

The UK's proposed RAB financing method for nuclear power plants

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The rationale for the Regulated Asset Base (RAB), proposed initially by the UK government in its consultation paper of July 2019³, for the Sizewell C project, is clear. One of the main factors behind the very high price (strike price) negotiated for the UK's proposed Hinkley Point C nuclear power plant is claimed to be the high cost of capital.⁴ If this could be reduced, the price of power from nuclear power plants financed using the RAB model would be correspondingly lower. Financiers would only offer a lower cost of capital if the risks (commercial and technical) falling on them were reduced. The model proposed raises a number of issues:

- What are the commercial risks and who will bear them under the RAB model?
- What are the technical risks and who will bear them under the RAB model?
- Why is the cost of capital high for the Hinkley project?
- Who are the potential investors?
- How will the energy be priced?
- Who will regulate the RAB and what will its function be? and
- Should investors recover costs before completion of the facility?

The overall question is: will the RAB model produce power that is competitive with other options for reducing climate change emissions, such as energy efficiency, and onshore and offshore winds?

The RAB model

Under the RAB model investors would receive a 'fair' rate of return on the amount invested in the asset which would be annually adjusted upwards for inflation and downwards for depreciation, plus they would recover their operating costs. The issue of how and when the value of the asset is initially set is examined below. The 'fair' rate of return should equate to the rate return available for investments of comparable risk *to the investors* in the rest of the economy. A nuclear power plant's running costs are substantial and, for example, the privatised nuclear generator, British Energy, collapsed in 2002 because its running costs were higher than its income from electricity sales. Large numbers of US reactors have closed or are due to close because they cannot cover their operating costs from sales of electricity. The running costs are likely to include provisions for decommissioning and, as was the case with the collapse of British Energy, if the owner of the plant collapses, the decommissioning cost will fall on the public, most likely taxpayers at the time the plant is decommissioned.

An important element of the proposal is that the developers will be allowed to start recovering their costs. The RAB model would provide⁵ 'A route for funds to be raised from energy suppliers to support new nuclear projects, with the amount set through the ERR [Economic Regulatory Regime], during both the construction and operational phases (the 'Revenue Stream').' So there will be a

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³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825119/rab-model-for-nuclear-consultation.pdf

⁴ Construction of the first unit started in December 2018 but it has not been announced by EDF when it expects to start construction of the second unit.

⁵ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825119/rab-model-for-nuclear-consultation.pdf p 6.

mechanism, not specified in the consultation document, for consumer money to be paid to the project developer before the plant comes online, implicitly as soon as construction starts, but perhaps earlier.

The consultation document goes to great lengths to try to show that the RAB model is tried, tested and proven.⁶ It states (p 10):

‘In 2016 the model was applied successfully for the first time to a single asset construction project – the £4.2bn Thames Tideway Tunnel (TTT) sewerage project. Much of the c.£1bn of private sector equity finance that was raised to deliver the project came from UK pension funds, representing 1.7 million pensioners, or a quarter of the UK’s largest 25 pension funds. RAB-funded infrastructure has received significant quantities of investment from private sector players over the last 20-30 years. As of 2018 the total RAB value across the UK electricity, gas, water and airport sectors is c.£160bn (2018 prices).’

These examples are misleading. Even if we accept EDF’s dubious claim that Sizewell will be 20 per cent cheaper than the current estimated cost of Hinkley, including the cost of finance, the total construction cost of Sizewell will be about £25bn, six times that of Thames Tideway. All experience with nuclear projects worldwide in recent years suggests it is almost inevitable that costs will substantially exceed estimates and a total cost of at least £40bn would be likely. Thames Tideway earns its return on investment simply by being there, there is no output to sell. For a nuclear power station the amount of output to be sold would vary substantially from year to year and would require some form of power purchase agreement. For a nuclear plant financed by RAB there will be a need to establish a mechanism to sell the power that will give investors a high degree of confidence that their expected level of income will consistently be achieved. If there is not, investors will see the project as too risky.

Little detail is given on the Thames Tideway project. For example, what was the cost of finance, what was the source of finance, how is the project progressing and what are the current perceptions of the investors towards the project? The consultation paper states that much of the equity (£1bn) came from UK pensions funds but how the rest of the cost is financed is not specified. Which financial institutions provided any borrowing and at what interest rate? How is the annual income provided to its investors calculated including the allowed rate of return, the operating costs and the depreciation formula?

