Energy dream or nuclear nightmare

Event transcript




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Centre

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Event panel

Bill Esterson MP

Former Shadow Minister for Business and Industry

Bill is the Labour MP and former Shadow Minister for Business and Industry.

Adrian Ramsay MP

Member of Parliament

Adrian is the former co-leader of the Green Party of England and Wales and Member of Parliament for Waveney Valley.

Penelope Hope

Co-Founder of Rebel Energy UK

Penelope is the Co-Founder of Rebel Energy UK and was Utilities Businesswoman of the Year in 2021. She is also a Supervisory Board Member at Carlson Investments SE and was previously an Equity Research Analyst at Goldman Sachs.

Cllr Will Barber–Taylor

Former Deputy Director

Will was our Deputy Director and now serves as a Councillor. He hosts the Debated Podcast and the Not A Day For Soundbites Podcast. Will was previously the Digital Campaigns & Media Officer for Generation Rent.

About Centre

We are an independent non-profit foundation and cross-party think tank. Our mission is to rebuild the centre ground and to create a more centrist and moderate politics. We support better public services and a strong economy inspired by policies from the Nordic countries.

To achieve these goals, we work with people from across the UK and party politics. This includes engaging with politicians and our networks, which include academia, politics, and law.

Our work includes creating new conversations by hosting events and conducting interviews. We also produce new policy ideas to better inform debate, publish papers, and release articles. We aim to build consensus, shape public opinion, and work with policymakers to change policy.

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Event summary

This discussion focused on whether nuclear power should play a central role in reaching the UK's net zero targets or be phased out in favour of renewables. Speakers explored the urgency of decarbonising the energy system, with some arguing that nuclear is a necessary part of the short-term energy mix to ensure stability, while others maintained that renewables and storage technologies can deliver sufficient clean power without nuclear. The debate centred on timescales, costs, and how best to balance energy security with environmental responsibility.

A key theme was the safety and sustainability of nuclear energy. Concerns were raised about waste storage, the long-term risks to future generations, and the vulnerability of nuclear infrastructure to accidents or external threats. Supporters of nuclear power countered that modern technologies have made significant safety advances and produce less waste, arguing that abandoning nuclear power would increase reliance on fossil fuels. The discussion also examined the moral legacy of nuclear power and its origins in weapons development.

There was broad agreement on the need for major investment in renewable energy, grid infrastructure, and battery technology. Participants emphasised the potential of tidal and solar power, improved insulation, and decentralised energy systems to strengthen energy resilience.

Transcript

Will Barber-Taylor: My name is Will Barber-Taylor, and I am going to be hosting this event. I am the Head of Events and the Interviews Centre Think Tank. So I will be asking the questions. And then when we get onto the Question and Answer section, I will be making sure that everyone gets to ask their question to the particular panellist that they want to. I think we shall get started as it is just about time.

Welcome to the event, where we will be discussing nuclear power and whether it is an energy dream or a nuclear nightmare. We will be discussing whether it has a role in fighting climate change and how we should treat the energy source in the future.

So the great panel that we have today, we are joined by Bill Esterson, the Labour MP for Sefton Central and Shadow Minister for International Trade. He was also the Shadow Minister for Small Business and the Shadow Minister for International Trade previously. Also joined by Adrian Ramsay, who is the Co-Leader of the Green Party of England and Wales. He has also previously served as Deputy Leader of the Green Party and as a Norwich City councillor. Last but by no means least, we are joined by Penelope Hope, the co-founder of Rebel Energy UK, a supplier of renewable energy to customers in the UK. She was recently back in 2021 awarded Utilities Business Woman of the Year and is now the new Head of Centre Think Tank Business Network. Thank you again to all the panellists for joining us and to everyone who is participating.

My first question is this, and it is for Bill. Do you think it is possible to reach net zero without nuclear power?

Bill Esterson: Thanks very much, Will. Lovely to see everybody, and thanks for joining us. Well, I suppose the technical question is if you have unlimited time, then yes, you can do it without nuclear power, but it is a question of how quickly we need to move. And this is why we accept the recommendations broadly of the Committee on Climate Change, that nuclear has a very important part to play in reaching net zero in energy generation.

Our target, where we are starting now, would be 2030 in renewables, which is doubling of onshore wind, trebling of solar and quadrupling of offshore wind, in which nuclear has a baseload role to play. While we invest in tidal, we invest in bioenergy with carbon capture and storage as alternatives to base load. Right now, nuclear is going to play a part, and we accept the analysis that nuclear will play a part, and we have to address the challenges around safety as well.

