House of Commons
Energy and Climate Change Committee

Building New Nuclear: the challenges ahead

Sixth Report of Session 2012–13

Volume I

Volume I: Report, together with formal minutes, oral and written evidence

Additional written evidence is contained in Volume II, available on the Committee website at www.parliament.uk/ecc

Ordered by the House of Commons to be printed Tuesday 26 February 2013
The Energy and Climate Change Committee

The Energy and Climate Change Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of the Department of Energy and Climate Change and associated public bodies.

Current membership

Mr Tim Yeo MP (Conservative, South Suffolk) (Chair)
Dan Byles MP (Conservative, North Warwickshire)
Barry Gardiner MP (Labour, Brent North)
Ian Lavery MP (Labour, Wansbeck)
Dr Phillip Lee MP (Conservative, Bracknell)
Rt Hon Peter Lilley MP (Conservative, Hitchin & Harpenden)
Albert Owen MP (Labour, Ynys Môn)
Christopher Pincher MP (Conservative, Tamworth)
John Robertson MP (Labour, Glasgow North West)
Sir Robert Smith MP (Liberal Democrat, West Aberdeenshire and Kincardine)
Dr Alan Whitehead MP (Labour, Southampton Test)

The following members were also members of the committee during the parliament:

Gemma Doyle MP (Labour/Co-operative, West Dunbartonshire)
Tom Greatrex MP (Labour, Rutherglen and Hamilton West)
Laura Sandys MP (Conservative, South Thanet)

Powers

The Committee is one of the departmental select committees, the powers of which are set out in House of Commons Standing Orders, principally in SO No 152. These are available on the Internet via www.parliament.uk.

Publication

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the internet at www.parliament.uk/ecc. A list of Reports of the Committee in the present Parliament is at the back of this volume.

The Report of the Committee, the formal minutes relating to that report, oral evidence taken and some or all written evidence are available in a printed volume. Additional written evidence may be published on the internet only.

Committee staff

The current staff of the Committee are Sarah Hartwell-Naguib (Clerk), Liz Bolton (Second Clerk), Jenny Bird (Senior Committee Specialist), Tom Leveridge (Committee Specialist), Luanne Middleton (Inquiry Manager), Shane Pathmanathan (Senior Committee Assistant), Jonathan Olivier Wright (Committee Assistant), Joe Strawson (Committee Support Assistant), and Nick Davies (Media Officer).

Contacts

All correspondence should be addressed to the Clerk of the Energy and Climate Change Committee, House of Commons, 7 Millbank, London SW1P 3JA. The telephone number for general enquiries is 020 7219 2569; the Committee’s email address is ecc@parliament.uk
# Contents

## Report

<table>
<thead>
<tr>
<th>Summary</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Introduction</strong></td>
<td>5</td>
</tr>
<tr>
<td>Context of the inquiry</td>
<td>5</td>
</tr>
<tr>
<td>Our inquiry</td>
<td>6</td>
</tr>
<tr>
<td><strong>2 Nuclear new build in the UK</strong></td>
<td>7</td>
</tr>
<tr>
<td>Plans for nuclear new build in the UK</td>
<td>7</td>
</tr>
<tr>
<td>Consequence of failing to deliver new build</td>
<td>7</td>
</tr>
<tr>
<td>Will the new nuclear programme be delivered?</td>
<td>9</td>
</tr>
<tr>
<td>Lessons from other countries</td>
<td>9</td>
</tr>
<tr>
<td>Is a Plan B needed?</td>
<td>11</td>
</tr>
<tr>
<td><strong>3 Financing new nuclear</strong></td>
<td>13</td>
</tr>
<tr>
<td>Where will the money come from?</td>
<td>13</td>
</tr>
<tr>
<td>Barriers to raising finance</td>
<td>14</td>
</tr>
<tr>
<td>The Government’s solutions</td>
<td>15</td>
</tr>
<tr>
<td>Contracts for Difference</td>
<td>15</td>
</tr>
<tr>
<td>Generic Design Assessment</td>
<td>16</td>
</tr>
<tr>
<td>UK Guarantees Scheme</td>
<td>16</td>
</tr>
<tr>
<td>Alternative approaches</td>
<td>17</td>
</tr>
<tr>
<td><strong>4 Public attitudes</strong></td>
<td>19</td>
</tr>
<tr>
<td>Public opinion at the national level</td>
<td>19</td>
</tr>
<tr>
<td>Fukushima</td>
<td>19</td>
</tr>
<tr>
<td>Foreign ownership of nuclear power stations</td>
<td>20</td>
</tr>
<tr>
<td>Local level opinion</td>
<td>20</td>
</tr>
<tr>
<td>Building public support</td>
<td>21</td>
</tr>
<tr>
<td>Government leadership</td>
<td>21</td>
</tr>
<tr>
<td>Trust, understanding of risk, and risk governance</td>
<td>22</td>
</tr>
<tr>
<td>Community benefit</td>
<td>24</td>
</tr>
<tr>
<td><strong>5 Supply chain and skills</strong></td>
<td>26</td>
</tr>
<tr>
<td>Potential for bottlenecks and delays</td>
<td>26</td>
</tr>
<tr>
<td>Opportunities for UK businesses</td>
<td>27</td>
</tr>
<tr>
<td>Skills</td>
<td>28</td>
</tr>
<tr>
<td><strong>6 New technologies</strong></td>
<td>30</td>
</tr>
<tr>
<td>Thorium</td>
<td>30</td>
</tr>
<tr>
<td>Pebble bed reactors</td>
<td>30</td>
</tr>
<tr>
<td>Fast reactors</td>
<td>31</td>
</tr>
<tr>
<td><strong>7 Conclusion</strong></td>
<td>32</td>
</tr>
<tr>
<td><strong>8 Recommendations</strong></td>
<td>33</td>
</tr>
<tr>
<td>9</td>
<td>Annex 1: Summary of private session with Hitachi</td>
</tr>
<tr>
<td>10</td>
<td>Annex 2: Visit to Bridgwater and Hinkley Point C</td>
</tr>
<tr>
<td></td>
<td>Formal Minutes</td>
</tr>
</tbody>
</table>

**Witnesses**

**List of printed written evidence**

**List of additional written evidence**

**List of Reports from the Committee during the current Parliament**
Summary

As a low-carbon technology, nuclear power could play an important role in helping the UK to meet climate change and energy security goals. However, all but one of the existing power stations are due to close by 2023. New build is therefore crucial if nuclear power is to remain part of the UK’s energy mix in future decades.

If the projects currently under development are all delivered as planned, 16GW of new nuclear capacity will be added to GB’s electricity system by 2025. Without these power stations, it will be extremely difficult to meet our low-carbon obligations, and potentially more expensive too. A failure to deliver new nuclear would have a lesser impact on energy security, but could result in an increased use of gas to make up the shortfall. This could bring indirect security concerns if the UK were to become more dependent on imported gas as a result. Finally, if this tranche of new nuclear projects is not successful, it could undermine investor confidence in the sector, making it difficult (or impossible) to finance any subsequent attempts at nuclear new build.

Many stakeholders consider the plans to build 16GW by 2025 as “ambitious” at best and “unrealistic” at worst. Given the delays and problems that have dogged nuclear new build projects in neighbouring European countries it is worrying that the Government does not have any contingency plans in place for the event that little or no new nuclear is forthcoming. These should be developed as a matter of urgency.

Raising finance remains one of the biggest potential barriers to nuclear new build. We hope that the introduction of Contracts for Difference will help to reduce the policy and revenue risk associated with nuclear new build projects and thereby lower the cost of capital. Construction risk remains a problem for the nuclear industry and it was not clear to us exactly who will bear this risk in the UK; consumers, taxpayers or project developers. We seek to gain clarity on this aspect.

Public opposition to new build projects could also present a barrier. While there is overall support for new nuclear at the national level, attitudes at the local level can be more polarised. During our visit to Bridgwater, we discovered that local concerns focused much more on the disruption that would be caused by the construction process than on the risk of a nuclear accident.

There is scope to improve engagement with members of the public on issues regarding risk. The Office for Nuclear Regulation conducts some public engagement work, but this is separate from the planning process, although that is the process through which most members of the public will tend to engage with any new development. In addition, it is “one-way” in nature, rather than a two-way dialogue, which is a more effective method of risk communication. We would like to see better coordination between the ONR, Environment Agency and developers in their public engagement. We also believe there might be merit in establishing an independent advice service for communities living near to nationally significant infrastructure projects, since permission for these projects is granted by the Secretary of State, rather than local planning authorities. This service could support local communities in interpreting complex planning documents and improving
understanding of the process for obtaining planning permission.

The UK’s nuclear supply chain industry and skills base has withered significantly since Sizewell B was completed in 1995. A nuclear new build programme presents an opportunity to rebuild this industry and to create new job opportunities in the UK. However, potential suppliers to nuclear new build projects need to have a proper understanding of the safety and quality requirements associated with nuclear projects in order to take advantage of these opportunities. Stronger leadership from Government will help to build confidence and to attract workers into this sector of the economy.
1 Introduction

1. Around 19% of the UK's electricity generation is from nuclear power. However, all but one of our existing nuclear power stations are currently expected to close by 2023. As a low-carbon source of electricity, nuclear power could contribute towards the UK’s long-term climate change and energy security goals, but a new generation of nuclear plant will be required to deliver this.

2. Although the Government does not set deployment targets for particular types of electricity generation, The Department of Energy and Climate Change (DECC) has always supported the idea of a “balanced mix” consisting of renewables, nuclear and fossil fuel with carbon capture and storage (CCS) as the route to delivering its energy and climate change policy aims.

3. A number of steps to help facilitate nuclear new build in the UK have already been taken. These include the introduction of the Generic Design Assessment process (see chapter 2) and changes to the planning system for nationally significant infrastructure projects (including nuclear power stations). Most notably, the Energy Bill—before Parliament at the time of writing—will introduce a new system of long-term contracts for low-carbon electricity generators, which are intended to bring forward new investment in these projects.

4. The industry has set out plans to develop up to 16GW of nuclear power in the UK by 2025. Our inquiry was prompted by concerns that there may be barriers to delivering such a programme in the UK. We sought to identify these and to ascertain how they might be overcome.

Context of the inquiry

5. Shortly before we launched our inquiry, energy companies E.ON and RWE npower announced that they would not be proceeding with their plans to develop Horizon Nuclear Power. This was a joint venture between the two companies with proposals to build new reactors at Wylfa on Anglesey and Oldbury in Gloucestershire. The sale of Horizon was on-going throughout most of our inquiry. In late October 2012, it was announced that Horizon had been acquired by Hitachi Ltd.

6. The UK European Pressurised Reactor (EPR) design—which EDF plans to use for its new build project at Hinkley Point C in Somerset—was the first design to complete the new Generic Design Assessment (GDA) process. It was granted a Design Acceptance Confirmation in December 2012, shortly after we finished taking evidence for our inquiry.

---

1 DECC, Digest of UK Energy Statistics 2012, July 2012
2 See, for example, DECC, Electricity Market Reform: policy overview Cm 8498, November 2012, para 16 - 17
4 “UK regulators confirm acceptance of new nuclear reactor design” Office for Nuclear Regulation press release, 13 December 2012
7. EDF were in negotiations with DECC about the terms of the “Contract for Difference” that would be offered to Hinkley Point C under the new market arrangements set out in the Energy Bill. Although it was hoped that an agreement would be reached by the end of 2012, at the time of writing, no announcement has yet been made.

8. There was also a change of Minister of State for Energy during our inquiry. We were fortunate to hear from both Charles Hendry MP and John Hayes MP in the course of our inquiry.

**Our inquiry**

9. The National Audit Office provided a useful scoping note, which helped us to formulate the terms of reference for this inquiry.\(^5\) We are grateful for their input.

10. We received 34 submissions of written evidence and held four oral evidence sessions. A full list of witnesses can be found at the end of this report.\(^6\) We are very grateful to all those who have contributed towards this inquiry. We visited Bridgwater and the site for the proposed new reactor at Hinkley Point C, where we met with representatives from EDF, local councils and the local community. We also visited the Energy Skills Centre at Bridgwater College. We would like to express our thanks to all those who took the time to meet us and to impart their first-hand knowledge of the opportunities and challenges for building a new nuclear power station in the UK.

11. We invited Centrica to give oral evidence to our inquiry. However, they turned down our invitation without offering an explanation. We note that on 4 February 2013, Centrica announced its decision not proceed with new nuclear investment in power stations at Hinkley Point and Sizewell.\(^7\)

12. Dealing with nuclear waste is a complex subject. Given the limited time available in our inquiry programme, we were not able to look at this issue in any detail. Indeed, it would not be possible for us to address this important topic adequately without holding a dedicated inquiry into nuclear waste. We received several submissions stating that new nuclear should not go ahead until questions relating to long-term storage of nuclear waste and sea discharged radioactive waste have been resolved.\(^8\) After we had finished taking evidence, Cumbria County Council voted to withdraw from the process to find a host community for an underground radioactive waste disposal facility. As the last remaining Council taking part in this process, the question of long-term storage is now even more relevant than when we initiated our inquiry.\(^9\)

---

\(^5\) NAO, The nuclear energy landscape in Great Britain, April 2012
\(^6\) Page 43
\(^7\) “Centrica announces decision not to participate in UK nuclear new build and launches £500 million share repurchase programme”, Centrica press notice, 4 February 2013
\(^8\) Ev w7, Ev w39
\(^9\) “Energy Secretary responds to Cumbria nuclear waste vote” DECC press notice 13/010, 30 January 2013
2 Nuclear new build in the UK

13. Before exploring the potential barriers to nuclear new build in more detail, we start by examining the significance of failing to deliver new build projects as they are currently envisaged. In this section, we set out some of the key risks and challenges that will be encountered should planned new reactors not materialise. We also examine the likelihood that programmes will not deliver as planned.

Plans for nuclear new build in the UK

14. The Government does not have targets for the deployment of particular electricity generation technologies. However, DECC is clear that it believes that a mixed portfolio containing nuclear, renewables and fossil fuels with CCS will deliver a cost effective route to delivering on our climate change and energy security goals.10

15. The Government's Low Carbon Plan cites industry intentions to bring forward 16 GW of new nuclear power stations by 2025, with the first new power station beginning operation in 2019.11 The 16 GW consists of:

- proposals from EDF and Centrica to build four new reactors (with a total capacity of 6.4GW) at Hinkley Point;
- plans from NuGen (a consortium of GDF SUEZ and Iberdrola) to build up to 3.6GW of capacity at Moorside near Sellafield; and
- the Horizon Nuclear Power scheme to develop around 6GW capacity at Wylfa and Oldbury, now owned by Hitachi Ltd.12

Consequence of failing to deliver new build

16. The primary major consequence of failing to deliver new nuclear would be the impact on the UK’s ability to reduce carbon emissions and thereby tackle climate change.13 The impacts on energy security are likely to be less severe (see paragraph 19). Mr Earp (Institution of Civil Engineers) told us that it might be impossible to meet the UK’s climate change targets without new nuclear.14 However, environmental NGOs Greenpeace and WWF-UK (who do not support the use of nuclear power) claimed that the targets could be achieved without new nuclear.15 Nick Butler (author of a blog on energy and power for the Financial Times) believed that “nuclear could be part of the story if the price is reasonable but it is not absolutely essential [for meeting carbon targets]”.16

10 EV 81
11 HM Government, The Carbon Plan: Delivering our low carbon future, December 201, pp 75-77
12 EV 81, Ev 93, Ev 118, Ev w21
13 EV 81, Ev w24, Ev w35, Q 173 [Mr Earp, Dr Fox], Q 328 [Mr Butler]
14 Q 173 [Mr Earp]
15 Ev w86, Qq 323-327 [Mr George]
16 Ev 118
17. Whether or not it is possible, it would certainly be much more difficult to achieve in practice. If there is little or no new nuclear, then much tougher action to reduce electricity demand will be needed, along with greater use of other low-carbon technologies. The scale of the challenge can be seen by comparing the difference between DECC’s “low cost” scenario as part of its 2050 pathway analysis, with the alternative scenario provided by Friends of the Earth. Under the “low cost” scenario, there is more than 40GW of nuclear power in 2050, along with 1,400 offshore and 4,400 onshore wind turbines in 2025, which fall to zero in the longer term as decommissioned sites are not replanted. Friends of the Earth’s scenario has no new nuclear but requires more than 10,000 offshore and 8,000 onshore wind turbines in 2050 (as well as greater effort on insulating homes).

18. Furthermore, DECC preferred a mixed energy portfolio including renewables, nuclear and fossil fuels with carbon capture and storage (CCS). Given the lack of progress that has been made to date in bringing forward CCS technology in the UK, the role for new nuclear in delivering on our decarbonisation goals seems likely to become even more significant.

19. If new nuclear capacity is not delivered as expected, some other measures will be needed to make up the resulting gap between demand and supply. Professor Steve Thomas (University of Greenwich) noted that gas, renewables and energy efficiency were all potential candidates for this task. Since any of these options could be delivered more quickly than a new nuclear power station, failure of the nuclear programme should not pose an immediate threat to energy security. However, greater use of gas could introduce new challenges for energy policy. Most obviously, increased use of unabated gas would make it much more difficult to meet carbon targets. There may also be energy security implications if the UK was to become more dependent on imported gas (but this risk could potentially be mitigated by increased use of domestically produced shale gas).

20. DECC argued that if offshore wind and CCS were used to make up for any shortfall in nuclear delivery, there would be adverse cost implications for consumers. It estimated that the cancellation of the nuclear programme would lead to a welfare reduction of £22 billion relative to a baseline scenario where plants are deployed in line with lowest cost in order to meet renewables targets, decarbonisation and energy security objectives.

21. We conclude that while the cancellation or reduction of the UK’s new nuclear programme may cause challenges for energy security, it would have a much more

---

17 Other example pathways include: “doesn’t tackle climate change”, “maximum demand, no supply”, “maximum supply, no demand”, “analogous to MARKAL 3.26”, “Higher renewables, more energy efficiency”, “Higher nuclear, less energy efficiency”, “Higher CCS, more bioenergy”, “Campaign to Protect Rural England”, “Mark Brinkley”, “National Grid” and “Atkins”.


19 Ev w30

20 Ev w30, Ev 111

21 Ev 81

22 Q 173 [Mr Earp, Dr Fox]

23 Ev 81 – DECC explained that: “These results are influence by three targets: (i) meeting the renewables obligation target of 110TWh of renewable generation in 2020; (ii) meeting an assumed decarbonisation target of a grid intensity of 100gCO2/kWh by 2030 (it is recognised that this target is not agreed across Government); and (iii) keeping the de-rated capacity margin above 10% by using a strategic reserve capacity mechanism.”
significant impact on the UK’s ability to meet carbon reduction goals, making our legally-binding long term targets extremely challenging, if not impossible to meet.

22. Failing to deliver the first tranche of nuclear new build could also undermine confidence among potential investors and make it much more difficult to secure funding for further rounds of new build (this is explored in more detail in chapter 3).24

23. We also conclude that failing to deliver the 16GW new build that is currently under development could undermine any hopes of developing new funding models for subsequent nuclear new build. This would make it likely that future projects would not be able to raise the necessary capital, raising the prospect that it would not be possible to build any further nuclear plant without state funding (see paragraph 45).

Will the new nuclear programme be delivered?

24. Despite the Department’s apparent confidence that the 16GW figure will be delivered, a number of witnesses suggested that the Government was overly optimistic. The Civil Engineering Contractors Association told us that the Government’s indicative timeline for new nuclear was “unrealistic”, while Greenpeace believed it was “increasingly unlikely that any nuclear reactors will be built before 2025”.25 The Institution of Mechanical Engineers said that the Government was taking “a courageous approach to its policy” by relying entirely on the market to deliver new nuclear capacity to its preferred timescale.26

Lessons from other countries

25. Many witnesses thought that experiences elsewhere in Europe could give an indication of how new build in the UK might progress. New EPRs (European Pressurised Reactors) are being constructed at Flamanville in France and Olkiluoto in Finland. Both projects have suffered significant delays and cost overruns.27 EDF is planning to use the same reactor design for its project at Hinkley Point C and some witnesses had little confidence that similar delays would be avoided in the UK.28 On the other hand, representatives from the nuclear industry pointed out that a new EPR was also being built in China and that this project was currently running on time and to cost (although EDF did acknowledge the significant differences in the regime in China compared with those across Europe).29

26. EDF argued that the Flamanville reactor is “first of a kind” and that “it is not unusual for such projects to incur additional costs, and take longer, than follow-on plants built to the same design”.30 EDF claimed it will incorporate learning from other EPR projects (including those in Finland and China) into any UK construction projects.31 NuGen said it

24 Ev 91
25 Ev 102
26 Ev 111
27 NAO, The nuclear energy landscape in Great Britain, April 2012
28 Ev w30, Ev w86, Ev 102
29 Ev 93, Ev w8, Ev w24,
30 Ev 93
31 Ev w24
Building New Nuclear: the challenges ahead

was also “committed to learning lessons from other programmes as we develop our project towards a final investment decision”.32 Horizon told us in written evidence that “should Horizon develop reactors in the UK that have been deployed elsewhere in the world, a high priority will be placed on incorporating detailed lessons learned from specific projects to minimise first of a kind design risks”.33 Horizon was acquired by Hitachi during the course of our inquiry, and now plans to use the Hitachi-GE Advanced Boiling Water Reactor (ABWR) design for its UK new build projects. The design has already been built in Japan and Taiwan and is licenced in the USA. We note that the ABWR reactors in both Japan and Taiwan were built on time and to budget.

27. Engineering the Future (the alliance of professional engineering institutions) published a report “Nuclear Lessons Learned”, which sets out detailed lessons that can be learnt from current and recent nuclear new build projects. It includes studies of the Flamanville and Olkiluoto projects, as well as projects in China and the UK.34 Witnesses from engineering institutions told us that these lessons had so far been adopted in plans for new nuclear build in the UK, in particular through the development of guidance documents for the industry on concrete, welding and safety culture.35

28. The introduction of the Generic Design Assessment (GDA) process also demonstrates that lessons from overseas have been taken on board. In France and Finland, construction began before the regulatory design and safety case assessment had been fully completed.36 This resulted in modifications being introduced during construction in order to meet regulatory requirements, which in turn led to delays. The GDA process is a voluntary process that allows the Office for Nuclear Regulation (ONR) and the Environment Agency to carry out an early assessment of the safety, security and environmental aspects of nuclear reactor designs before their consideration of licence and permit applications.37 This enables issues to be identified and corrected at the design stage, rather than during construction.38 The UK EPR reactor design is the first to have completed the GDA process and was granted a Design Acceptance Confirmation in December 2012.39 The Hitachi-GE ABWR design has recently begun the GDA process, which is likely to last four to five years.40

29. Although Hinkley C will not be the first EPR reactor in the world and nor will Horizon’s projects at Wylfa and Oldbury be the first ABWR reactors, they will nevertheless be the first of these reactors in the UK context. While there may well be lessons that can be learnt from experience overseas, these projects will still encounter challenges that are unique to the UK. Differences in working cultures, geography and regulatory regimes between countries mean that these projects should still be considered quasi “first of a kind”

---

32 Ev 118
33 Ev w21
34 Engineering the Future, Nuclear Lessons Learned, October 2010; Ev 111, Ev 109
35 Q 176 [Mr Earp]
36 Ev 122, Ev 109, Ev 100
37 NAO, The nuclear energy landscape in Great Britain, April 2012, Ev 100
38 Ev 122
39 “UK regulators confirm acceptance of new nuclear reactor design” Office for Nuclear Regulation press release, 13 December 2012
40 “Regulators to assess new nuclear reactor design” ONR press release, 15 January 2013; Qq 368-378; Annex 1
developments. As Hitachi told us, it is unlikely that the first ABWR reactors in the UK will be built as quickly as they have been in Japan because it will take time to identify the implications of the differences between the UK and Japan.\footnote{Annex 1} Vincent de Rivaz (EDF) also told us:

> We are starting a new first of a kind project in Somerset, taking into account all the elements that we have to take into account—what the safety authority is asking for, the regulations that you have in this country and the site specifications. The project in Somerset is not the same project as elsewhere.\footnote{Q 248}

30. **We commend both the Government and industry in their efforts to date to learn lessons and adopt best practice from nuclear new build projects in other countries.** It is still early days for new build projects in the UK, so it will be important to keep monitoring developments elsewhere in the world for emerging lessons and ideas that could be adopted in the UK.

31. **We note that the first new nuclear power plants in the UK are likely to take longer to build than subsequent plants of the same design.** This is because while some lessons can be learnt from experience overseas, differences between the UK context and other countries will mean these projects should still be considered “first of a kind” initiatives.

32. In the rest of this report, we look at some of the principal challenges for the nuclear new build programme and how these might be mitigated in order to ensure the best possible chance of delivering 16GW by 2025 as planned.

