

THE CASE AGAINST NUCLEAR POWER

And the case for real solutions to climate change and energy insecurity

Summary

- Even if Britain built ten new reactors, nuclear power can only deliver a 4% cut in carbon emissions some time after 2025. Even the Government admits this (Sustainable Development Commission figure). It's too little too late at too high a price.
- Most of the gas we use is for heating and hot water and for industrial purposes. Nuclear power cannot replace that energy. And it's a similar case for oil as it's virtually all used for transport - nuclear power can't take its place.
- Indeed, 86% of our oil and gas consumption is for purposes other than producing electricity. So nuclear power, which can only generate electricity, is almost irrelevant.
- The real solutions to the energy gap and climate change are available now. Energy efficiency, cleaner use of fossil fuels, renewables and state of the art decentralised power stations like they have in Scandinavia. Together they have the potential to deliver reliable low carbon energy quicker and cheaper. They are also safe and globally applicable, unlike nuclear. But these technologies will be strangled if cash and political energy get thrust at nuclear power.
- Gordon Brown very recently committed the UK to generating around 40% of our electricity from renewables by 2020. If he means it, Britain could become a world leader in clean energy and his case for nuclear evaporates. At the moment Germany has 300 times as much solar power and 10 times as much wind power installed as the UK and has given up on nuclear.
- Margaret Thatcher promised 10 new reactors when she was in power. Just one was built. Going for nuclear allows politicians to project the impression that they are taking difficult decisions to solve difficult problems. In reality going for nuclear simply will not solve our energy problems. Other low carbon technologies will.

NUCLEAR MYTHS EXPOSED

“The only way to keep the lights on is by building new nuclear power stations.”

Nuclear power cannot keep the lights on because reactors take too long to build.

Within the next 10 years, as some existing coal and nuclear plants close, the electricity they currently produce will need to be met from other sources. This is before any new nuclear plants could possibly come on stream. The most optimistic date from the nuclear industry for one new nuclear plant to be producing electricity is 2017. But realistically a nuclear power station has never been built on time and on budget.

Nuclear power will not ‘keep the lights on’. Instead we’ll need energy efficiency, cleaner use of fossil fuels, renewables and state of the art decentralised power stations.

“The only way we can slash our carbon emissions is by building new nuclear power stations.”

Wrong. In fact building new nuclear stations threatens our ability to reduce the UK’s carbon emissions, and here’s why:

While the government would like most people to think nuclear power can deliver energy security and solve climate change, it can’t. The government’s own figures reveal that a new fleet of nuclear power stations would cut UK emission by around 4% some time after the year 2025.ⁱ

New nuclear won't even be built until after deep cuts in carbon emissions and closing the so-called energy gap need to have been achieved - we need something that will really deliver and instead government is wasting time and resources on nuclear, which will strangle the real solutions.

The lion’s share of our energy demand is for heat and transport. Around half our energy need is for heat (mainly gas-based) while the next biggest demand is energy for transport (mainly oil-based). Electricity generation is the smallest portion, and new nuclear would be a small portion of that – currently around 3.6% of our total energy demand and falling.

Greenpeace opposes nuclear power because it generates a small portion of our electricity, leaving a radioactive legacy for a million of years while distracting us from taking the real global action necessary to tackle climate change and meet people’s energy needs.

“But groups like Greenpeace don’t have a solution to our energy problems.”

We do, it’s simple, it’s cheaper and it’s working in other countries. And it’s not just building wind turbines. We can easily keep the lights on by investing in energy

efficiency, renewable energy and decentralised energy as well as using fossil fuels more efficiently than we do now.

As we close coal-fired and nuclear power stations in the next decade we will lose capacity currently providing around 35% of our electricity output, but Gordon Brown recently committed to generating *more than 40%* of our electricity from renewables alone by 2020. So if the Prime Minister is telling the truth, there is no energy gap.

In a Q&A after Brown's big 'green speech' at the end of last year the following exchange took place:

JOHN SAUVEN OF GREENPEACE - I just wanted to push you a bit further on the EU 20% renewable energy target because I know you're waiting for the EU to report on that, probably in January. Do you accept that for the UK it will approximate at about 15% of total energy which would translate, since most of it would come from electricity at about 40 to 45% of our electricity coming from renewable sources by 2020.

