

INVESTMENT --- IN ENERGY

REPORT FROM THE INFRASTRUCTURE
FORUM'S ENERGY WORKING GROUP

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SUMMARY

There is a pressing need for strategic investment in energy infrastructure to set the UK on the path to meet its upcoming carbon budgets and deliver Net Zero by 2050 but the economic impacts of Covid-19 and current market frameworks present a significant barrier.

- Government's priorities and its capacity to finance infrastructure development to meet the Net Zero target have been impacted by the Covid-19 crisis.
- The crisis has also impacted company balance sheets and their ability and desire to finance the development of projects when balance sheets are stretched and cost reductions are ongoing.
- The delay to the Energy White Paper means there is a lack of strategic direction in energy policy and towards the optimal energy mix needed to deliver Net Zero with benefits for wider decarbonisation and levelling up of the economy.
- Current market conditions skew development to building mainly intermittent energy projects which have delivered significant cost savings through the Contracts for Difference (CfD) mechanism whilst continuing to favour existing unabated thermal plant through the Capacity Market.
- Focus is needed to ensure that mechanisms deliver a mix of technologies to support the further growth in renewables including system balancing and low carbon firm power technologies.
- Leaving market frameworks as they are with no strategic direction is unlikely to attract the investment required nor will it deliver a mix that meets the energy trilemma of decarbonisation to Net Zero, security of supply and affordability to consumers.

However, with a clear strategy aligned with policy employing established funding frameworks, private capital can be harnessed to help to deliver the required energy infrastructure for Net Zero and beyond.

- There is continued appetite in the private sector to invest in sustainable energy projects with good ESG credentials. This may be able to bridge the investment gap but requires the right models to be promoted for this to work for both sides and a clear strategy of what is needed to deliver the range of technologies that will be required.
- First, Government must set a clear policy and strategy towards Net Zero, setting out the technologies which should form part of the future mix.

- Current market mechanisms can then be adjusted to support developing technologies such as Electric Vehicle (EV) charging, storage and heat solutions along with further expansion of renewables.
- For larger projects, there is also a liquidity failure due to the high costs of development to get to Financial Investment Decision (FID). There is low desire to finance this, especially given the state of company balance sheet strength e.g. nuclear and carbon capture, usage and storage (CCUS). Providing access to development capital through a newly formed co-investment fund or Infrastructure Development Bank would help to support such projects.
- A model for such a joint investment vehicle does not yet exist. The need for such a model is so pressing that it is recommended that a joint HMT-Private Sector contact group be established as soon as possible to come up with potential options.
- Such investment vehicles would benefit from incentivised oversight from the private sector. In return, they would need a return on investment as well as some protection due to the higher risk profile in the development phase of projects. This would most likely require the Government to provide some down-side protection. How this risk could also be spread across a portfolio would also need assessing to see if this could encourage a wider range of investors including those with lower risk appetite e.g. pension funds.
- In order to utilise private sector capital to develop and deliver large capital projects e.g. nuclear and CCUS, the Government need to be forthcoming with acceptable funding models for investors, and should look to confirm the implementation of the Regulated Asset Base (RAB) model for nuclear to provide a clear route to market. Such an approach could also be utilised to support other technologies going forwards e.g. SMRs and CCUS. A detailed proposal along these lines developed as an RII model, is set out in The Infrastructure Forum's report, Regulated Infrastructure Investment: Innovation and Opportunity.¹
- Government should also consider including the proposed funding options as a framework within the Energy White Paper.
- When the National Infrastructure Strategy is announced, it should include measures to aid the delivery of strategic investment in energy infrastructure on a forward-looking basis.
- Finally, as the transition period with the EU comes to an end Government should also look to amend state aid rules in order to support economic recovery post-Covid.

¹ The Infrastructure Forum, Regulated Infrastructure Investment: Innovation and Opportunity, 2020, https://fea715ce-3c56-4c71-9893-f1a800dfb282.filesusr.com/ugd/d9a995_fc8eadfc7e074489bae9077bfd16dd23.pdf

INTRODUCTION

The Infrastructure Project Pipeline

1. In 2018, the Infrastructure and Projects Authority (IPA) released the UK infrastructure project pipeline² which estimated over £600bn of investment between the public and private sector over the following decade, with an estimated £186bn of private investment across all sectors.³ The report detailed around £190bn of investment in the Energy sector to 2028 of which £146bn accounted for electricity generation with £100bn of this funded by the private sector.