**Is a Plan B needed?**

33. The Government does not appear to have any contingency plans in place in case new build is not forthcoming.\footnote{Ev 111, Ev 102} Although we asked the Minister whether there were any such plans, he merely proclaimed his confidence that the new build programme would be delivered.\footnote{Qq 51, 444}

34. Several witnesses suggested what a “Plan B” might consist of. Greenpeace recommended that it should be based on the four principles of “demand reduction and management, expansion of renewable generating capacity, flexibility and an integrated power and heat policy, especially in the industrial sector”.\footnote{Ev 105} Energy and Infrastructure Project Finance thought it could consist of a short- to medium-term programme of gas turbines, combined with increased funding for research into next generation nuclear technologies (see chapter 6).\footnote{Ev w11}
35. The Government is taking steps to facilitate and encourage new build nuclear in the UK but the final decisions to go ahead or not will be taken by boardroom executives rather than Ministers. Given that ultimately these decisions are beyond the Government’s control, it is worrying that DECC does not have any contingency plans in place for the event that little or no new nuclear is forthcoming. Crossing one’s fingers is not an adequate or responsible approach when the UK’s legally binding climate change commitments and energy security are at stake. For a department whose principal priorities are to ensure energy security and carbon reductions, DECC appears to be overly reliant on aspiration and hope. While we share the Minister’s hope that new build will be delivered as planned, we nevertheless recommend that DECC begins exploring contingency options as a matter of urgency.
3 Financing new nuclear

36. At the most recent estimate, the price for each reactor at Hinkley Point C was expected to be £7 billion. In the current economic climate, finding such large sums of money is difficult. In this section we explore how new nuclear projects might be financed and what steps the Government can take to encourage investment into the sector.

Where will the money come from?

37. There are three main options for financing new nuclear power stations:

- Funding raised by governments (or state-owned utilities);
- “on balance sheet” funding where private power companies (or consortia) raise new debt and/or equity against their whole asset base; and
- “project financing” where private companies borrow debt for a specific project where the debt is linked to the revenue generated from the project (rather than being linked to the corporate sponsor).

38. To date, the vast majority of nuclear power stations around the world have been funded either by governments or on balance sheet. Energy and Infrastructure Finance highlighted two examples of nuclear power stations that had been funded through a project financing model (EDF’s Dunkerque plant and Olkiluoto-3 in Finland) but suggested that both of these instances could be considered as special cases.

39. DECC expects that the first new nuclear plant in the UK will be funded on balance sheet but also recognises that “it is considered unlikely that large scale and rapid expansion of nuclear generation involving multiple parallel build could be financed in this way.” This is because most European utility companies are not currently in a position to take on large amounts of debt. RWE npower’s outgoing Chief Executive, Volker Beckers, confirmed this view, telling us that “it is very clear that without the financial sector, the energy sector alone is not able to stem all these required investments.” In other words, if there is to be a large amount of new nuclear in the UK (more than the 16GW that is currently on the table) then we cannot rely on large utilities to deliver this investment through balance sheet funding. It is worth noting that under DECC’s “low cost” 2050 Pathways scenario, there is more than 40GW of nuclear power in 2050.

47 Ev w30, Ev w8, Ev w86
48 The Dunkerque plant supplies a local aluminium smelter and debt was secured against cash-flows relating to the operation of this plant, rather than revenue for the nuclear power station. Olkiluoto-3 is not yet operational. Ev w11
49 Ev w11
50 Ev w11
51 Mr Beckers stood down as CEO in January 2013 and was succeeded by Paul Massara.
52 Q 11
53 http://2050-calculator-tool.decc.gov.uk
40. The cheapest source of funding for the construction of new nuclear power plants would be the UK government (the plant could then be sold to a utility company once operational). This is because with its very good credit rating, the Government can borrow money at a cheaper rate than the private sector and therefore the overall cost of projects will be lower. However, we recognise that this approach is not compatible with the Coalition’s current policies. This means that it is likely that without a change of heart within Government project financing will be required for future new nuclear power plant in the UK.

**Barriers to raising finance**

41. There are a number of risks that may act as barriers to raising finance for new nuclear power stations. These include revenue risk, policy risk, and construction risk.

42. Revenue risk occurs because nuclear power stations have high upfront costs. Investors need confidence that the price for electricity generated over the lifetime of the plant will be sufficient to ensure a return on their investment.54

43. Policy risk is the danger that future policy changes might impact on the profitability of a project. For example, changes to rules on carbon emission targets or to the carbon price in the future could affect the profitability of nuclear plant over the course of its lifetime.55

44. The possibility of delays and cost overruns during the construction phase is known as “construction risk”. Unfortunately, the nuclear industry does not have a good record in this area.56 Many witnesses highlighted the on-going new build projects at Flamanville (France) and Olkiuoto (Finland) where costs have almost doubled from the original budgets and completion dates have slipped by at least four years.57 However, as noted in chapter 2, an EPR reactor has been delivered on time and to budget in China.

45. The success or otherwise of the first new nuclear power plant built in the UK could have a significant impact on subsequent plant. DECC told us that “if the first new nuclear plant are built to time and cost in the UK this could open up different sources and approaches to financing the construction phase of nuclear plant in the UK”.58 Of course, the reverse is also true; if the kinds of delays and cost overruns that have been witnessed at Flamanville and Olkiuoto were to occur in the UK, this could close down the possibility of raising project finance for subsequent projects because the construction risk would be too great for investors to contemplate.59

54 Ev w30
55 Ev w36, Ev w35
57 NAO, The nuclear energy landscape in Great Britain, April 2012, p 33, Ev w28, Ev w30, Ev w38, Ev w86, Ev 102
58 Ev 81
59 Ev 81, Q 339 [Mr Butler]
The Government’s solutions

Contracts for Difference

46. The Government has set out plans to reform the electricity market through the Energy Bill 2012, which at the time of writing had completed the Committee Stage in the House of Commons. This includes the introduction of Contracts for Difference (CfDs), which will address both revenue and policy risk by guaranteeing long-term prices for the energy generated from nuclear power stations through private law contracts (which cannot be changed retrospectively by future governments). We commented extensively on these proposals in our pre-legislative scrutiny of the Energy Bill.60

47. There is a great deal of uncertainty about the so-called “strike price” for new nuclear (the price that generators will receive for each unit of energy produced). At the time of writing, the Government was still in negotiations with EDF over the strike price level for Hinkley Point C (despite the Minister’s hope to have reached an agreement by the end of 2012).61 Some witnesses believed that the Government was not in a strong negotiating position and that there was a perverse incentive for EDF to inflate costs in order to receive a higher strike price.62 Vincent de Rivaz (EDF) rejected this accusation, arguing that “if I was increasing the cost to get a strike price that would not be competitive, I would be saying that nuclear is not competitive, that is not my job, I am in the job to demonstrate that nuclear is competitive.”63 The Minister appeared to be convinced by this argument.64 When pushed to give an indication of the level of strike price EDF was seeking, Mr de Rivaz told us that the figure of £140/MWh was “rubbish”, but would not comment on the figure of £100/MWh.65 Nick Butler (author of a blog on energy and power for the Financial Times) thought that “£100 [per megawatt hour] would be the absolute top band” and that “That figure [£100/MWh] is valid if supported by an open demonstration of the cost calculations but must include a complete and unequivocal acceptance of all the risks by the plant operators. It would be unacceptable to find that such a figure had been agreed and then discover that the risks had been transferred to the taxpayer or the consumer.”66

48. We note that the President of the Sustainable Development Committee in the French Assemblée Nationale, Jean-Paul Chanteguet, is reported to have stated that the revised build cost of Flamanville is expected to deliver a price for electricity at €74/MWh. It will be important to establish whether this is directly comparable to the UK context in relation to the ongoing negotiations for the strike price for Hinkley Point C.

61 Q 421 [Mr Hayes]
62 Ev w8, Q 353
63 Q 254
64 Q 421 [Mr Hayes]
65 Qq 236-238
66 Ev 118, Q 331
49. We support the introduction of Contracts for Difference as a way of reducing revenue and policy risk for nuclear new build projects. However, new nuclear should not be delivered if the price is too high. It is essential that any contract represents value for money for the consumer. We reiterate the recommendation made in our pre-legislative scrutiny of the draft Energy Bill that at the very least, the nuclear strike price should not be higher than that given to offshore wind, which is hoped to be around £100/MWh by 2020. We further note that other low-carbon technologies are likely to receive strike prices significantly below this level and that nuclear will need to offer advantages compared with these technologies if it is to deliver good value to consumers.

50. Transparency about how the nuclear strike price will be set is still a major area of concern. Even though Mr de Rivaz took issue with the notion of discussions in “smoke filled rooms”, several witnesses were not reassured.67 Supporters of Nuclear Energy were concerned that the process might present a reputational risk for nuclear power in general.68 Nick Butler told us:

I think we need real transparency in what they are asking for in terms of support prices and where that is going to feed through to consumers. I think this should be an open discussion, rather than done in what somebody said was a smoke filled room. It should be an open exchange of what the data is and who is going to take the risks if the costs are higher.69

51. Both EDF and the Minister insisted that the outcome of the negotiations would be transparent.70 We make our recommendation on this matter in paragraph 58, below.

**Generic Design Assessment**

52. The Generic Design Assessment process (described in paragraph 28) should help to reduce construction risk because it will lessen the chances of design changes being made after construction has begun (see paragraph 28).

**UK Guarantees Scheme**

53. The UK Guarantees Scheme was announced by the Chancellor of the Exchequer and Chief Secretary to the Treasury in July 2012. The Government hopes the scheme will help to encourage private sector investment in infrastructure projects, in part by reducing construction risk. The aim is to give investors confidence that the Government will step in if projects go wrong by providing expenditure and liabilities on financial assistance of up to £50 billion in support of infrastructure investment. This includes not only the provision of guarantees, but also loans or “any other kind of financial assistance (actual or contingent)”.71 Humphrey Cadoux-Hudson (EDF Energy) told us that the scheme “could

---

67 Ev w37, Qq 231 - 234
68 Q 311
69 Q 328
70 Qq 238, 286, 422-3, 432-3
71 Infrastructure (Financial Assistance) Bill, Research Paper 12/54, House of Commons Library, 12 September 2012
be a very important element of the financing [of Hinkley Point C].” We note that press reports published after we had finished taking evidence suggested that EDF was indeed exploring whether the UK Guarantees scheme could help to support the Hinkley Point C project. Rupert Steele (Scottish Power/Iberdrola) said “When we [NuGen] get to [final investment decision] stage, around 2015, then the Government’s guarantee scheme will no doubt be one of the things that we will look at along with other options.”

54. The UK Guarantees scheme may help to bring forward investment in Hinkley Point C, but it is not clear whether support will still be available for nuclear new build projects that are further away from making a final investment decision (such as the NuGen and Horizon projects). Given the important role for nuclear generation in the UK’s future energy mix, the Government should extend this support to all nuclear new build projects, which may require increasing the amount of available assistance to more than £50 billion. (We note that the UK Guarantees scheme does not involve expenditure, as long as the guarantees are not called in.)

Alternative approaches

55. Professor Steve Thomas (University of Greenwich) suggested that the only way to deal with construction risk was through “full cost pass-through to consumers. In the UK context, this could be done through escalators in the CfDs so that if construction costs did overrun, the price paid would cover these additional costs”. Greenpeace agreed that “investors want cast-iron guarantees that bill payers will pick up the tab when the nuclear industry does not deliver what it promised”.

56. Mr de Rivaz told us EDF was not asking for construction risk to be taken into the Contract for Difference and stated very clearly that “we are not asking the consumers to take the construction risks”. Rupert Steele (Scottish Power/Iberdrola) was more equivocal and said “it will either be necessary to allow for that [construction risk] in the strike price or to have some kind of adjustment mechanism”.

57. When we asked the Minister whether construction risk would be reflected in the Contracts for Difference, he told us that “there will be a price deal, clearly, but there will also be a negotiation around costs, because exactly the point you have made is the point that any commercial organisation would make in these circumstances”. However, he later went on to add “there is certainly going to be no fundamental difference between the approach we take to nuclear and the approach we take to other generating types”. We take this to mean that construction risk will not be incorporated into CfDs for nuclear.

72 Q 202 [Mr Cadoux-Hudson]
73 “EDF seeks state backing on nuclear site”, Financial Times, 11 February 2013
74 Q 202 [Mr Steele]
75 Ev w30
76 Ev 102
77 Q 195 [Mr de Rivaz], Q 202 [Mr de Rivaz]
78 Q 195 [Mr Steele]
79 Q 423 [Mr Hayes]
80 Q 428 [Mr Hayes]
58. As discussed in paragraphs 50-51, above, there is still a great deal of concern about the level of transparency of the strike price negotiations between nuclear developers and the Government. Although Mr de Rivaz told us that construction cost overruns would not be incorporated into the strike price for the Hinkley Point C project, the Minister was less clear on this point. We urge the Government to set out in its response to this report who is going to take the risk of construction costs being higher than anticipated: consumers (by incorporating this risk into Contracts for Difference), taxpayers (through the UK Guarantees scheme) or project developers.

59. An alternative solution to the problem of raising finance for new nuclear power stations was suggested by Energy and Infrastructure Project Finance, who argued that if the nuclear industry could offer units of a smaller size (perhaps comparable with the size of a typical modern gas-fired power plant), then the amount of capital required would be less and hence the financing difficulties would be diminished.81 We note that there have recently been reports in the press of other countries, including Russia and China, trying to develop a small, modular reactor.82 Witnesses from the engineering institutions told us about a South African design for a 160MW “pebble-bed” reactor, which could be used individually or combined into “four pack” or “six pack” clusters, which would generate similar amounts of power to a conventional large nuclear power station.83 New technologies, such as the pebble bed reactor, are covered in more detail in Chapter 6.

60. We recommend that DECC monitors progress toward developing small nuclear reactors, so that the possibility of including these as part of the UK energy mix remains open.

---

81 Ev w11
82 “Nuclear energy: Flexible fission”, Financial Times, 14 February 2013
83 Q 191 [Mr Earp]
4 Public attitudes

61. Public attitudes towards new energy projects are becoming an increasingly important factor in energy policy. There is no form of energy that is without its opponents; from campaigners against new wind farms to the anti-fracking lobby. Nuclear is no exception and public hostility towards new nuclear power stations could put the brakes on their development. In this section we examine attitudes towards new nuclear and explore ways in which concerns might be allayed.

Public opinion at the national level

62. EDF’s submission cited a recent poll, which showed that 66% of people thought that nuclear should be part of the energy mix. The figure, however, must be qualified because for many people, support for nuclear is conditional. This issue was explored recently by the House of Commons Science and Technology Committee. Professors Pidgeon and Henwood told us:

A closer look at the national data shows a more complex picture, however, with a large proportion of recent support remaining conditional - a ‘reluctant acceptance’ at best. While many more in Britain have indeed come to support nuclear power over the past decade they do so while viewing it only as a ‘devil’s bargain’, a choice of last resort in the face of the threat of climate change and energy security concerns. Given the choice individuals still show very clear preferences for renewable electricity generation over both nuclear and conventional fossil fuels.

Fukushima

63. Several witnesses noted that the Fukushima incident does not appear to have had a big impact on UK attitudes towards nuclear power. NuGen attributed this to “the sensible and measured approach to Fukushima in the UK”. Professor Pidgeon believed that a combination of factors, including the way the incident was reported in the British press, the fact that Japan is a long way away from the UK and the good track record of nuclear safety in this country, could explain the absence of impact on UK opinion.

64. While Fukushima has not affected overall levels of support for new nuclear, the salience of accident risk has increased. Sedgemoor District Council said that Fukushima had had a

---

84 Ev 93
86 Ev 125
87 Ev w35, Ev 118
88 Ev 118
89 Q 139
90 Ev 125
significant impact on local perceptions, suggesting that “perceptions of risk have undoubtedly risen”. Professor Pidgeon explained:

[I]t is not that people believe the likelihood is any different. It is that their thoughts are now focused on what might happen if it goes wrong, and the implication of that is that another conversation has to be had about the implications of an accident. So what would you do, who would you evacuate, and what are the contingency arrangements? Who would be responsible for paying if you had a large accident at a site like Hinkley Point? That is a conversation that probably wouldn’t have been had 18 months ago and that probably has to be had now.92

**Foreign ownership of nuclear power stations**

65. As mentioned previously, the Horizon project was put up for sale shortly before we launched our inquiry. As a result, there was a great deal of speculation throughout the course of our inquiry about who might buy Horizon. Media reports suggested that two Chinese state nuclear corporations, Russian-owned Rosatom and Japanese-owned Hitachi were interested in putting forward bids for Hitachi.93 In the end, Hitachi was successful.

66. It is not clear whether the entry of non-European players into the UK nuclear sector might have an impact on public opinion. We heard some speculation that it might, particularly if there was a perceived connection with Fukushima.94 There appears to have been very little (if any) research in this area to date so it is difficult to provide anything more than conjecture at this stage.

67. European ownership does not seem to have any negative impacts on public perceptions. The fact that EDF is French-owned (and part-owned by the French State) has not had any discernible negative effects on attitudes towards the proposed new reactor at Hinkley Point C.95 We note that following Centrica’s decision not to proceed with investment in Hinkley C, there has been speculation that a state-owned Chinese company might now join the consortium in Centrica’s place.96

**Local level opinion**

68. Although there may be broad support for new nuclear at the national level, the views of the local communities living near to new plants do not necessarily mirror the national picture.97 Professor Pidgeon told us that opinion tends to be more polarised at the local level, and can also be affected by geography:

---

91 Ev 130
92 Q 142
93 “Doubts mount over UK’s nuclear energy future” The Telegraph, 21 August 2012
94 Ev 111
95 Q 110, Q 121 [Mr Brown]
96 “Centrica nuclear exit opens door to China”, Financial Times, 4 February 2013
97 Ev 125
There is the phenomenon that people who live very close in, in this 10 to maybe 15-mile radius, are more positive than in the national polls, although again that is more complicated because they are a bit more polarised as well. […] Interestingly, as you move out, […] you tend to get more opposition than in national polls. Geography also matters greatly as well, […] An interesting one is Bradwell, […] Across the water in West Mersea there has been very strong opposition for years and years and years. Even though they are quite close, because the station is visible, they do not benefit from any of the local jobs because they are a long way around the estuary there, and they feel they just get all the potential risks if something went wrong.

69. Since new build sites are all adjacent to existing nuclear facilities, the local communities have experienced the UK’s good nuclear safety record first hand and are likely to have friends or family who work in the industry. This might explain the higher levels of support that are found immediately adjacent to new build sites. The potential jobs and economic benefits associated with new build projects are a clear driver of support at the local level.

70. Where concerns do arise, they tend to be more focused on the disruption caused by the construction process rather than the risk of a nuclear accident. We were struck during our visit to Hinkley Point C and Bridgwater that representatives from local parish councils focused entirely on how noise and disruption from the construction of Hinkley C might be mitigated or compensated for, and how the associated influx of workers to the area might be managed so as to maximise benefits to the local area. At no point did they raise “in principle” concerns about nuclear power, nor did they suggest that the risk of a nuclear accident was something they were worried about.

**Building public support**

**Government leadership**

71. Supporters of Nuclear Energy (SONE) argued that in order to build support for new nuclear, stronger leadership from Government was needed and that the case for new nuclear power in the UK should be made more explicitly. Although large companies like EDF already have confidence in the Government’s position, SONE felt that more needed to be done to make the position clear to members of the public. Sir William McAlpine told us

> What we do not get is the full support of all parties saying, “What we need, the answer to this country’s fuel problems, is nuclear”—if they believe it. There seems to be this terrible feeling that it is not popular in the country and there are no votes in it—this is me being cynical—and therefore it is not worth pushing it.

---

98 Ev 125, Q 142 [Mr Brown]
99 Q 106 [Mr Jones], Qq 122-123 Mr Jones
100 Annex 2
101 Ev 135
102 Q 305 [Sir William McAlpine]
72. The industry trade association agreed with this view and argued that “it is vital that the Government continues to be unequivocal about the energy challenge, presenting the case for nuclear in an objective way, and that it is seen to be acting in the best interests of both the UK electorate and electricity consumers”\(^{103}\). The Institute of Physics also thought that Government should do more to publicly stress the differences between UK nuclear power sites and those affected by the tsunami at Fukushima\(^{104}\).

**Trust, understanding of risk, and risk governance**

73. Perceptions of the potential hazards associated with nuclear power stations play an important role in public attitudes towards new build projects. While knowledge of hazards and the probability with which they might occur (risk) is important, it is not the only factor that can affect people’s concerns. Other elements include:

- the level of *control* people feel they have over a particular hazard;
- the extent to which relevant decision makers, regulators and industries are *trusted*; and
- the *affective* properties of a hazard – whether it promotes a feeling of insecurity or fear\(^{105}\).

74. This means that while boosting understanding of the hazards and risk associated with nuclear power may help to alleviate fears about new build to some extent, knowledge alone is unlikely to be sufficient to overcome opposition\(^{106}\).

75. Professors Pidgeon and Henwood argued that dialogue was an important part of risk communication\(^{107}\). At the moment, there is not an obvious forum in which members of the public can have a dialogue about how risk will be managed with developers. The most obvious point of engagement for local communities is the planning process but questions of risk management fall outside the scope of this process\(^{108}\). Professor Pidgeon explained:

> There is a disconnect in the sense that it is not necessarily the developer’s responsibility to engage on this [risk management]. The local council do not have the resources to do it, and HSE [Health and Safety Executive] and the ONR [Office for Nuclear Regulation], the nuclear regulator, is in some sense removed from that local process. We do not have a process whereby we could have a conversation about that critical issue with local communities.\(^{109}\)

76. The regulators responsible for managing health and environmental risks (the Office for Nuclear Regulation—the ONR— and the Environment Agency respectively) do enjoy a
relatively high level of trust among members of the public. Dr Hall (Acting Chief Nuclear Inspector of the ONR) told us that his organisation engages with the local communities in a number of ways. These include a local community liaison council that meets every six months to provide reports about activities to members of the local community, attending public debates, publishing documents on the ONR website and providing an e-bulletin to people who sign up online. However, most of these activities appear to be one-way communications, from the “expert” to the “public”, rather than a genuine two-way dialogue, as advocated by Professors Pidgeon and Henwood.

77. In addition, there is a further problem in that the technical consenting regimes are a separate process to the planning regime. While members of the public may be familiar with the planning process, they tend to be less well acquainted with the consenting regime and how they can engage with it. This can lead to confusion and frustration, as Mr Jones (New Nuclear Local Authorities Group) noted:

> We are very concerned that ONR is going to turn up in our local community and say something, because it is not aware of the process that we have been through for the last three and a half years, that will unsettle the community or move them back a step […] We hope that when they come to our local area and when they come to any local area they will be cognisant of what has gone on and be very aware of what the key issues are and how they will deal with them. But there is genuinely nothing more frustrating than someone turning around to the local community and saying on risk, for example, “I am very sorry, the planning inspectorate or the local authority can’t consider risk. That is a matter for ONR, who are coming to talk to you in a month’s time”.

78. It is important that local communities have an opportunity to engage in genuine dialogue about risk management with both the regulators and the developers. It is disappointing that there does not appear to be a natural forum for this kind of debate at present. The ONR and Environment Agency should plan their public engagement activities to coordinate better with the planning process, so that regulators and developers can be present at the same public meetings.

79. Dialogue between the developer and local community is also essential but not always easy to get right. It was apparent from our visit to Hinkley Point C and Bridgwater that EDF had made considerable efforts to engage with the local community and to try to alleviate the negative impacts of the construction process that local residents were concerned about. Indeed, Chief Executive Vincent de Rivaz cited the agreement of a section 106 deal with the local councils (under which EDF will pay £64 million on education, transport and housing projects to mitigate the local impacts of the construction process at Hinkley C) as proof that local engagement had been successful. Nevertheless, representatives from parish councils told us that they had been “underwhelmed” by EDF’s efforts to engage locally and had been left with the impression that they were not valued
partners in the dialogue. They felt at times they were being bamboozled by the large number of technical documents that were produced by EDF as part of the planning process. They also believed that the section 106 deal did not provide sufficient compensation to them for the disruption that the construction process would cause.\textsuperscript{114}

80. The planning process is by its nature very complex and technical, and this may be one of the reasons why local engagement is so difficult to get right. While developers have the in-house expertise to produce technical documents, local communities do not necessarily have the know-how to interpret them fully. In addition, they are likely to be working on their own submissions in their spare time, unlike developers who can pay staff to work full time on consultations.\textsuperscript{115} In the case of Hinkley C the local authorities were able to provide some support to parish councils to help them to participate more effectively in the planning process. We understand that this was possible because EDF contributed some financial resources to the councils for this purpose.\textsuperscript{116}

81. There is a mismatch between the capacity of developers and that of local communities to participate fully and effectively in the planning process, particularly where large, complex and technical projects such as building a new nuclear power station are concerned. The Government should consider whether it is possible to provide advice and support to local communities living near to nationally significant infrastructure projects in a more systematic way than the current approach, which depends heavily on individual local authorities. For example, an independent advice service for communities living near to any nationally significant infrastructure project could be established. It could help local communities with interpretation of technical documents and provide advice on what types of compensation might be permitted under Section 106 agreements. It could be funded by levy on developers submitting applications to the Planning Inspectorate.

Community benefit

82. There was a suggestion from a number of witnesses who were involved in new build projects that local support would be more likely if there was a clear benefit to communities in new build areas.\textsuperscript{117} Jobs and new opportunities for local businesses to get involved in the supply chain are an obvious example of one type of potential benefit.\textsuperscript{118} We will discuss how opportunities for the local supply chain might be maximised in chapter 5. Many witnesses believed that the Government’s proposal to allow local authorities to keep the business rates from renewable energy projects should be extended to include nuclear energy projects too.\textsuperscript{119}

\textsuperscript{114} Annex 2
\textsuperscript{115} Ev 130
\textsuperscript{116} Annex 2
\textsuperscript{117} Ev 93, Ev w24, Ev 114, Ev 130, Ev 118
\textsuperscript{118} Q 127 [Mr Jones]
\textsuperscript{119} Ev 93, Ev w24, Ev 130, Ev 118
83. The Government has argued that communities hosting renewable energy installations play a vital role in meeting a national need for secure, clean energy, and should be able to benefit from hosting such projects. The communities hosting nuclear power stations are contributing towards the same aims, and so it seems reasonable that they should also be able to benefit from hosting new-build projects. We recommend that Government extends the scope of its proposal to allow local authorities hosting renewable energy projects to retain business rates to include all forms of low-carbon energy (renewables, nuclear and carbon capture and storage).

