£160m is not going to go very far in upgrading ports and factories to manufacture the thousands of offshore turbines required to meet Johnson's target and to site the turbines offshore. Also only about one-third of UK's electricity goes to power homes.

Where does this leave nuclear however? Johnson's speech does mention nuclear in passing, when he says: "Imagine the future – with high-skilled green-collar jobs in wind, in solar, in nuclear, in hydrogen and in carbon capture and storage, retrofitting homes, ground source heat pumps." But the main emphasis is heavily on offshore wind power.

This new-found reticence over nuclear is perhaps understandable given the dire state of the British nuclear industry.

The UK currently has 15 commercial nuclear reactors in operation at 8 sites, all owned and operated by French company, Electricité de France. 14 are of the obsolescent Advanced Gas-Cooled Reactor type, which went on-line between 1976 and 1988 and whose original planned shut-down dates ranged from 2008 to 2018. These planned closure dates have since been extended to between 2022 and 2030, though many of the reactors have with time suffered increasing periods off-line because of developing faults, the most serious involving cracking of the graphite bricks making up the graphite moderator cores of the reactors. For this reason, the worst affected reactors, the two at Hunterston B, were off-line for the best part of two years until controversially put back on-line this summer with their closure dates moved back to January 2022.

The 15th is a Westinghouse Pressurised-Water Reactor (PWR) at Sellafield B in Suffolk which went on-line in 1995, with a planned closure date in 2035, which it is hoped will be extended to 2055. This reactor was the sole outcome of a plan announced by the new Thatcher government in 1979, which while completing the 14 AGR reactor programme, would also involve building a fleet of Westinghouse PWRs at the rate of one a year for at least a decade from 1982, making at least 10 in all. The plan foundered when the government was privatising the electricity industry in the late 80s. When they learnt the true cost of running and building nuclear power stations, no private company was prepared to buy the AGR stations and the sites for new PWR ones, so they remained in the hands of a government which itself then abandoned the idea of building the new stations because of the cost. All power stations were eventually privatised in 1996

In January 2008, a Labour government under Gordon Brown gave the go-ahead for the building of a new generation of nuclear power stations intended to replace the AGR stations. First of all 10 were planned but this was reduced to 8 in 2010. The new Conservative government took over the plan and sold off the planned sites for the power stations. Eventually, after many changes of ownership, five were owned by Electricité de France (EDF), at Hinkley Point B in Somerset, Sizewell B in Suffolk, Bradwell in Essex, Heysham in Lancashire and Hartlepool in County Durham, two were owned 100% from 2012 by Hitachi, Wylfa in Anglesey and Oldbury in Gloucestershire, and one owned 100% from 2017 by Toshiba at Moorside, sited beside Sellafield.

To date only one of these projected power stations is under construction, Hinkley Point C, a massive 2-reactor European Pressurised Reactor (EPR) designed by the French company, Areva, generating 3200MW. Since 2015 it is 80% owned by EDF and 20% by state-owned Chinese company, CGN. Enabling work for the plant began as long ago as 2008, with a projected opening date of 2017. However, a strong campaign, including direct action against the construction, legal problems with the EU over the claim that the contract between EDF and the UK government regarding the construction breached EU rules and the scrapping of the French pressure vessel originally supplied because of weaknesses found in similar pressure vessels supplied by Areva, held up construction and the predicted operation date for the first of the two reactors is now given as 2025.

But there remain considerable doubts that this power station will ever go into operation. Only four other rectors of the same type have begun being built anywhere in the world and all have suffered long delays in construction and large increased costs.

Indeed, it is looking quite possible that the two others in Europe may never go into operation. Thus the one being built in Finland started building in 2005 with an estimated operation date of 2009. EDF now estimates (this August) that it will now become operational in February 2022, which would make it 17 years in construction. The French one is little better: This began construction in 2007, with a predicted operation

date of 2012. By June 2019 this date had been put back to the end of 2022, already making a period of construction of 15 years

The two others in construction are both in China and though they came into operation in 2018 and 2019, they had both suffered delays in construction of about 5 years, doubling the time estimated for construction.

Meanwhile plans for the other seven PWR nuclear power stations originally planned have fallen through or are in seeming abeyance. EDF cancelled an agreement with the National Grid for it to provide connections for the planned Heysham 3 power station as long ago as 2012 and has shown no interest in building a station at Hartlepool B.

In November 2018 Toshiba abandoned plan to build at Moorside after failure to get any other company to invest in or buy the project and in September 2020, Hitachi finally pulled out of the plan to build Wylfa B and Oldbury B after failure to secure further government funding.

That just leaves Sizewell C and Bradwell B.

In 2015 state-owned Chinese company CGN agreed to take stakes in Hinkley C, Sizewell C and Bradwell on the understanding that CGN would build a Chinese-designed reactor at Bradwell B. Reflecting this, CGN bought a 20% stakes each in the Hinkley C and Sizewell C projects, and a 66.5% stake in the Bradwell B project. However, though consultations with local people about the project have been held for Bradwell B and are due be held soon for Sizewell C, and a Generic Risk Assessment has been applied for the planned Chinese design for Bradwell B, nothing else seem to have happened.

So, given a likely 10 year period needed to build PWR reactors, unless some of the ageing AGRs have their lives extended beyond 2030, becoming even more prone to breakdowns, dangerous and more and more expensive to run, it looks likely that by 2030, only two nuclear power stations are likely to be supplying electricity to the grid, and only one if Hinkley C suffers the fate of the Finnish and French PWRs.

By then, of course, if Johnson's boast has any substance, at least one-third of our electricity needs will be supplied by offshore wind-power. Oh happy days!

KICK NUCLEAR

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Regular Friday solidarity vigils, nuclear train action group stalls and joint KN/NTAG planning meetings all currently suspended due to the pandemic.

WIND IN, NUCLEAR OUT?

In his keynote speech at the Tory Party Conference on October 6th, Boris Johnson said that offshore wind farms would generate enough electricity to power every home in the UK by 2030. This would involve raising its target for offshore wind power capacity by from 30GW to 40G by then. He also announced an extra £160m to upgrade ports and factories for building the turbines. He said this plan would make the UK "The world leader in clean wind energy." He described these commitments as the first stage in a 10-point plan for a "green industrial revolution."

As often with Johnson's speeches this contains more wind than substance when examined.

It of course, as is Johnson's wont, playing to the gallery by making claims for grandiose achievements in the future which would make the UK a "world leader" in this or that, and by flaunting Johnson's supposed eagerness to combat climate change. It also involved a promise to constituencies newly captured by the Tories in last year's election in the North-East, since places like Teesside and Humberside are earmarked to be among the main beneficiaries of the £160m.

The glitter wears off however when we learn that the 40GW for offshore wind power was promised in the Tory manifesto at the last election, and