We have to do something about this for climate considerations. We also have to do it for energy security and price considerations. The other element of our plan is to invest in insulation and reduce bills. And it is very frustrating for everybody, whether you are a homeowner paying higher bills or part of the building trade, you want to make the most of the opportunity that we no longer deliver two million homes with better insulation as we did as recently as 2013, before David Cameron decided to get rid of what we call the green crap. I asked him about the green crap at a Prime Minister's Question Time at that time.

So it is a combination of reducing usage and cutting bills, which you can do right now, but the longer term is speeding up the investment in renewables, but unless you have nuclear as part of the mix, you are not going to get all the way there by our target of 2034 being self-sufficient in renewable generation, let alone hitting net zero. And the government wants to go much further with nuclear. We think that is a mistake, and it is a very, very challenging way of doing things. And I am afraid it points to them being much less ambitious in their use of renewables. And over the period to 2050, which is what their target is, they will have much greater emissions in the meantime. So that is our plan 2030, the publicly owned Great British Energy to drive investment into renewables alongside nuclear, providing part of the base load.

Will Barber-Taylor: Penelope, the same question to you. Do you think it is possible to reach net zero without nuclear power?

Penelope Hope: Absolutely. I think it is possible, Will. I think it is eminently possible. And we are already on our way to doing that. So, if I can share some information from the energy sector. We had a development last year, which was made possible by a new project initiated by the National Grid, which is a change to the grid code. Now, the National Grid determines and maintains the grid codes. And this change means that for the first time, renewable generators will be offering the same kind of stability services which have only traditionally been delivered by conventional generators, that is, coal, oil and gas. Now I am going to share a quote from a senior spokesperson from the National Grid talking about the ramifications of this change. He says, “This is a breakthrough moment, a key piece in the energy transition jigsaw that will ensure we can operate a fully decarbonised grid and deliver on our net zero commitments.” And he goes on to say, “It also ensures that as we transition away from conventional fossil fuel generation, we can operate the grid securely and efficiently, which will ultimately save consumers money.”

If the National Grid is telling us that it is possible and that the train has already left the station, my question would be who or what is feeding misinformation into the system, into our public psyche, to have us think anything otherwise. And I think two things are feeding that, and I would be delighted to hear from Bill and Adrian in respect of what they are seeing. I think the first thing feeding that is media, which is a for-profit-driven information system. And I think the second thing is what I might call crony capitalism, where we have some MPs, and it is typically the hard right in the pockets of the big corporations who are pushing their business interests to a position of state interests by developing relationships through lobbying and other practices. Yes, it is possible. And let us make sure that we keep our consciousness clear about the facts around what we can truly deliver.

Will Barber-Taylor: Absolutely. Now, nuclear waste is often a divisive issue. Some have concerns that a leak from a nuclear waste storage facility will damage human health and the environment. Others see the storage of nuclear waste as something that can be dealt with using modern technology. Should we be that worried about storing nuclear waste? Adrian, if you could respond to that first.

Adrian Ramsay: Yeah, thank you, Will. Yes, I think there are still real worries about nuclear waste, and I do not believe in scaremongering type stories, but really about just understanding what the risks are and whether the risks are worth it, given the alleged upsides. So I think it is possible to have a calm discussion about it. If we look at the types of waste, then the waste issue is particularly relevant to high-level waste, which is where the majority of the radioactivity is.

Whilst that radioactivity decreases over time through decay, it takes a million years for that process to happen before the level of radioactivity is down to the level it was at before the nuclear process. That is a huge amount of time in which to be able to have the confidence that we can safely store the waste, especially given that we know there will be dramatic changes to our society and to our climate in much shorter time scales than a million years, and there will be in the coming decades. So it is a big risk to be putting in place for future generations, going many times into the future, to be assuming that that is an effective thing to do.

Exposure to high-level waste can have drastic effects on life, on human life, and other species, on biodiversity in terms of cancerous growth, and in terms of genetic problems. So it is a real issue. And there are examples of where there have been accidents and where there has been human error. And I am not going to suggest that happens all the time, but they are frequent enough. There have certainly been a few well-documented ones in the last decade that are frequent enough, and the level of risk associated with it, the impact the risk we would have if it happened, is big enough that I think we have got to take it very seriously.

We do not have a permanent storage solution, especially if we continue to see significant increases in the amount of nuclear energy being produced. And if you look at the UK situation in particular, the government has tried six times in the last 42 years to find a location where there is local support for actually storing nuclear waste and dealing with it. The most recent attempt has been a new approach of voluntarism and partnership, which has failed to secure support from the community.