Thames Tideway’s cost is being paid for by ‘Thames Water’s 15 million wastewater customers through their bills, which will rise by no more than £25 per year.’⁷ For Sizewell, its cost would be recovered from all consumers even if they have opted for a supplier that explicitly does not buy nuclear electricity and, as argued below, if the method is to be viable, the additional cost cannot be capped in the way Thames Tideway seems to be.

The analogy with infrastructure investment in regulated, privatised companies is also misleading. The figure of £160bn appears to be the total investment in infrastructure in the 35 years since these regulated companies were privatised. This investment was carried out by companies holding a franchise, which they would lose, as was the case with the bankrupting of the UK’s privatised rail track company, Railtrack, if they failed to provide the service required including building new infrastructure. Investors in a RAB nuclear project would have nothing to lose apart from their losses on the project

⁶ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825119/rab-model-for-nuclear-consultation.pdf

⁷ <https://www.tideway.london/about-us/#sub-nav>

What are the commercial risks and who will bear them?

Under the model introduced in 1990 for the Britain's electricity industry, wholesale electricity should be sold into a competitive market. Producing a competitive market with sufficient liquidity to provide reliable and cost-reflective prices has yet to be achieved. Even if the market was liquid, by their nature, the prices in competitive markets are volatile and unpredictable. Investment in low-carbon sources, including nuclear power, has only been possible if the commercial risk is removed by a guarantee that all the power that is produced (or could be produced if the grid cannot accept it) will be paid for at a guaranteed fixed real price totally independent of the market price.

The take-or-pay element will become increasingly important as the UK generation mix becomes increasingly dominated by relatively inflexible sources, specifically wind and nuclear. Already, in summer months when demand is low and on a windy day, demand is not high enough to use all the available power that has been contracted on take-or-pay terms. Given the technical issues raised by varying the output of a reactor, wind plants will have to be increasingly constrained and the power that could have been produced but was not, will still be paid for by consumers. Removing the take-or-pay element from the contract would make these contracts commercially non-viable.

For Hinkley, the commercial risk was dealt with by giving a 35-year take-or-pay contract written by a government entity to buy all the producible power at a fixed real price. This risk was placed with consumers through the Levy Control Framework (LCF). The corresponding take-or-pay contracts for offshore wind are only for 15 years.

What are the technical risks and who will bear them?

There are several technical risks that must be specifically allocated, either to the public either as consumers or taxpayers, or to the developers. The most obvious risk is of construction cost and construction time overrun and experience with the technology proposed for Sizewell, the EPR, is not encouraging with any of the eight reactors firmly ordered. The Flamanville (France) and Olkiluoto (Finland) EPR projects are not complete after 12 years and 15 years construction respectively with at least three more years and one more year of construction still to go before the plants enter service. The most recent cost estimates are now at least two years old but, in both cases, the costs were then estimated to be at least 3.5 times the estimate at start of construction. The two EPRs in China, Taishan, are both now complete (one is still only in the testing phase) but in both cases, construction took 9-10 years. Reliable cost estimates for Taishan are not available. The expected cost of the Hinkley Point reactors had escalated by 66 per cent in the 4 years from when the project was agree to when construction started.

There are other major risks: plant reliability and plant operating costs; plant lifetime; and decommissioning cost. While these are mentioned in the consultation document, there is no discussion of how these risks will be dealt with.

Throughout the history of nuclear power, the reliability of reactors (as measured by its load factor⁸) has fallen short of expectations, typically expected to be 85-90 per cent, and has varied widely from year to year. The most reliable of UK plants, Sizewell B has a lifetime load factor of 84 per cent with a range of 46-100 per cent. The least reliable, Dungeness B, has a lifetime load factor of only 41 per cent with a range 4-74 per cent.⁹ If the kWh cost is fixed, this means that income for the owner will vary hugely from year to year and there is a significant risk it could fall short in the long-term of expectations.

⁸ Load factor is calculated as the power produced in a given period as a percentage of what the plant would have produced had it operated uninterrupted at full design output level.

⁹ Figures are taken from the IAEA PRIS data base and are based on the design rating rather than the authorised rating. Dungeness B is only allowed to operate at 86 per cent of its design rating.

