

## Briefing: Nuclear investment via the Regulated Asset Base risks reputational damage for politically uncertain returns

**Introduction:** BEIS<sup>1</sup> is consulting until 14 October on the use of the Regulated Asset Base (the RAB) to fund new nuclear. BEIS argues that nuclear energy has a “key” role to play in our future energy supply, and that the RAB has the “*potential to reduce the cost of raising private finance...thereby reducing consumer bills*”. BEIS also said the RAB model would require the establishment of a regulator to set how much companies could charge, while the government would need to provide guarantees to cover “low-probability but high-impact risks”. The RAB has never before been used for new nuclear, and will require legislation before it can be applied to such projects.

The BEIS consultation follows vigorous criticism of the “Contract for Difference” (CfD) struck with EDF & partners for Hinkley Point C, twin EPR reactors currently under construction in Somerset, which will cost energy bill payers £92.50 for every megawatt hour of electricity they produce for 35 years.<sup>2</sup> Lambasted by the National Audit Office<sup>3</sup> and the media,<sup>4</sup> government Ministers realised this fiasco should never be repeated. However, EDF’s £3 billion overspend on Hinkley Point, announced in September, attracted similarly negative press coverage about the RAB.<sup>5</sup>

EDF Energy’s Sizewell C twin EPRs in Suffolk could be the first nuclear project constructed under the RAB. The media reported that EDF, which has been “wooing” pensions funds for some years,<sup>6</sup> suggested a tariff of £6/year could be added to every bill, even customers of renewable energy tariffs.<sup>7</sup> Hitachi’s Wylfa project in Anglesey is suspended, although the Development Consent process is ongoing so it could be revived. China General Nuclear’s proposal for Bradwell, in partnership with EDF, remains in development and will require the UK Nuclear Regulator to approve CGN’s reactor design. Moorside in Cumbria collapsed when Toshiba failed to find a buyer to take over Nugen, after subsidiary Westinghouse went bankrupt. Kepco, the Korean state-owned nuclear company which considered rescuing Nugen, reportedly withdrew over reservations about the RAB.<sup>8</sup>

This briefing sets out a number of concerns about the RAB’s application to new nuclear, with an appeal to respond to the consultation or write to BEIS Secretary of State Andrea Leadsom before 14 October.

- 1. Risks for Investors:** A key concern under the RAB 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 costs of alternative energy sources - such as offshore wind - continues to fall, regulatory sympathy with increased construction costs may fall proportionately.
- EDF’s European Pressurised Water Reactor (EPR) has been challenging to deliver with overruns and overspends of epic proportions. On 25 July 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.<sup>9</sup> 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.<sup>10</sup>
  - The Flamanville project in France is over 10 years late and four times over budget;<sup>11</sup> 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 power they need from someone else*”.<sup>12</sup> Welding has been a major issue at Flamanville and news has emerged that such problems are systemic, also affecting older reactors. The news caused concern among investors and a sharp fall in EDF’s share price.<sup>13</sup> Olkiluoto in Finland is 11 years late,<sup>14</sup> and Taishan in China at least 5 years late.<sup>15</sup>

<sup>1</sup> <https://www.gov.uk/government/consultations/regulated-asset-base-rab-model-for-nuclear>

<sup>2</sup> <https://www.bbc.co.uk/news/uk-36925580>

<sup>3</sup> <https://www.nao.org.uk/report/hinkley-point-c/>

<sup>4</sup> <https://www.theguardian.com/business/nils-pratley-on-finance/2019/jul/23/lets-face-it-nuclear-power-is-hideously-dear-and-far-from-ideal>

<sup>5</sup> <https://www.bbc.co.uk/news/business-49823305>

<sup>6</sup> <https://www.bloomberg.com/news/articles/2018-07-26/edf-wooing-pension-funds-to-finance-sizewell-u-k-nuclear-plant>

<sup>7</sup> <https://www.bbc.co.uk/news/business-48593581>

<sup>8</sup> <http://koreajoongangdaily.joins.com/news/article/article.aspx?aid=3051383>

<sup>9</sup> <https://www.bbc.co.uk/news/business-49823305>

<sup>10</sup> <https://www.bbc.co.uk/sounds/play/m0008p2h> (at 15 minutes, 15)