GORDON BROWN - Yes I do accept that it would be a very demanding target for Britain and whether it's the figure that you mentioned or a figure around that figure we are going to have to change quite fundamentally.ⁱⁱ

This means delivering the 33 gigawatts of offshore wind the government recently promised and kick-starting other renewable and decentralised technologies where Britain can lead the world. It means building super-efficient power stations on the Scandinavian model – ones which are 90% efficient and can use both fossil fuels and cleaner fuels like biomass – and it means designing products and appliances that use energy more efficiently. If we do that we won't need new nuclear power stations.

And we can do it. Look at Germany.

“But where's the evidence?”

There are now dozens of studies, including many by government, engineering consultants, eminent academics and energy industry bodies all showing how this scale of electricity generation could be met through energy efficiency, cleaner use of fossil fuels, renewables and state of the art decentralised power stations like they have in Scandinavia.

A sizable portion of the 'gap' could be closed through energy efficiency alone - delivering a substantial economic savings at the same time. Government figures show that there is the potential to save over 30% of all energy (not just electricity) used in the UK solely through efficiency measures that would also save more

money than they cost to implement. Government puts the total saving for consumers for this level of efficiency improvement at £12 billion.ⁱⁱⁱ

There are several government and industry figures published for the potential contribution from marine power – electricity harnessed from waves and tides. A conservative view based on these, including one of the government's own studies into what could be achieved economically by 2020, suggests that 12% of UK electricity – or 1/3 of the so called 'energy gap' – could be met by marine power.^{iv}

According to the government, there is the potential in the UK by 2015 to generate 25% of our electricity using Combined Heat and Power.^v CHP is a super-efficient way of generating electricity and using the subsequent heat that is otherwise wasted. Combined Heat and Power stations can mix efficient use of gas and coal with other types of cleaner fuels such as woodchip, straw or biogas, further reducing any reliance on gas. John Hutton has also promised 33 gigawatts of offshore wind.

“Decentralised energy can't work here.”

Yes it can. The government itself describes says DE *“has the potential to contribute to the energy mix and to assist with meeting greenhouse gas emission reduction targets in a variety of ways: making use of the waste heat produced through electricity generation to heat and cool buildings; reducing electricity losses through moving generation much closer to where electricity is used; reducing the need for large transmission and distribution lines with their associated environmental impact; facilitating the use of local renewable energy sources; and encouraging behavioural change through increased awareness of energy consumption.”*

“We can have nuclear AND renewables.”

In reality going nuclear would squeeze out renewables. Indeed, then Secretary of State for Business Patricia Hewitt said in Commons debate on 2003 Energy White Paper: *“It would have been foolish to announce that we would embark on a new generation of nuclear power stations because that would have guaranteed that we would not make the necessary investment and effort in both energy efficiency and in renewables.”*

Since then nothing has changed.

Another insider, Jeremy Leggett, says: “The DTI set up a renewables advisory board to advise ministers how to execute the white paper plan in November 2002. By September 2003 the board's industry members, of which I was one, were already troubled by slow progress and issued a statement of concern. One warned me DTI officials would deliberately go slowly, to keep their hopes for

nuclear alive; renewables would be teed up to fail. I didn't believe it at the time, but recently I have heard two of Tony Blair's senior colleagues confirm that the DTI has long suppressed renewables to make space for nuclear.”^{vi}

“We need baseload, and renewables can’t supply that.”

We also need what’s known as baseload – guaranteed electricity to meet constant demand - and Britain can generate it with low-carbon technologies like CHP and some renewable technologies like tidal, biomass, biogas and hydro. More efficient use of fossil fuels also has a part to play.

“If we don’t go for nuclear we’ll be dependent for gas on unstable regimes like Putin’s.”

The real threat to our energy security is interruptions to our oil supply. However, essentially all of Britain’s oil is used for transport and cannot be replaced by nuclear electricity.

Much has been made of the threat of becoming over-dependent on imported gas, particularly from Russia. Unfortunately, half of our gas is used directly for domestic space and water heating and cannot be replaced by electricity.

More is used for industrial processes, leaving under a third that is used for electricity generation. Much of that third is used to generate electricity at peak times because gas turbines can be easily switched on and off to meet short term spikes in demand. Nuclear power stations must be run continuously. This considerably limits the role nuclear electricity can play in reducing our dependence on gas, from wherever it is imported.