84. The long construction period for nuclear power stations means that were such a measure to be introduced, communities living near to nuclear new build sites would not see any benefits for approximately 10 years (because business rates would only be paid once the plant started generating). The community representatives that we met during our visit felt that this was too long to wait, particularly since there would be some impacts from the construction process that could not be compensated for through the section 106 process (such as loss of amenity of gardens resulting from increased traffic on the roads).

85. Unlike renewables, nuclear power stations take a long time to build and therefore have the potential to cause considerable disruption to local communities for an extended period of time. Government should investigate whether it could be possible to provide any additional forms of community benefit during the construction period (beyond the compensatory measures already agreed to in the section 106 deal).
5 Supply chain and skills

86. The last nuclear reactor built in the UK was Sizewell B, which was completed in 1995.\textsuperscript{121} Since then much of the UK’s nuclear supply chain has withered away. Similarly, the population of skilled nuclear workers is aging. This presents both a challenge and an opportunity for a nuclear new build programme. The lack of an established and experienced supply chain might lead to delays, as might a shortage of a skilled workforce. However, there is also the possibility of new business opportunities and job creation.

Potential for bottlenecks and delays

87. There are some parts of the nuclear supply chain that are not available in the UK, for which we will be dependent on overseas suppliers. For example, there is no UK-based capability for fabrication of reactor pressure vessels, steam generators, large turbines and components from other large forgings.\textsuperscript{122} Neither is there a UK-based reactor designer/vendor.\textsuperscript{123}

88. Since the number of suppliers of these components is limited, there is the risk that bottlenecks and delays could occur if other countries placed orders for nuclear reactors at the same time as the UK.\textsuperscript{124} For example, in the case of the Areva EPR design, some very large forging for the reactor pressure vessel can only be made currently by Japan Steel Works.\textsuperscript{125}

89. One way to minimise the risk of delays is to ensure that orders are placed early, before other countries ramp up their own nuclear new build programmes. The NIA said “clearly it would help avoid potential bottlenecks if the UK were to be at the forefront of new build”.\textsuperscript{126} EDF was confident that orders for new UK EPR plants would be placed in advance of orders from other countries and would therefore avoid potential bottlenecks.\textsuperscript{127}

90. The Institution of Mechanical Engineers (IMechE) was concerned that the potential for peaks and troughs in the UK new build programme could lead to boom and bust for other parts of the supply chain. One consequence of this could be increased costs and/or delays if a several new build projects were to put simultaneous demands on the supply chain.\textsuperscript{128} A possible solution would be for the Government to broker communication and dialogue between the companies involved in new build projects to help them to better co-ordinate activity so that delivery of different plants could be smoothed over time.\textsuperscript{129}
91. We recommend that DECC’s Office for Nuclear Development (OND) investigates ways in which it might open a dialogue between the different consortia that are involved in nuclear new build in the UK. The OND should aim to facilitate a smoothing out of orders to supply chain companies in order to avoid crunch points and resultant delays.

Opportunities for UK businesses

92. Even though some of the components of new nuclear reactors will have to be imported, there is still scope to develop a UK-based supply chain for the remaining components. Sir William McAlpine explained that “initially, EDF will build the thing [Hinkley Point C] but concrete is going to come from this country, the steel will come from this country, the welders will be here”.\footnote{Q 318} The industry has claimed that around 70% of a new build programme could be supplied by UK companies.\footnote{Q 201 [Mr Anastasi]} Vincent de Rivaz told us that “our ambition is clearly that more than half the value of our project [Hinkley Point C] will be sourced from the UK”.\footnote{Q 197} 

93. Obviously, if there are opportunities for local companies to win contracts with new build projects, this will help to boost support among the local community. Alyn Jones, New Nuclear Local Authorities Group, told us:

> If we are going to make new nuclear work, in our view as part of that renaissance we need to make sure that the local community, the regional community and the national community can all enter into that business opportunity. [...] There will be great concern, I am sure, in the local community if there is no supply chain benefit as well. Constructing the plant and owning the facility is one thing, but to have UK companies, local companies, not accessing the supply chain will be a very big concern.\footnote{Q 127}

Similarly, if new job opportunities are created in the local area, this will help to enhance support too.

94. Although there may be the potential for UK companies to benefit from supply chain opportunities, it is by no means guaranteed that contracts will go to domestic firms. One of the biggest barriers to domestic firms winning contracts is the rigorous safety culture associated with nuclear construction projects that they may not be familiar with. Dr Fox (Institution of Mechanical Engineers) told us “One of the key issues is that many of the individual firms that might like to get involved in the nuclear industry at the fitting level do not necessarily understand the cultural requirements of getting involved, and it is about transferring that understanding and that knowledge to them”.\footnote{Q 162} John Earp (Institution of Civil Engineers) explained further:

> You will appreciate that there have been issues with concrete at both Olkiluoto and Flamanville, and indeed at some of the plants that are currently being built in the
USA. The guys pouring the concrete, who were very good, had not worked on a nuclear power station for a number of years and had a mindset that, “Well, if we pour this and it’s a road we can go back and dig it up”. That simple mindset doesn’t exist on a nuclear site, because once you have the nuclear material there, that concrete is there for good.135

95. During our visit to Hinkley, we heard that the significant up-front costs that can be involved in gaining quality accreditations could prevent some potential supply chain organisations from bidding for contracts with nuclear new build projects. Potential suppliers need to strike a fine balance – proceed with accreditation too early, and there is a risk that a new build project might not go ahead, and the money will be wasted; wait too long, and the accreditation might not be in place in time to bid for work.

96. We were pleased to see that DECC’s Nuclear Supply Chain Action Plan (published after we had finished taking evidence) acknowledged that the costs involved in quality accreditation could be a barrier to entry into the nuclear supply chain.136 However, we were disappointed by the timetable for action – the first meeting with industry to “understand issues” will be held in the first quarter of 2013 and further meetings were not mentioned. If, as is widely expected, EDF makes a final investment decision to go ahead with Hinkley Point C in the near future, potential suppliers for that project might miss out. *We urge DECC to bring forward solutions to this challenge by summer 2013 in order to maximise opportunities for domestic supply chain industries.*

97. We asked the Minister whether the Government would provide assistance to businesses who wanted to access supply chain opportunities. He told us “I think we will look again at how the process we have already begun can be tailored to bring about exactly what you suggest, which is the opportunity for as many smaller businesses as possible to engage. When I have done that I would be more than happy to write to the Committee setting out what we have done already and what more we think we might be able to do to ensure that outcome”.137 We look forward to receiving the Minister’s report on this matter.

Skills

98. Many witnesses expressed a concern about a potential shortage of the skills that are needed to build, operate and regulate nuclear reactors in the UK.138 The last UK nuclear new build project was completed in 1995. Many experienced nuclear engineers in the UK are now over the age of 50 and are likely to be retiring within the next decade. We heard that there was a need to train up a “new generation” of nuclear engineers if there is to be a renaissance in nuclear power in the UK.139

---

135 Q 162
137 Q 461
138 Ev 93, Ev w11, Ev w23, Ev 118
139 Ev 91, Ev w23, Ev 89
99. Witnesses also suggested that there may be competition for skills at the international level, particularly for senior level specialists.\textsuperscript{140} The Institute for Mechanical Engineers and Institute of Physics were concerned that if there was a hiatus in developing new nuclear projects in the UK, then engineers and skilled workers might be tempted abroad to work on international nuclear projects.\textsuperscript{141}

100. CITB-ConstructionSkills suggested that one area where training would be needed was the “nuclearisation” of the construction industry, which would mean “a change in culture, attitude, behaviour and compliance amongst the construction workforce, to support rigorous safety and security for workers on site and quality workmanship in the construction [of new nuclear]”.\textsuperscript{142}

101. We were pleased to hear about the range of initiatives that are currently under way to help develop the requisite skills, including the National Skills Academy for Nuclear and the facilities around specific nuclear sites, such as the energy centre at Bridgwater College (which was funded by EDF).

102. Alasdair Reisner (Civil Engineering Contractors Association) raised another potential barrier to delivering a skilled workforce: “If you don’t have confidence that there is going to be a programme of new nuclear, you are a graduate coming out of university and you are making a career choice, are you going to make that choice if you can’t be certain that there is something down the line?”.\textsuperscript{143}

103. Significant training will be required for the UK to benefit from new job opportunities. Initiatives like the energy centre in Bridgwater College are encouraging, but stronger leadership from Government about the future role of nuclear could help to encourage more people into this area of work.

\textsuperscript{140} Ev 91, Ev w23

\textsuperscript{141} Ev 111, Ev w23

\textsuperscript{142} Ev 89

\textsuperscript{143} Q 174
6 New technologies

104. While the primary focus of our inquiry was to look at nuclear new build in the short-to medium-term using existing technologies, we also received some evidence explaining how new types of nuclear technology might also contribute to the UK’s energy security and low-carbon objectives in the longer-term. While we have not been able to examine the potential for these technologies in any detail, we provide here a brief overview of three such proposals.

Thorium

105. Thorium is a heavy metal that could be substituted for uranium as a fuel for nuclear fission. It has several advantages over uranium including that it is more abundant and that the spent fuel would be more difficult to use for a nuclear weapon. Thorium could be used in new reactor designs, including pebble-bed reactors (see below) and the Liquid Fluoride Thorium Reactor (LFTR). The Weinberg Foundation (a not-for-profit organisation set up to promote thorium-fuelled molten salt reactors) argued that LFTRs were more efficient, generated only small amounts of waste and were less costly to construct than current reactor designs.145 So-called “Generation IV” reactors, such as the LFTR, are expected to become available beyond 2030.146 Although other countries, including China and India, are investing in research into Thorium, research funding for fission has fallen in the UK.147

Pebble bed reactors

106. Pebble bed reactors are smaller than conventional nuclear reactors. For example, a prototype, developed in South Africa, was for a 160MW reactor (this compares with the EPR reactor design that will be used at Hinkley C, which is approximately 1.5GW in size).148 One advantage of smaller reactors is that they cost less in total to build and therefore may not face such significant barriers to raising finance as traditional reactors (see chapter 3).149 Smaller reactors may also open up the potential for local stakeholding in nuclear power stations, which could help to overcome some of the issues with public acceptability (see chapter 4). Another advantage is that they may be able to flex their output more easily than conventional reactors.150

107. Representatives from engineering institutions told us that it was unlikely that this type of reactor could make a contribution to the UK energy mix until the mid-2030s or 2040s.151

---

144 Future nuclear technologies, Postnote 317, Parliamentary Office of Science and Technology, November 2008
145 Ev w28, Ev w83
146 Future nuclear technologies, Postnote 317, Parliamentary Office of Science and Technology, November 2008
147 Ev w28, Ev w83
148 Q 191
149 Ev w11
150 Q 189
151 Q 185
Fast reactors

108. Fast reactors use fuel more efficiently and can also be used to change nuclear waste into a less hazardous form. They run at higher temperatures and use liquid metal or gas coolants. The UK operated two prototypes at Dounreay between 1959 and 1994.152

109. GE Hitachi told us about its Power Reactor Innovative Small Modular (PRISM) reactor, which could be used to reduce the UK’s plutonium stockpile, while generating electricity at the same time. However, this technology is not yet commercialised.153

152 Future nuclear technologies, Postnote 317, Parliamentary Office of Science and Technology, November 2008
153 Ev w16
7 Conclusion

110. The Government’s preferred route to a low-carbon, secure and affordable electricity system is to have a “balanced mix” of renewables, nuclear and fossil fuels with carbon capture and storage. Achieving this ambition will require a new generation of nuclear power stations to be built, starting with the industry’s proposals to build 16GW of new plant by 2025.

111. Although some steps have been taken to support new nuclear projects in the UK (such as changes to the planning system and the introduction of the Generic Design Assessment process), some significant barriers still remain:

- The upfront cost of constructing a nuclear power station remains one of the largest challenges. We hope that the introduction of Contracts for Difference will help to reduce the cost of capital to some extent. However, new models of financing —such as project funding—are only likely to become a possibility if the first new build projects are delivered successfully, without the kinds of delays and cost overruns that have been seen in France and Finland.

- Public attitudes are another potential barrier. Building public support for new build projects requires a sophisticated understanding of the nature of people’s concerns, which are likely to consist of more than simply the fear of a nuclear accident. Better coordination between the regulatory permitting process and the planning process could help to improve dialogue with local communities. In addition greater support for local communities in interpreting complex planning documentation could allow them to make a genuine contribution.

- There is also a risk that the absence of a fully-formed nuclear supply chain in the UK could lead to bottlenecks and delays in the delivery of components for new build projects. Support for prospective suppliers may be needed to ensure they are able to comply fully with nuclear safety requirements.

112. There is some suggestion that it could be possible to meet our climate change objectives without any new nuclear power stations, but this would be a more difficult and possibly more expensive route.

113. A failure to deliver nuclear new build would pose less of a threat to energy security, but there could be some indirect security risks as a result, such as increased reliance on imported gas.

114. While we share the Government’s hope that the new build programme will be a success, the barriers described above may yet prevent some or all of the new projects from going ahead. Given this possibility, it is vital that Government starts thinking about alternative options for meeting our long-term climate change and energy security objectives so that these contingencies can be enacted quickly in the event that new nuclear is not forthcoming.
8 Recommendations

Consequence of failing to deliver new build

1. We conclude that while the cancellation or reduction of the UK’s new nuclear programme may cause challenges for energy security, it would have a much more significant impact on the UK’s ability to meet carbon reduction goals, making our legally-binding long term targets extremely challenging, if not impossible to meet. (Paragraph 21)

2. We also conclude that failing to deliver the 16GW new build that is currently under development could undermine any hopes of developing new funding models for subsequent nuclear new build. This would make it likely that future projects would not be able to raise the necessary capital, raising the prospect that it would not be possible to build any further nuclear plant without state funding (see paragraph 45). (Paragraph 23)

Will the new nuclear programme be delivered?

3. We commend both the Government and industry in their efforts to date to learn lessons and adopt best practice from nuclear new build projects in other countries. It is still early days for new build projects in the UK, so it will be important to keep monitoring developments elsewhere in the world for emerging lessons and ideas that could be adopted in the UK. (Paragraph 30)

4. We note that the first new nuclear power plants in the UK are likely to take longer to build than subsequent plants of the same design. This is because while some lessons can be learnt from experience overseas, differences between the UK context and other countries will mean these projects should still be considered “first of a kind” initiatives. (Paragraph 31)

5. The Government is taking steps to facilitate and encourage new build nuclear in the UK but the final decisions to go ahead or not will be taken by boardroom executives rather than Ministers. Given that ultimately these decisions are beyond the Government’s control, it is worrying that DECC does not have any contingency plans in place for the event that little or no new nuclear is forthcoming. Crossing one’s fingers is not an adequate or responsible approach when the UK’s legally binding climate change commitments and energy security are at stake. For a department whose principal priorities are to ensure energy security and carbon reductions, DECC appears to be overly reliant on aspiration and hope. While we share the Minister’s hope that new build will be delivered as planned, we nevertheless recommend that DECC begins exploring contingency options as a matter of urgency. (Paragraph 35)
The Government’s solutions

6. We support the introduction of Contracts for Difference as a way of reducing revenue and policy risk for nuclear new build projects. However, new nuclear should not be delivered if the price is too high. It is essential that any contract represents value for money for the consumer. We reiterate the recommendation made in our pre-legislative scrutiny of the draft Energy Bill that at the very least, the nuclear strike price should not be higher than that given to offshore wind, which is hoped to be around £100/MWh by 2020. We further note that other low-carbon technologies are likely to receive strike prices significantly below this level and that nuclear will need to offer advantages compared with these technologies if it is to deliver good value to consumers. (Paragraph 49)

7. The UK Guarantees scheme may help to bring forward investment in Hinkley Point C, but it is not clear whether support will still be available for nuclear new build projects that are further away from making a final investment decision (such as the NuGen and Horizon projects). Given the important role for nuclear generation in the UK’s future energy mix, the Government should extend this support to all nuclear new build projects, which may require increasing the amount of available assistance to more than £50 billion. (We note that the UK Guarantees scheme does not involve expenditure, as long as the guarantees are not called in.) (Paragraph 54)

Alternative approaches

8. As discussed in paragraphs 50-51, above, there is still a great deal of concern about the level of transparency of the strike price negotiations between nuclear developers and the Government. Although Mr de Rivaz told us that construction cost overruns would not be incorporated into the strike price for the Hinkley Point C project, the Minister was less clear on this point. We urge the Government to set out in its response to this report who is going to take the risk of construction costs being higher than anticipated: consumers (by incorporating this risk into Contracts for Difference), taxpayers (through the UK Guarantees scheme) or project developers. (Paragraph 58)

9. We recommend that DECC monitors progress toward developing small nuclear reactors, so that the possibility of including these as part of the UK energy mix remains open. (Paragraph 60)

Building public support

10. It is important that local communities have an opportunity to engage in genuine dialogue about risk management with both the regulators and the developers. It is disappointing that there does not appear to be a natural forum for this kind of debate at present. The ONR and Environment Agency should plan their public engagement activities to coordinate better with the planning process, so that regulators and developers can be present at the same public meetings. (Paragraph 78)

11. There is a mismatch between the capacity of developers and that of local communities to participate fully and effectively in the planning process, particularly where large, complex and technical projects such as building a new nuclear power
station are concerned. The Government should consider whether it is possible to provide advice and support to local communities living near to nationally significant infrastructure projects in a more systematic way than the current approach, which depends heavily on individual local authorities. For example, an independent advice service for communities living near to any nationally significant infrastructure project could be established. It could help local communities with interpretation of technical documents and provide advice on what types of compensation might be permitted under Section 106 agreements. It could be funded by levy on developers submitting applications to the Planning Inspectorate. (Paragraph 81)

12. The Government has argued that communities hosting renewable energy installations play a vital role in meeting a national need for secure, clean energy, and should be able to benefit from hosting such projects. Communities hosting nuclear power stations are contributing towards the same aims, and so it seems reasonable that they should also be able to benefit from hosting new-build projects. We recommend that Government extends the scope of its proposal to allow local authorities hosting renewable energy projects to retain business rates to include all forms of low-carbon energy (renewables, nuclear and carbon capture and storage). (Paragraph 83)

13. Unlike renewables, nuclear power stations take a long time to build and therefore have the potential to cause considerable disruption to local communities for an extended period of time. Government should investigate whether it could be possible to provide any additional forms of community benefit during the construction period (beyond the compensatory measures already agreed to in the section 106 deal). (Paragraph 85)

Potential for bottlenecks and delays

14. We recommend that DECC’s Office for Nuclear Development (OND) investigates ways in which it might open a dialogue between the different consortia that are involved in nuclear new build in the UK. The OND should aim to facilitate a smoothing out of orders to supply chain companies in order to avoid crunch points and resultant delays. (Paragraph 91)

15. We were pleased to see that DECC’s Nuclear Supply Chain Action Plan (published after we had finished taking evidence) acknowledged that the costs involved in quality accreditation could be a barrier to entry into the nuclear supply chain. However, we were disappointed by the timetable for action – the first meeting with industry to “understand issues” will be held in the first quarter of 2013 and further meetings were not mentioned. If, as is widely expected, EDF makes a final investment decision to go ahead with Hinkley Point C in the near future, potential suppliers for that project might miss out. We urge DECC to bring forward solutions to this challenge by summer 2013 in order to maximise opportunities for domestic supply chain industries. (Paragraph 96)
16. We asked the Minister whether the Government would provide assistance to businesses who wanted to access supply chain opportunities. He told us “I think we will look again at how the process we have already begun can be tailored to bring about exactly what you suggest, which is the opportunity for as many smaller businesses as possible to engage. When I have done that I would be more than happy to write to the Committee setting out what we have done already and what more we think we might be able to do to ensure that outcome”. We look forward to receiving the Minister’s report on this matter. (Paragraph 97)

17. Significant training will be required for the UK to benefit from new job opportunities. Initiatives like the energy centre in Bridgwater College are encouraging, but stronger leadership from Government about the future role of nuclear could help to encourage more people into this area of work. (Paragraph 103)
9  Annex 1: Summary of private session with Hitachi

6 November 2012

Witnesses:

- Sir Stephen Gomersall, Group Chairman for Europe, Hitachi Europe Ltd
- Graham Fagence, Business Development, Hitachi Europe Ltd
- Christian Blessing, Sales Director - Europe Region, Hitachi Power Systems America Ltd
- Ken Cronin, Senior Partner, Kreab Gavin Anderson

Summary of discussion

Background to Hitachi

Hitachi is a global IT and engineering company, concentrating on social infrastructure. It already has manufacturing operations in the UK. For example, it has signed a contract with DfT for intercity trains to be manufactured in the northeast of England.

Acquisition of Horizon

Sir Stephen noted that Hitachi’s acquisition of Horizon was not yet complete.

Hitachi will be bringing its Generation III+ Advanced Boiling Water Reactors (ABWR) which has been reviewed and approved in three different countries. The ABWR reactor has a successful operating history. The UK can benefit from using a proven technology since it would remove first-of-a-kind risks.

The aim is to provide in excess of 7GW in the UK, made up of two to three 1,300MW reactors at each site (Oldbury and Wylfa).

This is a strategic acquisition for Hitachi because the UK has a need for nuclear power as well as a supportive climate, so Hitachi believes this is an excellent market to deploy its technology. It also hopes to use the UK as a hub from which to access other markets in Europe.

Hitachi will be the technology partner (i.e. most of the money for the developments will come from other sources – see below).

Hitachi didn’t come forward at an earlier stage because at that time Hitachi lacked some of the expertise needed for developing new projects. But it can now build on the work that has already been done by E.ON and RWE.
**Reactor design**

Hitachi plan to put the ABWR design into the GDA process early.

Sir Robert Smith asked whether ABWRs carried a greater contamination risk and whether this might affect community acceptability.

Christian Blessing argued that BWRs have several features or enhancements designed to improve operational exposures doses compared to other technologies. These improvements include; i) more robust shielding through the addition concrete and steel, ii) more stringent water chemistry, and iii) improved fuel and more robust fuel design which makes BWR fuel bundles less susceptible to leaks compared to other designs.

**Timetable**

Hitachi hopes that a final investment decision will be made in four or five years’ time and to start generating power in the “early part of next decade”.

It may be possible to accelerate GDA discussions, meaning it would be concluded in less than four years. This is because ABWRs have already been constructed in other countries, meaning that the licensing process will be based on real experience (unlike some other designs that are currently going through the process).

In Japan the construction period has been less than four years, but it is unlikely that the process will be this fast in the UK (at least initially) because there are differences between the UK and Japan that it will take time to understand. The last nuclear plant in the UK was commissioned 25 years ago. Therefore it will be necessary to bring UK nuclear new build capability up to current practices found in Japan.

The best case scenario would be for a new power station to come online by the end of 2022, but since this will be the first time an ABWR has been built in the UK, it may take longer.

**Financing and the Energy Bill**

The fact that Hitachi has chosen to make this investment shows confidence in the overall environment for new nuclear in the UK.

No discussions have been held yet about the strike price, but Hitachi has confidence in the openness of the proposals and believes that there will be a fair outcome from the negotiation process. Negotiations will depend on actual costs and more work is needed on this before discussions can start. It could be months or even years before Hitachi is ready to begin negotiations.

Hitachi will need to seek investors for the projects – the majority of the cost (80%) of each new reactor will need to come from other investors. Hitachi is confident that it will be able to attract investors based on its strong track record of delivering new nuclear power stations to date.
Developing the supply chain and skills

Hitachi has an interest in the successful development of nuclear and sustaining public support. There should be time for potential supply chain organisations to gear up and get the necessary accreditations to benefit from the new projects.

Hitachi is working with Babcock to see what training is already available and what more might be needed. There is a possibility of setting up partnerships between UK and Japanese universities, but it is still early days.

Community engagement

Albert Owen noted that relations between Horizon and the local community in Oldbury had historically been poor.

Sir Stephen said that although Hitachi’s initial focus would be on the Wylfa site, building up a strong relationship with the community in Oldbury was also very important.
Annex 2: Visit to Bridgwater and Hinkley Point C

In November 2012 we visited Bridgwater and the Hinkley Point C site. We met with representatives from EDF, local authorities, community representatives, the Principal of the Energy Skills Centre at Bridgwater College and local supply chain organisations. We discussed experiences so far of the proposal to build a new nuclear power plant at Hinkley Point C and the challenges that had been faced so far.

Participating members:

Dan Byles        Barry Gardiner        Sir Robert Smith

Visit outline

1. Visit to Hinkley Point C site and meeting with: Humphrey Cadoux-Hudson, Managing Director, Richard Mayson, New Nuclear Build Planning and External Affairs Director and Nigel Cann, Construction Director Hinkley Point C site.

2. Meeting with representatives from Sedgemoor District Council, West Somerset Council and Somerset County Council: Doug Bamsey, Corporate Director, Sedgemoor District Council; Cllr Mick Lerry, Leader, SDC; Bob Brown, SDC; Duncan McGinty, SDC; Adrian Dyer, West Somerset District Council; Tim Taylor, WSC; Chris Morgan, WSC; David Hall, Somerset County Council; and Alyn Jones SCC.

3. Meeting with local representatives: Alan Hurford, Bridgwater Town Council clerk; Colin Allen, Cannington Parish Council chair; Paul Gripton, Otterhampton Parish Council, lead member on Hinkley Point application; Susan Goss, West Somerset Council; Allan Searle, Stogursey Parish Council chair; Peter Malim, Stogursey Parish Council; Lesley Flash, Parish Councillor.

