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Vendredi 7 avril 2023 – Durée : 3 heures

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Concernant la présentation du corpus dans l'introduction, vous n'indiquerez que la source et la date de chaque document. Vous pourrez ensuite, dans le corps de la synthèse, faire référence à ces documents par « doc.1 », « doc. 2 », etc.

Ce sujet comporte les 4 documents suivants :

1. Un article de *The Independent* daté du 4 octobre 2021,
2. Un texte d'opinion de Bhaskar Sunkara tiré de *The Guardian*, daté du 25 août 2021,
3. Un texte d'opinion de Paul Dorfman tiré de *The Conversation*, daté du 28 juin 2021,
4. Un dessin de Martin Ferran, à l'occasion des 10 ans de la catastrophe nucléaire de Fukushima de mars 2011.

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L'ordre dans lequel se présentent les documents est arbitraire et ne revêt aucune signification.

L'usage de tout système électronique ou informatique est interdit dans cette épreuve.

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Document 1 **UK electricity to be powered by clean energy sources from 2035, Boris Johnson says**

The Independent, Monday 04 October 2021

All electricity in the UK should be produced from clean sources by 2035, prime minister Boris Johnson has announced.

The target means a rapid switch from the remaining coal and gas-fired power stations to wind, solar and nuclear energy within 15 years, with fossil fuels used only with carbon capture and storage technology to avoid greenhouse gas emissions.

Mr Johnson's initiative comes after the government set a goal of ending the sale of new petrol and diesel cars by 2030 as part of a drive for net-zero emissions by 2050.

The prime minister is hoping to encourage other nations to commit to net-zero targets at the crucial COP26 climate summit which he will chair in Glasgow next month, with the aim of limiting global warming to 1.5 degrees above pre-industrial levels.

Speaking on a visit to a Network Rail site during the Conservative conference in Manchester, Mr Johnson said: "We can do for our entire energy production by 2035 what we're doing with internal combustion engine vehicles by 2030.

"From 2030, you won't be able to buy any more a new hydrocarbon-fuelled internal combustion engine car and we're going to move either to EVs (electric vehicles) or vehicles powered by hydrogen or clean power of one kind or another.

"And that will make a huge difference to our CO2 output, to controlling climate change, to the planet, but it will also put the UK at the forefront of this amazing new industry of clean vehicles.

"And what we're also saying is that by 2035, looking at the progress we're making in wind power - where we lead the world now in offshore wind - looking at what we can do with other renewable sources, carbon capture and storage with hydrogen potentially, we think that we can get to complete clean energy production by 2035."

The prime minister said a shift to renewable energy sources by 2035 would protect consumers from fluctuating import prices for oil and gas.

"The advantage of that is that it will mean that, for the first time, the UK is not dependent on hydrocarbons coming from overseas with all the vagaries in hydrocarbon prices and the risk that poses for people's pockets and for the consumer," he said.

Greenpeace UK chief scientist Dr Doug Parr said: "All senior politicians have now realised that gas needs to be taken out of the electricity system. That realisation is to be welcomed, as is the 2035 decarbonisation target.

"But the government remains unhealthily attached to nuclear technology, hoping against all experience that it will improve to the point where it becomes competitive with renewables.

"As we have learned over the last 70 years, nuclear just doesn't get cheaper. The case for large-scale reactors is weakening day by day as it becomes more and more obvious that the future of energy is a decentralised, flexible grid that makes use of new storage technologies whose costs are falling sharply, as well as cheap and rapidly deployable renewables. Trying to prop up the nuclear industry will just make that transition slower and more expensive."

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Document 2 **If we want to fight the climate crisis, we must embrace nuclear power**

by Bhaskar Sunkara, *the Guardian*, Wed 25 Aug 2021

On 30 April, the Indian Point nuclear power plant 30 miles north of New York City was shut down. For decades the facility provided the overwhelming majority of the city's carbon-free electricity as well as good union jobs for almost a thousand people. Federal regulators had deemed the plant perfectly safe.

New York's governor Andrew Cuomo said that the shuttering of Indian Point brought us "a big step closer to achieving our aggressive clean energy goals". It's hard to reconcile that optimism with the data that's recently come out. The first full month without the plant has seen a 46% increase in the average carbon intensity of

statewide electric generation compared to when Indian Point was fully operational. New York replaced clean energy from Indian Point with fossil fuel sources like natural gas.

It's a nightmare we should have seen coming. In Germany, nuclear power formed around a third of the country's power generation in 2000, when a Green party-spearheaded campaign managed to secure the gradual closure of plants, citing health and safety concerns. Last year, that share fell to 11%, with all remaining stations scheduled to close by next year. A recent paper found that the last two decades of phased nuclear closures led to an increase in CO2 emissions of 36.3 megatons a year - with the increased air pollution potentially killing 1,100 people annually.

Like New York, Germany coupled its transition away from nuclear power with a pledge to spend more aggressively on renewables. Yet the country's first plant closures meant carbon emissions actually increased, as the production gap was immediately filled through the construction of new coal plants. The carbon intensity of German electricity is higher than the EU average.