As the Government’s most recent energy white paper showed, global gas supplies are becoming more varied and more stable. The UK simply isn’t dependent on a handful of rogue states to keep our stoves running. For instance, we currently import very little of our gas from Russia.^{vii} We do, however, need to build up strategic gas reserves, like they do in other European countries, to protect against future fluctuations in supply.

Going nuclear will do virtually nothing to reduce our dependence on foreign gas.

“It’s inevitable that new nuclear power stations will now be built.”

Not so. For a start – legally at least - there’s been nothing to stop anyone building a new nuclear power station. All Gordon Brown is doing this week is announcing his government is in favour of companies building them and in the process loosening planning and regulatory constraints.

There are still many, many barriers to be overcome by nuclear enthusiasts before a single reactor is given the go-ahead, let alone built and commissioned. For example, reactor designs have to be approved, specific sites found and laws enacted to supposedly protect the taxpayer from the enormous costs of nuclear liabilities. There is no guarantee any of this will happen.

Greenpeace wrote to the Government before Christmas informing ministers that in our view it would be unlawful to give new nuclear the green light. This was because:

- The consultation was again flawed and in some respects seriously misleading.
- The government had made up its mind to support new nuclear long before it started its consultation.
- There is no solution to deal with nuclear waste. Without a solution it would be irrational and immoral to give the green light to creating more of it.

Our lawyers will look at today's statement and will advise on its legal consequences.

“It's okay, the waste problem is solved.”

The government has given the impression, in the consultation, that the problem of nuclear waste is solved. It isn't and no real progress has been made on this matter, in fact the situation on nuclear waste is pretty much as it was when the Conservative government abandoned the search for a national nuclear dump in 1997. The government simply does not know how to deal with our existing nuclear waste, let alone any new waste, and this was a key criticism in the previous High Court ruling. A decision to green light nuclear would be irrational and immoral.

No nuclear power station anywhere in the world has ever been built on time and on budget with the average reactor costing three times as much and twice as long to build.

According to the Nuclear Decommissioning Authority, the cost of cleaning up the UK's existing nuclear legacy is estimated to be £72bn. On top of this, the cost of building a waste dump could be as high as £21bn. When you add in various other disposal costs, the UK taxpayer is looking at a bill of almost £100bn to clean up nuclear waste.

“This second consultation was pretty fair.”

It wasn't, and you have to ask yourself why – if the government's case is so strong – it needs to keep fixing these nuclear consultations.

Greenpeace believes that the government's second nuclear consultation was, like the first, deeply flawed and a sham. The Government had already made up its mind. There were blatant cases of supposedly 'impartial' information being provided that bordered on a deliberate misleading of the public. For example it claimed that nuclear is cheaper than wind power, when government statements to parliament reveal the opposite is true.

The Government refused to delay the nuclear consultation until the findings of a further consultation on how to deal with nuclear waste has finished. People were asked to make a decision about allowing more nuclear plants, and more radioactive waste, *before* the consultation on how we deal with the existing massive stockpile of nuclear waste has finished. Despite this the Government misled the public by suggesting the problem of nuclear waste is solved.

In the consultation the Government refused to say exactly how the taxpayer will be protected from handing out massive subsidies to the nuclear industry to help them pay to deal with the highly radioactive waste they produce. The Government did not say it passed legislation in 2004 which was deliberately designed to allow the Government to be able to bail-out any future failed private operator if they cannot pay for their liabilities.

The Market Research Standards Council is now actively considering a Greenpeace complaint against the company employed to run the consultation. If, as we expect, the complaint is upheld, this second consultation will effectively be dead in the water.

A group of leading academics and nuclear industry insiders last week released a damning report stating that this second consultation was "rushed, undemocratic and failed to properly represent the complexities of the issues involved." Its authors, who accused Gordon Brown and Tony Blair of "repeatedly pre-judging" the outcome of the consultation, were "profoundly concerned that the government's approach was designed to provide particular and limiting answers."

“People who oppose nuclear aren't credible.”

Many nuclear industry insiders, scientists and academics have deep reservations. Some quotes:

“The Government's overall security case for new nuclear power is unconvincing due to its neglect of key aspects of energy security... The Government has tended to emphasise the 'problems' of Russian gas and electricity gaps. In both cases, there is little evidence of an impending threat. To the extent that risks to

security might occur, it has not been explained why nuclear power has to be part of an insurance policy against them.”