Net Zero Legislation

2. In June 2019, UK legislation was passed to require the UK to bring all economy wide greenhouse gas emissions to net zero by 2050,⁴ becoming the first major economy to do so. This target built on the 2008 target to reduce greenhouse gas emissions to 80% of 1990 levels by 2050. "Net zero" means any carbon emissions (for example, from aviation) would need to be balanced by UK-based schemes to offset an equivalent amount of greenhouse gases from the atmosphere.
3. The UK's 2050 net zero target was recommended by the Committee on Climate Change (CCC), the UK's independent climate advisory body. The legislation implemented the UK's commitments under the 2015 Paris Agreement, Article 4 of which called for the 'highest possible ambition' in relation to countries' individual targets.⁵
4. As part of the 2008 Climate Change Act, the Government must also set five-yearly carbon budgets, twelve years in advance, from 2008 to 2050. The Government is required to consider (but not follow) the advice of the CCC when setting these budgets.

² Infrastructure and Projects Authority, National infrastructure & Construction Pipeline, 2018, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759027/National_Infrastructure_and_Construction_Pipeline_Autumn_2018_csv.csv/preview

³ Analysis of the National Infrastructure and Construction Pipeline, IPA, 2018, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759222/CCS207_CCS1118987248-001_National_Infrastructure_and_Construction_Pipeline_2018_Accessible.pdf

⁴ HM Government, Climate Change Act 2008 (2050 Target Amendment) Order, 2019, <http://www.legislation.gov.uk/uksi/2019/1056/contents/made>

⁵ United Nations, Paris Agreement, 2015, https://unfccc.int/sites/default/files/english_paris_agreement.pdf

5. To date, 5 budgets have been set from 2008–2032 aiming to reduce the total GHG emissions from 1990s levels by 25, 31, 37, 51 and 57% respectively. The CCC’s advice on the 6th carbon budget is expected in December 2020 and will be the first set taking into account the Governments Net Zero legal requirement for 2050. The UK is currently projected to miss both its 4th and 5th carbon budgets under current policy interventions.⁶ This emphasises the urgent need for robust steps to change this course and ensure that the carbon budgets are met and Net Zero can be delivered by 2050.
6. The CCC further ambition net zero scenario assumed “Extensive electrification, particularly of transport and heating, supported by a major expansion of renewable and other low-carbon power generation. The scenarios involve around a doubling of electricity demand, with all power produced from low-carbon sources (compared to 50% today)”⁷.
7. The CCC, National Infrastructure Commission (NIC) and National Grid Energy Systems Operator have all published proposals for what a Net Zero UK energy mix could look like in 2050.^{8,9,10} Whilst the exact composition of these mixes differ it is clear that a range of low carbon technologies will be required including further expansion of existing technologies (e.g. renewables, nuclear) as well as development and deployment of emerging technologies (e.g. battery storage, carbon capture usage and storage (CCUS)).

UK Electricity Market Framework

8. In the UK, the Government sets the long-term direction for energy policy, establishes the overall legal and regulatory framework, and, through its delivery bodies, intervenes in the market to deliver its policy objectives. The Government introduced its ‘Electricity Market Reform’ (EMR) policy in 2012,¹¹ and legislated through the 2013 Energy Act.¹² EMR aimed to deliver the three aims described in chapter 1 (secure, low carbon, affordable to

⁶ <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2018>

⁷ Net Zero: The UK’s contribution to stopping global warming, Committee on Climate Change, May 2019, <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/>

⁸ Net Zero: The UK’s contribution to stopping global warming, Committee on Climate Change, May 2019, <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/>

⁹ NIC, Net Zero: Opportunities for the power sector, March 2020, <https://www.nic.org.uk/publications/net-zero-opportunities-for-the-power-sector/>

¹⁰ National Grid ESO, Future Energy Scenarios, 2019, <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2019-documents>

¹¹ Department of Energy & Climate Change, Electricity Market Reform, 2012, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/65634/7090-electricity-market-reform-policy-overview-.pdf

¹² HM Government, Energy Act, 2013, http://www.legislation.gov.uk/ukpga/2013/32/pdfs/ukpga_20130032_en.pdf

consumers) by providing incentives for the investment required in our energy infrastructure, through two key interventions:

