

Briefing: Nuclear investment via the Regulated Asset Base puts consumers at risk and could contribute to fuel poverty

Introduction: In October 2021 the government announced¹ the introduction into Parliament of a Nuclear Energy (Financing) Bill to allow a Regulated Asset Base (RAB) model to fund future nuclear projects.²

Background and application: This legislation follows vigorous criticism of the “Contract for Difference” (CfD) struck with EDF & China General Nuclear for Hinkley Point C, twin EPR reactors being constructed in Somerset, of £92.50 (inflation-linked) per megawatt hour of electricity for 35 years.³ Lambasted by the National Audit Office⁴ and media,⁵ ministers wish to avoid a repeat of this fiasco. However, EDF’s £3 billion overspend on Hinkley C in September 2019 attracted similarly negative coverage about the RAB.⁶

EDF’s proposed Sizewell C twin EPRs in Suffolk could be the first nuclear project constructed under the RAB and potentially used if new developers come forward for the the Wyfa site after Hitachi’s withdrawal in 2020, but other projects - including CGN’s proposal for Bradwell - are in limbo. Toshiba’s aspirations at Moorside in Cumbria collapsed when Toshiba failed to find a buyer to take over Nugen. Kepco, the Korean state-owned nuclear company which considered rescuing Nugen, reportedly withdrew over reservations about the RAB.⁷

1. Policy uncertainties:

- Influential energy economist Dieter Helm concluded that while the RAB may be an improvement on CfD, it still doesn’t address fundamental issues, such as cost competitiveness with other technologies or disposal of radioactive waste. *“No smart contracting and regulating framework can magic away the deep challenges that nuclear faces, notably: the possibility that in the next 60 years much cheaper new low carbon technologies may become available, possibly including new nuclear ones too; the very large upfront and sunk costs; the risk and the safety regulation; and the challenges of getting rid of the waste. It is for society to decide whether it wants new nuclear or not. The market cannot decide.”*⁸
- EDF’s EPR technology is already outdated (indeed EDF is working on an EPR2 design⁹) as well as uneconomic. Michael Liebreich, founder and senior contributor to BloombergNEF is a critic of the current generation of reactors, and made a compelling case for abandoning them: *“...the overwhelming priority is to keep existing nuclear plants open; when it comes to new plants, the current generation of plant designs won’t cut it on economic grounds; and for goodness sake, let’s get serious about developing SMRs [Small Modular Reactors] and researching the generation of nuclear technologies that might even follow them.”*¹⁰
- No site has been identified for a Geological Disposal facility for the long-term storage of spent fuel, or long-term cost quantified, nor is there likely to be one soon. Sizewell C’s onsite waste storage facility is not expected to be decommissioned until 2140.¹¹
- The RAB would give preferential treatment to nuclear, despite renewable prices dropping rapidly. Zero-subsidy offshore wind prices have fallen by 65%.¹²

2. Risks for consumers. The RAB system relies on a regulator to set the price consumers pay. It is proposed that Ofgem perform this role. For the nuclear industry this will likely mean ongoing negotiations as they seek to ensure that costs are included within the RAB structure, and could result in potentially lengthy legal battles that define overruns and delays as falling within the Government’s assumed risk rather than the Company’s. This will risk tainting the RAB model should projects overrun, suffer difficulties or worse, fail, meaning consumers will have paid without any benefit at all.

¹ <https://www.gov.uk/government/news/new-finance-model-to-cut-cost-of-new-nuclear-power-stations>

² <https://bills.parliament.uk/bills/3057/publications>

³ <https://www.bbc.co.uk/news/uk-36925580>

⁴ <https://www.nao.org.uk/report/hinkley-point-c/>

⁵ <https://www.theguardian.com/business/nils-pratley-on-finance/2019/jul/23/lets-face-it-nuclear-power-is-hideously-dear-and-far-from-ideal>

⁶ <https://www.bbc.co.uk/news/business-49823305>

⁷ <http://koreajoongangdaily.joins.com/news/article/article.aspx?aid=3051383>

⁸ <http://www.dieterhelm.co.uk/energy/energy/the-nuclear-rab-model/>

⁹ <https://www.edf.fr/en/the-edf-group/our-energies/nuclear/epr/designing-and-building-the-nuclear-plant-of-tomorrow>

¹⁰ <https://about.bnef.com/blog/liebreich-need-talk-nuclear-power/>

¹¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47860/1943-nps-nuclear-power-annex-vollll.pdf B.4.3

