

Nuclear power and Climate Change April 2005



**Friends of
the Earth
Scotland**

Tackling climate change is critical, however it is wrong for the nuclear industry to justify expansion on the grounds of climate change. Simply to stabilise the climate global emissions cuts of at least 50% are needed by 2050. Some high profile individuals, including environmentalists, have recently advocated nuclear power because they judge that the impacts of climate change will be so severe that nuclear power is the lesser of two evils. Yet new nuclear is not a practical, economic or environmentally justified response to climate change and it is deeply unpopular.

There are better alternatives : nuclear is unnecessary

- the potential for emissions reductions from energy efficiency and renewables is more than enough to make the nuclear option redundant;
- nuclear power could not be mobilised as quickly or as widely as renewable power and energy efficiency measures;
- nuclear power diverts money and time from safer, cheaper, more resilient alternatives.

The UK Government Performance and Innovation Unit (PIU) reported that "the current, apparently cost effective, potential for energy efficiency is approximately 30% of final energy demand". With further technological advancement and certainty in the industry this figure could be increased. Combined with meeting our renewable generation targets this would get us a long way towards the necessary cuts. Government's own advisors, ETSU, (Energy Technology Support Unit) say that the UK can provide two thirds of its electricity from renewables cost effectively by 2025. This is backed by the RCEP which showed that Britain can deliver CO2 emission cuts of 60% by 2050 without nuclear power.

A recent Greenpeace report written by respected energy experts Garrad Hassan demonstrated how

30% of Europe's energy needs could be generated from offshore wind power alone by 2020 – enough energy to power every home in Europe.

Every pound invested in electric efficiency displaces nearly seven times as much CO2 as a dollar invested in nuclear power. If we doubled nuclear power in the UK, this would reduce greenhouse gas emissions by only around 8%.

"New nuclear power stations are not indispensable in delivering long term emission reductions – energy efficiency measures, renewable energy sources and capture and disposal of carbon dioxide from fossil fuel power stations could all be viable alternatives." RCEP

Research carried out by the EU which looked at the overall impact of building and operating reactors – ie looking at the whole 'life cycle' of the power source (including things like CO2 emissions in uranium mining, reactor construction etc regularly ignored by the nuclear industry when championing nuclear as the solution to climate change) concluded that nuclear power stations would produce around 50% more greenhouse gas emissions than those from wind energy.

Developing renewable energy / investing in energy efficiency are far quicker solutions to reducing climate change emissions. The UK's offshore 60MW wind farm at North Hoyle, off the coast of North Wales, took 8 months to build. In comparison the last nuclear reactor built in the UK (Sizewell) required 7 years in planning and 8 in construction to get built. Most independent industry analysts acknowledge that the first of any nuclear power new build programme wouldn't come on line until 2010-2020 (factoring in the next Energy Review, 5 yrs to get a reactor licensed, 2-3 years finding sites / addressing planning, and 3-6 yrs construction)

The uneconomics of nuclear

The only new nuclear station ordered in Europe in the last 12 years is in Finland. At 3bn Euros the price is far higher than recent claims made for US reactors (of as little as \$1bn). But even this Finnish price is a 'special offer' from a desperate industry, fixed at this level and subsidised by French export credits so as to minimise the financial risk to the Finnish public purse. The nuclear industry is so keen to demonstrate that it is not dead and buried, that it is taking on any risk of cost overruns and delays. Sizewell B cost double the initial estimates at over £3.0bn.

The nuclear industry's estimated costs for building a series of the new AP1000 reactors have been challenged by the US Congressional Budget Office (CBO) as being overly optimistic. Whilst the nuclear industry estimates costs of £0.6bn-£0.8bn the CBO say that construction costs would be £1.2bn-£1.7bn per reactor. Even allowing for efficiencies of scale claimed by the industry the CBO's figures suggest that costs for building 10 reactors would be between 8 and 12 billion. Were the UK to source half of its electricity from nuclear an estimated 45 reactors would be needed costing up to £53 billion.

These figures are before the costs of decommissioning and waste management. Official estimates suggest that the cost of nuclear waste and other liabilities for the UK's existing nuclear programme will be at least £62 billion: more reactors will simply add to this expensive and dangerous legacy.

The PIU examined industry estimates and concluded that nuclear electricity costs of 3-4p/kWh would be a realistic estimate. In comparison the PIU suggests that in a similar timescale onshore and offshore wind has the potential to become among the cheapest low carbon options: around 1.5-2.5p/kWh for onshore wind, and 2-3p/kWh for offshore wind.

British Energy's woes demonstrate that nuclear power is a financially risky investment. Rising energy prices have made nuclear appear profitable again, but only when long-term liabilities are discounted. Investing in nuclear would leave a hazardous legacy for future generations, drain resources away from the next generation of renewables, wave, tidal, solar, and be to the detriment of confidence in the renewable energy sector.

The hazards of nuclear power

Nuclear operations create serious hazards. Radiation is a routine hazard throughout the nuclear lifecycle – from uranium mining, through

operation to waste management. Nuclear power stations make routine nuclear discharges into the air and produce low, intermediate and high level radioactive wastes, including spent reactor fuel. Nuclear reprocessing increases the amount of radioactive waste and releases radioactive materials into the environment. There is no safe dose of radiation, and radiation damage includes cancers, damage to immune systems and hereditary defects. Almost twenty years ago Chernobyl demonstrated the potential scale of the risk from an accident. It is estimated that up to 100,000 people have died as a result of radioactive contamination following Chernobyl and restrictions remain on farmland in parts of Scotland as a result of livestock grazing on contaminated land.

“The quantity of spent fuel requiring management could increase significantly, by approximately double, if say 10 nuclear power stations were to be built and assuming this fuel were not reprocessed.” Committee on Radioactive Waste Management

Nor do we have any proven solution for dealing with nuclear waste, especially for the prolonged time-periods (hundreds of thousands of years) that it remains a threat to human health and the environment. Existing nuclear power stations will leave us a legacy of half a million tonnes of nuclear waste and the government still does not know how to dispose of this safely.

Studies in the US put the potential impacts of an attack on a reactor at 44,000 immediate fatalities with 500,000 suffering long-term ill-health effects, such as cancers.

9/10 nuclear facilities have the potential for abuse in nuclear weapons programmes. Both reactors and waste facilities need tight security to avoid radioactive material falling into the wrong hands. Proliferation of nuclear materials and nuclear weapons escalates the risk of such weapons being used, whether by states or by terrorist organisations

Nuclear power is unpopular

According to a BBC poll in April 2005 75%, when pushed to choose, supported building more wind farms and only 17% supported new nuclear power stations in Scotland. A NOP and Energy Trust poll found that only 10% of those surveyed thought that government should invest in new nuclear facilities, and 85% wanted investment in renewables.