<sup>11</sup> <https://www.theguardian.com/business/nils-pratley-on-finance/2019/jul/23/lets-face-it-nuclear-power-is-hideously-dear-and-far-from-ideal>

<sup>12</sup> <https://www.ft.com/content/4b81682e-cf19-11e9-99a4-b5ded7a7fe3f>

<sup>13</sup> <https://www.thetimes.co.uk/article/edf-feels-heat-from-nuclear-weld-problems-9zdkrgqr9>. Bloomberg said the UK’s new nuclear plans were “*likely to take a hit if Brexit jeopardizes a crucial supply of welders*.” <https://www.bloomberg.com/news/articles/2019-08-19/welder-shortage-threatens-boris-johnson-s-u-k-nuclear-revival>

<sup>14</sup> <https://www.reuters.com/article/finland-nuclear/update-2-fresh-setback-for-finlands-delayed-olkiluoto-3-reactor-idUSL8N21S3EX>

<sup>15</sup> <https://www.scmp.com/news/china/politics/article/2178099/delayed-still-world-first-new-breed-nuclear-reactor-powers>

- Harminder Singh, director of power at data intelligence firm GlobalData: *“Because of the lack of use cases in the nuclear power domain, stakeholders are expected to be wary of the RAB mode of financing for nuclear power plants, and rightly so.”*<sup>16</sup>
- A 2016 Imperial College study found that the cost of building new nuclear plants is nearly 20% higher than expected due to delays.<sup>17</sup> The Berlin-based 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.<sup>18</sup>
- In August 2019 the United States added EDF’s Chinese state-owned partner, China General Nuclear, to its export blacklist over reports that nuclear technology had reached the People’s Liberation Army.<sup>19</sup>
- Government and developers are pushing nuclear as a low-carbon source of energy generation, yet there are many diverse assessments of nuclear’s carbon footprint, taking into account the entire fuel cycle from uranium mining to waste disposal, and given the major infrastructure required for their construction. Ben Sovacool’s research in 2008<sup>20</sup> concluded that nuclear generally had mean emissions of 66 gCO<sub>2</sub>/kWh, whilst Keith Barnham of Imperial College concluded that EPRs will emit close to 50 gCO<sub>2</sub>/kWh, rather than the 6 gCO<sub>2</sub>/kWh claimed by EDF over their lifetime<sup>21</sup> or 12 gCO<sub>2</sub>/kWh quoted by the UK government.<sup>22</sup>
- 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. As demonstrated below, new nuclear projects offer major challenges to an ESG approach.
- On 2 July the government launched its Green Finance Strategy<sup>23</sup> with the objective of *“mainstreaming climate and environmental factors as a financial and strategic imperative”*. The document makes only one indirect reference to the RAB, but there are significant environmental factors associated with Sizewell.

## 2. Reputational Risks for investors in 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 says *“Sizewell is not a suitable location for a new nuclear power station”* and that the project could be *“catastrophic for wildlife”*.<sup>24</sup> A review for DEFRA proposes giving AONBs more powers on planning issues.<sup>25</sup>
- 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 very small for a massive twin reactor project - 32 hectares compared to 45ha at Hinkley.
- EDF is unable to build a jetty in Suffolk, unlike at Hinkley Point, meaning that the local area - which has poor infrastructure compared to Somerset, will be subjected to over 1,000 lorries 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 thousands of 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 will take a significant hit 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.
- In March 2019 a group of influencers representing business, tourism and the arts expressed grave concern in a letter to the Daily Telegraph about the impact of Sizewell C on Suffolk, its landscape and economy.<sup>26</sup>

## 3. Policy uncertainties:

- Influential energy economist Dieter Helm concludes 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*

<sup>16</sup> <https://www.nenergybusiness.com/features/regulated-asset-base-model-nuclear/>

<sup>17</sup> <https://www.imperial.ac.uk/news/186487/construction-delays-make-nuclear-power-plants>

<sup>18</sup> [https://www.diw.de/documents/publikationen/73/diw\\_01.c.670581.de/dwr-19-30-1.pdf](https://www.diw.de/documents/publikationen/73/diw_01.c.670581.de/dwr-19-30-1.pdf)