If we take Hinkley Point C (3200MW) as an example and we assume it is expected to average a 90 per cent load factor, if it only achieves 84 per cent, the annual income shortfall would be £155m. If it achieved 100 per cent in a particular year, it would earn £260m more than expected, but if the load factor was only 46 per cent in a given year, there would be an income shortfall of £1140m. Investors are therefore unlikely to place themselves at this reliability risk.

While many reactors worldwide have operated for longer than their design life, a significant number have been retired early. From a project appraisal point of view, discounting¹⁰ means that the benefits of a longer than expected life have a much lower weight than the cost of a shorter than expected life.

The decommissioning risk is large but, as with lifetime, it occurs far into the future at the end of the life of the plant when decommissioning costs can be estimated more accurately. Only a handful of commercial nuclear reactors worldwide have been fully decommissioned – most retired plants have progressed no further than demolishing uncontaminated buildings and sealing the radioactive parts of plant. There are good reasons to believe the costs at this handful of plants are not likely to be representative. So the decommissioning cost estimate can only be a rough guess at this stage. There is a clear risk that unless the decommissioning cost is accurately estimated, the funds are securely invested and earn the expected rate of return, and the funds are in place well before the end of the life of the plant, the risk will fall on the public. Failings with the provisioning for reactor decommissioning have meant that the vast majority of the cost of decommissioning Britain's existing civil nuclear facilities, estimate to cost in excess of £100bn, will fall on future taxpayers, up to a century into the future.

The consultation document (p 6) claims there will be 'A fair sharing of costs and risks between consumers and investors, set out in an Economic Regulatory Regime (ERR).' The risks would be allocated via a Government Support Package (GSP), which would offer 'protection to investors for specified low probability but high impact risks that the private sector would not be able to bear.' The examples given are: 'risk of cost overrun above a remote threshold; disruption to debt markets; certain risks for which insurance is not available in the market, and political risks.' All are important but for these purposes, we focus on the first.

The paper states: 'it is envisaged that the threshold capital expenditure amount (the 'Funding Cap') would be identified prior to the GSP being issued and set by Government at a level at which there was only a remote chance of construction costs reaching this level. The Funding Cap would be set based on robust project diligence and global benchmarking of comparable projects.'

It is far from clear how high the level of costs overrun would have to be set for there to be only a 'remote chance' of the cap being exceeded. The clear examples are the only current projects with significant construction in Europe (Flamanville and Olkiluoto) and the USA (Summer and Vogtle, see below), all of which have overrun by a factor of three or more. For Hinkley Point C, the UK government's White Paper of 2008 forecast a construction cost for a pair of reactors of £4bn. The cost escalated by more than 66 per cent in the four years from 2013. In 2013, right up to the announcement of the agreement of the strike price, EDF was forecasting a construction cost of £12bn, the 2013 announcement saw this rise to £14bn, in 2015 it increased to £16bn, in 2016 to £18bn and in 2017, more than two years before construction start, it increased to £19.6-20.3bn.

Even if the cap was set at a factor of twice the estimated cost, clearly far from a remote risk, this would place a huge risk on the investors of having to absorb such a large cost overrun and it is inconceivable that the target investors would take such a risk. Up to the cap, there is a sharing of costs above the expected cost although no indication is given of what the relative shares of these extra costs

¹⁰ Under discounted cash flow calculations, the value of costs and benefits is lower the further into the future they occur.

between the public and the owners. Two approaches are outlined for setting the base cost: *ex ante* and *ex post*.

An *ex ante* approach is used in Britain for regulating energy network investment and was used for Thames Tideway, and is the approach favoured by the UK government. It would involve setting the target cost at the time the RAB agreement was signed with cost overruns shared between the public and the plant owners. Under the *ex post* method, a target cost would be set at the start of the project and then increased as the project progresses. The problem with both approaches is that when full commitment to the project is made, its cost will not be known. Under most normal contracts, the price would be set then so all sides knew exactly what they were signing up for and on those grounds, neither approach is desirable. It is important to note that no such cost adjustment is allowed for the UK's off-shore wind projects, the construction risk is borne wholly by the plant owner. As with all risks, investors will only be attracted if the balance of risk is heavily tilted towards public money taking the risks.

Why is the cost of capital high for the Hinkley project?

