
Britain is struggling to power the nuclear revolution

About 40km south of Beijing, some of the world's most exciting science is splitting atoms in pursuit of the nuclear physicist's Holy Grail – the tiny, cheap reactor.

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China started generating electricity from the first fourth generation nuclear station without fanfare last month, using largely home-grown technology that reduces waste, increases efficiency and vastly brings down costs compared with existing plants.

It's only a trial project, with the first commercial-scale model planned for 2020, but nevertheless is a step towards production-line nuclear plants that it aims to produce for the world. If it can bring down costs, China is likely to have customers galore rushing to reduce their carbon emissions by providing the equivalent of Ikea flat-pack parts for countries from Belarus to Ghana.



Sellafield Nuclear Power Plant. The Government has pledged not to spend a penny of taxpayers' money on nuclear power Photo: Alamy

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NEW PLANNING LAWS TO SPEED UP APPROVAL OF NUCLEAR POWER WERE MEANT TO BE IN PLACE THIS SUMMER

But as China throws money at pioneering technology and plans to build 153 stations using basic versions of existing designs, Western nations are struggling to make the old economics of nuclear power add up.

Delays and cost over-runs are already plaguing the construction of new nuclear plants in France and Finland. But **Chris Huhne, the Lib Dem energy secretary, last week pledged that the UK's £50bn programme is on track**

(<http://www.telegraph.co.uk/news/newstoppers/politics/7934915/New-nuclear-power-stations-operational-in-eight-years-says-Lib-Dem-Chris-Huhne.html>) .

This is despite an incomplete planning system, industry concerns about funding and no firm plans for disposing of radioactive waste.

The timetable already appears to be slipping. New planning laws to speed up approval of nuclear power were meant to be in place this summer, but the new Government has put them under review until April 2011.

EDF (<http://www.telegraph.co.uk/finance/newsbysector/energy/7919508/Li-Ka-Shing-Asias-richest-man-buys-EDFs-UK-power-grids-for-5.8bn.html>) , which aims to build the UK's first two stations in partnership with Centrica, insists that it will still put in its first planning application this winter – but there is currently no concrete system to assess its proposals. The French-state owned giant has gone from citing 2017 as the date for providing the first power from its station to 2018 – while insisting that nothing has held up plans.

Small delays are not insignificant, according to Sam Laidlaw, chief executive of **Centrica** (<http://www.telegraph.co.uk/finance/newsbysector/epic/cna/7941449/Centrica-agrees-229m-deal-to-buy-Canadian-gas-assets.html>) , which is part of the consortium aiming to get final approval by the end of 2011. "The consequence would actually be potentially losing our place in the queue for a lot of the large forgings and the other bits of critical long lead-time items," he says.

"Then it doesn't become a month-by-month slippage, but it becomes potentially a much more significant slippage which has consequences for energy security and meeting our climate change objectives."

Within the industry, there is a more deep-seated fear that Britain's current funding plans will not be sufficient to see the first cement poured in the ground. Power stations may be cheap to operate, but are mind-bogglingly expensive to build. Both America and France have opted to underwrite their nuclear programmes to take away the risk of building nationally critical plants from commercial utilities.

The imperative to build nuclear is strong – the UK needs to reduce its carbon emissions by 80pc by 2050 and must replace ageing coal-powered plants. Britain, however, believes nuclear can go it alone – with a bit of helpful regulation to sweeten the investment climate and nudge it on its way.

Despite heavily subsidising to renewable energy, the Government is standing firm on a pledge not to spend a penny of taxpayers' money on equally low-carbon nuclear power. Nuclear is actually inexpensive in comparison to offshore wind farms, according to Matthew Farrow, head of energy planning at the CBI.

"In terms of power output and carbon saved, nuclear could be two to three times cheaper than offshore wind," he says. "Because of this we think it should take its place alongside renewables and fossil fuels as part of a balanced energy mix."

By 2030, British taxpayers will have spent £96bn on directly funding low-carbon energy – largely offshore windfarms, but also £8bn for windmills and solar panels on roofs, £12bn for green heat pumps and £9bn for clean coal. As it stands, nuclear will get nothing. "The existing mix of policies is confused and conflicting in places," says Dr Robert McIlveen, author of a new report Greener, Cheaper, for the Policy Exchange. "Britain currently has a varied set of policies for subsidising different technologies, and taxes which are in some cases are arbitrary," he says. His co-author, Professor Dieter Helm, an economist at Oxford University specialising in utilities, agrees. "What we're currently doing is the most expensive way of making emission reductions you can conceive of," he says.

He believes it is possible to build nuclear without state backing, but only with radical changes to the electricity market, such as the introduction of long-term supply contracts rather than spot prices.

"NUCLEAR COULD BE TWO TO THREE TIMES CHEAPER THAN OFFSHORE WIND"

- Matthew Farrow, head of energy planning at the CBI

The only current measure to help nuclear on its way is a planned "carbon floor price" – which will artificially raise the price of carbon allowances under the European emissions trading scheme. This makes generating low-carbon nuclear power more attractive relative to high-carbon gas or coal plants.

But Peter Atherton, a utilities analyst at Citigroup, believes that this will not be enough incentive for new construction – a view shared by German utility giants RWE and E.ON, who plan to build the third and fourth UK nuclear stations.

"Is it enough? EDF says it is, all the others say it isn't," he says. "It's very unlikely to be enough. Our view is that it would be extremely unlikely that private investors can be sufficiently rewarded for the risks associated with new nuclear power in the UK because the developer takes all the major risks – construction, operation and power price. They are so huge – we call them corporate killers – that it's extraordinarily unlikely that the power price can stay high enough across the life of the power station to generate the sort of return that these risks require."

EDF was the main campaigner for a carbon floor price, and it will benefit by an estimated £350m a year in windfall profits for its existing plants when the measure is introduced. But EDF no longer appears to believe that a carbon floor price will be enough to kickstart nuclear building. While it may have campaigned for the measure for months, sources close to the French state utility company now say it is considered "just a first step".

Further energy market reforms will be needed to see the first nuclear plants built, its executives say.

It is entirely possible that the UK will have backtrack on its refusal to subsidise nuclear plants, says Lakis Athanasiou, analyst at Evolution Securities: "The Government says it's not going to subsidise but if they introduce capacity payments for new plants, is that a subsidy or not? It's something that comes in the back door – there's a lot of semantics going on here."

He believes the best way is to follow the US and French model of simply providing guarantees for debt financing to soothe investors' fears about the possibility of default if nuclear costs run out of control. "The government should provide guarantees for debt," he says. "The minimum carbon price is just a joke. Forget about it. No one is going to invest when they won't get paid back before 2020 or beyond."

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