For example, in the Sellafield area, where it has most recently been looking. Multiple official bodies have warned that the Sellafield site poses a significant risk to people and the environment, having accumulated an extraordinary amount of hazardous waste, much of which is stored in outdated nuclear facilities. So I think there are significant concerns about waste, which we do not have an answer to, and which would pose real threats and growing threats for decades to come and many generations to come.

Will Barber-Taylor: Absolutely. Bill, turning to you, what are your thoughts on this issue? There were real concerns about the storage of nuclear waste. Do you think it is something that we should be worried about and maybe put off further investment in nuclear, or do you think that we do have a way forward in terms of storing it?

Bill Esterson: Well, we should always worry about these things, Will, because nuclear waste is very dangerous. But we have 60 years of experience in this country, arguably the best in the world at decommissioning and dealing with nuclear waste, because we were so early into it.

If anybody has not been to visit, Sellafield is a very interesting visit, and it tells the story of just how dangerous and how difficult it is to deal with waste from the history of the nuclear generation industry in this country.

But if we come to the present day, we are in a very different place because the most modern technology has found a much better way of delivering safe nuclear energy. The design is much stronger, the protections are much stronger, and lessons have been learned from some very serious accidents like Chernobyl or Three Mile Island over the years. And the protections are in place to deal with terrorism or the consequences of the climate emergency, which brings me to the point about what we do with the waste.

We have to deal with the waste that has already been generated. And the new technologies produce much, much less waste than previous versions of nuclear reactors, for a start. But where Adrian is right is that there has not been an agreement yet on a geological storage facility, which is something that is going to have to be sorted out. That is going to have to be sorted out, whether we use our existing nuclear facilities, whether we build new ones in addition, or whether we stop right now because we have got this historical volume of waste. At some stage, we are going to have to find a way of dealing with it. And whether we add to that or not, that problem will exist.

So I come back to the first question. Do we want to use nuclear or not? If we do not use it, we are accepting greater use of oil or gas, potentially coal. Adrian made the point about vested interests. Look, some people want fracking to happen in this country because they want money out of it. Some people want more oil and gas fields to be permitted in the North Sea. That is something Keir Starmer has now ruled out for a Labour government. If we are going to make progress in reducing our reliance on fossil fuels, in minimising our carbon footprint from energy generation, nuclear has to play a part, and we have to solve the very many challenges, including what we do with the waste.

Will Barber-Taylor: Absolutely. And of course, the spectre of nuclear accidents has already been brought up. Accidents like Chernobyl, Fukushima, and Three Mile Island. And they have impacted how the public and politicians see nuclear power. Do we believe that these disasters are a warning for those looking to use nuclear power, or simply the result of bad technology, and in some cases, human error in using that technology? Penelope, what are your thoughts?

Penelope Hope: Thanks, Will, for the question. Well, I think if we look at those three instances that you have mentioned there, two of those are technological, and one of those is a result of natural forces.

Fukushima was an earthquake out at sea, which triggered a tsunami, which hit the coast where the generator was located, and there was a nuclear accident. That tells me two things. It tells me that this highly sensitive radioactive material is vulnerable to externalities, the externalities of human error in operating the technology to make nuclear power possible. And it is vulnerable to elemental forces, tectonic activity, and the unknown unknowns.

There is a third externality, which is not so often talked about, and that is offensive military action. Now, if we look at what is happening in the news at the moment, we have Russia trying to take hold of a nuclear facility in eastern Ukraine. Now, let us just say a missile were to be fired in that direction, which would trigger a nuclear 'accident'. Let us just hope we are not downwind of that, should that occur. Because we know from the Chernobyl disaster that you have the blast impact, you have the thermal flash, and you have the ionising radiation, and that goes up into the atmosphere, and it is carried on the weather systems. Chernobyl radiation ended up raining down in Wales, which hit the grass and the livestock. Sheep eat the grass, and sheep are slaughtered to be delivered up as food for humans. They enter the food chain. So in that disaster, the government had to order all of the sheep in Wales to be killed lest they should poison us through ingestion as humans. So we are intricately interlinked, and we have to be mindful of that.

I think what we also need to think about is under what circumstances nuclear technology was conceived. And if we wind back through the decades, it was conceived as a weapon of war and not just that, but a weapon of mass destruction for the annihilation of huge portions of the population. And I suppose my question would be, from a moral perspective, if that is the case, if that is the malicious intent under which this idea was conceived, can we ever truly hope for something good to come out of that?