- **Contract for Difference (CfD)** – Support for low carbon power is provided by Government, acting through the Low Carbon Contracts Company (LCCC). Government provides a contractual framework providing price stability to renewable technologies, known as ‘Contract for Difference’. The CfD mechanism provides price certainty for a specified time period (usually 15 years) and generators that meet the eligibility requirement for auction bid for contracts.
 - **Capacity market** – The Capacity Market aims to ensure future energy security, by ensuring sufficient capacity is available to be drawn on at times of ‘system stress’ up to 4 years in the future, by providing payments for such capacity (alongside their revenues from the wholesale market). Payments may be for new capacity, for existing capacity to remain open, or for ‘Demand Side Response’, following competitive auction. Since 2015, interconnectors (power lines that link with other European markets) have also been eligible to bid and the Government has confirmed that renewables will be able to bid in future auctions provided that they do not benefit from another subsidy (e.g. CfD). The Capacity Market is operated by the EMR Delivery Body.
9. These interventions, particularly CfDs, have supported a significant growth in renewables in recent years, which now constitute over one third of total electricity generation¹³ with a large reduction in costs (strike price). The costs are passed on to consumers, via additional charges to suppliers.

¹³ BEIS, National Statistics, Energy Trends: UK electricity, Fuel used in electricity generation and electricity supplied (ET 5.1 - quarterly), <https://www.gov.uk/government/statistics/electricity-section-5-energy-trends>

FRAMING THE ISSUES

The Impact on Government and Incumbent Utilities of the Covid-19 Pandemic

10. The direct and lasting impact of the black swan Covid-19 pandemic should not be underestimated. The Office for Budget Responsibility (OBR) has reported that between February and April of this year the UK's Gross Domestic Product (GDP) is estimated to have fallen by 25 per cent.¹⁴ Public sector net borrowing (PSNB) is now estimated to total almost £300bn for this financial year.¹⁵ In response to the pandemic, the Government has pledged £330bn in support of businesses.¹⁶ Clearly the impact on Businesses across sectors has been enormous and in some cases fatal. It is likely that further Government support will be required in order to support businesses to get back on the path of economic recovery. Without support from private sector capital it is difficult to see how Government will be able to mobilise the investment and infrastructure required to deliver the Net Zero transition by 2050. In June this year, the IPA release an updated infrastructure project pipeline for 2020/21 in response to the Covid-19 pandemic.¹⁷ Noticeably, energy procurements totalled only £397.5m of the £37.3bn total of which only one of the 9 projects related to Electricity generation in the form of offshore wind.
11. It is clear that Government see infrastructure as critical to providing jobs and stimulating growth as we come out of the pandemic. Another key policy area relating to this is centred around levelling-up and ensuring that jobs and investment are spread across the UK and regions.
12. The impact of Covid-19 has greatly impacted incumbent utilities as well, on whom the cost of developing new and existing low carbon technology often falls. For example, Oil and Gas majors have faced huge losses in revenue due to decreased demand, with oil prices turning negative during the pandemic. Incumbent generators such as EDF have also seen a large drop in their share price due to decreased electricity demand and the

¹⁴ Office for Budget Responsibility (OBR), Commentary on the Public-Sector Finances: May 2020, <https://obr.uk/docs/June-2020-Commentary-on-the-public-sector-finances.pdf>

¹⁵ Office for Budget Responsibility (OBR), Coronavirus analysis, May 2020, <https://obr.uk/coronavirus-analysis/>

¹⁶ <https://www.gov.uk/government/news/chancellor-strengthens-support-on-offer-for-business-as-first-government-backed-loans-reach-firms-in-need>

¹⁷ IPA, Analysis of the National Infrastructure and Construction Procurement Pipeline 2020/21, June 2020, <https://www.gov.uk/government/publications/national-infrastructure-and-construction-procurement-pipeline-202021>

number of merchant plants they operate. This presents a clear problem as large low carbon projects such as nuclear or immature technologies such as CCUS^{18,19} are time consuming and costly to develop and bring to market.

13. The Covid-19 pandemic has also thrown into question the deliverability of a future pipeline of subsidy free renewables projects.²⁰ The falling electricity demand has left merchant projects with reduced income streams compared to subsidised projects where the income is guaranteed by government through CfDs. This raises questions about the financeability of such projects.
14. Without the required balance sheet strength and a lack of any Government support it is difficult to see how the mix of technologies required to meet Net Zero can be developed and delivered.