4. Tour of Bridgwater Energy Skills Centre: College Principal Mike Robbins; and David Eccles, EDF Energy

5. Meeting with supply chain organisations: Rupert Cox, Somerset Chamber of Commerce; Laing O’Rourke, Norman Haste; Greenslades Grounds Maintenance, Dave Greenslade; Jual Branded Clothing, Alison Brown; Elecsis Ltd, Chris Pratt; Taunton Fabrications Ltd, David Phelps and David Eccles, EDF Energy
Formal Minutes

Tuesday 26 February 2013

Members present:

Mr Tim Yeo, in the Chair

Dan Byles
Barry Gardiner
Peter Lilley

Albert Owen
Christopher Pincher
Sir Robert Smith

The following declarations of interest relating to the inquiry were made:

Sir Robert Smith declared interests, as listed in the Register of Members' Interests, in the oil and gas industry, in particular a shareholding in Shell transport and Trading (oil integrated).

Mr Tim Yeo declared interests, as listed in the Register of Members' Interests, including as Director of ITI Energy Limited (unremunerated), suppliers of gasification equipment; Director AFC Energy; company developing alkaline fuel cell technology; Non-Executive Director, Groupe Eurotunnel SA; and Chairman of TMO Renewables Limited. Shareholdings in Anacol Holdings Ltd.; AFC Energy (share option); Eco City Vehicles plc., and Groupe Eurotunnel SA.

Draft Report (Building new nuclear: the challenges ahead), proposed by the Chair, brought up and read.

Motion made and Question put, That the draft Report be read a second time, paragraph by paragraph.

The Committee divided.

Ayes 4
Barry Gardiner
Albert Owen
Christopher Pincher
Sir Robert Smith

Noes 1
Peter Lilley

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 114 read and agreed to.

Annexes and Summary agreed to.

Resolved, That the Report be the Sixth Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.
Written evidence was ordered to be reported to the House for printing with the Report (in addition to that ordered to be reported for publishing on 15 May, 4 September, 16 October, 31 October, 20 November, 10 January, and 23 January.

[Adjourned till Thursday 28 February at 9.15 am]
### Witnesses

**Tuesday 15 May 2012**

- **Volker Beckers**, Group Chief Executive Officer, RWE npower, and **Dr Tony Cocker**, Chief Executive, E.ON UK  
  Page Ev 1

- **Charles Hendry MP**, Minister of State, Department of Energy and Climate Change, and **Hergen Haye**, Head of New Nuclear & Strategy, Department of Energy and Climate Change  
  Page Ev 9

**Tuesday 11 September 2012**

- **Alyn Jones**, Lead Officer, New Nuclear Local Authorities Group, **Professor Nick Pidgeon**, Professor of Environmental Psychology, Cardiff University, and **Bob Brown**, Corporate Director, Corporate Services, Sedgemoor District Council  
  Page Ev 19

- **John Earp**, Fellow, of both the Institution of Mechanical Engineers and The Nuclear Institute but representing the Institution of Civil Engineers, **Alasdair Reisner**, Director of External Affairs, Civil Engineering Contractors Association, **Dr Tim Fox**, Head of Energy and Environment, Institution of Mechanical Engineers, and **Steve Geary**, Skills Strategy Director, CITB Construction Skills  
  Page Ev 32

**Tuesday 23 October 2012**

- **Mr Vincent de Rivaz**, Chief Executive, EDF, **Mr Humphrey Cadoux-Hudson**, Managing Director, Nuclear New Build, EDF, **Mr Rupert Steele**, Director of Regulation, Scottish Power/Iberdrola, and **Dr Chris Anastasi**, Head of Government Affairs, Policy and Regulation, International Power, GDF Suez,  
  Page Ev 41

- **Sir Bernard Ingham**, Secretary, Supporters of Nuclear Energy, and **Sir William McAlpine**, Chairman, Supporters of Nuclear Energy  
  Page Ev 53

- **Richard George**, Climate and Energy Campaigner, Greenpeace UK, and **Nick Butler**, visiting professor of Public Policy at King’s College, London, and a contributor to the FT on energy issues  
  Page Ev 57

**Tuesday 6 November 2012**

- **Ed Mitchell**, Director of Environment and Business, Environment Agency, **Dr Andy Hall**, Deputy Chief Inspector of Nuclear Installations and Director of Regulatory Standards and Acting Chief Nuclear Inspector, Office for Nuclear Regulation, **John Jenkins**, Chief Operating Officer and Acting Business Head, ONR, and **Bruce McKirdy**, Managing Director, RWMD, Nuclear Decommissioning Authority  
  Page Ev 63

- **Mr John Hayes MP**, Minister of State, Department of Energy and Climate Change, **Hergen Haye**, Head of Nuclear New Build, DECC, and **Emily Bourne**, Head of EMR Programme Team, DECC  
  Page Ev 71
List of printed written evidence

1. Department of Energy and Climate Change  Ev 81; EV 87; Ev 88
2. CITB ConstructionSkills  Ev 89
3. Civil Engineering Contractors Association  Ev 91
4. EDF Energy  Ev 93; Ev 99
5. Environment Agency  Ev 100
6. Greenpeace  Ev 102; Ev 105
7. Institution of Civil Engineers  Ev 109
8. Institution of Mechanical Engineers  Ev 111
9. New Nuclear Local Authorities Group  Ev 114
10. Nick Butler  Ev 118
11. NuGeneration  Ev 118
12. Office for Nuclear Regulation  Ev 122; Ev 125
13. Cardiff University  Ev 125
14. Sedgemoor District Council  Ev 130; 134
15. Supporters of Nuclear Energy  Ev 135

List of additional written evidence

(published in Volume II on the Committee’s website www.parliament.uk/ecc)

15. Brian Catt  Ev w1
16. David Thorpe  Ev w7
17. James Lawton  Ev w8
18. Martin Blaiklock  Ev w11
19. GE Hitachi Nuclear Energy  Ev w16
20. Gwyn Evans BSc Ceng  Ev w20
21. Horizon Nuclear Power  Ev w21
22. The Institute of Physics  Ev w23
23. Nuclear Industry Association  Ev w24
24. Nuclear Issues  Ev w28
25. Peter Mellor  Ev w28
26. University Of Greenwich  Ev w30
27. The Royal Academy of Engineering  Ev w35
28. Donald Miller  Ev w36
29. SSE  Ev w37
30. Tim Deere-Jones  Ev w39
31. Weinberg Foundation  Ev w83
32. World Wildlife Fund UK  Ev w86
List of Reports from the Committee during the current Parliament

The reference number of the Government’s response to each Report is printed in brackets after the HC printing number.

**Session 2010–12**

First Report  
Emissions Performance Standards  
HC 523 (807)

Second Report  
UK Deepwater Drilling—Implications of the Gulf of Mexico Oil Spill  
HC 450 (882)

Third Report  
The revised draft National Policy Statements on energy  
HC 648

Fourth Report  
Electricity Market Reform  
HC 742 (1448)

Fifth Report  
Shale Gas  
HC 795 (1449)

Sixth Report  
Ofgem’s Retail Market Review  
HC 1046 (1544)

Seventh Report  
A European Supergrid  
HC 1040 (1684)

Eighth Report  
The UK’s Energy Supply: Security or Independence?  
HC 1065 (1813)

Ninth Report  
Solar Power Feed-In Tariffs  
HC 1605 (1815)

Tenth Report  
The EU Emissions Trading System  
HC 1476

Eleventh Report  
The Future of Marine Renewables in the UK  
HC 1624

Twelfth Report  
Consumption-Based Emissions Reporting  
HC 1646

First Special Report  
Low carbon technologies in a green economy: Government Response to the Committee’s Fourth Report of Session 2009–10  
HC 455

Second Special Report  
Fuel Poverty: Government Response to the Committee’s Fifth Report of Session 2009–10  
HC 541

Third Special Report  
The future of Britain’s electricity networks: Government Response to the Committee’s Second Report of Session 2009–10  
HC 629

**Session 2012–13**

First Special Report  
The Future of Marine Renewables in the UK: Government Response to the Committee’s Eleventh Report of Session 2010–13  
HC 93

First Report  
Draft Energy Bill: Pre-legislative Scrutiny  
HC 275

Second Report  
The road to UNFCCC COP 18 and beyond  
HC 88

Second Special Report  
Consumption-Based Emissions Reporting: Government Response to the Committee’s Twelfth Report of Session 2010–12  
HC 488

Third Report  
Low-Carbon Growth Links with China  
HC 529
<table>
<thead>
<tr>
<th>Report Type</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth Report</td>
<td>Pre-appointment hearing with the Government’s preferred candidate for Chair of the Committee on Climate Change</td>
<td>HC 555</td>
</tr>
<tr>
<td>Third Special Report</td>
<td>The road to UNFCCC COP 18 and beyond: Government Response to the Committee’s Second Report of Session 2012–13</td>
<td>HC 633</td>
</tr>
<tr>
<td>Fourth Special Report</td>
<td>Low-Carbon Growth Links with China: Government Response to the Committee’s Third Report of Session 2012–13</td>
<td>HC 748</td>
</tr>
<tr>
<td>Fifth Report</td>
<td>Consumer Engagement with Energy Markets</td>
<td>HC 554</td>
</tr>
</tbody>
</table>
Dr Tony Cocker

Good morning. Thank you very much for your attention that relate to that, we would be very happy to hear them.

I start with a general question about the recent decision. What was it that triggered the strategic reviews that both your companies undertook before making the decision that was announced at the end of March?

Dr Cocker: Well, in the case of E.ON, I think the overall decision was really down to the financial firepower of the company. I think it is well publicised that a number of issues have affected our financial performance as a company over the last two to three years. The long-term contracts for gas that we have are high priced relative to the marketplace. Also, the spreads on generation production across most of Europe have narrowed and many plants are either making very low margins or much lower margins than they were making before. Then, thirdly, there was the nuclear decision in Germany, which has obviously impacted on our cash flow. Those three things together impacted the cash flow of our company.

Now, back in, let’s say, November 2010 we set out our E.ON strategy, which was really saying we will continue to develop in Europe and optimise our assets in Europe. In addition to that, we will invest outside of Europe, and we set ourselves a target of growing our businesses outside of Europe at that point in time. That sets the context when these financial issues really hit us. Therefore, we said, “Okay, how do we prioritise where we make our investments?” We said that when you look at a nuclear investment it is extremely long term and, yes, you may get a good return at the end of that long term but it is a very substantial investment at a single site for a long period before you get a return on the investment. That is the general context.

In terms of timings, as the two companies and Horizon, we spent most of 2011 and previously working with the vendors to really get good bids for the plants from the two preferred vendors. Working with them, we reduced the price and reduced the risks and as of January/February we were in a position where we needed to take a decision to go left or right with one vendor or the other. At that point in time as E.ON we took the opportunity to step back and say, “Look, if we go left or right, then we are committing ourselves for a further period and we are narrowing down our options. Isn’t this a time at which we should sell the venture, seek another purchaser who can take the venture forward?” I think that sets out the timing and the strategic context. It is really about our broader strategy and then our financial firepower and saying where are we going to focus, and then the technology decision to go either left or right, as the vendor selection process required us to take a decision to go either left or right. We said, “Look, given that we need to take a decision, actually this is a good time at which to take a decision not to go forward”.

Volker Beckers: It is just worth emphasising what has changed between when we started Horizon back in 2009 and 2012. Clearly, the financial crisis has meant not only that capital is at a premium for large infrastructure projects and that developed over the three years very much to our disadvantage as far as Horizon was concerned, but secondly, the markets have weakened as well. If we look at the margins of gas plants in particular, they are at all-time lows right now, and the situation has been exacerbated by the decision in the German market, after the Fukushima event, to withdraw the lifetime extension. That decision, which was combined with the decision to close eight reactors, or not even to reopen some, because they were already shut, led to a significant deterioration in our financial performance.

But the timing I think is quite important. Why in Q1 2012? As you know, we were very much in the final stages of selecting either Westinghouse technology or the AREVA technology and that offer effectively...
timed out at the end of March. We were very clear when we arrived to the conclusion to exit that we want to give a potential purchaser the maximum flexibility to choose either of the two technologies. That is where we are with Horizon at this point in time.

Q2 Chair: Is there any circumstances under which this decision might be reversed?
Dr Cocker: No.

Volker Beckers: It is simply a fact that we cannot afford this investment.

Q3 Chair: Are either of your companies contemplating new investment in nuclear elsewhere in the world?
Dr Cocker: Yes. At E.ON we are participating in a development in Finland. That is further behind relative to where we were with Horizon and it is smaller. A decision will be taken in due course but that is not needed yet. Having said that, you will also know we continue to operate nuclear power stations in Germany and continue to operate nuclear power stations in Sweden. We will operate those in Germany until their lives are expired as agreed by the Government and those in Sweden until the lives are expired as determined by the engineering and safety cases.

Volker Beckers: As far as RWE is concerned, we have three reactors that we can continue to operate under the new regime in the German market. We have a small stake in a nuclear plant of 30% in The Netherlands, but there is no new build project that we are pursuing.

Q4 Chair: If Finland is still part of E.ON’s programme, is it fair to say that the Finnish context is more sympathetic to nuclear investment than the UK context?
Dr Cocker: No. I think it is simply a timing thing. In fact, our Chief Executive, Johannes Teyssen, said at our annual results meeting in mid March that the investment framework in the UK was one of the best investment frameworks anywhere. If behind your question you are saying is it something about EMR and asking whether there is a better investment framework in Finland than in the UK, the answer is no. We believe that the investment framework in the UK is as good, is developing very well and is one of the best in Europe or the best in Europe. The issue is really more about timing and scale and we had a decision to make here in the UK. We do not yet have a decision to take in Finland.

Q5 Chair: We will explore the EMR a bit more in a moment, but just on this issue, the German decision to wind down nuclear power in Germany is clearly a big factor. If that decision had not been taken, and if Germany had not had a change of policy after the Japanese accident, would that one altered factor have been sufficient to allow you to continue with Horizon?
Dr Cocker: I think we have always said it was a combination of factors. Each of the three things that I think we have each said in our different ways—the gas price issue in Germany and Continental Europe, the spreads, the margins on conventional plant in Continental Europe, and the nuclear decision—has hit our cash flow. It is a combination of all those three things not any one individual item.

Volker Beckers: There is nothing to be added. I guess it is very speculative if you isolate any of these factors, but it is fair to say that if all these factors hadn’t occurred, we would be in a different situation.
Dr Cocker: Yes.

Q6 Albert Owen: Good morning, gentlemen. Could you just explain to the Committee the impact of the German decisions? A nuclear tax is one of the elements; another one is decommissioning because you have to close down plant earlier. Can you explain what kind of generating life was left in the stations that will be forced by Government policy to close down? Can you just give us a flavour of the impact?
Volker Beckers: When the consultation on the lifetime extension took place, the decision was made that most of the newer reactors will get a lifetime extension of eight to 12 years in general. As part of that, there was a decision to take some of the fuel costs and increase them by what was called a fuel rod tax. That was a combination of lifetime extension and introducing a tax on uranium, effectively.

The decision post the Japan event was not only that the lifetime extension for all stations was withdrawn, it effectively led to curtailing the lifetime of, as I said before, eight power stations. Most of the plants will close by 2020–2022 in this timeframe, so we have another eight to 10 years in the German market. As you rightly said, that also means that for some of the plants that are now closed or mothballed, we have an accelerated decommissioning programme. Combined with that, however, the fuel rod tax is still there. Obviously, it has been legally challenged but at the moment companies that operate nuclear stations have to pay it. That is the current assumption. It is not clear yet what the court will decide eventually. You have an accelerated decommissioning programme. You have lost revenue as a result of that curtailed lifetime and you have reduced revenue because some of the plants that you assumed will be on the system won’t be there anymore. It is a combination of all these factors.

Q7 Albert Owen: I know this might seem an unfair question but I am going to ask it anyway. Merkel was very pro nuclear a couple of years ago; if she loses power in Germany and there is another shift, how will that affect your decision to invest in nuclear in Europe in the future? If the previous decision is reversed and they then say, “Look, we now need nuclear, we can’t rely on imports from elsewhere. Our climate change targets won’t be reached. We are going back to the nuclear situation”, how would that impact on your business? Do you have the flexibility to reverse your decisions?
Volker Beckers: Well, these are two questions. Let me start with the first one because I think there is an interpretation that it was a political decision that we withdraw from nuclear. That is not the case. I think the consequences of the decisions in the German market combined with the factors we talked about earlier led to this decision. It is a question of are we able to invest in low-carbon technology that
effectively means that we have to invest in the next 10 years, using Wylfa as an example, of around £10 billion to £12 billion? Any decision will have to be based on its commercial merits and, indeed, whether it is viable.

Let’s be clear: when you invest in a particular country it is all about the energy policy in place and public support. If you look at public support in the United Kingdom in comparison with Germany, it is a very different picture. I don’t know where the recent polls have marked support but it is certainly above 40%. In Germany you have the reverse picture. I think public opinion is more than 70% against nuclear. What I am saying is that the political support in this country is very strong but it doesn’t mean that our financial situation has changed. It is very speculative that such a decision would change anything.

As to your second question about whether we have the skills to operate power stations, that comes back to my earlier point. We still operate nuclear power stations. We have three that will remain on the system for the next eight to 10 years. Yes, we have the skills.

Q8 Albert Owen: My point was you are losing generation by this quick decision to close down and not extend them. If that decision had not been reached, would you consider continuing? I know it might sound hypothetical now but—

Volker Beckers: But then all the other factors have to change as well.

Dr Cocker: I think it goes back to the question before. There was no single factor. It was a combination of factors.

Q9 Sir Robert Smith: Did you notice with the German decision that the financial markets put a greater risk premium on other countries’ nuclear investment or did they really see it as a German decision that was not necessarily indicative of a risk in nuclear?

Dr Cocker: I am not sure. That is not something that we have specifically noticed. In fact, if you look across Europe there is a mixed picture. Yes, some countries have stated they will withdraw from nuclear, like, for example, Germany. On the other hand, other countries are still developing nuclear. From our perspective, it is not sufficiently clear to say there is a risk premium attached by the financial markets.

Q10 Sir Robert Smith: As the Chair said, we are about to embark on electricity market reform and we are about to scrutinise the draft legislation. It is the final chance to get it right as possible in terms of the future of this country’s energy policy. You said in an earlier answer that the electricity market reform did not make a difference to the decision, but surely if it was so enticing there must become a tipping point where it would motivate a decision.

Dr Cocker: I think the factors that have caused the decision were independent of electricity market reform. The decision was made for our company independent of energy market reform and, indeed, we believe that the general direction of energy market reform is very positive towards investment. As I said, Johannes Teyssen quoted that. Specifically, the CFD and the capacity market or capacity payment will be very positive towards investment when they are implemented. I will come back to that in a moment. I think in addition to that if we broaden it out it was very clear to us and to me personally—having been out of this market for quite some time because I was working in Germany, as you know, for a period and came back in October—that the British authorities, both this Government and the previous Government, had worked very hard to put in place not just energy market reform but to improve the overall institutional framework for investment in nuclear in this country.

So reforming the Office of Nuclear Regulation, for example; really working hard on the waste issue; putting in place the Nuclear Development Forum to help to ensure that there is a supply chain. It is not just about energy market reform, it is that broader context that I think the UK authorities have really worked hard to put in place. What I would say is we saw all that context, which was positive in our view, but our decision was based on the overall financial and strategic constraints.

In terms of going forward and your question about energy market reform, how can we continue to develop energy market reform to ensure that we do get investment and not just in nuclear but in the full range of low-carbon generation—offshore wind, onshore wind and biomass—and also in CCGTs. I think the simple thing from our perspective is to focus on the two bits of energy market reform that really make a difference, which is the CFD and the capacity payment, and work on those and get those sorted out as soon as possible. By sorted out, I mean three things in the context of the CFD: the strike price, the counterparty and the overall drafting to ensure that they are as immune as possible from future political and regulatory interference. On the capacity market, we need to get that designed as quickly as possible so that we can then encourage CCGTs to come on to the system as well. Going forward, those will be the two things I would focus on. I would add that the carbon price floor is just a tax, does not incentivise investment, is bad for customers because it puts up everybody’s energy price, and it is a windfall subsidy to old nuclear generation and old hydro, which was built and funded largely by our fathers and mothers.

Q11 Chair: It sounds as though you share our bewilderment that the Chancellor of the Exchequer says he is very anxious not to damage Britain’s competitive position by policies that might somehow load costs if we have very strong pro low-carbon tax incentives, and yet the actual introduction of the floor price for carbon does exactly the opposite to what he says he intends.

Dr Cocker: Well, I have not read all of his speeches in great detail, but the carbon price floor, as I said, does not incentivise investment. It does put up electricity prices for all customers, whether they be households or large industry. It does not say what it says on the tin and it is bad for customers in this country.

Volker Beckers: Can I just add one thing that I think is quite important, Mr Chairman? Coming back to whether there is a premium for nuclear, which was the
original question before we embarked on EMR, I guess there is a general and a specific answer. The general one is, as I said earlier, that large investments and large capital requirements are at a premium. If you look at analysis we have seen from one of the big four audit firms looking at all investments needed in Europe and the United Kingdom in particular, it is very clear that without the financial sector, the energy sector alone is not able to stem all these required investments. That is factor number one, which does not help the CAPEX requirement and the cost of borrowing this money.

The second one, and that is a specific nuclear issue, is that nuclear has very long lead times. From the day when you start consenting to then construct and then commission the plant, it is probably between eight and 10 years. That is currently best in class. You have effectively eight to 10 years where you do invest the £10 billion to £12 billion, to use the example of Wylfa, where you do not generate any trade revenue, and then after that you will then be in a position to pay back your debt. That is a very nuclear specific one in answering your question. That is definitely something we see the market that has caused a premium and will cause a premium for any investor. Therefore, it is quite important that any policy framework does provide that longevity, that long-term certainty in terms of what the investor in a particular nuclear power station will eventually get when it does generate electricity. I think that is quite crucial.

Q12 Sir Robert Smith: Do you see EMR delivering that?

Volker Beckers: Delivering suggests we are already assessing something that is fully in place. I think EMR is addressing all these points, for example, the need for long-term certainty; hence the decision on the contract for differences, which gives that certainty to a strategic investor, to an energy company, and the financial investor. I think where more certainty is needed, as we heard before, is on the price and who effectively is the guarantor of these contracts. That is something that is not worked out yet, certainly not in the details that are required to make these final decisions.

Q13 Dr Whitehead: Could I just dwell for a moment on contracts for difference and, indeed, strike price in EMR. Your understanding is that the question of counterparty on contracts for difference is not yet resolved as far as the future course of the arrangements are concerned. Is that a material consideration as far as your possible investment decisions on nuclear?

Volker Beckers: The first question is: is it important for our decision? Answer: not anymore, and I think we explained that this has nothing to do with this particular subject on EMR. But it is definitely a crucial element of the EMR. When we started last year on the consultation on what is actually needed, there was an expectation that the CFD would be backed by Government. To put it in layman-speak, who is ultimately signing the cheque? The expectation was it would be the Treasury. Now, we are miles away from that very point. A different path is now being pursued by Government and we need to see what ultimately the detail of that looks like. But I think moving away from a triple A guaranteed contract, which was honoured by Government, to a statutory contract using different instruments, is a big shift in this process over the last six to nine months.

Q14 Dr Whitehead: Is your understanding now that the likely outcome of a contract for difference guarantee would be some form of jointly financed back-up fund as far as CFDs are concerned? In your view, would such a fund increase investment costs because of the need to contribute to such a fund?

Volker Beckers: Ultimately, I think you have to ask the Minister that very question. My understanding is that we are certainly not in the position any more where we could count on a triple A-backed contract. I think any deterioration from that very point inevitably has an impact.

Dr Cocker: I think I would take it back to this layman’s terms and also look at it across all of the investment. I think your original question was about premium for nuclear, and nuclear has particular challenges, but offshore wind is also a pretty chunky investment. It is not as chunky, but nevertheless quite a chunky investment and, therefore, needs some certainty to support investment. Now, the current ROC regime has done that and I think the CFD regime can be better. That investment could be more financeable if we get the CFD right. We know there is obviously a substantial need for investment both in nuclear and in CCS and in offshore wind, so getting the CFD right and the right arrangements governing it is extremely important to reduce the cost of capital to enable investors and also to bring in financial investors as well as strategic investors in due course.

Q15 Dr Whitehead: In your view, does that include a differential strike price between nuclear and other low carbon technologies?

Dr Cocker: At this point I don’t know. In fact, there is also a timing point there anyway, which is that we are working very hard to drive down the cost of all technologies, but if you look particularly at offshore wind, we are working very hard to drive down the associated cost. We would expect strike prices ought to be able to come down over time.

Q16 Dr Whitehead: But I was wondering whether you either have envisaged in the past or do envisage now that a part of the investment scenario might be the establishment of differential strike price levels for nuclear and for non-nuclear?

Dr Cocker: That we have not discussed.