¹² <https://www.gov.uk/government/news/scotland-and-wales-could-be-home-to-new-floating-offshore-wind-ports-thanks-to-160m-uk-government-funding>

- Jonathan Marshall, Climate and Energy Intelligence Unit, highlighted the vulnerability of the regulator to industry pressure, describing RAB as *“Vastly more complicated than the CfD system, the RAB model has long been criticised for opacity, with governments and regulators struggling to keep up with specialist consultants and accountants constantly pushing for minor rule changes to favour asset owner.”*¹³
- Greenpeace says: *“Whether a fair rate of return is paid out from people’s pockets relies heavily on the regulator correctly estimating some fairly opaque future scenarios, such as construction length, supply chain costs and prevailing economic conditions.”*¹⁴ and *“the (RAB) model has been described as an ‘open cheque book’”*¹⁵ that allows developers to duck the impacts of delays and cost overruns.
- The National Infrastructure Commission has said: *“[The RAB] makes projects appear cheaper as consumers are effectively financing the projects at zero interest. At least some of the risk associated with construction costs also sit with consumers, a further hidden cost, since consumers are not paid to hold these risks in the way investors would be.”*¹⁶
- RAB financing is dependent on favourable Value for Money assessments. These were the cause of the furore over the CfD assessment for Hinkley Point C and remain a further risk to a RAB funding decision.
- A RAB-type model in the United States for a cancelled nuclear plant in South Carolina is costing ratepayers \$2.3bn.¹⁷ The developers of another plant, near Atlanta Georgia, whose costs ballooned, are being allowed to pass an extra \$2.1 billion in overspend on to consumers.
- ¹⁸The most often-quoted example of using a RAB for infrastructure projects is the Thames Tideway (TT) Tunnel or “Super Sewer”. The capital cost is only a quarter of Sizewell C, and the Financial Times recently revealed that the project developer wants to pass overspends onto consumers, raising the surcharge on bills from about £18 per year to £20-25.¹⁹ The project is two years behind schedule. A further key difference is that those paying are limited to Thames Waters’ customers. Sir Ian Byatt, a former head of Ofwat said of TT: *“If a company has a big capital project it should put money aside to fund it. Thames hasn’t done that - it’s paid out every penny in excessive dividends and left Londoners to pick up the bill.”*²⁰
- While all energy infrastructure would no doubt welcome reduced financing costs, this offer is only being made to nuclear power. Thames Tideway Tunnel, was criticised by Sir Ian Byatt, a former head of Ofwat: *“If a company has a big capital project it should put money aside to fund it. Thames hasn’t done that - it’s paid out every penny in excessive dividends and left Londoners to pick up the bill.”*²¹

3. Risks for Investors: A key concern is uncertainties around risk-sharing if a project is late or over budget - which major construction projects and EDF EPRs are notorious for. Allocation of risk will be decided by the Regulator or an independent technical assessor, but as the cost of alternative energy sources - such as offshore wind - continues to fall, regulatory sympathy with overruns and overspends may fall proportionately.

- EDF’s European Pressurised Water Reactor (EPR) has been challenging to deliver with overruns and overspends of epic proportions. In 2019 EDF announced that Hinkley Point, originally due to be online by 2017, could cost an extra £3 billion and be a further 15 months late.²² Dr Jonathan Marshall of the Energy and Climate Intelligence Unit told Radio 4’s “Today” programme that the news would cause “jitters” in government and likely result in a readjustment of the RAB to allocate more risk to the developer.²³
- The Flamanville project in France is over 10 years late and four times over budget;²⁴ Nick Butler wrote in the Financial Times: *“Under [the RAB] consumers would have been paying a surcharge on their bills since 2007 with nothing to show for it. They would have no leverage over the company building the plant and no scope for compensation. They would also of course have to pay in addition the cost of buying the*

¹³ <https://eci.net/blog/2018/where-next-for-uk-nuclear>

¹⁴ <https://uneartthed.greenpeace.org/2018/08/06/new-nuclear-plants-funding-regulated-asset-base/>

¹⁵ Ibid

¹⁶ <https://www.nao.org.uk/report/hinkley-point-c/>

¹⁷ <https://theintercept.com/2019/02/06/south-caroline-green-new-deal-south-carolina-nuclear-energy/>

¹⁸ <https://thecurrentga.org/2021/10/15/latest-vogtle-deal-may-mean-extra-3-78-month-on-georgia-power-bill-bills/>

