

Your questions answered

Can the UK do its fair share to tackle climate change if Kingsnorth is built?

To play its part in preventing the impacts of catastrophic climate change on the world's poor the UK needs to reduce emissions by more than 40 per cent by 2020 on 1990 levels.

Several coal power stations in the UK will reach the end of their life span between now and 2020. This is a fantastic opportunity to reduce UK emissions from electricity generation.

However, if any of the coal power stations scheduled for closing is replaced with a new coal power station, it will be virtually impossible for the UK to cut emissions by 40 per cent by 2020.

Generating electricity is the single biggest contributor to climate change in the UK. And coal is the most climate damaging way to produce electricity.

Most critically, building new coal power stations will undermine the UK's position in international climate negotiations. Talks are at a crucial point, with a global deal to reduce emissions needed by the end of 2009. Given the historical responsibility of rich countries like the UK for causing climate change, developing countries are deeply suspicious of our will and ability to adequately reduce emissions. New coal power stations in the UK will confirm such suspicions, undermining the chance of an effective and just global agreement to tackle climate change.

How do the UK government think they can meet their targets for emission reductions if Kingsnorth is built?

Instead of cutting our own emissions, the UK government wants to meet its global targets for emissions reductions by 'offsetting' its emissions through UK companies buying carbon credits which are claimed to reduce emissions in developing countries – a system that evidence shows is flawed.

To tackle climate change, rich countries like the UK need to drastically reduce *their own* emissions. In addition they need to provide the resources and technology to help developing countries to curb the growth of, and ultimately reduce, their emissions. Carbon credits prevent the UK from drastically reducing our own emissions to tackle climate change.

Furthermore, many of the carbon credits UK companies can buy to 'offset' their emissions actually have no effect in reducing emissions elsewhere in the world.

If lots of power stations are closing, how will we have enough electricity without new coal power stations?

To reduce emissions from electricity generation the UK needs to reduce the amount of electricity we use and get far more electricity from renewable sources such as wind, wave, tidal and solar. If we do this, we will have more than enough electricity generated to meet demand.

To meet European targets, the UK has to get 35-45 per cent of electricity from renewable energy by 2020. Meeting these targets would require an expansion of renewable energy which more than compensates for the fall in electricity generation from the coal and nuclear plants that are closing.

The UK Business Council for Sustainable Energy, an industry body which includes E.ON as well as British Gas, EDF, National Grid, Scottish and Southern Energy, and RWE, has set out a strategy demonstrating that the UK is able to meet these targets within the time frame. This would primarily come from offshore and onshore wind, but also includes wave, tidal, hydro and solar power.

Just as important is reducing the amount of electricity we use in the first place. Measures are needed such as regulating markets so that only energy efficient appliances are sold, and introducing smart meters to homes and businesses to help people reduce their electricity use and therefore lessen demand.

The UK government itself has said that even without any new coal power stations: "Current evidence on planned investment shows the market is making good progress towards delivering sufficient electricity generation

capacity to deliver secure supplies through the next decade."¹

But isn't the UK really bad at generating electricity from renewable sources?

The UK currently gets around 5 per cent of its electricity from renewable sources, mainly hydro and onshore wind. This puts the UK almost at the bottom for renewable electricity generation within the 15 richer members of the EU (see table 1).

Table 1: EU member states electricity from renewable sources

Country	Percentage of electricity from renewable sources
Austria	60 per cent
Sweden	52 per cent
Finland	33 per cent
Denmark	29 per cent
Portugal	18 per cent
Italy	16 per cent
Spain	15 per cent
France	10 per cent
Germany	10 per cent
Greece	10 per cent
Netherlands	9 per cent
Ireland	7 per cent
Luxembourg	6 per cent
UK	4 per cent
Belgium	3 per cent

The UK has the largest wind, wave and tidal resources in Europe. The lack of progress on renewable energy in the last decade is because of a lack of political will and investment, not because of a lack of natural resources available.

Portugal's Finance Minister, Manuel Pinho, has said: "The relative price of renewables is now much lower, so the incentives are there to invest. My advice to countries like the UK is to move as fast as they can to renewables. With climate change and the increase in oil prices, renewables will become more and more important."

If we are dependent on wind, will the lights go out when the wind is not blowing?

Along with other renewable technologies, wind is a variable source of electricity; the amount generated is dependant on the wind levels at the time.

