

Nuclear energy debate needs facts, not fervour

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There's a quote from a character in Charles Dickens' final novel, *The Mystery of Edwin Drood*, which deserves to be more famous than it is: "Your remarks are well meant, I have no doubt, but you will permit me to observe that they develop a mistaken view of the subject, which can only be imputed to your extreme want of accurate information."

An extreme want of accurate information is unfortunately not an unusual phenomenon in many important public debates.

The public discussion of nuclear power generation is a modern example of Dickens' quote, and nowhere is it more apposite than in Scotland. The prevailing view in Scotland is that renewable energy – by which is generally meant wind and solar – is the only desirable option, and that nuclear power is expensive, dangerous and harmful to the environment. Of course, legitimate disagreements based on differing views of the facts generally leads to better and more balanced decision making.

Arguments based on incorrect or outdated information have become ever-more entrenched and now pose a risk not only to energy security in Scotland, but to the achievement of net zero by 2050 as described in last October's COP26 summit.

The reversal of views on nuclear power generation in the UK is largely due to the activities and science brought out during COP26 – all the more ironic then that Scottish policy makers seem to be deaf to the message.

The overall objective here is clean, reliable, safe energy at an affordable and predictable price. If we can agree on this, then we must also agree that what's needed is a discussion based on objective facts and absent of politics or bias. The core position is that energy security is key to every economy and to all economic growth.

Recognising the need for change

The Chernobyl disaster was a turning point for the nuclear power industry and resulted in stringent safety regulations and controls which are continually monitored and updated. A sensible question would then be to ask how many nuclear accidents and resulting deaths have occurred since then?

One plant operator was killed at Fukushima Daiichi nuclear plant, which was caused by natural disaster (the Tohoku earthquake and tsunami) and not of a failure in the plant itself. Semantics, perhaps, but it underlines the point that



nuclear power is not the apocalyptic bogeyman so often conjured by its opponents.

Eighteen thousand people died in the carnage caused by the tsunami. It is correct that the event was categorised by the International Atomic Energy Agency (IAEA) as a level 7 event – the highest possible severity – but that was related to the potential risk to population from the radiological material washed through the plant into a 10 square kilometre area, which was then monitored and is now returning to normal occupation. No material changes in operational safety were recommended by the IAEA as result.

Compare this with deaths related to other methods of energy production. Around 60 people died as a result of the accident at Chernobyl. Five years later, a hydro-electric dam failed in Belci, Romania, killing 116 people. Thousands of people have died in coal mine explosions and flooding, as well as oil platform accidents.

If you need further convincing, the scientific website Our World In Data, which examines data to objectively address globally significant issues, reviewed death rates from energy production based on accidents and air pollution. Nuclear power accounted for 0.07 deaths per terawatt hour (TWh), compared to 0.04 deaths for wind and 0.02 for solar. By contrast, coal was responsible for close to 24.62 deaths per TWh and oil for 18.43 deaths per TWh.

Cost and emissions data

In its report 'Net Zero by 2050', the International Energy Association (IEA), which works with global governments and industries on energy policy, said renewable energy should account for 90% of the global energy mix if net zero was to be achieved by 2050. Most of the remainder would come from nuclear power. This would require 20 gigawatts of new nuclear capacity to be added to global capacity every year between 2020 and 2050. A net total of six gigawatts was added in 2021.

The IEA has published data showing the lifetime cost of energy – including construction and power production over the operational life of a given plant – is lower for nuclear than most other technologies, particularly in relation to the long-term operation of existing plants. At \$50 per megawatt hour, it's almost half the levelised cost of offshore wind and less again than coal and hydro.

New technology already in development can further improve the cost and speed of delivery. The World Nuclear Association, quoting data from the Intergovernmental Panel on Climate Change, says whole lifetime carbon emissions from nuclear power are equivalent to those from wind energy, and a third of solar.

Scotland's energy mix

In Scotland solar is never going to provide the whole answer. Even the wind doesn't blow as much as we need it to. Nuclear power provides a stable and predictable baseload as part of the energy mix – but the idea of a mix is often forgotten. No-one is suggesting we move to a solely nuclear future but we need to reduce reliance on hydrocarbons. Our future energy source must be clean, predictable, safe and deliver value for money. Ideally it will create jobs and economic benefit. There is no reason why nuclear power generation should not be included in the taxonomy to be adopted as 'green energy'.

Every technology has its drawbacks, but an objective, factual analysis of nuclear power generation should be the starting point for decision makers, in Scotland and elsewhere. One thing is clear on the scientific analysis – we can't do it without nuclear power.

To return to my opening Dickensian theme: even Ebenezer Scrooge was persuaded to change his mind when he saw things in a different light. Perhaps we can hope for the same when it comes to nuclear power and its role in creating a clean energy future for Scotland.

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