Will Barber-Taylor: The same question to you, Bill. Looking back at those three accidents, do you believe that they are warnings or simply bad technology? Do you think that the possibility of accidents like that happening in the future is going to decrease as technology gets better? What do you think?

Bill Esterson: The technology that was around when Fukushima happened, when Three Mile Island happened and when Chernobyl happened was vulnerable, and lessons have been learned. Hinkley Point C, Sizewell, if they happen, are of completely different standards and would not be vulnerable to any of the circumstances that caused those disasters.

We do have to ask ourselves the question, how are we going to replace 10 gigawatts by 2035, which the Committee on Climate Change says is needed? It is consistently what the Labour Party is proposing as part of our renewable energy plan. How do we do it without nuclear? And the alternative is just to the point Penelope made. I do not disagree with the analysis about why we have a nuclear industry. It was the byproduct of the creation of atomic bombs at the end of the Second World War. That is correct. You are quite right that the Chernobyl disaster caused an environmental disaster in Wales. These things have been addressed in the advances in technology.

The alternative is we rely on gas or potentially oil as well, potentially even coal and continue to add to global warming through our CO_2 emissions. These are the questions that we have to address. And it is why the conclusion I reach, which is the Labour Party conclusion, is that nuclear has a place in addressing the very serious challenge of how we decarbonise as quickly as possible.

Will Barber-Taylor: Absolutely. Now, talking about technology and developments in technology, nuclear fusion is one part of that. Adrian, do you think that nuclear fusion is the future of nuclear energy, or do you think that this technology is unlikely to be practical?

Adrian Ramsay: The whole question we are debating here is around what technologies are going to be available in the time scales and the scale that is needed to address the climate emergency. I think we can all agree that that is the basis on which we are talking about this topic.

In terms of nuclear fusion, we have been promised since the 1950s that it is 30 years off. And despite recent pronouncements, there is no evidence that we are any closer than that now. And yet the climate emergency needs to be tackled in a far quicker timeframe than that. Any form of nuclear energy has long lead-in times and a huge price tag attached to it. If we were putting that money directly into a massive expansion of renewables, both big scale renewables and domestic and building scale renewables, into measures to reduce energy use, which is far too often left out of this debate, but home insulation measures to make the economy more localised and effective by reducing energy use that way, we have a far bigger effect with the same amount of money.

It is estimated from epidemics that nuclear fusion could be 10 times as expensive as conventional nuclear and new nuclear. There is every reason to think that it has far less of an impact and certainly a far slower impact than if you put that money directly into renewables and into energy efficiency.

So there are real arguments around what is physically possible and the time available, around what is financially viable, and whether renewables would end up being squeezed. And if you look at what the International Thermonuclear Experimental Reactor Project has said, even their head of communications acknowledges that the technology is questionable as a contribution to carbon targets in 2050, let alone the earlier timescales, which I think lots of us on this call have already referred to. So for me, there are lots of people who have had long-standing ideological concerns about nuclear power.

I think it is a very practical question we have now, whether it is on a big-scale nuclear or nuclear fusion, can these technologies deliver in the timescales we need them to? Are they good value for money?

And in my view, nuclear is not where the money should be focused. The focus should be on mass scaling up of renewables and energy efficiency.

Will Barber-Taylor: Bill, the same question to you. Do you think that nuclear fusion can be the future of nuclear energy, or do you think that it is ultimately, as Adrian said, something that keeps being promised is going to happen in the next 30 years, but does not ever actually materialise?

Bill Esterson: Well, I do not know the answer to that. We heard some exciting news a few weeks or months ago about a recent successful test, but we are a very long way off. And I think the point is well made about that investment at one level.

We are going to have to invest in a lot of technologies. It may well be that nuclear fusion is one of them. Just the point about the cost of fission. France has a very large nuclear programme and has very much lower energy prices right now than the UK, in part because of public ownership, I would suggest, and the Labour Party's plans to create Great British Energy will undoubtedly help there. But they have demonstrated the scalability of it in France. I think it has to be part of the plan.

I was just looking at the CO_2 emissions, which are also a very important pithe ece, same emissions as wind, because even so-called renewable energy does produce emissions. After all, we are talking about net zero, not about absolute zero. Because there are greenhouse gases produced in the manufacturing processes and in the decommissioning processes, whether we like it or not. Solar produces four times as much CO_2 as nuclear and hydroelectric twice as much. Of course, fossil fuels are far higher than that. So I think it is important to put all of these options in perspective.