<sup>19</sup> <https://www.telegraph.co.uk/technology/2019/08/15/questions-raised-chinas-involvement-hinkley-point-us-trade-blacklist/>

<sup>20</sup> [https://www.nirs.org/wp-content/uploads/climate/background/sovacool\\_nuclear\\_ghg.pdf](https://www.nirs.org/wp-content/uploads/climate/background/sovacool_nuclear_ghg.pdf)

<sup>21</sup> <https://theecologist.org/2015/feb/05/false-solution-nuclear-power-not-low-carbon>

<sup>22</sup> Quoted by the InterGovernmental Panel on Climate Change, and by BEIS in a letter to Paul Collins, Theberton and Eastbridge Action Group.

<sup>23</sup> <https://www.gov.uk/government/publications/green-finance-strategy>

<sup>24</sup> [www.rspb.org.uk/our-work/our-positions-and-casework/casework/cases/sizewell-c/](http://www.rspb.org.uk/our-work/our-positions-and-casework/casework/cases/sizewell-c/) and [www.rspb.org.uk/get-involved/campaigning/love-minsmere-sizewell-c/](http://www.rspb.org.uk/get-involved/campaigning/love-minsmere-sizewell-c/)

<sup>25</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/833163/landscapes-review-final-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/833163/landscapes-review-final-report.pdf)

<sup>26</sup> <https://teags.org/daily-telegraph-letter-21-march-2019/>

*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.*<sup>27</sup>

- EDF's EPR technology is already outdated (indeed EDF is working on an EPR2 design<sup>28</sup>) as well as uneconomic. Michael Liebreich, founder and senior contributor to BloombergNEF is a critic of the current generation of reactors, and makes 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.*<sup>29</sup>
- There is no facility for the long-term storage of spent fuel, at major unquantifiable long-term cost, nor likely to be one soon. The earliest waste is likely to be removed off current nuclear sites is 2130.<sup>30</sup>
- Doug Parr of Greenpeace: *"The nuclear industry has gone in just 10 years from saying they need no subsidies to asking bill payers to fork out for expensive power plants that don't even exist yet, and may never."*
- The RAB would give preferential treatment to nuclear, despite renewable prices dropping rapidly. Zero-subsidy offshore wind prices struck in September 2019 dropped 30% to £39.65 - £41.61 per megawatt hour.<sup>31</sup>

#### **4. Nuclear power and the RAB are highly political and a source of controversy with consumers and the media.**

- Dieter Helm: *"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."*<sup>32</sup>
- Hinkley delays undermine the case for Sizewell; BBC: *"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."*<sup>33</sup>
- Media reaction to the RAB consultation has been 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"*<sup>34</sup> 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."*<sup>35</sup> Alastair Osborne in The Times: *"Greg Clark spent his dying days as business secretary agonising over whether it might actually be better to fleece consumers upfront instead, via his "regulated asset base" funding model, before the plant was built. His verdict? A "consultation", the sort of non-decision-making for which he was deservedly sacked."*<sup>36</sup> 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 £6 per customer per year 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 25,000 people to date.<sup>37</sup>

**5. Vulnerabilities of regulation via the RAB raise questions over liabilities and "fairness" for consumers.** The RAB system relies on a regulator to set the price consumers pay. For the nuclear industry this will likely mean ongoing

<sup>27</sup> <http://www.dieterhelm.co.uk/energy/energy/the-nuclear-rab-model/>

<sup>28</sup> <https://www.edf.fr/en/the-edf-group/our-energies/nuclear/epr/designing-and-building-the-nuclear-plant-of-tomorrow>

<sup>29</sup> <https://about.bnef.com/blog/liebreich-need-talk-nuclear-power/>

<sup>30</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/47860/1943-nps-nuclear-power-annex-voliii.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47860/1943-nps-nuclear-power-annex-voliii.pdf) B.4.3

<sup>31</sup> <https://www.thetimes.co.uk/article/a8c9766c-dbde-11e9-9cfd-b79996a387b0>