¹⁹ <https://www.ft.com/content/f25e29f9-03b4-43a2-9da5-779bc3f883>

²⁰ <https://www.ft.com/content/bb99abb4-7203-11e7-aca6-c6bd07df1a3c>

²¹ <https://www.ft.com/content/bb99abb4-7203-11e7-aca6-c6bd07df1a3c>

²² <https://www.bbc.co.uk/news/business-49823305>

²³ <https://www.bbc.co.uk/sounds/play/m0008p2h> (at 15 minutes, 15)

²⁴ <https://www.theguardian.com/business/nils-pratley-on-finance/2019/jul/23/lets-face-it-nuclear-power-is-hideously-dear-and-far-from-ideal>.

power they need from someone else".²⁵ Olkiluoto in Finland is 11 years late,²⁶ and Taishan in China was at least 5 years late²⁷ and is currently offline because of fuel failure after only 3 years of operation.

- A 2016 Imperial College study found that the cost of building new nuclear plants is nearly 20% higher than expected due to delays.²⁸ The German Institute for Economic Research (DIW) recently calculated, after analysis of the 674 nuclear power plants built since the 1950s, that on average they make a loss of 5 billion Euros each, without taking into account the cost of getting rid of their radioactive waste.²⁹
- EDF's Chinese state-owned partner, China General Nuclear, is blacklisted in the US³⁰ and the UK press have widely reported that it will be removed from future UK nuclear projects.³¹
- Investors that are signatories to the Principles of Responsible Investment (PRI) agree to incorporate Environmental, Social and Governance issues into investment analysis and decision-making processes. New nuclear projects offer major challenges to an ESG approach. Stop Sizewell C has secured statements from a number of UK pension funds stating they are not looking to invest in Sizewell C. These include Legal & General, Prudential, Nest, ABRDN and Phoenix Group, owners of Standard Life and Sun Life. Correspondence available on request from info@stopsizewellc.org
- The government's Green Financing Framework (green bonds) excludes nuclear, stating: "*Recognising that many sustainable investors have exclusionary criteria in place around nuclear energy, the UK Government will not finance any nuclear energy-related expenditures under the Framework.*"³²

4. Reputational Risks specifically associated with Sizewell C related to environmental and other impacts:

- The Sizewell site is wholly within the Suffolk Coast & Heaths Area of Outstanding Natural Beauty and adjacent to some of the most biodiverse habitats in the UK, including two Sites of Special Scientific Interest and the RSPB's Minsmere Reserve - an international RAMSAR site with European habitat designations. The RSPB and Suffolk Wildlife Trust remain opposed to Sizewell C because of its potential impact on nature.³³
- The Suffolk Heritage Coast, which would host Sizewell C, its spent fuel and waste for over a century, is an eroding coastline which is also slowly sinking. Rising sea levels, increased frequency and intensity of storms and storm surges, and the site's immediate proximity to Flood Zone 3 land all raise legitimate concerns that Sizewell may be the worst site imaginable from a stability and longevity perspective.
- The Sizewell site is small for a massive twin reactor project - 32 hectares compared to 45ha at Hinkley.
- Suffolk has poor infrastructure compared to Somerset. EDF is building two jetties - one temporary and one permanent - but local roads will be subjected to 700 HGVs a day at peak construction.
- EDF admits that the vast majority of jobs at Sizewell will go to people from outside the area and is planning accommodation for 6,000 workers. Low unemployment in Suffolk means that jobs taken by local people will likely be at the expense of important services such as social care. The Suffolk Coast Destination Management Organisation has evidence that Suffolk's tourism economy could lose up to £40m/year that would be difficult to recover from. The Suffolk County and East Suffolk District Councils, the two main statutory consultees, are still 'unpersuaded' that the benefits will outweigh the impacts.

5. Nuclear power and the RAB are a source of controversy with consumers and the media.

- Dieter Helm writes: "*Nuclear power is always and everywhere political because it not only involves very capital intensive and long-lived assets, but also because it comes with environmental, military and technology specific risks on a scale which no private market can handle on its own.*"³⁴
- The pre-pandemic delays at Hinkley C prompted the BBC to write: "*Making a forty-year bet on another nuclear station with a funding model that exposes consumers to those overruns, is a big call for any government to make.*"³⁵

²⁵ <https://www.ft.com/content/4b81682e-cf19-11e9-99a4-b5ded7a7fe3f>

²⁶ <https://www.reuters.com/article/finland-nuclear/update-2-fresh-setback-for-finlands-delayed-olkiluoto-3-reactor-idUSL8N21S3FX>

²⁷ <https://www.scmp.com/news/china/politics/article/2178099/delayed-still-world-first-new-breed-nuclear-reactor-powers>