As noted above, the rationale for the RAB proposal is that the cost of capital for Hinkley was higher than it could be. In fact, it is likely it is likely to be lower than it ought to be if the commercial and technical risks inherent in the project were reflected in the cost of capital. The commercial risk is borne by consumers through the fixed price take-or-pay contract. However, EDF claims it is taking the technical risk of overrunning construction costs and times, poorer than expected reliability and higher operating costs through the fixed costs. There is scope to increase the allowed operating costs after 15 years of operation. These claims of EDF taking the risk are not necessarily realistic as the plant will not be owned by EDF, but by a public limited company, NNBG, made up of EDF (66.5 per cent) and the Chinese company, CGN, (33.5 per cent). If the project runs into difficulty either during construction or operation, there is no reason for EDF or CGN to 'throw good money after bad' and the consortium will either go bankrupt, writing off any loans and leaving the government with a loss-making facility, or the government will renegotiate a higher strike price so the losses are covered.

No bank will lend money to a nuclear project in which it is exposed to such risks so when the strike price was negotiated in 2013, it came with an offer from the UK government of sovereign loan guarantees to make borrowing feasible. This means the banks would essentially be lending to the UK government so taxpayers would pay back the loans if the project failed. Given the very high credit rating of the British government, the interest rate would be at rock bottom levels. So with those terms there could be no scope to reduce the interest rate short of providing a loan at below minimum rates. See Appendix 1 for details about how Hinkley will be financed. Reflecting the risks it appears to be taking on, EDF is targeting a real rate of return on capital of about 10 per cent.

Who are the potential investors?

The only investors specifically identified for Thames Tideway were UK pension funds. It seems unlikely this source would be an option for the RAB model if applied to a nuclear power plant. The Thames Tideway scheme was not seen as economically risky and while some expressed doubts about its value for money, the technology was not controversial. Many pension fund members would see a nuclear project as economically risky and would also not be willing to see their funds invested in nuclear power in the same way as some funds will not invest in military or tobacco shares.

Thames Tideway is owned by a consortium of investors, representing pension funds and other long-term investors, which comprises Allianz, Amber Infrastructure, Dalmore Capital and DIF providing £1.275m in equity. Thames Tideway does not specify where the balance of the cost will come from. If pension funds are not feasible, this leaves other long-term investors such as sovereign wealth funds, e.g., Saudi Arabia and venture capital funds, e.g., MacQuairie. It is this type of investor that owns a

significant proportion of Britain's electricity and gas distribution companies. While such long-term investors will generally have no principled objection to nuclear, they will be unwilling to invest in risky ventures and before investing in a project such as Sizewell C, they will carry out a rigorous due diligence to ensure that all major risks fall on other parties and that can only mean UK electricity consumers and UK taxpayers. Thames Tideway was seen as a huge project, but in cost terms, Sizewell would be almost an order of magnitude larger. Whether such funds would have the capability to provide such huge sums is not clear.

How will the energy be priced?

A feature of the Hinkley Point C deal of 2013 was that the price was fixed in real terms at £92.5/MWh (in 2012 money). At the time, the price seemed high but since, sharp reductions in the cost of renewables, particularly in the UK context, wind (Hinkley's price was 60 per cent higher than 2017 offshore wind prices) and the continuing low wholesale electricity price have shown how appallingly high the price is.

The consultation paper states (p 20): 'a nuclear RAB model would entail a variable £/MWh price (calculated by reference to the Allowed Revenue from time to time) allowing for the revenue stream to be adjusted by the Regulator as circumstances change.' This will appear to consumers, rightly, as signing a blank cheque. The way in which the construction phase income to the plant owners will be paid is not specified. It seems likely that some form of levy will be imposed on consumers to generate the income required. All that will be known at the point the plant enters service will be the asset value. The rate-of-return will vary according to prevailing interest rates. The operating costs and the number of units of output over which the fixed and variable costs can be spread will vary from year to year.

Who will regulate the price and what will be their function?

There are a number of references to the role of a regulator and there would appear to be two options, setting up a new regulatory body or allocating the task to the existing UK energy regulator, Ofgem. For Thames Tideway, the UK water regulator, Ofwat, was allocated the regulatory role. Clearly whoever gets the task, it is vital that the regulator has the expertise and the resources to do a thorough job plus the powers to impose their decisions. Ensuring these conditions are met will be more important than whether the job goes to a new or existing regulator.

The consultation document lists a number of areas that will be under the control of the regulator. For example, the regulator will decide whether extra costs would be passed on to consumers and the allowed rate of return.