However, even a more aggressive investment in renewable energy wouldn't have solved Germany's problem. There are just a handful of large economies that have already mostly decarbonized their grids; all of them have a foundation of nuclear or hydroelectricity (or both), and then to greater or lesser degrees add renewables like wind and solar on top. This is because nuclear and hydro are able to provide electricity whenever we need it. These "firm" sources of clean electricity do not need to wait for the sun to shine or the wind to blow to power the ventilators in our hospitals. Batteries and other forms of energy storage are great, and we need much more funding of research and development to make them even better, but until huge technological leaps occur, sustainables are hindered by the need for cooperative weather.

Elsewhere around the world, even where we've been investing in renewable technology, without nuclear or the right geography that allows hydroelectricity, we've had no choice but to rely on fossil fuels to fill the gap.

So why, given the stakes of global warming, is there still so much hostility to nuclear power?

Some of the paranoia is no doubt rooted in cold war-era associations of peaceful nuclear power with dangerous nuclear weaponry. We can and should separate these two, just like we are able to separate nuclear bombs from nuclear medicine. And we should also push back against popular narratives around Chernobyl and other disasters that simply aren't replicable with modern technology. Advanced reactors and many existing ones are designed with passive safety systems – they don't need active intervention by humans or a computer to deactivate in case of emergencies. Instead these plants use natural forces such as gravity to disable them, while maintaining active monitoring as a backup. As the journalist Leigh Phillips puts it, "it is no more physically possible for them to melt down than it is for balls to spontaneously roll up hills."

There are some legitimate concerns about nuclear waste, but the public perception is driven by outdated information. The amount of waste produced by plants has been reduced dramatically, and most of what remains can be recycled to generate more electricity. These worries are not particularly unique to nuclear, either. Renewable energy produces waste of its own – solar, for example, requires heavy metals like cadmium, lead and arsenic, which unlike nuclear waste don't lose their toxicity over time. As an article in Science points out: "Current electric vehicle batteries are really not designed to be recycled" and could pose public health problems as battery cells decay in landfills.

Other objections to nuclear power, like its reliance on mining, are also not unique to nuclear. Renewables require destructive extraction to unearth lithium and other critical minerals. The answer to those concerns is simple: we should demand environmental and labor regulations from the state and defend good working conditions as our primary consideration.

Nuclear is an idea whose time came and seemed to have passed, but may indeed have a future. For those of us looking for a solution to climate change, the least we can ask is that no plants like Indian Power close until we have a clean, dependable and scalable alternative already in place.

• Bhaskar Sunkara is the founding editor of *Jacobin magazine* and a Guardian US columnist. He is the author of *The Socialist Manifesto: The Case for Radical Politics in an Era of Extreme Inequality*

Document 3 **Nuclear energy isn't a safe bet in a warming world – here's why**

by Paul Dorfman in *The Conversation*, 28 June 2021

The overwhelming majority of nuclear power stations active today entered service long before the science of climate change was well-established. Two in five nuclear plants operate on the coast and at least 100 have been built just a few metres above sea level. Nuclear energy is, quite literally, on the frontline of climate change – and not in a good way.

Recent scientific data indicates sea levels globally will rise further and faster than earlier predictions suggested. Even over the next couple of decades, as extreme weather events become more frequent and destructive, strong winds and low atmospheric pressure will drive bigger storm surges that could threaten coastal installations.

Nuclear power plants must draw from large sources of water to cool their reactors, hence why they're often built near the sea. But nuclear plants further inland will face similar problems with flooding in a warming world. Increasingly severe droughts and wildfire only ramp up the threat.

Around 516 million people worldwide live within a 50-mile (80km) radius of at least one operating nuclear power plant, and 20 million live within a ten-mile (16km) radius. These people bear the health and safety risks of any future nuclear accident. Efforts to build plants resistant to climate change will significantly increase the already considerable expense involved in building, operating and decommissioning nuclear plants, not to mention maintaining their stockpiles of nuclear waste.

Nuclear power is often credited with offering energy security in an increasingly turbulent world, but climate change will rewrite these old certainties. Extreme floods, droughts and storms which were once rare are becoming far more common, making industry protection measures, drafted in an earlier age, increasingly obsolete. Climate risks to nuclear power plants won't be linear or predictable. As rising seas, storm surges and heavy rainfall erodes coastal and inland flood defences, natural and built barriers will reach their limits.

The US Nuclear Regulatory Commission concludes the vast majority of its nuclear sites were never designed to withstand the future climate impacts they face, and many have already experienced some flooding. A recent US Army War College report also states that nuclear power facilities are at high risk of temporary or permanent closure due to climate threats – with 60% of US nuclear capacity at risk from future sea-level rise, severe storms, and cooling water shortages.

Before even thinking about building any more nuclear power stations, the industry must consider how models of future weather extremes and climate impacts are likely to affect them. Not only should they account for changing weather patterns over seasons, years and decades, but try to assume the worst in terms of the potential for sudden extreme events. Before any project is greenlit, the costings of all these necessary precautions must feed into the final forecast.

• Paul Dorfman is Honorary Senior Research Associate at the UCL Energy Institute, University College London

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