Dr Jim Watson, Science and Technology Policy Research, University of Sussex^{viii}

"The unresolved technical and ethical concerns related to managing radioactive wastes safely provide both a necessary and sufficient condition for rejecting the case for nuclear new build."

Prof Andy Blowers OBE, Open University, former member of CoRWM^{ix}

“Government’s position on the economics of nuclear power is overly optimistic. It fails to account for the uncertainties inherent in construction costs and overestimates the extent to which carbon pricing will incentivise investment in low carbon energy technologies... The simple answer to the question ‘what are the economics of nuclear power’ is: we don’t know – but the risks are very substantial.”

Professor Gordon MacKerron, Former Chair of CoRWM & Science and Technology Policy Research, University of Sussex^x

“There is clear evidence, after the expenditure of some £400m, mostly directed to the Sellafield area, that West Cumbria possesses no suitable rocks in which to site such a (nuclear waste) repository. However, the current consultation exercise is flawed, in that it places the voluntarism of potential host communities ahead of scientific considerations...To choose Sellafield yet again, by way of community voluntarism, and despite the lessons that have been learned, would be wrong and possibly illegal in international law.”

David Smythe, emeritus Professor of Geophysics, University of Glasgow^{xi}

ⁱ <http://www.sd-commission.org.uk/publications/downloads/SDC-NuclearPosition-2006.pdf>

ⁱⁱ Gordon Brown speech on climate change, 19th November 2007. <http://www.number10.gov.uk/output/Page13791.asp>
When asked “I just wanted to push you a bit further on the EU 20% renewable energy target...Do you accept that for the UK it will approximate at about 15% which would translate, since most of it would come from electricity at about 40 to 45% of our electricity will have to come from renewable sources by 2020,” Brown responded, “Yes I do accept that it would be a very demanding target for Britain and whether it’s the figure that you mentioned or a figure around that figure we are going to have to change quite fundamentally and that’s why we’ve been discussing not only the individual projects which are controversial in themselves and discussing how these projects can be done in an environmentally acceptable way, and that’s why I’m mentioning what the military can do what we’ve got to do in different departments to make it possible but we are investigating as a matter of urgency how we can actually move forward in a number of areas where Britain has not lead the way but Britain could lead the way in the future so, I accept it’s demanding, I accept it’s challenging but I also accept that you’re right that it puts a huge demand on changing the way that we generate and produce our electricity I

believe that we can show ourselves equal to the task, but obviously it is a task that people must understand is one that must be met with the whole public understanding just the scale of what we're trying to do. If we are going to meet this target we not only need to be bold in what we're looking at but have this open national debate about what's going to happen and I do insist that we are going to meet our target and we're going to have the open debate that will allow people to put their views about what are difficult but challenging and I in my view decisions that we can meet and win through."

ⁱⁱⁱ http://www.offshore-sea.org.uk/downloads/Offshore_Energy_SEA_Scoping.pdf

^{iv} <http://www.cabinetoffice.gov.uk/upload/assets/www.cabinetoffice.gov.uk/strategy/piuh.pdf>

^v The UK's power stations today waste on average around 2/3 of the energy they generate as lost heat – for example up a cooling tower. The total energy loss in the UK system is the equivalent as all the heating and hot water needs for every building in the country. This waste alone accounts for a full 20% of UK CO2 emissions. If the lost heat was instead captured and used to supply industry or homes and businesses with hot water and space heating, much more of the energy generated would be used from the same quantity of fuel. This approach is called combined heat and power (CHP) and ultra-efficient CHP power plants are commonly used in Scandinavia. They can achieve up to 95% efficiency and use multiple fuels, including cleaner fuels, to further reduce emissions.

^{vi} <http://www.guardian.co.uk/comment/story/0,,2234322,00.html>

^{vii} <http://www.catalyst-commercial.co.uk/blog/latest-news/uk-gas-prices-could-rise/>

^{viii} http://www.sussex.ac.uk/sussexenergygroup/documents/security_brief_webonly.pdf

^{ix} http://www.nuclearconsult.com/NUCLEAR_REPORT_COMPLETE.pdf

^x http://www.sussex.ac.uk/sussexenergygroup/documents/economics_brief_webonly.pdf

^{xi} <http://www.guardian.co.uk/business/2007/nov/02/nuclearindustry.greenpolitics>