Strategic Direction and Alignment of Initiatives

15. As noted, the Government sets the long-term direction for energy policy. It was due to release an Energy White Paper in summer 2019, which is yet to be released. This means currently there is a lack of strategic direction to meet Net Zero, as it is unclear what energy mix government is seeking to achieve this in the most cost-effective manner whilst maintaining security of supply. There are also questions currently around decarbonising transport and heat sectors. Therefore, once released, it will be important the Energy White Paper fits within the overall National Carbon Strategy that the private sector will be able to get behind and help to deliver.
16. A House of Lords Select Committee has previously criticised the lack of direction, clarity and consistency in energy policy.²¹ Without a clear strategic direction and a route to market, private investors and technology developers will not commit capital to develop projects which would take the UK off the path to Net Zero and make it difficult to get back on track in the future.

¹⁸ Paul Davies, CCS Time for an Ambitious Leap Forward, 2020, https://fea715ce-3c56-4c71-9893-f1a800dfb282.filesusr.com/ugd/d9a995_1abfb5173c18460394e289840d6fbda5.pdf

¹⁹ Paul Davies, Carbon Capture & Storage, A Necessity not an Option, 2020, https://fea715ce-3c56-4c71-9893-f1a800dfb282.filesusr.com/ugd/d9a995_a9e70d0c542440829e624b5b51038835.pdf

²⁰ Switch onto the new normal: Impact of COVID-19 on capital for renewables/clean energy transition, Eversheds Sutherland, 2020, <https://indd.adobe.com/view/01e0c154-9b01-4a5c-938e-af892c8351fd>

²¹ House of Lords, Select Committee on Economic Affairs, The Price of Power: Reforming the Electricity Market, 2017, <https://www.parliament.uk/business/committees/committees-a-z/lords-select/economic-affairs-committee/news-parliament-2015/uk-energy-policy-report/>

17. There are also a variety of other ongoing initiatives across Government and from their independent advisors. These include but are not limited to:

- National Infrastructure Strategy
- Spending Review Process
- Review of National Security
- Ofgem's RIIO-2 price control
- Net Zero (CCC recommendations and HMG economy wide approach)
- National Industrial Strategy
- National Infrastructure Commission (NIC) recommendations

18. There is a critical role for a central body within Government to ensure consistency across these plans. For example, concerns over involvement by other, possibly hostile, state entities in energy or other critical infrastructure investments should be clarified from the outset.

Energy Market Failure

19. The UK Government uses two mechanisms to provide low carbon electricity and ensure security of supply in the UK via the CfD and Capacity Market mechanisms. Whilst both have been successful to a degree *i.e.* a huge drop in the cost of renewables, especially offshore wind; and sufficient capacity to ensure supply; looking forward to net zero, neither mechanism has promoted emerging or system balancing technologies or provided new low carbon baseload capacity beyond Hinkley Point C (HPC).

20. The implementation of the CfD model for the HPC project faced criticism from the National Audit Office (NAO) over the Value for Money (VfM) of the deal with a strike price of £92.50/MWh and EDF holding all the construction risk.²² It suggested that different models should have been reviewed with more appropriate risk-sharing that could have delivered better value for consumers. On the back of this, the Government launched a consultation into developing a Regulated Asset Base (RAB) model which has previously been used to fund the Thames Tideway Tunnel (TTT) greenfield asset. Although this consultation²³ closed in October 2019, there is yet to be a government response. It is estimated that a Next of a Kind (NOAK) project with appropriate risk allocation under

²² Hinkley Point C, NAO, 2017, <https://www.nao.org.uk/report/hinkley-point-c/>

²³ The Infrastructure Forum, Submitted a Response to the BEIS Consultation: RAB Model for Nuclear, 2019.

such a model could deliver electricity with an effective strike price of around £40–60MWh, which would be competitive with renewable generation.²⁴