Volker Beckers: Maybe on your question, I think personally it is quite important that we do keep a diverse energy mix. I have said this previously and I want to repeat this here as well. It is quite important that we do not start to pick winners and just focus on a few technologies. I think the key will be that we maintain a mix with conventional plant as we have very efficient CCGTs and also coal with carbon capture storage, as well as wind offshore and onshore as well as nuclear. That is why I always felt whatever we do as part of the EMR we need to ensure that there
is a level playing field between all technologies. What do I mean by that? Very simply that technologies compete for the investment from energy companies. As soon as you start to become technology-specific on elements, investors will rush into that particular technology. We have, therefore, made investment decisions a few years ago on the most efficient CCGTs. In fact, they are just coming to the system, Staythorpe last year, Penbrook this year, and that alone is 2.5 billion in investment. For us it is quite important that we can operate these plants in the most efficient way. They are the most efficient in Europe. At the same time we are one of the largest investors in renewables. Any change in technology-specific incentives would obviously jeopardise the ability to ensure the CFD is a level playing field and that we have and maintain a diverse energy mix in this country. I think that is quite key for policy going forward.

**Dr Cocker:** The conversation, of course, starts on nuclear but I think it is important to say that the decision we made was about nuclear. We continue to invest in the full range of other technologies—offshore wind, onshore wind, biomass and CCGTs and, indeed, also gas storage. For example, last year we invested £1 billion in those technologies and our plans for this year are of the same order of magnitude. We are continuing to invest. The conversation started on nuclear but we are continuing to invest in all of the other technologies. As the EMR framework becomes clearer that will facilitate further investment.

**Q17 Barry Gardiner:** Did you guys know something that Centrica and EDF did not? Because you made your announcement about Horizon back in March and in April, of course, Moody’s threatened to downgrade Centrica and EDF if they went ahead with the four reactors in the UK on the basis that there was uncertainty about the future electricity prices in the UK. Obviously, if there had been a downgrade then it would have made it a lot more expensive to borrow that money. Do you agree with Moody’s? How much a part of your thinking did that uncertainty over future electricity prices play?

**Dr Cocker:** From our perspective, when we looked at the investment decision it was for the reasons we described earlier.

**Barry Gardiner:** I am always suspicious if somebody says, “I refer you back to my earlier answer” because it means they do not want to answer this question.

**Dr Cocker:** I am going to answer, but with respect to the electricity price risk in the country, the purpose of the CFD is to take that risk away, essentially.

**Q18 Barry Gardiner:** Do you disagree with Moody’s?

**Dr Cocker:** The Moody’s view was not part of our decision making. Our view was that an investment in nuclear in the UK was independent of electricity price in the UK because the CFD would sort that out. It was dependent on the strike price but was independent of the daily, weekly, monthly electricity price. In that regard, if Moody’s are focusing on the electricity price uncertainty in the UK—

**Barry Gardiner:** That is what they said on 7 April.

---

**Dr Cocker:**—I would disagree with them, I do not know whether we have a company line, but I personally would disagree with them. It was not from our perspective about the electricity price because the CFD would give you certainty on—

**Q19 Barry Gardiner:** You were not worried about a downgrading at all?

**Dr Cocker:** That was not—

**Barry Gardiner:** By proceeding with Horizon?

**Dr Cocker:** Yes, that was not part of our decision making.

**Q20 Barry Gardiner:** No, nothing. Do you think that you might have had a downgrading? Do you think Moody’s might have taken a look at you and said, “Actually, guys, we are not so confident in you any more?”

**Dr Cocker:** Well, again, it is speculative, it is a “might have”.

**Barry Gardiner:** Oh, it is. I am just trying to flesh out how much a part of your thinking such a thing might have been.

**Dr Cocker:** Yes. They have not downgraded us on that basis and we have taken the decision—

**Q21 Barry Gardiner:** You have taken the right decision?

**Dr Cocker:** We have taken the decision anyway, yes.

**Volker Beckers:** Can I just come back to your point? Are we worried about downgrading generally? I think the obvious answer is yes. We have been downgraded by one notch last year for all factors and every downgrade means that capital becomes more expensive. We know all of that. To mitigate this and to maintain a single A-rating, we had to put a lot of measures in place. On efficiency, we had to increase our capital, at least we got the decision to be able to do it; and, thirdly, last year we started a divestment programme that RWE has announced of €7 billion; and we have reduced our capital requirements. Inevitably, your answer is if you do all of that, divestment, reducing capital and at the same time commit on one of the largest CAPEX programmes, you will face a downgrading. In the case of RWE—I cannot answer for EDF and Centrica whether it would have been wrong as well—it would have meant a downgrading and we could not afford that. Therefore, we had to be disciplined as we all will be if the money gets tighter.

**Barry Gardiner:** Thank you. That seems a much more straightforward answer.

**Q22 Sir Robert Smith:** Going back to your earlier answer about not picking winners, which I am instinctively sympathetic to, when you have one technology, nuclear, which is high capital and a long return, and then you have offshore wind and tidal and wave with their different cost bases and the cost bases coming down, and a desire to get marine, tidal and wave into the mix, but obviously with a lot more incentive needed to start it up, isn’t there inevitably going to be an element of the Government having to send different signals to different markets if you are
then going to achieve your goal of a balanced mixed portfolio?... political will that will support the contract for difference. If you were offered a job to run a large energy company that had a high percentage of nuclear capacity, would you take that job?... Q24 Laura Sandys: I mean does nuclear have a future in the structures that we are putting forward from a Government point of view or does it need so much greater incentive to de-risk it for you to take this excellent job that I am now offering you?... Q25 Laura Sandys: But do you believe it will be a reality? Do you believe that your commercial analysis rather than what we understand to be called a backdrop of overseas political environment? If you were Sir Humphrey, would you be saying to Centrica and EDF, “It would be a very, very brave Minister to be taking these decisions and investing in nuclear”?... Q26 Laura Sandys: You have not quite taken the job but you have advised your friend to take the job?... Q27 Chair: Another issue you mentioned, which is not quite so directly related to nuclear but is interesting, relates to the element of uncertainty about capacity payments. Do you think that as long as that element of uncertainty exists there will be investors who decide to delay investing in new gas-fired
Chair, can I just remind the Committee, given what we are talking about, of my entry in the Register of Members’ Interests relating to the oil and gas industry and particularly a shareholding in Shell?

Dr Cocker: I think I look at it somewhat differently. First of all, we already see that less efficient plants are taken out of the system. We see that new investment proposals are not coming forward in the way we all would expect. Having said that, my company has made the opposite decision and invested and committed to £3.5 billion over the last three years. I think to make even more investments that are needed, and we keep talking about the impending gap and the 200 billion that is needed, clarity is absolutely paramount for making new investment decisions. I think you are combining this now with the question of will capacity payments and capacity markets in particular stimulate these investments.

Now, I guess there are two different things. On the one hand, we see a system that is sufficiently supplied at the moment. I mentioned this earlier. For new gas stations we have spreads, so the margin we make on a gas plant, which have had historic lows, may be close to zero, or around £1 or £1.50 at the moment. You need at least eight to sustain the commercial viability of these plants. That is the situation in the market right now.

At the same time, we are concerned about capacity not being added to the system when all the older stations will retire in the next 12 to 24 months under the Large Combustion Plant Directive and there will be also old AGR nuclear reactors that will close in the next few years. My personal view is that the case for a capacity market has not been made yet. In fact, you just go back five, 10, 20 years and you always see at the horizon that there is going to be a capacity gap. That is why I am so strongly arguing for a market-based framework. The market eventually signals this scarcity of capacity and, therefore, reflects this in prices, but at the moment you do not see this in the market. In fact, power prices are very, very low and, therefore, are at the margins. When the market realises that, that gap will open. I personally believe that if we maintain the current framework with the amendments I was talking about in terms of the low-carbon obligations in comparison to the renewable obligation,— that would help. Discussion about a capacity market will inevitably lead to, “Well, give me the details and then I can make an investment case”. I hope that answers your question.

Sir Robert Smith: Chair, can I just remind the Committee, given what we are talking about, of my entry in the Register of Members’ Interests relating to the oil and gas industry and particularly a shareholding in Shell?

Dr Cocker: I think I look at it somewhat differently from Volker, although many of the fundamentals are the same. Clearly, the market is not signalling a need for new capacity at the moment. The spark spreads are very low. We have seen plants being mothballed. At the same time, it is equally clear that a number of old coal and nuclear stations will close in the next few years. Therefore, if you look at it, step back, it is clear that the UK system will need some new conventional capacity in the next few years. This gap in the next few years will not be filled by the growth in renewables or nuclear. That is clear from stepping right back, but the market is not signalling that.

I think in a theoretical world or in the current world without a capacity payment, yes, the market price will rise and start to signal the need for investment. But I think there are also some potentially game-changing technologies out there that would make looking at a CCGT investment even now, even if the market was rising, difficult. What I mean by that is we don’t know what the pace of renewables investment will be. If that is faster than we expect, then it will squeeze out the load factor of a CCGT. You could build one, have it on the bars in 2020 but then find it is hardly running in 2030 or 2025. We have seen, for example, in some countries in Continental Europe, and Germany is one of them, the massive growth in solar. Now, obviously today is not a good day for solar in this country, it is raining, but we have seen how it has grown very substantially and there is 25 gigawatts of solar in Germany now. If we had the similar intervention in the UK, could we see big volumes of solar also as the costs of solar are coming down? I think what we are facing there is a market price risk and, as Volker said, the market will signal that so that will be okay. But there is also a technology risk that would inhibit or add risk to an investment in a CCGT. Therefore, I believe that a capacity payment is a good way to solve that issue. Having said that, the capacity payment, therefore, needs to be put in place sooner rather than later to make sure that investors do have certainty and can get on and invest.

Chair: Okay, so I had better get back to nuclear. That was my fault for doing that.

Q28 Ian Lavery: The Energy Minister, Charles Hendry, said he was disappointed by the withdrawal of RWE and E.ON from this venture, but he also said that it was an excellent, ready-made opportunity for other investors. Reports have it that there are interested investors from the state-owned industry in China together with the Japanese, and also, I believe, Rosatom in Russia. What in your view would be the characteristics of potential buyers?

Dr Cocker: Well, we are running an M&A process and I think you will appreciate we need to have confidentiality around that M&A process. But let me pick up on some of your points.

First of all to Charles Hendry’s point that this is an excellent investment opportunity, we agree with that. We believe that the team we have created at Horizon has done a very good job to develop the opportunity over the last few years, and particularly with Wylfa the local community is very much on side and very very supportive of the investment. We believe we have created a great opportunity there. Indeed, when we made our announcement, we both went to Gloucester to announce it to people face to face because they have done a great job and we appreciate that they are now putting them through a period of uncertainty. One of our colleagues went to Wylfa on the Friday and to Anglesey the second day for exactly the same reason. We believe there is a great opportunity here. Timing wise, because we have not yet made a technology decision, we have created the opportunity to bring forward the most potential interested buyers...
by not narrowing it down to one technology or the other. We know that any buyer will be interested in EMR and the UK institutional frameworks and, therefore, we are working closely with DECC to ensure that we can provide the buyer with that information and access to DECC. We also know that any future owner of Horizon will need to assure not only us but the Government that it would run Horizon with the utmost safety standards. We have all of those points in mind through the sales process, but I would not like to comment on individual countries or individual potential buyers. We are running a professional sales process with external support, we will run with that and we will do that as well as we possibly can.

Q29 Ian Lavery: I would like to press you on that if that is okay. Two companies in Horizon, world-class reputation, plenty of finance, think this is a fantastic opportunity for others, yet you yourselves bailed out. Has there been any potential buyers come forward to Horizon from both inside the EU and outside the EU?

Volker Beckers: Sorry, the question can only be is there interest in the market and the answer is yes, there is.

Q30 Ian Lavery: That might be your question but I did not ask that question. I am just wondering whether there have been any interested potential buyers from inside the EU or any organisation, state-owned or private, outside the EU.

Volker Beckers: I think the point we tried to make here is we commenced the process a few weeks ago and we have interest. We are now in conversations with potential buyers. I think it would be absolutely premature to say whether it is European or non-European and if it is non-European, where it comes from.

Let me just summarise this briefly. We have probably in the UK together with France potentially the most advanced framework. We have gone through the GDA process, generic design assessment. With Horizon we have two technologies backed in the process so a potential buyer has the maximum flexibility to choose either technology. You have a team that has done all the site investigation work that is necessary, so any investor can hit the ground running and has effectively bought into three years of development. If there isn’t any interest, if there wasn’t, and I do not believe that is the case, then there was not any interest in nuclear, but that is not the case. We see that Wylfa is regarded—and we keep saying this and it is true—if not the best site, it is the second best site and certainly one of the best we have in Europe. Clearly, we need to wait until the process is finished. We have decided to appoint an adviser who is facilitating the process for us. We have just agreed on the information memorandum and then we will have the conversations and management presentations with potential buyers. Then I think we will both be able to answer your question more precisely, but it would be premature to do so today.

Q31 Ian Lavery: If another company goes bust, I think you would be an ideal politician because you spoke for five minutes and did not answer the question. Can you answer the question or are you just not prepared to answer it?

Dr Cocker: No, I think both of us are saying we are running a process and that process involves confidentiality. That is the way all mergers and acquisitions processes are run. Newspapers will speculate but we will not.

Chair: We are running out of time because the Minister is outside waiting to come in. Albert, you just wanted one last quick comment.

Q32 Albert Owen: Just on that, the market is likely to include non-European parts to it that are showing an interest and even if you went forward with your joint venture then you would have outside European help if you chose Westinghouse, which is a Japanese company, and some of the sovereign wealth funds may come from outside the European Union. Surely the likely scenario is that you would have a make-up of a consortia that has a European aspect to it and has a non-European aspect to it and has companies that are not directly involved in nuclear, investing cash in it. That is a likely scenario.

Volker Beckers: It is a possible scenario, yes.

Q33 Albert Owen: You would not be worried as a lay person about whether there was an international consortia, which had European and non-European parts to it?

Volker Beckers: What constitutes a credible nuclear operator? We talked about the money you need to make these investments. You have to have experience in operating nuclear plants safely and securely and you need to understand the technology. If they do have that expertise the answer could be very much yes. But again we are speculating on this. I think we need to go back to capabilities and experience rather than nationalities. I think that is important, that is what we need to test and that is why DECC is also part of this process. We keep them informed about the process and how it has panned out, and indeed we will make sure that Government is fully informed about potential buyers.

Dr Cocker: I think just one thing I would add is the regulation requires that the site licence company, in this case perhaps Horizon Wylfa, has clear capabilities to run the power stations, and that site licence company would obviously be based in this country. There are some very clear rules governing how we operate in the UK to make sure we protect that and secure that.

Chair: Phillip, do you just want to raise one more topic very briefly before we go?

Q34 Dr Lee: Do you think the Fukushima incident was a nuclear accident?

Volker Beckers: A nuclear accident?

Dr Lee: Do you think Fukushima was a nuclear accident?

Volker Beckers: I must admit this is a difficult question and I will explain to you why I think it is a difficult question. If you say it was—because I need to interpret your words—are you saying there was human error involved and it was—
Q35 Dr Lee: I think it is quite a simple question. Was it a nuclear accident or was it not?
Volker Beckers: Let me try to answer this. When we looked at this disaster and where the earthquake took place, we saw that there were other stations closer to the epicentre than Fukushima was. Why did it happen at this particular station? Because it was a flooding event and the power station was not designed for that potential flooding event because of the tsunami.

Q36 Dr Lee: In the interest of brevity, you do not think it was a nuclear accident?
Volker Beckers: No, it was caused by that.

Q37 Dr Lee: So it was not a nuclear accident? The reason I ask is in the context of all these decisions you are having to make, and we have touched upon how it has affected your investment here, and the decision in Germany vis-à-vis nuclear. If it was not a nuclear accident, why did Germany change its position on nuclear power?

Dr Cocker: I think Fukushima was declared a nuclear accident by the Japanese authorities and by the nuclear authorities.

Q38 Dr Lee: I am not so sure that is true.

Dr Cocker: The accident at Fukushima was declared an accident. I cannot remember exactly which level of nuclear authorities.

Q39 Dr Lee: Forgive me. I look at your CV, sir, and you have an impressive mathematical background, so let us deal with evidence here. This was not a nuclear accident. This was a disaster caused by the failure of back-up diesel engines, which were flooded. I put this in the context of all these investment decisions, which are very difficult to make. They are particularly hard to make if you do not deal with evidence. Nuclear power has not, in any way, killed as many people as, say, hydro-electricity in history and all of this fear of radiophobia, as it is called in Germany, is driven by this belief that Chernobyl created significant health problems and there is no scientific evidence of any health problems from Chernobyl. None at all. I am just asking you, how can you make decisions if you do not deal with proven evidence.

Dr Cocker: May I say two things? I think first of all the way the UK authorities dealt with the aftermath of the accident by appointing the Weightman Inquiry was very positive and—obviously there were some good recommendations, which we have taken into account in our developments at Horizon, and also I think extremely interesting public support for nuclear in the UK has recovered now to pre-Fukushima levels. I think it shows the confidence of the approach taken. The German decision was made by German politicians for their own German popular opinion and German politics. We took a decision based on the cash flow of E.ON, which has been impacted by a number of factors, and we had to decide what we should invest in in this country. We said right at the very beginning that if Fukushima had not happened, would we have been making this decision? We do not know, but a number of factors have driven our cash flow in E.ON, which therefore drove the decision in the UK.

So on your point evidence, the evidence for us was cash flow. Last year our profits were down by 3.5 billion as a result of the three effects that we have talked about.

Chair: I am sorry, but we have to call it a day. We are getting into a whole big area of new territory. This inquiry will run for some time. There are some other issues that we might want to return to you about in due course. We are taking evidence again in September on this same subject. Thank you very much for coming in this morning. It has been a very useful and interesting session for us and for other people.

Examination of Witnesses

Witnesses: Charles Hendry MP, Minister of State, Department of Energy and Climate Change, and Hergen Haye, Head of New Nuclear & Strategy, Department of Energy and Climate Change, gave evidence.

Q40 Chair: Good morning, thank you very much for coming in. Sorry we are running slightly behind time but you will appreciate there is quite a lot of interest in this particular subject right now. I will skip any formalities. You are a regular and welcome witness for this Committee. Could you start by saying why you think RWE and E.ON decided not to go ahead with their plan to build nuclear power stations here?

Charles Hendry: I think the overriding factor was the situation on their own corporate balance sheets, the effect of the nuclear levy and Germany, the fact that they had expected to have lifetime extensions to pay for that, but those lifetime extensions were taken away and that led to a much more capital constrained situation. Everyone looks I think at, for example, RWE, which is looking at making major savings in the course of the next couple of years, in particular, I think it is €7 billion worth of savings in the next couple of years. There was a very clear sense of direction that they were rather too capital constrained to take forward the work here.

Q41 Chair: Perhaps regardless of what the reasons were, although those clearly are very important elements in the decision they made, it does leave us with a bit of a problem, does it not? It has driven a coach and the horses through the Government’s hopes and intentions that there would be a good chance of replacing the 16% of electricity generation that comes from nuclear at the moment.

Charles Hendry: No, it does not. I think what we have are two sites, which are very good potential sites for development. Wylfa, I would say, is one of the best sites you are going to find anywhere in any country in terms of their skills base and, in that case, the enthusiasm of the local community. Oldbury is also good but I think Wylfa is exceptional. There are other people who we believe are looking at both sites, who
we hope will come forward to take forward that investment. This was always a programme that was expected to deliver 2022–2023, and there is plenty of time for that to be delivered on that timescale. I remain firmly positive about the opportunities for taking this forward. It was certainly disappointing. I do not wish to hide that in any way but I do not think it derail the Government’s nuclear programme.

Q42 Chair: It may not derail it but it hardly accelerates it. All the signs now are that we may have some hesitation on the part of EDF and there have been rumours about whether Centrica are going to stay in the game. Does the Department have any contingency plan in case you find it is not quite so easy to sell Horizon and that EDF are starting to think perhaps they have different political priorities?

Charles Hendry: First of all we see, as I say, significant interest coming forward for new companies to take forward the work of RWE and E.ON and that could lead to an acceleration of that programme. There may be other investors who have additional resources, different skills that they can bring to that so that it could happen on the same timescale or faster. Much of the work has been done to facilitate that investment, all of the planning issues in terms of reforming the planning system, the generic design approval of process, which has been gone through, and the regulatory justification, assuming they use one of the two reactor designs already approved. So this is a project that is ready to run with, so this does not necessarily mean there needs to be a delay. I think we could see it maintained on the same timescale or possibly even scope for some acceleration.

EDF are also very heavily committed to this market. They have spent many, many hundreds of millions taking forward their investment. They have spent billions in buying the sites in the first place, so this is a very strong area for them to take forward, and I see no indication at all of their pulling back in their enthusiasm for the UK.

Q43 Chair: When do you think Horizon will be sold?

Charles Hendry: It needs to happen soon. I think there is a window over a few months when serious interest would need to be shown. The workforce is being maintained in Gloucester, but if the process were dragged on for a long period, it is inevitable that some of the specialist skills there would start to drift away. I do not think we should be in doubt that finding a new buyer is an urgent requirement—that has been taken forward with urgency by Nomura as the financial advisors to Horizon. Certainly, the Government is very keen to talk to any serious investor.

Q44 Chair: What can the Government do to try and facilitate all that?

Charles Hendry: What we have always said is that we will remove the barriers to private sector inward investment, so if there are additional areas where that needs to be done, we will continue to do so. We have taken forward the work of the last Administration, in terms of some of those regulatory barriers. We are now introducing the legislation on market reform, which will, I think, provide the final stage of the necessary reassurance and framework. That Bill, which will be published shortly, will be scrutinised by this Committee. There will then be much greater clarity about exactly how the process will work.

Q45 Laura Sandys: Carrying on from the Chairman’s point, we just had evidence discussing in some ways some of the commercial considerations, and that includes obviously the cost of capital, the contractual relationship with the counterparty, which I think is seen as adding additional cost and uncertainty to the overall investment profile. Dr Cocker used an interesting term—“patience of capital”. Have you factored the patience of capital into the risk profile of these other consortia coming forward? It is not just our regulatory structure that is going to determine this, is it? It is also whether we have Moody’s approval, which is looking at the profile of these companies. We have the competing investment requirements, both across Europe and globally. I do not know, but from our previous evidence just now it seems as if we are going to have to develop real certainty to secure that investment. Are you not quite concerned about this particular sort of analysis of what this market looks like?

Charles Hendry: I think we recognise very clearly the challenges that are there, but I think we are putting in place a mechanism that deals with it. It is absolutely evident that the capital intensity of a nuclear plant or an offshore wind plant is much greater than a gas plant where the up-front capital costs are lower although the running costs for gas will be greater over time. We recognise that each of these has a different investment shape.

On the counterparty side, we have put forward the proposal that we think is most likely to deliver the investment and also be comfortable with European State Aid rules, and we have made submissions to the Commission to ensure that we are within the rules on State Aid. I think that that structure is most likely to deliver, but we made it very clear that we recognise that there are concerns in industry here. One of the reasons why we were so keen that this Bill should go through pre-legislative scrutiny by this Committee is exactly to ensure that we get the widest possible support for the package of measures that we are putting forward. We also recognise the investors, who are predominantly major international companies, can invest anywhere in the world and they need to find something that is more attractive about the UK regime than elsewhere. So the whole basis of the EMR structure is to give assurances on the longer term for investors that those investments will be justified and will pay off.

Q46 Laura Sandys: If you flip it round the other side and consider value for money for the taxpayer and the customer, at this moment we have the evidence of two consortia. Do you feel that that is creating enough of a competitive environment or do you think we might end up having to pay? It is the balance between paying
over the odds to secure our future generation. Are you taking measures to attract other players into this sector because obviously just two consortia with the pressure of, let us say, the credit agencies as well, strikes me as being a little bit vulnerable to a less than open competition.

Charles Hendry: I would not expect it to be one of the other two consortia that would take over Horizon. I think it would be new investors who come forward, so we would be back to three consortia in that process. Part of that competitive benefit comes from having two reactor designs, so we hope the competitive tension with that will help to bring down the cost of developing and that people will realise they cannot simply take it for granted, an assumption, that whatever price they happen to put it in, the Government will pay. We simply will not. We will not sign up to a contract that we believe is not good for the taxpayer-the bill payer.

At the end of the day we do believe that nuclear should be the lowest cost, low carbon technology on a large scale. Therefore the cost of that should be reflected in the price that goes forward.

Q47 Ian Lavery: The situation this morning with EDF, or the reports this morning about EDF, is greatly concerning, as is the fact that Horizon withdrew from what they had planned at the UK’s Wylfa site. What do potential buyers of Horizon have to demonstrate to DECC before you would allow the purchase to go ahead because I think you say to yourself, Minister, that you are disappointed, however you believe that it presented a great opportunity for other companies to come forward and you have reiterated that fact this morning?

Charles Hendry: Yes, we have been clear that any potential investor needs to be able to meet all of our safety and security requirements. They also have to be able to demonstrate that there is a benefit to the United Kingdom more generally. As part of a consortia they have to have a partner who has experience of nuclear generation, and so we do not think this is something that can be done by an organisation who has no expertise in that sector, and we will judge them on exactly the same criteria as we have judged those who are current participants in the programme.

Q48 Ian Lavery: Does it matter where the companies are based, whether it is in the EU or whether it is outside the EU? Does it matter as far as DECC is concerned?

Charles Hendry: Essentially not. What we are looking for are companies that have real experience and expertise in this sector. We have always recognised that there are not British companies that can take this forward. In two years as Minister I have not met a single British company that had either the capability or the will to take forward a nuclear programme as the lead partner. Clearly we have Centrica, which is in there as a smaller partner, but we therefore need to look at international investors, as we do in many other sectors of the energy market. As long as they can satisfy us on the safety and security issues and their skills as an operator, then we are happy to talk to people and to see how that can take us forward.

