

Is new nuclear build in the UK a step forwards, or backwards?

Is new nuclear build in the UK a step forwards, or backwards?

Dr Paul Norman

The news about EDF Energy's agreement with government, to build new nuclear reactors at Hinkley Point, has understandably had mixed reactions from the general public.

The financial side of the deal, involving a fixed "strike price" for the nuclear generated electricity of £92.50 per megawatt hour is something that is difficult to put into any type of sharp conclusion, given that this is about a 100 per cent increase, but projected so many years ahead. Statistics from Ofgem show that, over the past ten years, however, wholesale electricity costs have risen by 140 per cent, and wholesale gas prices by 240 per cent. In addition, given the immediate price hikes by npower and other companies of 10 per cent for both electricity and gas, it may be that a doubling of the electricity price is actually even rather conservative for amounts we will actually be paying in 10 or more years' time. Either way, it is purely speculative and any guesses we can make for decades in advance come with heavy amounts of conjecture.

What does seem certain, however, is that new reactors are essential to replace the many older stations (both nuclear and fossil fuel) that will be closing in the next decade. It also forms part of a low carbon energy mix, which would include nuclear alongside renewables and possibly "carbon capture and storage" in fossil fuel plants, if it can work. Whilst we should use renewables where possible, there quickly become difficulties with their deployment on a large scale – typically they are individually low power, as well as intermittent. This becomes problematic in such areas as grid stability, and the almost carbon-free windmills unfortunately need somewhat less carbon-friendly gas power on standby to use instead, should the wind not be blowing.

So we still need to use large power stations, but current technology has only three main types: nuclear, coal, and gas. With the latter two being high in carbon output, this means that nuclear must play a role in any realistic low carbon future. Certainly, we will not meet carbon reduction targets if our current stations are not at least replaced before closing.

One issue that is always raised with nuclear is that of safety. Contrary to some views, "another Chernobyl" is not actually possible. The Chernobyl type design had an inherent instability built into it, due to its particular combination of components, meaning it would never have been licensed in the UK. At Fukushima in Japan, no deaths were actually observed, even amongst the plant workers, despite some of the media labeling them as "suicide squads". There will be some non-negligible costs associated with the reactor clean up, but these will be tiny compared to the unfortunately huge restoration costs from the tsunami and earthquake in general.

Whilst the waste associated with nuclear generation in general is not a desirable entity by any means, it is at least relativity small in volume compared to conventional wastes. Nuclear waste has three categories, with the "high-level waste" forming the bulk of the radioactivity. Yet the total, added up high-level waste content from more than 60 years of nuclear power in the UK is only about one house size worth in volume. When we compare this to the planet wide issue that has been created by climate change, this seems small in comparison to what is happening to our much wider planet via global warming. Nuclear power is not the whole solution to issues of secure supply and climate change, but it is part of the solution in our ever-changing world. Therefore, EDF's build of new reactors in the UK seems like a step in the right direction.

[Dr Paul Norman \(/staff/profiles/physics/norman-paul.aspx\)](/staff/profiles/physics/norman-paul.aspx), Senior Lecturer in Nuclear Physics at the University of Birmingham