Wherever the regulator has scope to exercise judgement, this will all be interpreted by investors as risk and investors will want as much of the regulatory procedure to be codified and predictable leaving little scope for the regulator to do more than implement these rules.

Should investors recover costs before completion of the facility?

This is one of the most contentious and most foolhardy of the proposals. It is not clear how much of the cost can be recovered during the construction phase or by what mechanism. The attractions to investors are clear, the earlier costs are recovered the less their finance costs are and the income will, in a project appraisal weigh high because discounting places a higher weight the sooner revenue is collected.

In the USA, utilities have long argued to be allowed to begin recovering their costs during construction for these reasons, but in almost all cases, regulators have, rightly, resisted such pressure. The Vogtle and Summer nuclear projects (both for two reactors) began construction in 2013 and were the first orders not subsequently cancelled to be placed in the USA since 1974. All orders placed after

then were cancelled and in total, more than 120 firm reactor orders, many with significant construction work completed, were cancelled from about 1979 onwards. The reason for these cancellations was simple, there was no longer any implicit guarantee that state energy regulators would allow the plant owners to recover all their costs. This meant investing in nuclear was a massive risk to the utilities which would have a severe impact on their credit rating and meant banks were unwilling to lend for nuclear projects.

The Summer and Vogtle orders were possible in part because of federal government subsidies but mainly because the state regulatory bodies (Georgia and North Carolina) gave strong indications that all costs could be recovered and that consumers would start paying for the plants before even construction started. By 2017, after 3-4 years of construction, both projects were 3-4 years late and costs were several times those expected when the orders were placed. As a result, the Summer project was abandoned then and the contributions already made by consumers will almost certainly be lost. The Vogtle project continues, albeit there is still a significant risk it will have to be abandoned. There is little doubt that consumers' interests would best be served if it was abandoned as soon as possible and before more consumer money was wasted.

Experience here and at Dungeness B is that there is great reluctance to abandon prestigious projects, however strong the economic case for abandonment is. Decision-makers appear reluctant to face the embarrassment that having to admit their decisions were wrong would cause. For Dungeness B, which took 24 years from start of construction to commercial operation and which has a lifetime load factor over its 30 years of operation of less than 50 per cent, it was clear from a very early stage that the design was misconceived and would be an economic disaster yet the project continued because the owner, the publicly owned generating company, the CEGB, knew its costs could be passed on to consumers. It seems highly likely that even now, it would be in consumers' interests for the Hinkley Point C project to be abandoned paying any penalty clauses and for remediation of the land rather than incur the additional costs to consumers of about £50bn over the life of the plant that its operation would result in.

Will the RAB model produce competitively priced power?

While EDF has made optimistic predictions about cost reductions for Sizewell compared to Hinkley Point, given EDF's hopeless record of cost forecasting at Flamanville and Hinkley, little weight can be put on these predictions. All experience suggests real construction costs will continue to rise so the only way to produce a lower price than Hinkley will be to use a significantly lower cost of capital based on reducing the risks to investors. However, risks often become outcomes, especially with nuclear technology and this apparent reduction in prices will be an illusion which will be eaten up when some of the risks inevitably turn into outcomes and must be passed on to consumers through higher prices. Given Britain's poor economic record with nuclear power, it would be extraordinary arrogance to believe that none of the issues that have affected nuclear projects in the USA and Europe will apply to Britain.

It also seems unlikely that that even if we assume the reduced price projections for Sizewell compared to Hinkley Point can be realised, Sizewell will be competitive with wind alternatives. When announcing the abandonment of the Wylfa project¹¹, the then energy minister, Greg Clark, talked about requiring a strike price of no more than £75/MWh¹², which would represent a 20 per cent reduction compared to Hinkley. This would be based on the UK government taking a one third equity share and with the government rather than banks providing all the required loans. This should have

¹¹ A project to build two reactors of the Japanese ABWR design at a site in North Wales

¹² <https://www.gov.uk/government/speeches/statement-on-suspension-of-work-on-the-wylfa-newydd-nuclear-project>

made the cost of capital almost as low as possible, but despite this, the developers were unable to commit to achieving £75/MWh. So it seems that £75/MWh is probably the lowest achievable price.

