



How the US could affect nuclear and net zero in Europe and the UK

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The approach to state aid for the energy industry is as complex as it is crucial. In a previous article, we discussed the history of renewables subsidies in the UK and how this affects the realisation of nuclear's potential. As various national jurisdictions implement their net zero policies, it is important to consider how the character of these policies, particularly those in the United States and the EU, affects the political and economic sustainability of those adopted in the UK.

Compatibility with internal market rules in a post-Brexit world may, on first impressions, seem to no longer apply. However, in the context of nuclear power plants and the contentious reforms of the EU's electricity market, the interconnected nature of the UK and EU energy system will almost certainly require applications to the European Commission.

One potential stumbling block that Great British Nuclear (GBN) will wish to troubleshoot is securing the same green-light approvals to use state investment aid for the construction of new nuclear reactors

that Hungary secured from the Commission in 2017. This was endorsed by the Court of Justice in 2022, despite Austria's objection.

Also relevant is the ongoing power struggle between the French group of 16 Member States (with the UK as an observer) – led by the French Minister Agnes Pannier-Runacher – and the smaller group comprising of Germany, Austria, Luxembourg and Spain – led by German Vice Chancellor Robert Habeck. Indeed, as minds focus on future targets, two main questions face the European nuclear industry:

1. Will France prevail in its plea for the lion's share of the EU's energy subsidy package – equivalent, according to Minister Turmes of Luxembourg, to "a cheque of 120 billion" for the lifetime extension of existing nuclear plants including 56 across France.
2. Will large nuclear power, despite progress to include Nuclear Power in the EU taxonomy (the Complementary Climate Delegated Act), continue to be excluded from the EU's 'strategic' low-carbon

industries 'for climate neutrality' definitions (and therefore funds) as drafted in The Renewable Energy Directive and The Net Zero Industry Act (NZIA)?

In fact, there are reasons for optimism. The NZIA contains good news for advanced Generation IV technologies and SMRs, by providing a clear exemption on state aid restrictions aimed at end-of-the-decade deployment, but it is still unclear whether the Commission will continue to allocate their multi billion budget to nuclear power plants that are commercially deployable today (in contrast to controversial coal power subsidies). As Pannier-Runacher recently stated: "The CO₂ emissions from nuclear are not only less significant by far than fossil fuels, they are even less significant than solar power and wind power. That's just fact."

There is much promise here, but the European situation is far from insulated from global policy, particularly that of the US, which will have significant effects because of its scale. The current state of the Biden energy

and climate package (misleadingly called the Inflation Reduction Act) proposes tax credits, mostly focused on renewables, amounting to about \$300 billion (perhaps much more), while the rent-seeking capital that moves in under a decade to take advantage of these credits will run up towards \$5 trillion.

Of the capacity built with this subsidised capital, 1 TW (about 60%) is expected to be solar, just under 465 GW onshore wind and about 30 GW offshore wind. Several hundred billion more is projected to be spent on transmission lines. Spending on nuclear is anticipated to be small by comparison, only amounting to upwards of \$20 billion to support less than 10 GW of capacity.

However, given the physics of renewables and their consequent cost problems, it is conceivable that the spread of technologies will change radically as the US catches up with European experience. There might be much less wind, for example, as seems likely both from cancelled projects in both the US and Europe and the latest round of CfD auctions in the UK, where not a single project was able to bid below the government's cap of £57/MWh (often stated as £44/MWh in 2012 prices).

Should wind falter, much more conventional generation, including nuclear and gas with carbon capture, might have to come forward. Would such nuclear growth in the US be positive at a global level? In an obvious sense, yes. But the creation of a super-attractive support regime in one jurisdiction could have disruptive effects elsewhere, in the UK and EU for example. In that case, the design of the relevant mechanisms becomes more than a niche interest – since the probable political sustainability of state aid varies considerably according to the design details.