However, our current electricity systems already have to be controlled through complex balancing mechanisms because energy supply from fossil fuels already changes constantly. Large coal, gas and nuclear plants can suddenly shut down with no warning because of faults. And the demand for electricity fluctuates wildly throughout the day. The system is already equipped to cope with considerable fluctuation, with different power plants starting up and shutting down all the time.

The UK electricity system works by predicting supply and demand for electricity one hour in advance, with power plants coming on-line or going off-line to meet predictions.

Technologies such as hydro-pumped storage are already in use for when there are sudden increases in electricity demand, or loss in supply.

Forecasting wind conditions and electricity output can be very accurate, so wind can easily fit into the UK system. Gas will continue to be part of the electricity system as a backup to renewable electricity for several years to come, preferably with ‘waste’ heat from gas power plants being used in heating for homes and businesses.

Furthermore, wind conditions in places several hundred miles apart are not closely correlated. In the UK, onshore and offshore wind will be spread across great distances, so fluctuation in different areas will often balance out.

If and when renewables form a far greater proportion of electricity production there may be a need for more innovative ways of balancing demand and supply. Increased use of electricity storage, such as hydro-pumped power, would allow power to be stored and used when needed. This could be coupled with measures to reduce sharp increases in demand, such as efficient fridges and freezers which can stop taking power from the national grid when there are increases in demand. Such measures, alongside increases in other renewables such as tidal and solar, could allow the UK to cease using fossil fuels entirely.

I heard that wind turbines create as much carbon dioxide in being built as they will ever save from generating electricity?

Wind turbines take between three and ten months to produce the same amount of energy as it takes to make them. Given that they have an average life of 20 years, they are a very carbon efficient means of energy production.ⁱⁱ

Of course, until we have developed a low carbon energy system, all power plants in the UK will create emissions as they are being built, whether renewables, nuclear, gas or coal. The key difference is that gas, and

especially coal, continues to create large amounts of emissions throughout their lifetime because of the fuel they burn.

If we don't use British coal, won't we become dependent on Russian gas?

In 2007, 80 per cent of the gas used in the UK came from British sources. The other 20 per cent came primarily from Norway. In contrast, the UK supplies only a quarter of the coal it uses, with the rest sourced mainly from Russia (one third), South Africa and Australia. British coal production is in decline, whilst coal imports from Russia continue to increase.

Though the production of gas from the UK's North Sea is predicted to decline over the next couple of decades, the government predicts Norway will be the main source of meeting the shortfall.

Only 30 per cent of gas currently consumed in the UK is used in electricity generation. Around 35 per cent is used directly in people's homes, with 15 per cent used in industry and 10 per cent in office buildings.

There are various measures which should be taken to reduce use of gas in homes and businesses, such as insulation, solar water heating, ground source heat pumps and combined heat and power for electricity generation. All of these would both cut carbon dioxide emissions and increase the UK's energy security. Some would also reduce fuel bills.

Even the UK government says: “total UK demand for gas is expected to remain broadly constant throughout the next decade.

Electricity generation accounts for only a third of the UK's total gas consumption and growth in renewable generation means that fossil fuel power stations are expected to be operating for fewer hours each year. In the domestic and industrial sectors, energy efficiency improvements and the growth of renewable sources of heating are expected to reduce gas demand.”ⁱⁱⁱ

A large expansion of renewable electricity would mean the UK only needs to use as much gas as is currently used in electricity generation. Combined with a programme of reducing gas consumed for other purposes,

this would increase the UK's energy security. Of course, renewable forms of energy make use of Britain's own wind, wave, tidal and solar resources, and so are the most secure ways of generating electricity.

Will a switch towards renewable sources make our electricity bills more expensive?

Until now, because cheap fossil fuels have been plentiful, the UK has failed to invest in renewable energy. However, in 2007/2008 the cost of coal trebled in a year leaving onshore wind as the cheapest form of electricity generation in the UK. Whilst the price of coal fell again with the recession, it is likely to increase if and when there is a recovery.

As production of renewables increases, production costs will fall. In contrast, costs of gas and coal will only increase due to their limited supply, meaning renewable energy will be cheaper in the longer term.

If the UK government played a more active role in the electricity market it could have greater say over how electricity is produced, whilst also ensuring subsidies are used to cover increased costs of electricity in the short term, rather than these costs falling on low income consumers.

If we don't have new coal, won't we just get nuclear?

The issue of nuclear power is a source of much heated debate in the UK. UK government policy is currently to allow new nuclear plants to be built if electricity generating companies want to do so. So far, no electricity company has come forward with any clear plans to build new nuclear power plants.