The capacity auction of 2017 yielded offshore wind prices of £57.5/MWh (2012 money) with none of the risk-sharing required by the RAB model and with a power purchase agreement for only 15 years. The UK government's auction under way in 2019 to commission new renewable capacity is expected to achieve even lower prices. Onshore wind was ruled out in 2015 on the implausible grounds that it was too expensive. If bids for onshore wind were solicited, there is little doubt prices would be even lower than those for offshore wind. The scope for cost-effective energy efficiency measures which, if well-targeted, would yield significant welfare benefits as well as reducing greenhouse gas emissions is far from well-exploited. The promise of low prices using the RAB model is therefore an illusion.

Conclusions

The UK government has now proposed three models for financing new nuclear power plants. The model adopted for Hinkley Point C produced very high power prices and the main recipient of the contract, EDF, does not appear willing to consider this model for follow-on projects. It therefore seems unlikely this model will be used again. The second model proposed for the Wylfa project involved a significant UK government equity stake, a promise for the government to provide all the required loans and support from the Japanese government to find Japanese investors. Despite this, the expected price of power was too high, investors were not forthcoming and the project collapsed. The latest model, RAB, proposes to reduce the expected cost of power and attract investors by shifting most, if not all, the commercial and technical risk to consumers. The lower forecast price will prove illusory when the inevitable problems and their extra costs are passed on to consumers. It remains to be seen whether this transfer of risk will be publicly acceptable and whether investors will be forthcoming on the scale required.

This experience is in stark contrast to that with offshore wind projects. Unlike the nuclear projects which have been carried out via bilateral negotiations, these have been allocated by a competitive process. The contracts required are for only 15 years and no loan guarantees have been required yet there has been no shortage of potential investors. Prices have fallen dramatically to little more than half the level negotiated for Hinkley Point C. The lead-time from project approval to first power, likely to be at least 12-14 years for Hinkley Point C, has been no more than about four years. A programme of energy efficiency measures targeted at low-income households may also be as cost-effective as renewable power sources in reducing greenhouse gas emissions as well as providing significant welfare benefits by ensuring energy bills are affordable as fossil fuels, especially for space heating, are replaced.

Overall, the problem for nuclear projects is not that the right model for financing them has yet to be found, it is that nuclear power is simply too expensive and economically risky. The continued attempts to identify feasible financing models will therefore be unsuccessful and, more importantly, will divert resources and attention from options that can deliver the emissions reductions more cost-effectively and much quicker.

Appendix 1 Financing Hinkley Point C

Since the strike price for Hinkley Point C was announced in September 2013, the issue of how it will be financed has been clouded by the government's Base Case Condition, which was only placed in the public domain by the European Commission in its verdict on the State-Aid inquiry.¹³ This stated (p 51):

‘During the period up to the Base Case Condition being met there is a cap on the amount of debt drawn..’

And

‘The Base Case Condition is that satisfactory evidence has been provided that Flamanville 3 has completed the trial operation period and that the requirements of the Guarantor in respect of performance during such period have been met. The Guarantor has the option to extend the date for meeting the Base Case Condition into the future by increasing the amount of Base Equity and procuring that such increase benefits from the required credit support. The Base Case Condition date cannot fall later than 31 December 2020.’

By 2016, there were doubts that Flamanville 3 would be in operation by end 2020 and in 2019, EDF acknowledged that the earliest it can be in commercial service would be 2022. A Parliamentary Question was asked in 2017, when doubts about Flamanville were increasing, as to whether the Base Case Condition still applied but the government in its response did not answer the question¹⁴ so it is not clear whether the government has quietly abandoned it.

In September 2015, George Osborne, on a visit to China, announced the availability of £2bn in loan guarantees in the form of bonds, presumably up to the level of the cap noted in the Commission State-Aid inquiry.¹⁵ However, given that Hinkley had not started construction at that point and that, as the National Audit Office report states (but not acknowledged in the official announcement of the guarantees), the bonds would have to have been repaid by end 2020, this guarantee was essentially useless to EDF and was not taken up.¹⁶

Given that EDF does not have the money to fund construction solely from equity (its profits) and without loan guarantees, the money cannot be borrowed, it is unclear how EDF expects to finance construction of Hinkley Point C.

¹³ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2015:109:FULL&from=EN>

¹⁴ <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2016-04-29/36126/>

¹⁵ <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2016-10-25/HCWS216/>

¹⁶ <https://www.nao.org.uk/wp-content/uploads/2017/06/Hinkley-Point-C.pdf>