<sup>32</sup> <http://www.dieterhelm.co.uk/energy/energy/the-nuclear-rab-model/>

<sup>33</sup> <https://www.bbc.co.uk/news/business-49823305>

<sup>34</sup> <https://www.theguardian.com/business/nils-pratley-on-finance/2019/jul/23/lets-face-it-nuclear-power-is-hideously-dear-and-far-from-ideal>

<sup>35</sup> <https://www.theguardian.com/business/2019/jul/27/despite-hinkley-new-plan-nuclear-hardly-better-than-old-one>

<sup>36</sup> <https://www.thetimes.co.uk/article/flamanville-points-to-nuclear-fiasco>

<sup>37</sup> <https://actions.sumofus.org/a/no-energy-bill-surcharge-for-new-nuclear>

negotiations with regulators as they seek to ensure that costs are included within the RAB structure, and 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. These potential (even likely, given nuclear's track record) problems mean that investors who fund nuclear projects through the RAB may be drawn into public controversy and potential legal action, like it or not.

- Jonathan Marshall of the Climate and Energy Intelligence Unit highlighted the vulnerability of the regulator to industry pressure. He described the 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."*<sup>38</sup>
- 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."*<sup>39</sup> and *"the (RAB) model has been described as an 'open cheque book'"*<sup>40</sup> that allows developers to duck the impacts of delays and cost overruns. Power Engineering said: *"...the consumer winds up footing the bill no matter how incompetently the developer proceeds"*.<sup>41</sup>
- The National Infrastructure Commission said: *"This [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."*<sup>42</sup> The Commission also warned *"There is limited experience of using the RAB model for anything as complex and risky as nuclear"*.<sup>43</sup>
- For a project to be included on any RAB financing, it requires a value for money assessment by the regulator. This valuation was the root cause of the furore over the CfD assessment for Hinkley Point C and remains as a further risk to all aspects of a RAB funding decision.
- Use of the RAB for its biggest project to date, the 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."*<sup>44</sup>

**Conclusions:** Whatever guarantees a current government may make, the use of the RAB model at Sizewell C exposes any 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"*.<sup>45</sup> 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 ruled this option out.<sup>46</sup>

The RAB loads too much risk onto consumers and lets developers off the hook for delays and overspends. However, should the government adopt the RAB, it could allow EDF, within two years, to commence construction at Sizewell, a site openly acknowledged by government<sup>47</sup> to be one of the two most environmentally sensitive in the National Policy Statement, whilst other more suitable sites have failed to progress for financial reasons. Sizewell is not a suitable site for the enormous twin reactor project that EDF proposes.

We urge you to express your concerns about the RAB by writing to BEIS Secretary of State Andrea Leadsom or responding to the consultation before 14 October. We suggest not being constrained by the questions posed in the consultation - of most importance are the broader issues around the use of the RAB for new nuclear. See <https://www.gov.uk/government/consultations/regulated-asset-base-rab-model-for-nuclear> for ways to respond.

**This briefing was prepared by Theberton & Eastbridge Action Group on Sizewell, with the support of finance professionals. Please contact [info@teags.org](mailto:info@teags.org) with questions or comments. [www.teags.org/rab](http://www.teags.org/rab)**

<sup>38</sup> <https://eciu.net/blog/2018/where-next-for-uk-nuclear>

<sup>39</sup> <https://unearthed.greenpeace.org/2018/08/06/new-nuclear-plants-funding-regulated-asset-base/>

<sup>40</sup> Ibid

<sup>41</sup> <https://www.powerengineeringint.com/articles/2019/04/feature-regulated-asset-base-a-model-for-the-nuclear-future.html>

<sup>42</sup> <https://www.nao.org.uk/report/hinkley-point-c/>

<sup>43</sup> Ibid

<sup>44</sup> <https://www.ft.com/content/bb99abb4-7203-11e7-aca6-c6bd07df1a3c>

<sup>45</sup> <https://www.theguardian.com/business/nils-pratley-on-finance/2019/jul/23/lets-face-it-nuclear-power-is-hideously-dear-and-far-from-ideal>

<sup>46</sup> <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]

<sup>47</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/47800/1983-aos-site-report-sizewell-en6.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47800/1983-aos-site-report-sizewell-en6.pdf) page 53