Nuclear power plants take longer to build than renewable, gas or coal power plants. It is estimated that there would be no electricity generated from new nuclear power plants in the UK before 2020. Therefore, nuclear is irrelevant in terms of both replacing the power plants which are closing between now and 2020, and reducing emissions as needed by 2020. The choice is not between nuclear and coal but between coal and renewables.

As explained above, a large expansion in renewable electricity can more than cover the closure of power plants over the next decade. Whilst nuclear is also a low carbon form of electricity, it produces waste which is difficult to deal with, it is a potential target for terrorist attack, it is dependent on imported uranium supplies (the UK has no uranium of its own), it is not a renewable source of energy as the uranium will ultimately run out, and it has received massive amounts of government subsidy in the past, including more than £73 billion on the programme to decommission the current set of nuclear power plants.

Given all of this, the World Development Movement argues that the UK government's political and financial support should be for renewable forms of electricity which have not yet received anywhere near the support the nuclear industry has received over its lifetime.

Will we lose jobs?

The expansion programme for renewables will create more jobs than would be created by new coal power plants such as the one proposed at Kingsnorth. The UK government estimates that its current plans for expanding renewables will create 500,000 jobs. In Germany, the renewables industry has already created 250,000 jobs, and this is expected to double to 500,000 in the next decade as renewables are expanded further.

Specifically in wind power, Germany employs 38,000 people, Denmark 24,000 and the UK just 4,000. In Denmark, the wind industry has been an important alternative for blue collar workers who have lost jobs in recent decades in industries such as ship building.

The current coal power plant at Kingsnorth employs around 300 people. The plant will need to shut down by 2016. This eight year period allows a long time for E.ON to provide retraining and support for employees to be in position to get new jobs. Furthermore, expansion of projects such as offshore wind in the area should mean that there is a net increase in jobs in Kent if the coal power plant at Kingsnorth is not built.

What will happen if Kingsnorth is built?

If Kingsnorth is built, UK emissions are unlikely to be reduced by more than 40 per cent by 2020 which is needed to prevent catastrophic climate impacts. If this action is mirrored across the world, a global temperature increase of more than 2°C will be virtually inevitable and the world will be on track for an increase in global temperatures of more than 4°C by the end of the 21st Century.

Around the world, such temperature increases could mean:

- Over 1 billion people losing access to their dry season water supply due to glaciers melting^{iv}
- Between 350 million and 600 million more people suffering from drought in Africa^v
- Around 200 million people being forced out of their homes and becoming climate refugees, due to increased disasters, sea-level rise and drought.^{vi}
- Up-to 550 million more people at risk of hunger due to drought and lower crop yields
- One to three million people dying each year due to malnutrition.^{vii}

- Around 300 million more people each year could suffer from coastal flooding, with tens of millions losing their homes permanently to sea-level rise^{viii}
- Between 40 million and 80 million more people could be exposed to malaria in Africa alone^{ix}

In Kent, such temperature increases could mean:

- Heat waves such as that in 2003 becoming common-place
- Increase in summer droughts, possibly leading to standpipes
- More storms leading to more flooding, especially near rivers and on the coast
- Increases in the cost of insurance
- A 5 metre rise in sea-level which would be likely to affect much of the county (see map – link)

ⁱ DECC. (2009). Building a low carbon economy: A framework for the development of clean coal. Department of Energy and Climate Change. April 2009.

ⁱⁱ Because there are low carbon forms of electricity in the UK system - nuclear, hydro and wind - not all the energy used in building wind turbines creates carbon emissions. The amount of time it takes wind turbines to 'pay-back' the emissions created in their generation will get shorter the more low carbon sources of electricity are used in the generation system.

ⁱⁱⁱ DECC. (2009). Building a low carbon economy: A framework for the development of clean coal. Department of Energy and Climate Change. April 2009.

^{iv} Stern Review. (2006). Part II: Impacts of climate change on growth and development. *The Stern Review*. HM Treasury. London. October 2006.

^v IPCC. (2007). *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the IPCC. Chapter 9: Africa. Cambridge. Cambridge University Press.

^{vi} IPCC. (2007). *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the IPCC. Cambridge. Cambridge University Press.

^{vii} Stern Review. (2006). Part II: Impacts of climate change on growth and development. *The Stern Review*. HM Treasury. London. October 2006.

^{viii} Stern Review. (2006). Part II: Impacts of climate change on growth and development. *The Stern Review*. HM Treasury. London. October 2006.

^{ix} Stern Review. (2006). Part II: Impacts of climate change on growth and development. *The Stern Review*. HM Treasury. London. October 2006.

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