Q49 Ian Lavery: The general public will be looking at this very closely, and rightly so because of Fukushima and what happened there. If the reports in the press are correct that there is interest from Guangdong in China, the state-owned nuclear company, together with Toshiba in Japan, where Fukushima actually occurred, people will be extremely concerned that perhaps nuclear power will be produced by a nation, as in Japan, together with China, which has relatively little knowledge in terms of nuclear power generation. The general public will be extremely concerned if that is the case. Is there a difficulty, as far as DECC is concerned, with perhaps Russia, perhaps China, perhaps Japan, coming into the UK and building new reactors?

Charles Hendry: There is not an objection in principle to their being involved in a consortium. I think if we look at the role that Toshiba might play, and I am not going to get into the particular details of any interest that may be being expressed, it is the owner of Westinghouse. Westinghouse has gone through the approvals process with the National Nuclear Installations Inspectorate, so their reactor design has been approved or is in the final stages of that. So that is where their expertise could potentially be brought forward.

In China, there are different companies who have experience of building dozens of nuclear power stations on time and on budget, and so there is no suggestion that these are companies that do not have expertise in this sector. They have extremely well proven expertise in this sector and in looking at how we take this forward in the United Kingdom I think we should be guided by where that expertise has already been proven.

More generally, we have already seen significant investment from companies in both countries into our energy sector. For example, a Chinese company has bought part of the distribution network, bought the old E.ON distribution network and a multi-billion pound investment was put in place there. So as long as we can be satisfied by any purchaser, wherever they come from, on the safety and security issues then we do not rule them out because of where their origin.

Q50 Ian Lavery: I am sure you understand the thought of the British public in that and what decision will eventually be made. Would you prefer private or state-owned companies to take over Horizon?

Charles Hendry: I think that it is likely to be a consortium that would come forward. We believe the private sector is very good at delivering on major infrastructure and major energy projects but we have also, quite actively, sought investment from sovereign wealth funds, which are clearly linked to government wealth in different parts of the world because of their desire to invest in low carbon technologies. We hope the structure of the system that we are putting in place would make it attractive for them to come in. The more that this can be done by bringing in investment from overseas and doing this in a way that
reduces the cost of capital, then the greater the benefit we believe is to the UK consumer.

Q51 Ian Lavery: Finally, if there is not any private, public or any interest or any eventual buyer for Horizon, does DECC have contingency plans for the future?

Charles Hendry: If there is not a buyer?

Ian Lavery: Yes.

Charles Hendry: We have always had an approach of saying we want a balanced energy policy and that would be some nuclear, that would be some major roll-out of renewables. It would be carbon capture for hydrocarbons and we need some new gas in there as well. We are clear that in the event that we cannot get as much of one of those as we wished then we can still have a stable policy. We are not over-reliant on any particular technology but we do remain, as I say, very committed and indeed very positive about the prospects of finding a new buyer for Horizon.

Q52 Chair: One of the problems with the nuclear though is it is a bit exposed to what happens around the world, isn’t it? We have had an industrial accident in Japan, with a big setback, a decision in Germany taken, I think, for domestic political reasons, the risk of a change of Government in France, all those three things have a direct impact on the level of investment in nuclear in this country. So however good the intentions of the coalition are here, we are exposed in this particular technology in a way that perhaps we are not for some of the other renewables to what happens in countries quite a long way away and that are completely outside our control.

Charles Hendry: I think that is inevitably the case but I think that if we wish to see nuclear as part of the mix going forward that is a challenge that we have to accept. I think it is too early perhaps at this stage to know exactly what President Hollande’s approach is going to be to this. But I think at a time when he wants to see more active commercial and business growth then this is one area where international opportunities provide a great opportunity for that growth, and so we would hope that he would be a President who would encourage that continued investment overseas.

It is undoubtedly the case that decisions in Germany have had an impact here, but at the same time we have seen other countries, many of them in Europe, that have decided to continue with a new nuclear programme. Many of them are looking at the model being developed here as the approach that they should be looking at in the future where there is no government subsidy but we create a market framework to facilitate that investment.

Q53 Chair: It does look a bit as though we are hoping for some friendly Russian oligarch with a partner with a bit of nuclear experience to come along and bail us out, doesn’t it?

Charles Hendry: No, I think what we are looking for is a consortium where there is real proven expertise in this sector—people who see the opportunities, which are here, as being very alive and very real, and who want to take forward that investment as a business case. That has been the work of the last Administration, it is the work that we have taken forward and I think if you look at what has been achieved in just five years it is quite extraordinary that since the 2007 White Paper, which put nuclear back on the agenda for the first time, we have now moved to being one of the most exciting places anywhere in Europe and one of the most exciting places in the world for new nuclear investment. So an immense amount has been achieved in five years.

Where one looks at what we are talking about in terms of 2025 and potential 16 gigawatts for investment, that is what has been achieved in five years and so in the next 13 years we believe there is every realistic reason for being able to take this forward.

Q54 Dr Whitehead: At the moment we have one company with serious unannounced plans to develop nuclear reactors and we have, I think, eight sites as possible development arrangements. The NuGen consortium has not announced any concrete plans, and say they will not do so until 2015. The Chief Executive of one company that is still in, GDF Suez, said recently that plans to support new nuclear plants through a Contract for Difference in carbon price were not enough and something is missing. Do you think that apparent almost complete lack of interest in developing nuclear sites that is around at the moment has anything to do with that or is that an unfair thing for the Chief Executive of GDF to have said?

Charles Hendry: I think if you look at the full comment and the full interview of Mr Mestrallet, then you will see that what he was saying is exactly what we are delivering. He said that what they now need is greater clarity on exactly how the contracts for difference are going to work. They need clarity on the counterparty elements of that and that is exactly the process that we are going through this year. We do not have any difference with him in terms of the true substance of his comments. He recognised we have done a great deal to set out a general framework for market reform, but in the course of this year much more detail is going to be necessary, and at the end of the day it is going to be how the strike price is determined which will determine whether we get a positive final investment decision.

I must take up your comments in terms of where you think NuGen are. I am seeing significant interest from NuGen in taking forward the Cumbrian proposals for development. I think they are very active and very committed investors in this country. I think that is a very significant project. EDF is in main league with Centrica, we have a second consortium, and I think we will end up with a third consortium taking over the Horizon project and we will be in a strong position moving forward.

Q55 Dr Whitehead: Do you think the clarity that was sought, certainly as far as contracts for difference are concerned—I think we all accept that is a very important element of nuclear power generation support in the future—might have been taken from the impact assessment to the White Paper which said that contract for difference was a superior way of...
organising such payments than a premium fit because the price risk is borne by Central Government balance sheets, and that was the reason for choosing it. That is not the case now, is it?

Charles Hendry: At the end of the day the National Grid would be our delivery agent for taking that forward. We believe that that was the right structure. They have the expertise, they have the knowledge of the market. They are the people who we felt were in the right position to be the deliverer of this policy. But at the same time what needs to be clearer through that process is that this is not a policy that can be changed at the whim of Government. This will be a legal contract and so the concern that they have is the longevity of it and the consistency of it. What we need to be going through in the final stages in the course of the next few weeks is making sure that people are comfortable with that process.

But we are clear, and this will be part of the Energy Bill assessment that predates your scrutiny, that there are different ways of delivering this and we are very keen that your Committee should look at those different mechanisms and be comfortable as well that we have this approach right. We believe we are right on it but we are keen to see that taken forward in the most constructive way.

Q56 Dr Whitehead: If we are now clear, who will the counterparty be for CFDs?

Charles Hendry: These are legal contracts, therefore no future Government can simply change that without being subject to legal action, but the delivery partner is National Grid and that will be divided into separate organisations; one for its trading activities and one for its management of this process.

Q57 Dr Whitehead: They will sign a counterparty form, as it were, and be the counterparty as far as risk is concerned in the delivering of CFDs.

Charles Hendry: So the contracts are with National Grid.

Q58 Dr Whitehead: They will sign a counterparty agreement ensuring that CFD payments are honoured over the next period?

Charles Hendry: Although that does not fall on their balance sheet. They are not liable, so if the policy was changed by a subsequent Government, the liability would not fall to National Grid so—

Q59 Dr Whitehead: Who is liable then?

Charles Hendry: If a future Government was to change those contracts then legal action would be taken against the Government if that was what the companies wished to do.

Q60 Dr Whitehead: So the Government is liable?

Charles Hendry: Although we have not signed the initial agreement, Government would inevitably be liable for a change of policy.

Q61 Dr Whitehead: So the Government would be liable, is that right?

Charles Hendry: The Government is ultimately liable, and, Hergen, do you want to add more to that?

Hergen Haye: The proposals will come forward with the Bill. We have a model of such contracts and counterpart signing parties, which will ensure that we have to make sure there is no risk to the investor. If there is a price agreed, that price needs to be delivered. If a Government, for whatever reason, changes all of that then there is a question one has to ask; who deals with that risk? That is one of the key considerations we need to evaluate in any contract that has been signed, as many contracts are signed where you have change of law provisions, and so on, where we deal with that risk.

Q62 Dr Whitehead: So the Government is not liable?

Hergen Haye: The Government probably would take an amount of risk.

Q63 Dr Whitehead: How much risk?

Hergen Haye: I would say let us wait until the full proposals are there—

Charles Hendry: This is the work we have been going through over time because we recognise that within industry they are nervous about where the risk balance falls. Understandably National Grid would not take on this responsibility if they would be, themselves, liable for a future Government changing the policy and reneging on a contractual agreement. We, as Government, have no intention of changing the contracts. We believe it is important that we give long-term certainty.

In the event that a future Government should decide it wished to tear up that agreement and to say that, “No, sorry, that is not an acceptable way forward”, then the Government would be liable for legal challenge and therefore for the legal losses, which the company might incur.

Q64 Dr Whitehead: Do you think the position that you have just put forward is clear for future nuclear investment?

Charles Hendry: I think it sets out the right framework. It is also something that we are going through the process now of discussing it with the European Commission to ensure that we get their approval for that process. But there is still, and this will come out in your investigation into the Bill, a preference within industry that we should look at different models for doing that. We have not closed the door on that. We have set forward what we believe is the best model, but we have said that we will continue to look at other ways to see if there is a better way of providing the assurance that they need.

Q65 Dr Whitehead: Is it your intention to provide differential strike prices for nuclear and other forms of low-carbon generation?

Charles Hendry: Yes, and we recognise that different types of technology will have different costs. That is why we are not going straight to an auction. We believe it would be impossible to have an auction on this at this stage because comparing an offshore wind farm with a nuclear facility is going to be virtually impossible. If you add into that a CCS plant, the technology of which has not yet been perfected, it
becomes completely impossible. We would like to move to that at some point in the 2020s. We think an auctioning structure is better at that point but we recognise that different technologies will have different costs but we would expect nuclear to be cheaper than others.

**Q66 Dr Whitehead:** So there will be differential strike prices?

**Charles Hendry:** Yes.

**Q67 Dr Whitehead:** That is okay with State Aid, is it?

**Charles Hendry:** This is the process we are going through. We believe it should be appropriate. We believe it is right that we should reflect the different costs of different technologies, just as we have with the renewable obligation at the moment. Different technologies have different support through the RO, different renewable sources, and that is entirely acceptable within the EU State Aid scheme decarbonising. If they wish to see us achieving very strict carbon production targets, we have to build low carbon plant.

**Q68 Chair:** To go back to the question of the counterparty, I think you said that the Government might be willing to consider some of the concerns expressed. My advice would be that you should start considering that pretty soon. We have just heard in the earlier part of our evidence session this morning from two of the largest players in this industry, who expressed absolutely concerns about the counterparty, and I do not think I am exaggerating—we will look at the evidence later on—in saying that they think the choice of this company to be the counterparty is an impediment to investment.

**Charles Hendry:** We have already been having those discussions over many months. Those are continuing. But what we need to be clear of is the system that we put in place is one that will satisfy the European Commission. We believe that the approach we are taking is most likely to be acceptable under the rules on State Aid. The views that some in industry have put forward we believe may be more likely to fall foul of those rules. As I say, we are willing to look at other approaches. We have had those discussions, they are continuing with industry, but as we go through the PLS process we hope that that will be something that can be looked at as well.

**Q69 Chair:** Are we saying that the European Commission may be forcing the British Government to make decisions about the counterparty, which are directly contrary to those that the industry say are most likely to promote investment?

**Charles Hendry:** Inevitably there is a difference at times between what industry wants and what the Commission believes is appropriate under State Aid rules. This is not something that applies just to nuclear or to energy but to all aspects of Government’s relations with business. We have put forward the package that we believe most complies with EU requirements and industry have other thoughts on how they would like this to be dealt with in the future. We will try to find the best balance for that, which gives the certainty and the comfort to investors but does it within the framework of State Aid rules.

**Q70 Chair:** I do not think you will be surprised if I say I think there will be serious alarm politically if it appears that some interpretation of EU State Aid rules prevents Britain from having the best possible market structure. All kinds of bribes offered to various sources of energy and electricity generation would seem to escape the notice of the European Commission. Why on earth is this rather important aspect of our quite sensible market reforms going to run foul of the European Commission?

**Charles Hendry:** We are putting it forward in a way that we believe it will not fall foul of those rules and those discussions with the Commission are now happening. But at the end of the day we have to be absolutely clear that legally we put forward a package of measures, which will not fall foul of them, otherwise we will be in contempt of those rules and they will not be able to go forward. These rules do not just apply to nuclear. These are EU rules on State Aid where Government is involved in putting in a structure, which could be seen as supporting different industries.

**Q71 Chair:** So a counterparty whose credit rating was beyond reproach is not acceptable to the European Commission, but one that may be so dubious that some people do not want to do business with it is okay?

**Charles Hendry:** What we are saying is we have started those discussions. We need to find out where their red lines are. We need to find out where they have concerns about this process. What we want to do is to end up in a situation that will satisfy the investors and that will satisfy the Commission’s requirements. These are not rules that will be uniquely imposed on Britain. These are rules that would be imposed on any such investments anywhere within the European Union.

**Q72 Sir Robert Smith:** Can I just clarify who pays the Contract for Difference?

**Charles Hendry:** The Contract for Difference is linked into the wholesale price and when the wholesale price is high either less is paid or it is clawed back, and when price is low, more is paid. At the end of the day the investor gets a certainty about what they are going to get.

**Q73 Sir Robert Smith:** Yes, but where does the money come from?

**Charles Hendry:** At the end of the day, this is something that is charged to consumers because we need to get £100-plus billion of new investment in our energy infrastructure and in the event that we do not secure that investment the cost to consumers is going to be absolutely prohibitive. We know what plant is closing in the course of this decade. We lose about a quarter of our coal plant, we lose all of the old oil plant. We are losing most of the nuclear plant and Sizewell B is the only one still guaranteed to be
operating post 2023. We should have seen more investment in a new plant by now.

Q74 Sir Robert Smith: Who decides how much the consumer pays to make it balance the books?

Charles Hendry: That is what the process of the CFD is going to be about. The intention is that we strike a price, which we believe secures the investment in the new plant and all types of different low-carbon plant, it is not just obviously about nuclear, and does that in a way that is at the best cost to consumers. That needs to reflect the costs of the different technologies, that is why the strike price would be different for different technologies but the purpose is to try and do this in a way that reduces the cost of capital because the structure of it means that the companies can borrow at a cheaper rate than they could otherwise borrow and therefore it brings down the cost to consumers.

Q75 Sir Robert Smith: I am just trying to understand where the risk lies if something is misjudged. Where does the cash come from?

Charles Hendry: The cost for the plant is going to be borne by consumers. There is no way that Government will do this. The investment itself, the capital, will be raised by the companies but then the CFD provides a pricing structure and therefore at the end of the day this comes through to consumers.

Q76 Sir Robert Smith: But the CFD takes away the risk of the market price but who guarantees to pay that difference?

Charles Hendry: The structure is therefore a system whereby there is a price that is guaranteed. They know what they are going to be receiving and that is put into the pricing structure on bills. The market can decide between security and supply and affordability but with the investment that we need to be securing in low carbon we need to have a mechanism that factors in the cost of carbon. Part of that is the carbon floor price, which is part of the market reform proposals. Part of it is also the Contract for Difference, which will facilitate the investment in low-carbon technologies. Without that this investment cannot happen and without that investment the consumer is left high and dry because there will not be enough generation to meet demand.

Q77 Sir Robert Smith: I understand all that thinking but the investor that is going to build the plant, that is relying on a Contract for Difference, needs to know at the end of the day someone is going to hand over the cash.

Charles Hendry: Yes.

Sir Robert Smith: How can they assess the risk of that cash default or not?

Charles Hendry: This is a contract, so this is not a Government policy, it is not a whim, this is a legal contract.

Q78 Sir Robert Smith: Yes, but if you do a contract with someone who goes bust you do not get paid. A contract has a risk premium on it working out how robust the finances are of the other side of the contract, and if you are transferring the risk—

Hergen Haye: The price is set for a period of time. Fluctuation, that risk of fluctuation, is what it is all about.

Sir Robert Smith: That is to attract the investment.

Hergen Haye: If it falls below, it will be made up between the contractual parties—it will be settled between the different counterparties.

Charles Hendry: There is a process called the State Settlement Process, which is to ensure that the investors get paid, to ensure that the process is run and therefore that risk is—

Sir Robert Smith: So levies on bills.

Q79 Dr Whitehead: Is it fair to say the price risk is borne by Central Government balance sheets then?

Charles Hendry: No, it is not. The consumer bears the risk. At the end of the day either Government has to fund the plants to be built, which is clearly not something that we can do, or it has to be something where at the end of the day consumers pay. What we have sought to do is to find the mechanism, which delivers us a security of supply, moves us in a low-carbon direction we need to do legally, and does that at the lowest cost to consumers. That is also why we have so much focus on energy efficiency, in order to try and reduce the amount of electricity that people are going to need.

Q80 Dr Whitehead: Forgive me, but what is the mechanism then?

Charles Hendry: What is the mechanism—

Dr Whitehead: You just said you sought to provide a mechanism whereby consumers underwrite and bear the price risk, since it is not borne by Government balance sheets. What is the mechanism?

Charles Hendry: This is the process that National Grid delivers. It is delivered through the strike price. The system operator delivers that system, i.e. the National Grid, that delivers a guaranteed rate of return for each unit of electricity produced and that is then charged through the system on to consumer bills.

Q81 Dr Whitehead: Can we be clear then; is the price risk now borne by National Grid?

Charles Hendry: No. Consumers bear the risk.

Q82 Dr Whitehead: How can consumers, in the abstract, bear a price risk?

Charles Hendry: Because of the mechanism, the settlement process, ensures that, once it is agreed, it is charged on to bills and so according to the volume, which is a different source of technology, which are brought in there, that is transferred into the billing system. At the end of the day, the cost of new plant is borne by the consumers but it also does this in a way that ensures that is set at a predictable level for the investors.

Q83 Dr Whitehead: So the billing system bears the price risk?

Charles Hendry: If the price is set at the wrong level, then either the investment does not go ahead, but the process of discovery, the process of setting the final investment decision, is designed to find the right price at which that investment will happen. That is carried
out by the system operator. They have the greatest expertise in doing this. Their job is to set that price, to strike that price, and Government will be responsible for finally making decisions on some of these areas, but at the end of the day the operator sets the price through the settlement process, and that is the way in which it is transferred on to individual bills.

Q84 Barry Gardiner: Can I ask you to engage in a thought experiment with me here. You know there are energy companies that make their pitch to the consumer through the very fact that they are wholly renewable, not nuclear, not coal fired, not fossil fuel and so on, and they try and attract people over to them in order to have some sense of coherence between people’s principles and the energy that they are buying. What happens if the entirety of the British public suddenly go German, suddenly say, “Goodness me, we do not want to have anything to do with nuclear. We all want to go over to this company over here”. I will not mention it by name because it is not my purpose to big up good energy. They all go over to a non-nuclear renewable supplier and yet all these nuclear power stations are still churning out energy. Who is going to pay?

Charles Hendry: Your world is fanciful.

Barry Gardiner: It is; it is a thought experiment only. But of course what it does do is it exposes the skeletal architecture of the argument and of the different risks that there are brought to bear.

Charles Hendry: No, it doesn’t because the company to which you did not wish to refer would not be in a position to take on customers that it could not service and there would not be enough renewable electricity generation to meet the demands of 60 million people. That does not exist. Therefore they would have to have a massive programme for building plant, which would be more expensive, and those consumers would then decide, “Do you wish to pay much more for that renewable generation or do you wish to go for a different source of generation?” So what we believe is the right way forward for this country and for the industrial users, bearing in mind how much of our demand is industrial usage, is looking for electricity generation at the lowest cost.

We believe the system that we are putting in place enables nuclear to be part of that process and it does it at the lowest cost. Therefore the concept that all of those people will say, “Actually we want to make ourselves less competitive by going for a more expensive way of electricity generation” is fanciful.

Q85 Barry Gardiner: But of course there is technological change and we have heard about the rate of investment in renewable technologies increasing and how price comes down accordingly. Indeed I think you talked about that in front of this Committee before. There is the possibility of technological breakthrough, there is the possibility that the public may shift, not simply because of high-minded principle but because of low carbon and the financial incentive and benefit that they might be able to gain elsewhere. So the key thing here is are you banking against technological change in terms of such a switch in demand for nuclear taking place? If there were such a switch in demand for nuclear I think the fundamental question that we all want to know the answer to is who would pay the companies what Government has promised. It is a long time since I did contract law but usually that would be the counterparty. You seem to be telling the Committee that in this case it would not be the counterparty, it would be the Government.

Charles Hendry: The cost for the contracts is borne by the consumer. The consumer is receiving the electricity that is generated. The process that we therefore go through is one where we have a system operator handling those agreements but where the ultimate cost of that, through the settlement process, is spread across consumers. In order to facilitate the investment in plant where the payback is not in a few years but is in decades one has to have a long-term contractual arrangement. Historically these plants have tended to be built by Government who took on that risk directly because it was built on their own balance sheets, but if one is looking for a system where individual investors will be bringing forward that investment then they have to have a degree of certainty, not just for nuclear, but for offshore wind where similar issues arise and follow those—

Q86 Barry Gardiner: I understand. Let us have clarity then. I think I understand that you are saying that in a world, post 2030, maybe post 2035, new technologies may have come on and given us a far cheaper source of energy than nuclear could possibly provide, but, in order to get the nuclear investment into the market, Government will have promised, through the Contracts for Difference feed-in tariffs, a fixed price to the industry going forward. We will then possibly find ourselves in 2035, 2040 in a situation where those consumers who are now with those new technology companies, new generating companies, that have set up much cheaper provision, will still be paying back the old contracts that you had National Grid enter into.

Charles Hendry: Because one has to make a decision about new plant being necessary.

Barry Gardiner: I am not saying yes or no. I am just saying let us be clear that that is what is happening.

Charles Hendry: Absolutely. But we do believe that nuclear plant should be able to deliver the lowest cost of large scale low-carbon generation and therefore this should be a good deal for consumers. It is possible, completely possible, that a new technology will be developed, which none of us is yet aware of. Traditionally they take 30 years to come from operation to being large scale. Normally that is about the timescale that it takes. We hope that will happen, and we will see other technologies coming forward. But the consequence of us not securing this investment is catastrophic for consumers. If we do not get investment in the new plant, which is going to be necessary, then it is going to be rationed by price because there will not be enough generation to meet demand. In those circumstances the consumer is the first person who loses so if we need to get new investment in plant one can forever put off those decisions thinking, “Well, you know, something better
Then moving into 2020 and the we are taking forward work across the switch-off of German nuclear. I do not believe it has changed it. This is a long-term contract for difference and so that gives them the certainty for a guaranteed period of years that this is the price that they will pay. Hergen Haye: I think that is the key. It is not an indefinite contract so there will be a time limit to ensure it is sufficient to give that return on the capital but if we think about new technologies and route to market 30, 40 years to come, by that time most of these contracts probably we enter into now will have ended. It is also a gradual process so the first CFDs for the first few plants will be signed now. It is not that we are signing CFDs for all nuclear plants to come. It will happen when these plans come on stream, when the investment plans come forward, equally for wind.

For CCS, always sending the signal what we think low-carbon requirements for the UK long-term market are necessary to give us that margin, to have security of supply and to meet our carbon targets. Charles Hendry: Then moving into 2020 and the process of auctioning, so that we can then be ensuring that we bring in the lowest cost low-carbon option for generation, which is necessary.

Q87 Sir Robert Smith: Crucial in the mind of investors is the fact that it is a contract that is protected by contract law and therefore cannot be reneged on when this new technology comes along. Charles Hendry: This is a long-term contract for difference and so that gives them the certainty for a guaranteed period of years that this is the price that they will pay.

Q88 Sir Robert Smith: Given the setback in the nuclear climate, is the Government redoubling its efforts on CCS to at least make sure we get some low-carbon, big generating technology? Charles Hendry: We are taking forward work across the sector for low-carbon technologies. We recently launched the competition for the CCS project, £1 billion up front for that. The contract for difference is an integral part of how we want to turn that from being a few pilot projects into a long-term industry because they need to know how they are going to get paid in the longer term for generating electricity with CCS. So that is a core part of that. Similarly, the work that we are doing on offshore wind to bring down the cost of offshore wind by 40% over the course of this decade is an essential part of the ambition because the extent of the roll-out has to link into the cost of the technology to consumers.

What we want to do is to guarantee the security of supply, we want to do it in a low carbon way, and we want to do that at the lowest cost to consumers, and that final part, lowest cost to consumers, is critical in all of this work.