The Committee on Climate Change talks about a balanced pathway. As someone with a shadow ministerial role, I am looking at what the best way is. This is not directly my brief; it is currently Alan Whitehead, but I will certainly have a role in it because I cover net zero. What is the best way of delivering on the net-zero agenda? What is the best way of delivering cheaper energy? We have got a massive problem across the industry as well as for consumers, where our electricity prices are 60 per cent higher than in Germany. We must address all of these challenges, and we have to address them as fast as possible.

To your point about investment, it is looking at all of the options. We have not talked about hydrogen yet. Hydrogen is part of this. I will acknowledge that both hydrogen and tidal are more proven than fusion right now. But we have to consider the options. We have got to support investment in a range of options, carbon capture and storage as well, if we are going to make the kind of progress that we need in the timescales that we need.

Will Barber-Taylor: Unlike most forms of renewables, nuclear power is not an intermittent source of power. Will we always need some form of energy that runs without interruption, unlike wind or solar? Penelope, what do you think?

Penelope Hope: I think it is safe to say that we need a massive investment in the improvement and advancement of battery technology. And I think we need to set that as a national priority, particularly if we want to bring a massive amount of new energy onto the grid. I think the phrase "intermittent" is a little bit misleading, and I would probably delineate between irregular and regular forms of renewable energy. Irregular forms of renewable energy would be wind and wave. And let us remember that those two are linked because longshore coastal winds drive the coastal currents. It is unpredictable.

Regular forms of renewable generation include solar and tidal. And remember, those photovoltaic cells do not need sunlight to operate. They just need daylight. So with solar, we have a guaranteed supply every single day in a predictable rhythm. And with tidal, we have a guaranteed four times a day supply because we have an in and an out tide and another in and out tide every single day on a 24-hour rotation. So we can guarantee that these sources will generate for us.

So we have to think about this missed opportunity with tidal power. We have more than 3,000 miles of coastline, and it is a craggy coastline, which means we have a lot of inlets. We have the Thames Estuary, we have the Humber, we have the Bristol Channel, and we have the Firth of Forth. And anywhere you have an inlet, you have a massive amount of tidal power coming in and out on these regularised motions. Now, a tidal generator is very straightforward. It is an industrial-sized rotor with an anchor attached, and you sink it to the bottom of the seabed, and you put a cage on top so that it does not interfere with any wildlife. Then you connect that energy to a local substation, which is floating, and the substation connects the energy straight back onto land. This is a huge opportunity for us. Even if we deployed 5% of our coastline to tidal initiatives, we would have a big boost to our renewable generation economy.

Then we have to think about those inlets. So you may have heard of a tidal lagoon, for instance. A tidal lagoon is a systemised series of tidal rotors, which are combined and can be deployed across inlets or bays. We saw under the David Cameron government a tidal lagoon commissioned in Swansea Bay, which would have provided continuous renewable energy for 600,000 residents. That was scrapped under the Boris Johnson administration.

So it seems to me that we need battery storage and innovation. We need a massive investment in tidal, and we need continuity of government thinking and programme delivery to make sure that the projects we commission get through to delivery, whether that is under a Labour government or a Conservative government. We need some kind of continuity of thinking.

When I look at what has come out in the news lately about levelling up initiatives, I am not here to debate the strategic merit of levelling up as an overarching theme. But I think of the new Eden Project, which has been suggested for Morecambe Bay. Now, that is essentially a fancy building and a tourist attraction. And to my mind, that can only bring so much economic generation to a dilapidated coastal town. Renewable generation, however, could provide a really exciting solution because to commission a tidal lagoon, for instance, we need to move jobs into those areas to survey it, commission it, implement it, build it, operate it, and maintain it. And when you move jobs and expertise into local communities, that puts their consumer spending power to work, and you start to generate the local economies. And once they have finished on one renewable generation project, I would be surprised if they did not initiate with others. So there is an opportunity here to put our foot down on renewable generation as a way to repair our economy and as a socially accretive solution to some of the issues that we are facing at the moment.

Will Barber-Taylor: Adrian, the same question. Do you think we will always need some form of energy that runs without interruption, like wind or solar?

Adrian Ramsay: Yeah, this is a commonly asked question, is it not, in terms of the grid. And it is important to bear in mind that we are not asking this question in terms of where we are right now, because I am not proposing that we cease using the existing nuclear power stations. For me, the question is whether we build new ones and whether that is the right route and the right investment. In terms of the future direction of the grid and how to make things work, there is a growing body of evidence and a growing number of stakeholders in the sector who argue that the idea of focusing on a large scale and centralised power supply and baseload is quite outdated compared to where we need to be going in the future. And we need to have a far greater focus on things like battery storage, as Penelope says, on flexibility and on systems that encourage decentralisation and support for renewable infrastructure.