²⁸ <https://www.imperial.ac.uk/news/186487/construction-delays-make-nuclear-power-plants>

²⁹ https://www.diw.de/documents/publikationen/73/diw_01.c.670581.de/dwr-19-30-1.pdf

³⁰ <https://www.telegraph.co.uk/technology/2019/08/15/questions-raised-chinas-involvement-hinkley-point-us-trade-blacklist/>

³¹ <https://www.ft.com/content/a92bad50-ba5a-44e5-883b-29fac8a4571e>

³² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1002578/20210630_UK_Government_Green_Financing_Framework.pdf

³³ <https://www.suffolkwildlifetrust.org/news/sizewell-c-update-october-2021>

³⁴ <http://www.dieterhelm.co.uk/energy/energy/the-nuclear-rab-model/>

³⁵ <https://www.bbc.co.uk/news/business-49823305>

- Media reaction to the RAB consultation in 2019 was lukewarm at best. The Guardian: *“The government’s new funding model at the heart of its plan for a nuclear renaissance is an improvement since it struck a deal three years ago (for Hinkley Point). This is the best that can be said for the new strategy..... It is also very faint praise”*³⁶ and *“Britons will twice shoulder the risk of building new nuclear reactors. First, by paying upfront for the reactors through energy bills to help fund their construction. Second, by taking on the cost of any overruns or construction delays through a taxpayer guarantee. The public purse would also compensate nuclear investors if the project were scrapped.”*³⁷ Shadow energy minister Alan Whitehead MP: *“Using customers’ bills to make a bet that construction of such large and complex projects will not overrun in terms of cost or time is a reckless act.”*
- Energy Companies have expressed concern. In response to a customer email Octopus Energy said: *“The nuclear plant proposed by our state-backed legacy utility rival is outrageously expensive and will take many, many years to build. Renewable power, on the other hand, is cheap and available right now. What’s more, the digital technology required to overcome any issues caused by the intermittency of renewable resources is already beginning to become available, and will be able to handle a fully renewable grid within a few short years - long before any new nuclear power stations will be generating. The cost of renewable power will continue to fall in that time, making [the RAB] look even more of a rip off.”* Ecotricity wrote: *“Ecotricity will not be supporting this as we are dedicated to putting all of our efforts into renewable energy.”* Consumers who wish to choose renewable tariffs would not be excluded from paying for new nuclear under the RAB.
- A campaign by consumer group SumOfUs has been signed by over almost 100,000 people to date.³⁸

Conclusions: Whatever guarantees a current government may make, the use of the RAB model loads too much risk onto consumers and lets developers off the hook for delays and overspends. Sizewell C would expose investors to substantial reputational risk, as well as the dangers implicit from national political change and involvement in an uneconomic and controversial project. To quote Nils Pratley, The Guardian’s Financial Editor: *“no financing model can disguise the core truth about nuclear – the technology is hideously expensive.The government should be backing renewables, not tying itself to an expensive nuclear future”*.³⁹ If, despite this advice, the UK government thinks that nuclear is strategically important, it should select the least environmentally damaging site and pay for it itself. Economist Dieter Helm agrees that state funding would be best but observes that the Treasury has previously ruled this option out.⁴⁰

Meanwhile Sizewell C is proposed on a site openly acknowledged by government⁴¹ to be one of the two most environmentally sensitive in the National Policy Statement and is currently the project furthest along the planning process timeline, while other sites have failed to progress for financial reasons. Sizewell is not a suitable site for the enormous twin reactor project that EDF proposes.

This briefing was prepared with the support of finance professionals. info@stopsizewellc.org,
www.StopSizewellC.org/rab

³⁶ <https://www.theguardian.com/business/nils-pratley-on-finance/2019/jul/23/lets-face-it-nuclear-power-is-hideously-dear-and-far-from-ideal>

³⁷ <https://www.theguardian.com/business/2019/jul/27/despite-hinkley-new-plan-nuclear-hardly-better-than-old-one>

³⁸ <https://actions.sumofus.org/a/no-energy-bill-surcharge-for-new-nuclear>

³⁹ <https://www.theguardian.com/business/nils-pratley-on-finance/2019/jul/23/lets-face-it-nuclear-power-is-hideously-dear-and-far-from-ideal>

⁴⁰ <http://www.dieterhelm.co.uk/energy/energy/the-nuclear-rab-model/>. Also *“For the government, the RAB approach is a useful way of using the clout of the state to secure investments without putting a project on its balance sheet.”* [Unearthed]

⁴¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47800/1983-aos-site-report-sizewell-en6.pdf page 53