Q89 Sir Robert Smith: What is your assessment of the consequence of Fukushima on the incentives we need for nuclear power in this country? Charles Hendry: I do not believe it has changed it fundamentally. We have looked at, through the work of Dr Michael Weightman, who is the chief regulator, any lessons we need to learn. He submitted a report to Government, we are looking at how we need to take forward those recommendations but we should be in no doubt that this was 40-year-old-plus technology that was being used, that we have looked through the national policy statements at siting issues in terms of whether that needs to be addressed. We delayed the final parliamentary approval for the national policy statements until we had the initial recommendations from Dr Weightman so that we can take account of any changes, which should be necessary in that process. But I think that the situation, which applied in Japan, is very radically different from anything that could ever apply here. But we have, because we have put the onus on caution, made sure that we looked at this in a very careful way.

Q90 Sir Robert Smith: It has impacted indirectly on us through Germany in the sense that it is part of the calculations that have affected this consortium and their finances. Charles Hendry: It did. I think Germany came to very different conclusions partly for historical reasons, but in terms of the technology that was applying at Fukushima that does not apply in the new reactors, which are being looked at here. So the back-up issues in terms of back-up power supplies will be different here. The whole of the generic design approval process was delayed in order to take account of any changes to the design, which might be necessary following Fukushima. I think we have a very robust approach to assessing those issues, so that any new plant will be put in locations with suitable mechanisms in place to guarantee their longer term safety.

Hergen Haye: The switch-off of German nuclear plants was predominantly not because of direct safety concerns but more due to political concerns and no support for usage of the older plants in Germany.

Q91 Sir Robert Smith: Obviously with Japan switching off its nuclear feed, consumption of LNG is going up there, how much of an impact is that likely to have on our own domestic gas? Charles Hendry: We are looking at this in our gas generation strategy because there are many new sources of LNG which will become available but at the same time significant new demands. What does that mean in terms of our gas strategy moving forward? How does that link into the development of shale gas? How quickly may that happen, if it happens at all? We need to be clearer about what we think is the long term security of gas. For example, if you look at Western Australia, the LNG export from Western Australia alone will be either the first or second largest in the world by 2020. So major new sources of supply are coming on, but we expect to see significant increases in demand in Germany, in Japan, in China, in India. So even in some countries where they will be looking at nuclear we also expect significant demand for gas too. This is all part of the gas generation strategy where we have issued a call for evidence and will be publishing our conclusions in the autumn.

Q92 Chair: Just very briefly and finally, do you have an assessment yet of what may happen in France as a...
result of the new President—we do not obviously know the result of the elections next month—and given the exposure that we now have to the intentions of EDF in terms of their rather crucial contribution to our nuclear programme, do you have any judgments about that at this stage?

Charles Hendry: We do not have a definitive view on it but we believe, as I was saying earlier on, that the benefit to the AREVA manufacturing plants of being able to have contracts overseas, if we are going to see fewer new power stations built in France, becomes a very important part of their industrial strategy. We have not picked up anything that would suggest President Hollande will be uncomfortable about EDF investing in the United Kingdom. We believe that they will continue to support it, as had been the case under the previous Administration.

Q93 Chair: Decommissioning costs, are they going to be a threat to EDF’s ability to go ahead with a new programme here?

Charles Hendry: No. A reactor is now designed with decommissioning in mind, which is a fundamentally different approach from the historical reactor design where it had not been considered at all. The cost of those issues are assessed, and they need to be taken account of because all of the developers are aware that they must be responsible for those costs.

Q94 Sir Robert Smith: Could we be in a similar situation if the French direction changed quite dramatically? The EDF’s finances would then be hit in the same way as the German generators were hit by an early decommissioning route, and then undermine their ability to invest.

Charles Hendry: President Hollande has said he wants to bring forward the closure of two plants, which are both close to the German border, but that is the only statement of what will happen in the course of this five years. We are not expecting a major decommissioning programme. I think that there is a sense that given the investment that has gone into these plants, they need to run their proper lives rather than incurring additional cost for French consumers through an early closure programme.

Q95 Barry Gardiner: Have you made an assessment of the French Government’s and the French banks’ exposure to Greek debt and the impact that might have on EDF?

Charles Hendry: No, we have not made a specific proposal on that. We try to understand the full range of issues that this is clearly a situation that is evolving day by day. EDF, as a major international company, would be borrowing at international money markets. It would not purely be through French banks but if it becomes evident that there is a wider issue to address then—

Q96 Barry Gardiner: But you will be aware that whereas in the UK both the Government’s and UK banks’ exposure to Greek debt stands at 14.2 billion, the French Government has 15 billion and French banks have 42 billion, and that might have a significant impact on EDF if it is seeking to put its investment into the UK. That might affect us.

Charles Hendry: I absolutely understand the point you are making but clearly, as I say, this is a rapidly evolving situation and the circumstances this week are different from those last week. It is inevitably going to be hard to predict the full ramifications of what needs to happen in those circumstances, but I agree with you that it is something that we need to understand more effectively.

Chair: Thank you very much for your time this morning. It is much appreciated, as ever. The Committee much looks forward to its pre-legislative scrutiny of the draft Bill, and looks forward to seeing that draft Bill next week, I think. I am sure we are going to be talking to you about that again in due course.
Tuesday 11 September 2012

Members present:
Sir Robert Smith (Chair)
Dan Byles
Ian Lavery
Dr Phillip Lee
Albert Owen
Christopher Pincher
Dr Alan Whitehead

Examination of Witnesses

Witnesses: Alyn Jones, Lead Officer, New Nuclear Local Authorities Group, Professor Nick Pidgeon, Professor of Environmental Psychology, Cardiff University, and Bob Brown, Corporate Director, Corporate Services, Sedgemoor District Council, gave evidence.

Q97 Chair: Welcome to our second session of evidence taking on Building New Nuclear: the Challenges Ahead. Could you just briefly introduce yourselves and the organisations you represent?
Alyn Jones: Good morning. I am Alyn Jones from Somerset County Council but also representing the LGA Group of New Nuclear Authorities this morning.
Professor Pidgeon: Good morning. I am Professor Nick Pidgeon from the School of Psychology at Cardiff University.

Q98 Chair: Thank you very much for agreeing to give evidence today. First of all, I must remind the Committee of my entries in the Register of Members’ Interests to do with the oil and gas industry and, in particular, a shareholding in Shell. Professor Pidgeon, you have studied public-sector risks relating to all types of energy generation. What are the key factors that most influence the public when it comes to nuclear power stations in the UK?
Professor Pidgeon: Thank you. I think there are some generic issues here. The first point to make is that there is a difference between national attitudes and attitudes at a local level, and we may get on to that. There is no single public as well, and I think that is very important to bear in mind. For example, women and men have, as documented, quite different views on nuclear power. The second generic point is that we have known from many years’ work on science and technology studies that people do not oppose risky technologies like nuclear just as a result of lack of knowledge. If life were that simple, it would be easy just to say—as engineers tried to in the 1950s and 1960s when opposition was rising to nuclear—this is good technology, it is safe. Actually, that did not resolve the unacceptability issues. Knowledge is a complex matter. A science-literate public is very important, but it is not the only issue. What are the other factors underlying this? There are really three things. First, there are a series of qualitative factors that nuclear has. Involuntary exposure is one. People do not feel they have control over the risk, which makes the risk more unacceptable to them. Second, the key thing in the literature is distrust in risk governance. We know that if people distrust the regulation and management of risk, either at an industrial level or at a government level, then they are more likely to feel the risk is unacceptable. Finally, the other side of the coin is that if there are visible benefits that go to communities or individuals from a risk issue, they are more likely to see it as acceptable. There is an interaction between the two in people’s perceptions. The only caveat to that is if there are large benefits but they are felt to be unfairly distributed—this was the problem with GM food, for example; the benefits went to multinational corporations and not to the local people who were being exposed to the risk—then again that makes things more unacceptable.

In terms of nuclear, it has many of these—involuntary exposure; the fact there have been major accidents reported in the media over the years; the invisibility of radiation, so the fact that you feel you can’t control that exposure; a feared outcome, which is cancer, rightly or wrongly associated with exposure to radiation or certain cancers associated with exposure to radiation. A key message, which I think the industry learnt over time but took a while to really get, is that there has been a history of distrust in the industry, basically stemming from past secrecy around the industry. That stems back, obviously, to its historical legacy, and the link between the military and the civilian programmes. Distrust has been there in the survey and other evidence we have seen for many years.

Q99 Chair: You say there is a difference between men and women. For the record, could you confirm which way the difference shows up?
Professor Pidgeon: Yes. It is not just with nuclear energy, but women are more cautious about nuclear energy, but women are more cautious about nuclear energy. They are less accepting of nuclear energy on average, on aggregate in surveys. That does not mean that there are not lots of men who do not like nuclear power and there are not some women who are supportive of nuclear energy, obviously. That is a very subtle effect and again, as far as we can see, is not due to lack of knowledge. It is more due to the way women and men are differentially socialised, as we would say as good scientists, into thinking about technology and risk issues and the fact that there are different almost moral frameworks that boys and girls in particular adopt when they are young in relation to care for others and the environment. There are some quite complicated factors there.

Q100 Chair: Is there any research that shows the different perceptions by age range?
**Professor Pidgeon:** There is some research to show this, but no conclusive evidence on that. I think as people get older they become more accepting of technical fixes to environmental problems, problems like nuclear. But that is correlated with the fact that sometimes people become slightly more conservative, not in a political sense but in a traditional sense, as they become older as well. One has to correlate for other factors.

Q101 **Dr Lee:** Just a small point. In medicine you need informed consent to engage in a procedure. To what extent do you confirm that the people you are asking in your survey actually have informed consent to make a judgement of perception of risk?

**Professor Pidgeon:** In a technical sense? All our work—

**Dr Lee:** No. It is all very well saying, “Well, 35% of women surveyed think that nuclear power is risky and only 32% of men do”, but if they all do not understand what the risk is then what is the point of having the survey?

**Professor Pidgeon:** Yes. It is a very good question. All our work goes through ethics committees, so from our perspective we have to ask for consent before we do any research with participants. There are two ways of studying this. You are absolutely right that surveys only give the gross overall characteristics of a set of perceptions and we know that, depending on how you phrase the survey questions, you can get rather different answers. A good example would be we would ask a basic question, “Do you like nuclear power or not?” and you might get 40% for and 40% against with some in the middle. If you phrase it as, “Would you like nuclear power if it could be seen to contribute to dealing with climate change?” you get a slightly higher or a higher endorsement of that statement. So you have to be very careful with surveys.

What we do in parallel with the surveys is qualitative work, and there you get a much richer picture of the way people are talking about a risk issue and a technology issue. Where knowledge is particularly low, you can use knowledge-based techniques where you supply people with information about the technology or the issue as well. There is always a danger there that as a researcher you are framing it around a particular position in what is often a highly political debate, but one tries to be as neutral as possible, presenting the arguments from the industry, arguments from government, arguments from the environmental organisations as well, and then you allow people to debate. Given time, if you took a day and a small group of people and gave them information, you could arrive at a set of positions that people had that were rather more informed. So you can overcome that question by using more deliberative and in-depth techniques.

Q102 **Albert Owen:** Just for clarification of the differential between support among men and women, it is not unique to nuclear?

**Professor Pidgeon:** No, it is not.

Q103 **Albert Owen:** Have you done other forms of energy generation, oil, coal, gas or whatever?

**Professor Pidgeon:** It has been well known in the literature. It is often quite a small difference, but it is a robust difference. It is always there in surveys. It is primarily associated with what you would call mid-range environmental questions, by which I mean not so much the large-scale things like climate change and not so much the small-scale things like environmental litter. It is things that affect a local community, but at this kind of mid-level, such as chemical pollution from a local plant.

Q104 **Albert Owen:** It is not an ideological reason?

**Professor Pidgeon:** No, it is definitely not ideological.

Q105 **Albert Owen:** You have touched on the fact that it is probably because the industry has been male dominated in the past, as has coal and many other industries. Would that be a factor?

**Professor Pidgeon:** I think it is the other way round. The fact that we have relatively few women engineers is a function of the early socialisation processes with men and women. Girls are not, therefore, encouraged to go into engineering-type careers. So both issues are a function of that original way society brings up young children to think about technology.

Q106 **Chair:** Mr Brown or Mr Jones, do you have any views yourselves?

**Bob Brown:** I do touch upon the issue of risk because I had the benefit of giving evidence to the Science and Technology Committee on a similar subject. I think for the communities the issue of risk is where is it considered in the process or how it is taken account of in the process of deciding where a new nuclear power station goes. I think that is a critical issue for the communities because, while the communities surrounding Hinkley Point are very well informed—they will have relatives or friends who work at the station because there has been a Hinkley Point A and a Hinkley Point B—so people will understand the issues, in terms of engaging with risk through the process, that is the difficult area because it is not dealt with through the DCO process or it is not dealt with within the planning process. I think under the Natural Planning Statement it was to be dealt with in the technical area, so it is to be dealt with by the technical, scientific consenting regimes rather than in the planning regime. The difficulty with that is that people and communities generally are not familiar with that more technical consenting regime and how to engage in it. They are familiar with the planning process, and perhaps a move to include issues of risk so that communities can engage in that through the planning process may help address the issues of risk and make possible a wider community discussion about how people perceive risk more generally, because it seems to be hidden in the technical areas.

**Alyn Jones:** To add to that, in locational terms the closer you get to a nuclear power station the more accepting the community are of that. That is something that is borne out of the consultation exercise that we have done as local authorities, but also the developer has done it in the case of Hinkley...
Point C. The principal concerns are down to the risks associated with construction; the risks associated with the social impact of such a large number of workers coming into the local area. Beyond that, the risks are understood to be something that is managed and dealt with, but I would agree with my colleague Mr Brown that the planning system is difficult enough and the community do not respect that, and why should they? The planning system is built to be accessible, whereas the consenting regime for some of the licensing and more technical aspects really is not built for that engagement process and is not required of the developer.

**Q107 Chair:** We are coming a bit more to the difference between local community and national perception, but on that issue of where the risk should be judged, is the planning process informed enough to take the technical decisions on the risk or is the whole idea to try to get the technical risk assessment into a more informed process?

**Alyn Jones:** That is correct. Essentially, the two processes should be treated separately and the planning issue is not necessarily the technical issue. The key concern is, because the community have the key access point of the planning system, to know that risk is being considered by the planning inspectorate, by the local authority. The key issue is that, relatively speaking, it is undecipherable for the community to see those two points and see the separation. There has been nothing more frustrating for the last three-and-a-half years than explaining to the community the difference between an Environment Agency consenting regime and the planning system. They just want to know about their nuclear power station in their local area and how it is going to be managed. We do not have a single consenting regime that deals with that, so we have to try to fill those gaps on behalf of our communities.

**Bob Brown:** Those issues of risk were acknowledged in the previous planning process, I think under Planning Policy Statement 25. Where there was an issue of health risk that was significant, it was appropriate to come into the planning process and be considered so that it could get an airing. I think reassurance of the technical regimes that would give assurance about health could come into the planning process to give that reassurance to the local communities when the development was being considered.

**Professor Pidgeon:** This is not a new issue. It was raised years ago in the original Hinkley inquiry. I think for the last time this issue was raised there. There is a disconnect in the sense that it is not necessarily the developer’s responsibility to engage on this. The local council do not have the resources to do it, and HSE and the ONR, the nuclear regulator, is in some sense removed from that local process. We do not have a process whereby we could have a conversation about that critical issue with local communities. I am not sure what the solution to it is. It is a different planning framework or some kind of different planning system.

**Q108 Chair:** More engagement by those other authorities with the public in the area that is affected?

**Professor Pidgeon:** Yes.

**Q109 Chair:** Does the track record of Britain’s nuclear safety have any perception on public risk? You talked about reports of incidents. There have been some incidents, but the big reports are ones from overseas.

**Professor Pidgeon:** I think the answer to that question is that it is clear it has had an influence. As you say, since the Windscale accident in the 1950s there has not been a major nuclear accident in the UK. What we have detected from our research into the change in attitudes over the last 10 years—that is prior to Fukushima—is that that is one of the factors that reduced opposition to nuclear energy in the UK. It is also alongside the debates about climate change and energy security. If you look at some of the data that showed what people’s main concerns were 18 months ago at a national level, primarily the radioactive waste issue was the unresolved issue that people would raise first. Now, following Fukushima, accidents have become much more salient to people and that is one of the first things people will raise. Again at the local level, we did very in-depth interview research, not at Hinkley but at Bradwell and at the Oldbury sites when they were both operational. People said to us, “Well, there has not been a major accident locally”, and that was one of the reasons why the local management of the industry there did have some confidence among the local population. Trust had been built up over a very long period of time and that was clearly one of the reasons. Keep your plants safe, I think, is the answer to that one for the industry.

**Q110 Albert Owen:** Still on the theme of attitudes and public opinion, the media have been suggesting that non-European corporations are interested in overseas. Do you think this has an impact on public attitude towards nuclear power per se because a non-European company could be running it?

**Professor Pidgeon:** It is a very good, interesting question. It is an interesting question for the whole of the debate about energy infrastructure. I think, not just nuclear. Partly my answer is that the question should be studied and it has not been studied, certainly in the last 12 months. Work that we have done does show, though, that people are very concerned about dependence on overseas countries for energy, our energy security. I know there were examples. One narrative that has come up in our work is, “Remember when the Russians cut off gas to Ukraine or wherever it was”. People have picked that up from the media. My suggestion would be that any connection between Russia, China and rather more distant countries and ownership of nuclear power would raise some questions for people, but it is an interesting empirical question as to how significant those would be. EDF is a French-owned company by contrast and the engagement at Hinkley Point seems to have accommodated that. That does not seem to have materially changed the way people are engaging with that site and that company.
The one thing I would say, which is not exactly on the perceptions issue, is that we have to think about what has happened in Germany. There is a phenomenon in the literature that is called secondary amplification of perception of risk, and I mentioned it briefly in my evidence. It is quite a complicated effect whereby perceptions may well change in other countries or in other industries. There is a classic example of some French cheese makers who once had a problem with bacteria in their cheese and their Swiss competitors were pleased to hear that because they thought they would sell their cheese and the other cheese would be embargoed for a while, but then sales in the Swiss cheese collapsed as well. That is a secondary—what we call a ripple—effect. What has happened with Fukushima is that perceptions in Germany have changed quite radically—they were always very different from the UK—and that has affected the decisions of the German Government. As we know, that has fed through to decisions that the German-owned companies have made.

Q111 Albert Owen: I am sure we will come on to that but, just for clarification, you do not believe that the fact that there is a potential for non-European companies to take it over is going to affect the attitude of people and people are a bit concerned now about the dominance of non-British companies within the European Union running energy.

Professor Pidgeon: No. I do not think I said that. I said it is an interesting question that we should study.

Q112 Albert Owen: I know you said that. I want some answers.

Professor Pidgeon: It is difficult if you do not have direct evidence. But what I do believe is—

Q113 Albert Owen: Fine. Can I try to help you? Were you trying to say that in the last 12 months, because there was no Chinese and Russian involvement, there were concerns about the French dominance or the EU dominance of the UK’s—

Professor Pidgeon: No, I was not trying to say that. I was trying to say the opposite.

Albert Owen: The opposite? Okay.

Professor Pidgeon: Yes, but I think if China and Russia were involved as partners or owners of one of these facilities, one of the proposed nuclear facilities, that would raise genuine concerns for people because of the distance and the obvious political history between the West and China and Russia over time and what has happened over the Russian gas being used for apparently political ends and that being reported.

Q114 Albert Owen: Mr Jones or Mr Brown, do you have any—

Alyn Jones: At the particular local level, to deal with the question as directly as I can, I think one of the key issues is that the developers are often very good in terms of making sure there is a presence locally. While there may be a global French, German, Chinese corporate feel to the organisation, we have certainly found, and I know from working with my colleagues in Anglesey, that Horizon, for example, and EDF make a presence felt. They do their utmost, I think, to integrate into the community, but also they are dealing with the current station as well. They have that legacy associated with it, so there is an association that is there. Again, it strays beyond where the company is from. There are some comments from the community around some of the attitudes of the developer, when they see something they do not particularly like, that is predominantly based upon the country of origin of that particular developer. But we are not seeing anything that has come from that; that is purely an opinion from the community.

It is fair to say that we have seen, certainly in our local community, and I know from working with colleagues across the country, developers being in amongst it, if I can be so direct. They are there day to day; there is a presence in the local town; there is a presence in the local school. I think that is probably one of the key issues. While there may be those higher corporate issues, we are finding that there is a much more aggressive attempt to make that feel like a local project and see the local community as part of that and be part of the local community.

Bob Brown: I think that is right. We see the local people engaging on the ground from EDF and they are seen to be locally orientated and dealing with it within the community. The wider issues of where ultimately the finance is coming from is not playing out significantly, I do not think, compared to the real local issues of the impact of the immediate development as it comes forward.

Q115 Chair: So advice to any new entrants is to copy that model of a local presence that reflects the local community and interacts at that level?

Bob Brown: Absolutely.

Alyn Jones: I would agree with that. To drag it down to its absolute base level, understanding that there is somebody within the organisation who can talk about a particular road junction, a particular roundabout, a particular school where there is a particular impact is a key issue for the community in how they would deal with that point.

Q116 Dr Lee: It is one thing for Americans to own Asda. Okay, so foreign ownership of business like that, I think most people would say, “Fine”. I am not so sure that the people would feel the same about foreign ownership of something like a nuclear power station. Do you think that the public know that EDF is essentially the French state? Do you think people know that?

Alyn Jones: I would argue that there is an acceptance within the community that it is definitely a French company.

Q117 Dr Lee: No, but the French state? Not a private company, that it is a state organisation? Do you think they know that?

Alyn Jones: I do not think we have the evidence or the experience to answer that point directly other than to say that they certainly know it is a French company.

Q118 Dr Lee: Do you think it would make a difference if they knew it was the French state as opposed to a French company?
Alyn Jones: There are a limited number of respondents that we have seen through the Hinkley planning process that have commented on that point. The key issue is that it is not material to the planning process, but also the assumption will be that there is a longer process. The community feel that there is a longer process that Government are dealing with in relation to final electricity market reform, the strike price for electricity, and that that is being managed through. Whether they are accepting of that point I can’t answer.

Q119 Dr Lee: The same applies to the Chinese involvement. That would be the Chinese state as well, wouldn’t it?
Alyn Jones: I can only assume so, yes.

Q120 Dr Lee: I am not convinced that the public know this. It is very difficult to make a judgment on the perception of foreign ownership. Roman Abramovich owns Chelsea; we know that a foreigner owns a football club. Everybody knows that. We know that Walmart owns Asda. But I am not so convinced that people understand that these power stations are going to be essentially owned by a foreign country, foreign state or government.

Alyn Jones: The only way I could answer that is to recount a particular incident whereby a member of the community particularly close to the site itself was commenting on concern about French construction technique, about delays that have happened in the Flamanville construction and how that would be taken into account, how the matter of delay would be taken into account in the planning process. So there are members of the community out there who know that it is a French company and that the French company will be coming to build it. There is no doubt about that, and it has certainly been a key feature of the evidence about how do we know that the regimes are the same, how do we know that the practices in France, or any other location in the world for that matter, will be suitable and appropriate for Hinkley Point? They are the sorts of questions that the community are asking, so I can only infer that they understand.

Q121 Dr Lee: I guess my point is that when you are dealing with something like a nuclear power station it is not like you are dealing with a car plant. I think people are quite comfortable in Britain about the concept of foreign ownership of business. They are accepting of it. They understand that British companies own foreign businesses themselves, so there is a sense of free trade that is part of the British psyche, I would suggest. But when it comes to infrastructure projects and something of such great importance as a nuclear power station where potentially—forget aircraft carriers and tanks and everything else—somebody can turn a switch off, this country is in a pretty weak position, is it not? If something of integral importance to the country is owned by another country, I would suggest that the public perception of it is less supportive than for private enterprise.

Bob Brown: I think perhaps there are two issues. One is that the community around Hinkley Point are looking at the immediate development by EDF of a nuclear power station on their doorstep. The ownership of the wider programme that is proposed and the other developers, I think, do not play a part in that community development. They are looking at the immediate issue of EDF. They know EDF because they have been receiving their bills from EDF for some time. They have a base in the area. They did the sensible thing of setting up local offices in Bridgwater, which is the closest town, and they have really developed a presence. I think certainly Sedgemoor’s experience is that the communities will look at EDF rather than necessarily the wider programme. They will comment about the French, that it is a French company, but we have not seen the debate go wider than that over the whole programme of those developments.

Q122 Albert Owen: Can I bring you back to the local and national attitudes towards it. I think the three of you have mentioned a differential. What are the big pluses that the local community sees and what do those opposing it see as a negative? Can you explain that with particular reference to Hinkley C?
Alyn Jones: I think the key concern for the community is the construction process.
Albert Owen: Jobs?
Alyn Jones: Or the impact of the construction process. Clearly, they are keen to derive as much benefit from it as possible in terms of jobs and local opportunities entering the supply chain. That is something that we as local authorities are working with the developer to try to facilitate, as any local authority would. One of the key issues is that that is one of the absolute key concerns, mainly because the people who live closest to the current sites of Hinkley A and B have friends and family members who work there, so there is already an association with that. It is about the fact that there will be a significant number of HGVs going past their front door for a 10-year period. There is going to be a significant increase in work force in the local town. They are the sorts of concerns when you get to the real local level. I think what we have seen is the—

Q123 Albert Owen: What do you call local? It is a genuine question. I live close to a nuclear power station, but I am 16 miles away. Are we talking 30 to 40-mile radiuses here and less? Do you see the attitudes changing in those radiuses?
Alyn Jones: I think anecdotally we have seen that within that 25 to 30-mile radius there is a good understanding of the project within reason. There is a good understanding of what the potential impacts could be. The further you move out the concern changes. The concern changes to one of principle—the principle of new nuclear, the principle of a new nuclear station. There are a number of residents of Somerset, for example, who do not know there is a nuclear power station in Somerset. Why would they? It is something that is just a characteristic of their community, and if you are at the fringe of Somerset that might not be the case. We know from our other
colleagues across the country that is the same point. The construction is the key issue for the majority of the local communities that are those who have the usual concerns associated with any new nuclear station, but the closer you get the more concerned they are about how it is going to operate, how noisy it is going to be, how dusty it is going to be. Then it gravitates away. The further you move away from the site, the concerns become more about the principle of new nuclear as opposed to the actual construction of the site itself.