Now, you may say, “Are those things actually at odds with each other?” But as I say, there is a growing body of evidence to suggest that they could be. So, for example, back in 2015, the then CEO of National Grid, Steve Holliday, spelt out the issues around this and said that “The idea of large power stations for baseload is outdated”, and that is from someone who was at the National Grid at the time. And we have seen similar arguments made by others. For example, the National Infrastructure Commission has made similar arguments that it is more costly and less flexible to put all of your eggs in the basket of big nuclear rather than allowing greater flexibility. And even the International Energy Agency has said that power system flexibility has to be the priority if we are to have a more decentralised grid in the future.

That has been backed up as well by a study by Academic SIPs and the University of Sussex, who published a paper in Nature Energy last year, where they said that in practice, if you focus on new nuclear, it does tend to crowd out renewables. And it does tend to mean that the focus ends up being on large-scale centralised production rather than small-scale decentralised production. So to get the flexibility, we need to get the focus on investment in renewables and to maximise the impact of battery storage. We have seen estimates that we could have 25 million electric vehicles by 2035, which is just an example of how you could use the overall electricity grid very effectively for storage.

There are many options that we can be pursuing that I think are much more cost-effective than nuclear, but also open up the options for genuinely supporting renewables far more effectively.

Will Barber-Taylor: So we have come to the end of my set of questions. We are now in the Question and Answer section of this event. We have a question from Tim Rickman for Bill. Tim, would you like to ask the question, or would you like me to ask it for you? The question from Tim: "Enough nuclear generation capacity will be needed to provide peak grid demand when there is no wind or solar generation. Therefore, whenever wind or solar also provides electricity, there will be a surplus. So, what is the point of having any wind or solar generation? Turning down a nuclear plant saves virtually no money or resources." Bill, what is your response to that?

Bill Esterson: I think, to the point Adrian just made, we have got roughly 10 gigawatts of nuclear generation at the moment. And our plan is to ensure by 2035 that is where we are at, rather than going beyond it. This government plans to go for 24 gigawatts by 2050, which I think makes the point Adrian made about really putting all your eggs in one basket, probably fits with current government policy and base planning.

We think that is a good idea for a variety of reasons, including financial ones. When wind is so much cheaper now than pretty much anything else, when solar is becoming cheaper, then it makes sense to invest there. But there is this gap where we do not have the technology, and we cannot store the excess generation. The evidence base at the moment suggests we are not going to be in that position for some time to come. And that is why nuclear has a role to play for a period of time, and it is why you have this mixed economy.

I did want to pick up something Penelope said. Now, far be it from me to miss an opportunity to have a go at Boris Johnson, but I mean, it was an appalling smear of Boris Johnson to accuse him of it being his government that cancelled Swansea Bay. It was the Theresa May government. Now the only reason I know that is because I responded to the statement from Greg Clark, the then Business Secretary, when they announced the cancellation. And the next item of business was the expansion of Heathrow Airport and building the fifth runway. And Boris Johnson was notoriously absent as Foreign Secretary, so he did not have to vote on it, having promised to lie down in front of the bulldozers. So it is funny how you remember certain things. Very happy to join the criticism of him otherwise, including on the various parts of this topic.

I mean, look, we have to address all of these points. We have to dramatically expand our battery capacity. The very, very worrying news that Britishvolt went into administration the other week shows how far we have to come. I mean, Germany is going to have 10 gigafactories. We are so far not off the blocks. I mean, we plan to have eight, to have charging points across the country, to have grants and loans, grants for low-income families, for everybody else, low-interest loans, so we can move, we can transition to an electric fleet of vehicles. All of these things come together. All of these things put a huge demand.

I mean, that point you made, Penelope, about the opportunity for regional growth or levelling up, whichever you want to style it. The renewable industry is part of it, as is retrofitting and installing insulation. It creates great jobs, lots of jobs, as well as cutting bills and revitalising communities. There are so many aspects of this agenda that are really attractive, but it is looking at it as a whole. And I think the long-term is about having an industrial strategy. So we have published an industrial strategy of which our energy plans are part. And in the end, we are going to need to get an agreement that lasts way beyond single parliaments that goes way across parties, that takes the British people with us, that we can deliver an agenda that is going to be effective for our energy security and laying out part in addressing the climate emergency.

Will Barber-Taylor: Absolutely. Does anybody have another question for the panel? There is nothing in the chat at the moment. Mark has raised his hand.