21. The CCC's further ambition scenario assumes 38% of electricity generation in 2050 should come from firm low carbon sources (e.g. nuclear and natural gas CCUS) to support the further expansion of renewables, especially wind and solar.²⁵ However, the Capacity Market has continued to favour existing fossil fuel generation rather than promoting new low carbon baseload capacity which is required to meet Net Zero by 2050. Renewables will now be able to bid in capacity market auctions; however, this is on a de-rated basis and thus is only likely to have a small impact. Such amendments do not deliver truly firm power low carbon options.
22. Ofgem have previously criticised the cost to consumers of the current mechanisms²⁶ "The dramatic progress to ensure clean and secure electricity supplies has sometimes come at a higher cost to consumers than necessary. On average, consumers currently pay about £90 each year towards environmental policies. This will rise as low-carbon generation increases. Rapid falls in the costs of wind and solar generation show the scope for competition and innovation to limit future cost increases. But consumers will lose out if there isn't effective competition for low carbon support schemes and for measures to help the energy system to work effectively."
23. Whilst mechanisms have delivered low carbon power with renewables contributing an ever-greater proportion and coal generation is becoming a rarity in the generation mix. Ofgem has stated that the increase in intermittent generation has increased the difficulty of operating the system.²⁷ There therefore needs to be a shift to ensure that technologies which provide system balancing and improve grid operability are developed and delivered alongside renewables.
24. The House of Lords Economic Affairs Committee has also criticised government interventions in the market saying they "have put unnecessary pressure on the electricity supply and left consumers and industry paying too high a price. The growth of renewable energy, supported by contracts that guarantee a given price for a fixed period, has left the UK facing a possible shortage of capacity as private investors have not been willing to build new conventional power plants. The UK's capacity margin is narrow. The

²⁴ Note comparison of the Levelised Cost of Electricity (LCOE) between firm low carbon baseload power (e.g. nuclear) and intermittent sources (wind, solar) is not a like for like comparison. See P Joskow et al. for details <https://dspace.mit.edu/handle/1721.1/59468>

²⁵ CCC, Net Zero - Technical Annex: Integrating variable renewables into the UK electricity system, 2019, <https://www.theccc.org.uk/publication/net-zero-technical-report/>

²⁶ Ofgem, State of the Energy Market, 2017, https://www.ofgem.gov.uk/system/files/docs/2017/10/state_of_the_market_report_2017_web_1.pdf

²⁷ Ofgem, State of the Energy Market, 2019, https://www.ofgem.gov.uk/system/files/docs/2019/11/20191030_state_of_energy_market_revised.pdf

Government introduced the Capacity Market in an attempt to reintroduce competition into the electricity sector. However, it is still struggling to procure new power stations".²⁸

25. As noted previously, whilst the UK is on track to meet its current legally binding carbon budgets, the CCC estimates that the UK is not on course to meet them from 2023 onwards.

²⁸ House of Lords, Select Committee on Economic Affairs, *The Price of Power: Reforming the Electricity Market*, 2017, <https://www.parliament.uk/business/committees/committees-a-z/lords-select/economic-affairs-committee/news-parliament-2015/uk-energy-policy-report/>

POTENTIAL SOLUTIONS

Investment Capital is Available Within the Private Sector

26. There is a significant amount of global private capital ready to commit to the right investment opportunities. Sustainable energy projects are particularly desirable, and the UK has proven and continues to be successful at attracting investment in intermittent solar and wind projects.²⁹ Investors are looking for the right market frameworks and signals from Government that hold out the prospect of stable returns with appropriate risk sharing for which a lower cost of capital can be provided in return. Investors have a strong focus on projects that have good Environmental, Social and Governance (ESG) credentials.
27. Sir John Armitt Chair of the National Infrastructure Commission, said in a letter to the Chancellor that “While significant public investment will be necessary, private capital is critical to infrastructure in many sectors. Clear guidance on the direction of policy and regulation, supported appropriately with public money for R&D and pilot projects, will stimulate private infrastructure investment”.³⁰

Established Funding Models Which Provide Revenue Support are Attractive for Investors and Consumers

28. CfD auctions which provide a fixed revenue stream continue to attract private investment into the energy sector. As mentioned previously this model has driven the cost of offshore wind down dramatically.
29. The RAB model which is widely used in regulated sector such as water and electricity networks and was recently used to fund construction of the Thames Tideway Tunnel (TTT) greenfield asset was designed and adopted for the privatised utilities for three reasons:
- **Strategic** – to help shrink the size of the state
 - **Economic** – to improve the productivity and efficiency of these businesses

²⁹ EY, RECAI 55, May 2020 https://www.ey.com/en_uk/power-utilities/in-the-wake-of-a-human-crisis-do-climate-goals-take-a-back-seat

³⁰ Letter to the Chancellor, Sir John Armitt, NIC, May 2020, <https://www.nic.org.uk/wp-content/uploads/C0160-Sir-John-Armitt-Chancellor-HM-Treasury-12052020.pdf>

- **Financial** – to remove the financing needs of the pipeline of infrastructure investment from the Government's books.

