

It has become increasingly clear while reviewing the evidence for the Energy Review that we were falling even further behind in meeting our CO<sub>2</sub> emissions goals. A key factor for this is the rapid decline in carbon-free energy to the grid from nuclear fission as existing plants close. In 2001 the contribution of nuclear power to grid electricity was 27%. By 2010 this will have fallen to around 18%, and by 2020 to just



7% – effectively more than offsetting the contribution expected from renewables over the same period.

Nuclear power currently accounts for 20%, or one fifth, of our electricity generation and is an important part of the low carbon equation. The question is shouldn't we replace that, so that we can keep that source of electricity? It is only about one fifth, and what we need in the future is a good electricity balance. Each year we delay any new nuclear build means an additional 35 million tonnes of carbon dioxide are emitted to the atmosphere (about 6% of total CO<sub>2</sub> from all sources), assuming that gas fills the gap as nuclear capacity declines. In some scenarios the position could be worse, if gas prices remain high and coal becomes more competitive.

Let me make it clear, if there were other sources of low carbon energy that could replace our generation of nuclear while ensuring security of supply and eradication of fuel poverty I would be in favour of them, but there aren't. Nuclear power is an important source of low carbon electricity in the UK and that is why the UK Government has said nuclear power will play an important part in meeting our energy goals.

This may well be the last generation of new nuclear fission power plants in the UK. In 35 years time the ITER project may well yield the availability of commercial fusion power plants, with zero radioactive waste implications, like energy efficiency this could be another win-win.