Mark: Hi, thank you. I am a Green Party member. So I was particularly interested in the particular issue for Adrian with new nuclear as opposed to previous nuclear, because the Green Party policy is to phase out current nuclear. So it will be interesting to see if any motions come to that, whether Adrian will support the idea that we can keep our current nuclear capacity.

What I do want to say is that, quote from the grid, and quoting earlier using fossil fuels, the lumping in of nuclear into fossil fuels, I think, was a bit misleading. We can indeed run a grid without fossil fuels. Absolutely. I do not think anyone here is going to argue with that. The Intergovernmental Panel on Climate Change says nuclear. So it is a little bit difficult when we start quoting experts, when one of the biggest pieces of work done in terms of reaching net zero was done by the Intergovernmental Panel on Climate Change, which specifically said nuclear.

What I do want to say is that when it comes down to costs, a recent publication that was commissioned by 100% Renewable UK, which I thought was very interesting, looked at costs and was widely shared. What it did do was specifically say it excluded inter-annual storage costs. And it is estimated that these would be roughly in the ballpark of £30 billion per year, which is quite substantial. And when we look at the costs of renewables, I think the storage costs need to be particularly understood because that is where the costs come in.

Beyond that, I think we also have to look at the real-world examples of France, which has already been mentioned as a good example, but also Germany. And look what Germany has done by closing nuclear power, now and look at what their CO_2 emissions are.

So my question is to both Penelope and Adrian. Where we have got real world example of scaled nuclear that is shown that we can deliver low carbon in conjunction with renewables, do we really support our current position, which is that we are going to be reliant on future technology to reach 100% renewables and currently are satisfied with the phasing out of nuclear and then the combinations of renewable and gas, which is the Green Party policy based on it is current model to balance the load?

Will Barber-Taylor: Thank you very much for your question, Mark. So, who would like to go first, Adrian or Penelope?

Adrian Ramsay: I think it is a good point about whether we rely on future technologies, because that is a big concern of mine about the whole debate. Indeed, one of the arguments that I have raised about new nuclear power stations is the lead-in time from a nuclear power station being commissioned to producing any energy, which was going to be at least ten years. And some studies have suggested it could be significantly more than that.

I have been involved in the campaign against Sizewell, which is near me in Suffolk, where it has just been given the green light, but no work has started yet. And there is certainly time to change course on that, given the huge public cost that there would be directly, as well as the indirect costs in terms of levies on bills.

I think that money could go much better into renewables and energy efficiency. And there are other technologies as well, where we are reliant on whether they come to fruition. Some of the more high-tech carbon capture and storage systems have limited evidence about their impact and effectiveness. Same as some of the other geoengineering-type solutions. Whereas if we focus on the available solutions and scale those up with the significant investment they need in terms of renewables and in terms of energy efficiency, then that is where it could have the biggest impact most quickly. And I think it is a bit of a false comparison to say that a model without new nuclear energy relies on gas in the short term and one with new nuclear power does not, because, as I say, new nuclear power will take ten, maybe seventeen years to come to fruition.

That is just a false argument because, if they have the investment, renewables will be generating that additional energy much more quickly. And in terms of return on investment, it is worth just remembering the figures around Hinkley Point C, which I earlier mentioned in the chat, Mark. When it was first mooted in 2008, the cost was supposed to be £4 billion. And yet by 2019, that had risen to £23 billion, and is still rising. So the costs are just spiralling, and it is the same fears around Sizewell, and with Sizewell, there is plenty of time to still change direction.

Will Barber-Taylor: Penelope, would you like to respond to the question from Mark?

Penelope Hope: Thanks so much for the question, Mark, and I think I would support some of the comments from Adrian there about the lead-in time. Now that is really significant because we have a climate emergency. I think we have to ask ourselves if we can afford to wait for energy, new nuclear power coming online in ten or fifteen years, given the life cycle cost. So, not just the cost to commission, but the cost to operate and the cost to decommission, because renewable energy generation assets are significantly cheaper to install and maintain.

I think perhaps what Mark may have been referring to when he is talking about use cases where a lot of nuclear has been rolled out, for instance, France is one of them. But a lot of the nuclear power stations in France are sitting idle because the government cannot afford to renew them. It is an incredibly expensive source of power.