30. The cost of achieving these objectives was a higher cost of capital (which is regulated) but provides value for the taxpayer. For example, a Global Water Intel report³¹ declared that "there is a strong case for stating that the England & Wales regulated system delivers the best value for money of all the utility sectors compared to France, Ireland, Italy, Spain and Germany. The model has driven up standards and increased efficiency ". Examples of the weighted average cost of capital (WACC) for TTT as bid for during construction,³² set quinquennially by the regulator for incumbents in the water sector³³ and the indicative WACC for the energy sector, demonstrate that RAB structures are associated with lower costs of capital compared to other forms of private finance. Furthermore, the RAB structure doesn't preclude a blend of private and public-sector capital from being deployed.

A Clear Strategy Utilising Established Funding Frameworks is Needed from Government

31. In order to deploy capital in established and emerging technologies, investors need the right signals from Government that such technologies are required in the future mix. Government need to set a clear pathway to Net Zero and the technologies required to achieve it. Sir John said that "Confidence can be won, and crucially private investment can be unlocked, by government setting out a long-term infrastructure strategy and continuing with front-end planning for longer-term schemes – even if any construction work may be some years away".³⁴
32. The NIC have recently advised that the UK should target 65% renewables generation by 2030³⁵ (previously 50%)³⁶ which they say can be done if ambitions are realised through an active push from government to generate the private sector investment needed. This should be pursued through a pipeline of annual CfD auctions which can mobilise private sector capital quickly. The Commission also stated that it is prudent to leave as many

³¹ International Comparisons of Water Sector Performance, Global Water Intelligence, 2019, <https://www.water.org.uk/news-item/new-research-shows-water-companies-in-england-and-wales-outperform-comparable-water-sectors-in-europe/>

³² Project Licence, Bazalgette Tunnel Limited, Ofwat, 2015, https://www.ofwat.gov.uk/wp-content/uploads/2015/10/lic_lic_baz.pdf

³³ PR19 Final Determination, Allowed return on capital technical appendix, Ofwat, 2019, <https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Allowed-return-on-capital-technical-appendix.pdf>

³⁴ Letter to the Chancellor, Sir John Armitt, NIC, May 2020, <https://www.nic.org.uk/wp-content/uploads/C0160-Sir-John-Armitt-Chancellor-HM-Treasury-12052020.pdf>

³⁵ Renewables, recovery, and reaching net zero, National Infrastructure Commission, Aug 2020, <https://www.nic.org.uk/wp-content/uploads/Final-Renewables-Recovery-Reaching-Net-Zero.pdf>

³⁶ Net Zero: Opportunities for the power sector, National Infrastructure Commission, Mar 2020, <https://www.nic.org.uk/wp-content/uploads/Net-Zero-6-March-2020.pdf>

future options on the table whilst taking the needed near term actions to deliver a lowest cost net zero electricity system.

33. Clear signals on how other projects will be funded will be critical. Investors and developers would like to see the Government be forthcoming with a response on its RAB consultation for nuclear and a view on how this approach may be applied to other technologies e.g. CCUS. As Sir John Armitt said “government policy on energy should incentivise private investment – particularly in the development of new power and heating technologies such as hydrogen with carbon capture and storage”. As part of the updated Energy White Paper the Government should consider including the funding options as a framework.
34. Having set the strategy, ensuring that emerging technologies, such as Electric Vehicle (EV) charging infrastructure and storage technologies such as batteries, are delivered alongside intermittent renewables by reviewing and revising current market mechanisms is advised. Clarity on the business models to support CCUS projects,³⁷ specifically hydrogen production (steam methane reforming with CCS), gas CCS, industrial CCS and BECCS is also needed.
35. Venture capital remains an important source of finance that can significantly accelerate the market diffusion of emerging technologies, despite the fact that the early stage investments provided by these types of investors are a relatively small subset of overall investment flowing to clean energy.
36. Clear policies and a well set out investment framework from government can help to enhance confidence levels amongst investors, ensuring venture capital can continue to play a role in fast tracking the development of various technologies that could become critical to the energy transition.
37. Government’s own £40m venture capital fund for green start-up companies is also a welcome step. This Clean Growth Fund will be accessible to UK-based companies driving green technology across the power, transport, waste, and building energy efficiency sectors, funding energy storage and renewable heating and ventilation technologies across homes and commercial buildings; and bio-fuels and bio-energy systems.