As a consequence, it is imperative that European nuclear advocates are discerning in their choice of state aid instruments. In particular, they should bear in mind the differences between the European Union – where levies on consumer bills have been preferred – and the United States – which leans towards the provision of tax credits.

We should not forget that the nuclear industry in general, and particularly in Europe and the United Kingdom, is not seeking support to fund research and development or cost reduction. Nuclear is already an advanced technology quite capable of competing in a liberal market. Instead, the industry is seeking to offset existing market distortions offered to other technologies.

Levies on consumer bills in the EU have been used to de-risk renewables projects

for investors by topping up or guaranteeing income per megawatt hour generated, thus reducing market exposure. This has often been conjoined with market share guarantees, a method also employed in the US through portfolio standards. European levy-based subsidies have been extremely generous, with the EU (including the UK) providing the overwhelming majority of total subsidies to renewables in the world's major economies in the period 2008 to 2018. Out of a total of €900 billion in the EU, the US, China and Japan combined, the EU provided about €600 billion, mostly drawn down from consumer bills. This support resulted in a dramatic expansion of EU solar and wind capacity, rising from almost nothing in the early 2000s to about 350 GW in 2018. Perhaps because of this apparent success, the EU, and the UK, remain committed to the principle of de-risking investment through levies, an effort now focused, in the UK at least, on Feed-in Tariffs with Contracts for Difference (CfDs).

The US approach has for some time preferred tax credits, but its scale has been insufficient to have global impact. While US support for renewables was a significant minority share of the total in the period 2008 to 2012, it fell sharply afterwards. However, this changes dramatically with the Inflation Reduction Act, which promises a major expansion, mostly in the form of tax credits.

The renewal of US support at dramatically increased scale is resulting in a significant shift of low-carbon developer interest, and there is justified anxiety among European policy makers that they have been outbid, resulting in an attempt to increase the attractiveness of the EU via the Net-Zero Industry Act, together with revisions of the Green Deal State Aid rules and other measures. Interestingly, these revisions seem to indicate some interest in the employment of tax credits alongside the by-now traditional levies.

So, for which avenue should the nuclear industry argue, levies or tax credits?

Europeans would be well-advised to overcome their pride and admit that the Americans may have made the better choice. Consumer levies have the grave disadvantage of being politically vulnerable in the short and medium term, since they immediately add to household bills and to the general cost of living as other consumers, such as retailers, pass on their share of the levies in higher prices. Additional levies to support nuclear in Europe would add yet more to bills already burdened by levies de-risking previous investments in wind and solar. The willingness (and ability) of

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European consumers to pay may already be stretched to breaking point.

The political sensitivity of this matter is accentuated by the fact that levies are inherently regressive, since poorer households spend a larger share of their income on energy than rich households. And even if reluctantly accepted by bill payers, the wider effects of the levies will be felt in short order as reduced spending in other parts of economy. This is an economically and politically dangerous combination of effects.

The burden of tax credits, on the other hand, gives governments considerable flexibility. They can either decide to increase taxes in less politically sensitive areas, or they can defer the issue by funding the measures through deficit spending, thus transferring the impacts to future taxpayers. This is clearly a fiscal gamble, but it at least has the merit of avoiding instant controversy – and if the measures are to support genuine wealth-creating energy technologies, such as nuclear, then the gamble may be a reasonable one.

Since the United States is very likely to fund the Inflation Reduction Act package through public borrowing and deficit spending – which is the default option now in Washington – the EU will find itself badly outgunned if it attempts to provide the bulk of the support for the Net-Zero Industry Act via new consumer levies. There can be little doubt, after all, that the Federal government's ability to borrow at reasonable cost, at least in the medium term, will exceed the tolerance of European consumers for higher bills.

Whether a tax-credit system would also assist in defusing the State Aid allocation debates in Europe is doubtful, but it would at least be politically robust, giving breathing space – an arguably more important consideration, given the urgent need for nuclear generation capacity to support security of supply and competitive pricing.