So the other big issue that has come up is this idea about demand. We somehow need nuclear to satisfy these big peaks in demand. And I think to answer that question, we have to look at the mechanics of the grid. The grid was built to transport energy. That is what it is for, which means that if there is an energy dip in one part of the country, energy can be transported from another area. Now, one of the things that we are missing to update our grid is investment in the hardware of the network. The nuts and the bolts and the wires of our network are deteriorating, and we have a capacity issue. Energy generation falls into three marked categories. You have got 33 kilovolts and above, which are your big energy generation power plants. And we are at capacity for that level.

Unless there is a massive investment in updating our network infrastructure, we cannot bring a lot more online. But there is an opportunity at the mid-tier level, which is localised renewable energy generation between 11 kilovolts and 33 kilovolts. Now that is the sweet spot because when you are generating it in that category, you do not have to connect your energy to the national grid. So you circumvent the capacity issue in that bracket; the energy instead goes directly into a local substation, which means that we can meet that demand, which is the issue that has been mentioned, without the need for nuclear power. And to reiterate the point I made about battery storage, this is the thing, both at a national and at a local community level, that is going to enable us to wean ourselves off bridging fuels like nuclear and get onto totally green sources of energy.

Will Barber-Taylor: There is a comment from Mark, a different Mark to the one who commented just now. He asks, “So France still has amongst the lowest retail prices for electricity in the EU and has for a long time, which is true. Germany, the poster child of the 100% renewables revolution, has among the highest.”

Penelope Hope: Thank you so much for that, Mark. What we have seen over the last twenty years is a massive decrease in the price of renewable energy. We are starting to come to the base of that bell curve. And that is because, as any new form of technology is being ramped up and rolled out, it takes a while for those cost efficiencies to start coming through. So we need to give it time. A big issue that we have, as I said, is infrastructure and network ability. That is not just at a national level, but also at a microgrid level. So when we have our solar panels and our generation asset equipment at the level of our home, that is going to make things much cheaper because there is less distance for the energy to cross, and that also solves the latency issue, which we have when those electrons are travelling for long distances. So I do think it is possible to have a cheap, affordable, socially inclusive form of renewable energy supply at a national level.

Will Barber-Taylor: We are coming towards the end of this particular event. And one question that I think I have for everyone on the panel is this: we have discussed the public perception of nuclear energy, but in terms of how nuclear energy is portrayed in drama, one of the most chilling recent examples is the Chernobyl mini-series. To what extent do we think that has influenced the public perception of nuclear energy and perhaps changed the debate in ways where, if those dramas did not exist and people did not watch them, they perhaps might not have the same views on nuclear energy? Adrian, would you like to respond?

Adrian Ramsay: I did not jump in because I was not sure what my contribution was going to be. I may not have been watching the same films and programmes as you would to offer informed comments. I mean, the arts have an important role to play in helping us think about what positive futures can be like. And there is a bit of a tendency, is there not, in films and programmes to portray dystopias of different sorts about the climate emergency more generally, even if I have not seen it so much in relation to nuclear. I am thinking of fiction, but it could also apply to the way non-fiction is described. So I suppose my main thought on this would be: what is the potential for the arts to demonstrate a positive future where we have addressed these issues and we are living in a much healthier, happier, net-zero future?

Will Barber-Taylor: Absolutely. Bill, do you have any response to that in terms of the way that drama shapes our perception of particular issues like nuclear?

Bill Esterson: Well, whether it is dramas or media reporting, one of the things I have discovered in previous careers where I have known a subject, and it has been confirmed many times over as a politician, is that sometimes the reporting of these things is not accurate. So why should it be any different with the reporting of what happens with nuclear power? That is the simple answer. But look at my views. I have expressed that we need nuclear power as part of the mix, and we are going to have to take the public with us.

No one ever wants these things in their backyard, unless it is already there. Although the public in Hinkley seems relatively happy with it, because there have already been generations of nuclear power stations there. But in the end, we are going to need to take people with us, and whatever is in whatever doom and gloom is expressed in documentaries or elsewhere in the media, we have got to deal with it.

Will Barber-Taylor: Well, I think I am going to wrap it up there, as I know that Adrian has to get off, and I do not want to detain the rest of you any longer than I have to. Thank you, everyone, for coming to this event. I hope you have enjoyed it. Thank you to the panel for taking the time to answer my questions and to the audience for their questions. Our next event will be in March. It will be on devolution and will include Lord Kinnock, who will be on the panel. So I hope you sign up for that event and come along if you have enjoyed this one. Thank you once again to everyone for coming to the event. I hope to see you at the next event in March. Thanks again, everyone.

Bill Esterson: Thanks very much, Will.

Adrian Ramsay: Thanks, Will. Thanks.

Note: This event has been edited for grammar, clarity, and flow. The original recording is the final and definitive version.

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