³⁷ Industrial carbon capture business models, Element Energy for BEIS, 2018, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759286/BEIS_CCS_business_models.pdf

There is a Pressing Need for a UK Infrastructure Development Fund

38. Given the issues on the development time and cost required to get many projects to Final Investment Decision (FID) and with balance sheets weakened post-Covid, government support for development will be required to bring projects to market especially those with high development costs, especially nuclear and CCUS.
39. The State Aid regime is bound to be different post-Covid, both in the EU and the UK and Government should consult now on its new form. It should also respond quickly to the need to replace or reinstate European Investment Bank investment, as The Infrastructure Forum argued in 2018 ³⁸. The European Investment Bank has lent around £100 billion to UK infrastructure projects since 1973 and has helped to 'crowd in' additional investment from the private sector. Many have argued that a national infrastructure bank independent of government should be formed to generate investor confidence and play a counter-cyclical role in the event of economic downturn. The House of Lords EU Committee advised that the advantages and disadvantages of such a bank financing itself through the capital markets, as the EIB does, should be considered.
40. In Sir John Armitt's Letter to the Chancellor he advised that "A domestic replacement for the European Investment Bank, with an explicit focus on infrastructure, could also play a major financing role and crowd-in private capital".
41. Both the Private Finance Initiative and privatisation were born out of times of crisis. There is a simpler duty for the private sector to present ideas to help economic recovery. The Government should begin exploring the option of a co-investment fund with private investors to provide incentivised oversight. A model for such a joint investment vehicle does not yet exist, however the need for such a model is so pressing it is recommended that a joint HMT-Private Sector contact group be established as soon as possible to come up with some potential options.
42. A privately managed co-investment fund aligned with government policy on a future energy mix could be used to help finance the development of unproven emerging technologies as well as the early development phase of established projects that require large amounts of capital to reach FID.

³⁸ The Infrastructure Forum, The Future of the European Investment Bank in the UK, 2018, https://fea715ce-3c56-4c71-9893-f1a800dfb282.filesusr.com/ugd/d9a995_9e8ae46e9a6f44f89e1b0d23d0c271ee.pdf

43. In cases where there may be security issues on particular projects, such a Fund could, for example, oversee the terms of involvement of investors or financiers, including any banking covenants entered into by project developers or operators. Such covenants can have real significance in how projects and services are run once they become operational.
44. Like the £400m Charging Infrastructure Investment Fund (CIIF) and £800m Digital Infrastructure Investment Fund (DIIF); the proposed co-investment fund would be managed by a fund manager and joint investment decisions will be made via an agreed governance arrangement involving stakeholders. Seed asset (e.g. Sizewell C) can be included as part of the initial set-up (like InstaVolt in the case of CIIF) and fund life / investment period can be determined through mutual agreement.
45. Due to the high risk associated with development phase of projects, government may need to provide some down-side protection. How such a vehicle can spread its investment over a portfolio of projects should also be explored; pooling could further decrease risks, making it investible for capital with a lower risk appetite, including pension funds. A recent Legal & General report³⁹ suggested that pension funds could have the potential to pump a large amount of capital into UK infrastructure if government gained a renewed focus and commitment to collaborate with the private sector.
46. The Green Investment Bank (GIB) was an example of such a co-investment fund and initially was able to bring projects and private capital to the market in areas such as Energy from Waste (EfW) infrastructure. One of the main issues with the GIB was its terms of reference. It should have acted as a fall back for where the market would not go but instead it ended up going with the market rather than acting as the backstop. Avoiding this scenario would be highly important for a development fund. It would also be important for government to take a long term view a co-investment type model, whether fund or investment bank, rather than selling off its stake after a relatively brief period.

³⁹ Legal and General, The Power of Pensions, 2020. <https://www.legalandgeneralgroup.com/media/17854/legal-general-the-power-of-pensions-17-june-2020.pdf>



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