Q124 Albert Owen: Would you like to add anything?

Professor Pidgeon: There is the phenomenon that people who live very close in, in this 10 to maybe 15-mile radius, are more positive than in the national polls, although again that is more complicated because they are a bit more polarised as well. Those who are for are more strongly for and those who are against are more strongly against. Interestingly, as you move out, that is right, you tend to get more opposition than in national polls. Geography also matters greatly as well, so it is not just a geographic radius. An interesting one is Bradwell, which is obviously on this side of the country. Across the water in West Mersea there has been a very strong opposition for years and years and years. Even though they are quite close, because the station is visible, they do not benefit from any of the local jobs because they are a long way around the estuary there, and they feel they just get all the potential risks if something went wrong. So you have to look at the local geography as well.

I think in our research we did pick up that waste was a concern. Again, coming back to the trust question, everybody wanted to be consulted about a new nuclear power station at Hinkley Point irrespective of whether they were for or against the principle of it. I think the involvement question and the process question is very important here as well.

Bob Brown: I support what my colleague Mr Jones has said, but particularly with emphasis on Bridgwater, which is the main town, which is in a difficult position inasmuch as Hinkley Point is situated in West Somerset, which is the neighbouring local authority, but actually on a peninsula that runs out to sea slightly, but all the transport needs to come through Bridgwater and Sedgegemoor. A lot of the temporary campuses that will host the workers will be based in Bridgwater. Those issues play out locally as concerns, as well as the transport, which means that all the lorry movements will have to funnel through Bridgwater and out the other side. I think also there is considerable benefit in terms of the jobs and the economic investment that is going to come with that, but they will not all be local jobs. The travel time for the local area is 45 minutes, which means that people will be coming from some distance, and that will be considered local within the development itself. But there is a significant element of outside labour that will come because of the immediate need for skills in the area that will not be either in this country or immediately locally because this is going to be the first nuclear power station that has been built for some considerable time in the country.

Q125 Albert Owen: Thank you. Final question specifically for you, Mr Jones. You have mentioned in your evidence the importance of not just the local community but the local authority in the process of new nuclear build. Do you see the current processes, from experience of the past and the current experience in Hinkley Point, as being sufficient or do you think there should be some sort of national guidelines from central Government to say there should be this minimum amount of engagement and there should be this amount of benefits going into the local area?

Alyn Jones: To a degree it is horses for courses in terms of what is appropriate, what is relevant for that particular local area and how that is going to be derived—the availability of a work force, for example, to deal with particular issues. Prescribed guidance may reduce flexibility between a local authority and a developer. I think we have found, and certainly colleagues across the country in the LGA group are finding, that there are different circumstances, and there are different solutions. Colleagues in Cumbria have very different views about how to approach assessment of the application, and how to work with a developer. It is not that we have done it wrong in any way; it is just that they want to do it slightly differently. Everyone is learning the lessons from the mistakes we have made and the things that we have done well. From our side, I think there is a value in the local authority being engaged in that process, but I think it is for the local authority to determine the impacts with the developer and then work out the best approach to mitigate those impacts.

We have found that it has been a very long process and the formal consideration of the application is relatively short now. We have been working on Hinkley Point for about four years now, and I am sure the developers have been working slightly longer than that. The teams have been working very hard to make sure we take account of all those particular concerns. We have done what we can in the time allowed. There are clearly some issues that will not be resolved, there are clearly some residual impacts, but we have done our best to make sure that those are addressed.

Q126 Albert Owen: Isn’t the focus of attention too much on the construction period? When you are talking about such a big infrastructure project, there is going to be strain on the local authority for many years, on new schools and various things like that. Shouldn’t there be some sort of guidance from Government to say, “You need to look beyond the construction period”? Yes, you will have a skilled work force, but they will be predominantly construction workers and then it is down to just the generators, and there will still be the transport issues if many of them are within a radius. Shouldn’t we be looking more long-term? I think that is your concern from what I read in your evidence. What can be done? Our report is your opportunity to get the message across to Government that we should not be just looking to short-term jobs, welcome as they are, but to the long-term future of the communities.

Alyn Jones: I think one of the key points is that the Energy National Policy Statements could have more
reference to the legacy benefit, ensuring that legacy is taken into account—

Albert Owen: Just like the Olympics. Alyn Jones: Absolutely—more in relation to the construction, but also then the operation of the site itself. By virtue of how those documents are written at the moment, we have to focus on the construction process naturally because that is where the majority of the impacts are borne out. But how we deal with the operational impacts is something that is, relatively speaking, given very little airing.

Q127 Albert Owen: I mentioned the Olympics because the kind of investment is similar, isn’t it? The volume of investment in London could be the same in Hinkley’s and Anglesey’s and Cumbrias. Alyn Jones: Absolutely, and over, dare I say it, a much longer period and with a lasting impact, because the community are going to be dealing with both the operational issue but then subsequently the management of onsite waste, as all facilities will be storing that. That is not something that is lost on the community at all. I think if we can make one plea it is to make sure that within those documents is enshrined consideration of how the legacy will be derived, and how the training and skills programmes will be used to benefit local people. Local people must be able to access those opportunities that are created, but also to create the supply chain associated with new nuclear. If we are going to make new nuclear work, in our view as part of that renaissance we need to make sure that the local community, the regional community and the national community can all enter into that business opportunity. The question earlier was on concern about a company from another state building something, but there will be great concern, I am sure, in the local community if there is no supply chain benefit as well. Constructing the plant and owning the facility is one thing, but to have UK companies, local companies, not accessing the supply chain will be a very big concern. Some guidance, some thoughts from Government, would be very helpful on that point in particular.

Q128 Ian Lavery: Continuing on the theme of engagement and consultation, it is very interesting to hear now—and I hope you will correct me—that the nearer the community to the power station the more people appear to be in favour of the power station. It is very interesting, and the further you get away the questions are quite different. I am not sure if that would be me, by the way, if they wanted to build a new power station in my back garden. I merely make that point. However, Professor Pidgeon has argued that it is better to think of risk communication as a process of participation, dialogue and decision support rather than a one-way transfer of detailed information. How does this actually work? How is it carried out on the ground? What does it look like?

Professor Pidgeon: A number of proposals have been made for this and I should just say, to pick up your point about completely new sites, that what is unusual about Hinkley and the existing civilian sites is they have had this long history of operation. The situation there is very unique to that site because the nuclear industry has been there. Ian Lavery: We will probably come on to that issue later on.

Professor Pidgeon: Very different from the centre of London or somewhere like that. Ian Lavery: Well, next to my house I would not be very pleased. Professor Pidgeon: Yes, and all the surveys show that. In terms of the process of engagement, I think the key thing is how you listen to people. All communication is a dialogue and risk communication has failed multiple times in the past, for a number of reasons. The first one is that you do not do it early enough, which I think the industry has learnt—we have heard the experience from Hinkley Point that an attempt has been made to engage early. The second is to do it in a way that is open about what the issues are and what the risks are as well. There is nothing worse than just saying, “The Government has said this is safe enough, and therefore it is okay”. That does not persuade anybody and it certainly should not persuade anybody. You have to have a genuine dialogue with people. People are not stupid. They understand many of the issues that need to be raised. The question of onsite storage is one for local communities. There should be a proper discussion with them about what that means over a long period of time and what some of the risks are. It is early, it is long term, it is an open process, and it involves listening and responding to local communities when they raise concerns. Some of it, as we have heard, is about things like roads and waste and dust, and changes are then made. When you are having a consultation, again there is nothing worse than having a meeting, listening and then doing nothing, or seeming to do nothing. You also have to close the feedback loop and say, “We came and listened to you, we engaged with you and this is what we have done about it”. It requires genuine commitment. It also requires a wide scope, and again the current local situation is not as good as it could be because risk is seen to be more for the regulator and it is therefore looked at, at a national level rather than the local level. That disconnect does not allow what could be a better process, notwithstanding some of the things that have already been done at Hinkley Point.

Q129 Ian Lavery: EDF claims that it carried out extensive consultations at Hinkley Point C. Would you say that that was a process of participation, dialogue and decision support?

Professor Pidgeon: I am not sure whether it was decision support. You would have to ask the local council whether they felt all of the key things they wanted resolved had been supported. Bob Brown: I suppose there are two issues. In terms of whether there was a dialogue, there has been significant consultation—the process provides for it—but it is a dialogue about the detail of the development rather than the principle of the development. One of the unique things about nuclear power stations is that the decision as to where they go and which one is going to be developed was made in the National Planning Statement rather than the DCO. The DCO...
process was never going to reach a conclusion about the location of the sites. That was already determined in the first place. It is a dialogue of detail.

To some extent there has been a feeling, I think, in Mr Jones’ evidence that in some communities it is an issue of fait accompli, but that is always going to be the case where the planning statement in the first place had already decided on the locations. It is about a wider discussion with the communities on the detail, the impact and, as Mr Jones has said, the longer-term impact and the benefits over the whole period, which is why both NNLAG and the local authorities around Hinkley have been pushing for clarity about community benefit and what that means, especially in the statement that was made in the National Infrastructure Plan back in November 2011, which we have been seeking clarity on for some time now.

**Professor Pidgeon:** You can also point to examples of where this has not gone very well from other areas of the energy sector. Mid-Wales is a good example. We have had a very large controversy around some of the wind proposals for there. It is clear that what has failed in mid-Wales is the governance dialogue process. A decision was taken four years ago and nobody told anybody about it, and then suddenly developers and the National Grid turned up and said, “Yes, we have potential issues about power-line routing”. The principle was never tested in a dialogue. So you have to do it early and around the key questions. I know that is difficult when people in Westminster have ultimate responsibility for major infrastructure projects. The process means that a lot of issues that arise from the main site operation, and we have a main site forum that deals with some of the key issues and how they will be managed, in order to come up with their considered view. We have a huge amount of sympathy for our local communities and all of the new nuclear authorities are made, in order to come up with their considered view. We have a huge amount of sympathy for our local communities and all of the new nuclear authorities are making efforts to address some of the key impacts. I think it is too early to say whether it is successful or not; it is at a very early stage. In Somerset we are aware that there has been some engagement, but some of the community aspirations have not been quite met yet. People are concerned about some of the issues. It is fair to say that not all of the issues have been addressed in Somerset. Again, we have tried to do as much as we can to address those issues, but not everybody is happy.

**Q130 Ian Lavery:** Some local authorities are running activity groups in Hinkley Point. Have they in any way engaged the local public in terms of the plans for Hinkley C?

**Alyn Jones:** A reasonable number of community forums have been established, some of them dealing with particular issues. We have transport groups. We have a main site forum that deals with some of the issues that arise from the main site operation, and we also then have a broader community forum that tries to deal with the issues in the round in terms of employment opportunities, brokerage of skills, brokerage of jobs, but also draws together the findings and reports from the two transport groups and the main site forum group. So there is that opportunity to feed back. I think the community feel that more could be done. More could always be done, but the project moves at such a pace on one of these major infrastructure projects. The process means that a lot of detailed technical material is being presented. It is quite a task to ask the community to review that. It is quite a task for them to wade through 55,000 pages of application and then to review all of the other submissions that the local authority has made, the land owners have made or the Environment Agency has made, in order to come up with their considered view. We have a huge amount of sympathy for our local communities and all of the new nuclear authorities are very concerned that a barrage of material is coming their way that they need to engage with and review. Sadly, the planning process does not differentiate that much between a local authority, which is resourced, within reason, to deal with the issue and the community, who are not. We have some very dedicated members of our community. I can think of a few parishes in particular where people have spent a huge amount of time considering the issues and dealing with that particular point. They may have an in-principle objection to new nuclear—so taking your point that you would not be happy if it was near your house—but they have got into it, and they have understood the planning process and where they can have their influence. That is quite a task and we take our hat off to our local communities for doing that, but we know that that happens everywhere. I speak to my colleagues in Anglesey. I speak to my colleagues in Cumbria, and there are elements of the local community that spend a lot of time seeking to understand very complex applications.

**Q131 Ian Lavery:** These other new nuclear power stations—obviously there have been public engagement activities on those as well. Are you aware of how successful they have been, or otherwise of course?

**Alyn Jones:** I think there is a limited amount in some areas at the moment. There is very cursory engagement in the potential for new nuclear in some locations. We are aware that a few of the operators are now coming forward and starting to engage. The residual element of the Horizon operation that is currently operating in Anglesey is still engaging with the local community, still engaging with the local authority, in particular on the Energy Island programme of work. In Cumbria, we have the Energy Coast and NuGen are beginning to engage with the local authorities on the key issues and how they will address some of the key impacts. I think it is too early to say whether it is successful or not; it is at a very early stage. In Suffolk we are aware that there has been some engagement, but some of the community aspirations have not been quite met yet. People are concerned about some of the issues. It is fair to say that not all of the issues have been addressed in Somerset. Again, we have tried to do as much as we can to address those issues, but not everybody is happy.

**Q132 Ian Lavery:** Who do you believe should be responsible for risk communication with local communities? Should it be the local authorities, the project developers, or perhaps national Government?

**Alyn Jones:** I think there are two issues. One is that the local developer should make very clear the risks associated with the application—both operational risks and construction risks. The reason I say that is that there is a window. It is an avenue of introduction into some very complex elements of the application around environmental impact assessment. The developer has to think very carefully about how they articulate those risks to the community and make sure that it is not all sugar-coated, to be blunt. It is an opportunity to understand, “There will be these risks associated with it, but this is how we are going to manage it”. Some of that is borne out of responses. The community will ask a question about risk or waste management, and the developer will be forced to
answer it on that basis, but I think there will probably be some thought about actually owning that point. To a degree, EDF has, but there is more that could be done with it.  

Bob Brown: That is right, it is taking it out of the remit of the technical regulators and bringing it into the process so that there is a dialogue between the proposers or the developers, the local authority and the communities and the technical regulator and assurances can be given across the piece rather than being more technically orientated as they are at the moment.  

Professor Pidgeon: I was going to say that there definitely is a role for Government alongside the developers and the local council. The reason why comes out in all surveys that we do and the work we do on trust in institutions. The less trusted parties are the media. It pains me to say that politicians are also not trusted, but they are not trusted as well as independent regulators. Industry is not trusted either because people say that it has an interest in the development so if there is a problem there will always be the temptation not to tell the whole story. People make a distinction between the more political side of Government and the regulatory side. What is critical is that the regulatory side is seen as independent of the political aspect of Government. For example, there is a good reason why risk regulation has always been in the Health and Safety Executive—it always had that arm’s length from Government.

We did some work on trust in the Health and Safety Executive a few years ago, and that is precisely what people said. They trusted the agency because they believed it would not be deflected by short-term political or other factors and it was seen as competent as well. So it is two things. You are supposed to be competent in the area, have technical expertise, but also act in people’s interests and not be deflected by short-term political or other pressures. That is why it is unfortunate in a sense that HSE and ONR are not involved to quite the degree they could be in the local process, because those agencies would gain greatest trust in the risk communication process. If a party is distrusted a priori, or there is some suspicion a priori, sometimes you might have a perfectly sensible science message but some people will not accept it just because of who you are and how people view you as an institution. The trust question cuts across all of this.

Q133 Dr Lee: In the spirit of outsourcing all possible risk as a politician, do you think we need a risk agency? Do we need some sort of attempt to educate the populace about the concept of risk in general? I find in my professional practice that the average punter’s judgment of risk is quite appalling. They will drive a car at 90 miles an hour down the motorway and think that is absolutely fine, but they will not take simvastatin because of some one-in-a-million risk that it will cause some muscle pain or whatever. People’s judgment of risk in the wider populace is pretty appalling; it is all over the place. Rather bizarrely for me, I am trusted as a doctor but not as a politician. Do you think I need to outsource that as well to people who are trustworthy, because apparently I am not?

Professor Pidgeon: From my perspective, if it is a health question where you have expertise—

Q134 Dr Lee: No, I used health because I happen to know something about it. If I stopped someone outside Hinkley Point and said, “What is more dangerous, a nuclear power station or a dam?”?, they would say a nuclear power station, even though that is nonsense if the evidence is added up. My point is that people’s judgment of risk and their perception of risk is appalling, as is the media’s judgement of risk. It is disgraceful at times. The MMR scandal was a disgrace because it was a misrepresentation of risk. The third generation contraceptive pill in the 1990s: disgraceful. I could give you a long list of medical cases in which the presentation of risk has been fundamentally inaccurate. When you come to something as important as the energy infrastructure of this country for the next 50 or 60 years, it would be nice if we dealt with fact, not fiction.

Professor Pidgeon: The first response to that is to say that, of course the media and the public are not the same thing. It is true that the media report risk in very unhelpful ways. The Science Media Centre does a lot of good work trying to connect sensible journalists with scientists on some of the issues.

Dr Lee: Yes; it does not sell papers, though, does it?

Professor Pidgeon: It does not stop certain headlines. It certainly did not stop the MMR scandal. You raised a strategic point. If you look, we have faced several risk issues over the last few years. We had the ash cloud, which created regulatory and communication questions, climate change and the whole question of what climate science was saying and the risk issues around that, and then Fukushima. Each of these has shown the need for some kind of capacity in this area. I have argued with colleagues that there is a need for something that sits between academia and policy, which would be independent and would be able to support decision-making when it was required. So it would do long-term research into some of the questions of perception, but also would be able to advise Government and potentially be the trusted third party.

Q135 Dr Lee: The MMR is a classic example. There was this nutty woman who set up an organisation called JABS, who was given the same level of exposure on the media as people who were educated and understood the risk and the implications of a vaccination programme. I am sure this could happen in the nuclear industry. You are going to get another nutty person who thinks that we are all going to turn into Frankenstein if we live next door to Hinkley. It will be completely not based on anything to do with facts, but they will get the same coverage because that is what the media do. That is what history teaches us. I wonder whether, in a desperate attempt to try to see this off at the pass, we do need some sort of independent organisation saying, “Actually, the risk of a nuclear power station is X. The risk in walking down the street is Y. What is your judgment?”

Professor Pidgeon: Going back to the media, they operate on this balance principle, which many people have suggested is unhelpful when you have a science
issue where there may be more of a consensus on one side than the other, because then it comes across as uncertain and is confusing to people. Again, I would agree with your suggestion up to a point. The difficulty is ensuring that the agency does not get sucked into one or other position in the debate, because some of these debates are quite politicised. Well, the whole energy debate is politicised so people have views depending on their fundamental values.

Q136 Dr Lee: Or their ignorance.
Professor Pidgeon: Well, potentially their ignorance; some people, potentially.

Q137 Dr Lee: But it is not potential, is it? It is not potential. My point is that often people get publicity from a position of ignorance, very often in science.
Professor Pidgeon: Yes, okay.

Q138 Dr Lee: On the basis that we know that the ignorant get as much airplay as the informed, when it comes to something as fundamental as nuclear power, how on earth do we stop the ignorant getting as much airplay?
Professor Pidgeon: I think you connect the media with people in the science community and elsewhere who are able to give some responsible judgment about the risk. I agree with you there. Again, I come back to my caveat that the question of acceptable risk cannot be purely solved by science. If you believe that, then—
Dr Lee: I am not saying it is. I am just saying—
Professor Pidgeon: There is a blend of the value judgments and the science, and the two have to go together. That is where it becomes a little more complicated. But on the basic issue of how and what we communicate, trying to lay out independently what some of the risk issues are, yes, I would agree. There is a glaring gap in the way this country does it, but that is true in every country because risk communication is not seen as a priority particularly by Government unless a crisis occurs or a significant infrastructure issue pops up.

Alyn Jones: Sorry, I cannot comment directly in relation to whether there is a need for a central agency.
Dr Lee: I wish there was not a need, by the way.

Alyn Jones: Our key concern is that whoever turns up in front of the local community, be it the developer, the local authority, the Office for Nuclear Regulation, or the Department for Energy and Climate Change, should not stop where the responsibility runs out. Nothing is more frustrating to local communities—it happens everywhere—than to have someone say, “Oh, that is fine, but I am afraid that is not our role, we can’t comment on that.” Somerset, and I think all new nuclear build will unsettle the community or move them back a step and say the sort of thing that you are referring to. We have moved on and we hope that when they come to our local area and when they come to any local area they will be cognisant of what has gone before. It would be very aware of what the key issues are and how they will deal with them. But there is genuinely nothing more frustrating than someone turning around to the local community and saying on risk, for example, “I am very sorry, the planning inspectorate or the local authority can’t consider risk. That is a matter for ONR, who are coming to talk to you in a month’s time.”

Q139 Dr Whitehead: Could we return specifically to Fukushima? It seems quite significant that, although the perceived risk concerning nuclear accidents has heightened considerably in other countries as a result of Fukushima, this has not particularly been the case in the UK and the US. Are there any particular explanations for that in your view, Professor Pidgeon?
Professor Pidgeon: There are. It has been a genuine puzzle, I think. We have more evidence now and it is fairly consistent. There has not been a big drop-off in the support for nuclear energy, certainly in this country and the US. Some of us are puzzling about this. I think there are three reasons. One is that in this country it would appear that, certainly in the press reporting, the accident was attributed to a natural disaster. We know that the events are rather more complicated than that, and certainly the recent Japanese Diet’s independent report suggests that, but that is the way it has been presented. There is a distance effect as well, which would not affect other European countries such as Germany, for example, but I might come on to those in a minute. But certainly in the UK, I think there is a distance effect; it is just a long way away.

I think also there is this point about lack of visible accidents in this country over a very long period and the debate over climate change and energy security, which is where there is no distance effect. There may be no simple resolution to that, but I think that is the way it has been presented. Something that I have described in literature, or on the radio, as the ‘George Monbiot effect’. He is a well-known environmentalist who came out very soon after the accident saying that he had been against nuclear power years ago but the tsunami had thrown everything at this plant and it appeared nobody had died yet, so it had to be more complex than all of this huge stress. The debate about the long-term health consequences will run for a very long time, and there may be no simple resolution to that, but I think it is significant that one or two significant figures from the environmental movement have made statements like that.

So, yes; interesting. What has changed is the accident salience; there is no doubt about that. If you look at the evidence, that has come up again above radioactive waste. The other thing to bear in mind is that the support prior to Fukushima was never wholehearted in the sense that there was a core ambivalence at the heart of it. It is something that I discussed in one of the earlier parliamentary reports. We describe in our research the fact that nuclear was seen as a ‘devil’s bargain’. We picked this up 10 years ago when we did qualitative work with members of the public, just suggesting to them that radioactive waste and new nuclear power might be a trade-off
against climate change, and that debate was emerging at that time. People said, "I don't want climate change, because we think that is very serious, but I don't necessarily want a new nuclear power station near me, but if I could be convinced that it could be safely managed and it could contribute to preventing climate change, then it's the least worst option".

There is a certain fragility in beliefs, which I think was there before Fukushima and will be more salient also at the local level. What I take from that is the point I made earlier that the industry now has to manage its plants very, very carefully, particularly its older plants. If you think about Three Mile Island and Chernobyl, opposition in Europe reached a peak after Chernobyl; it was not after Three Mile Island. I think one of the reasons was that there were two accidents in a relatively short period of time. One accident happens and maybe there are extenuating circumstances, but the industry certainly could not afford another major accident anywhere in the world. That raises some interesting questions about energy policy. If you went down a certain policy line, and then something else major did happen, what then? So that comes back to the point about managing the risk very, very carefully now.

Q140 Chair: I don't wish to interrupt, but do you think the difference between Chernobyl and Three Mile Island was that Chernobyl actually had consequences on life in the UK whereas Three Mile Island didn't?

Professor Pidgeon: Yes, and if you look at the evidence from the US and the UK, Chernobyl had the bigger effect obviously in Europe. In the US, Chernobyl had less of an effect. Other things were going on. Strangely enough the opposition to nuclear at about that time was also tied to developments in the Cold War and re-arming. It is interesting to see it rising but it wasn't just the accidents. People were very concerned about that aspect of nuclear.

Q141 Dr Whitehead: You said—and indeed Mr Brown mentioned this in evidence—that the increased salience of accident risk running alongside roughly level support for new nuclear suggests that there is some churning in the process, with people saying, "If you do various things then, okay, my support is undiminished", but that sounds rather conditional, doesn't it?

Professor Pidgeon: It is conditional, yes. Nuclear acceptance has always been conditional for a large proportion of the population, talking more generally now rather than at the local summits, and I think it is more conditional than it was before.

Q142 Dr Whitehead: So what implications might that have for new nuclear build in the UK, in addition to the Weightman report suggestions of further measures to damp down the possibility of accidents? If the general view is that nuclear is safe in the first place then those additional measures, or perhaps additional measures demanded by the public as a result of increased accident salience, may be superfluous in any case.

Professor Pidgeon: Aside from ensuring that the risk is properly managed, the conversation has to change a little bit. The dialogue between developers, Government and others has to focus on that risk question and the accident question in a way that it probably did not 18 months ago. So that has to be addressed and, again, the disconnect that we have talked about is quite significant. The Sedgemoor evidence is really interesting—what people feel has happened around the Hinkley plant as a result of Fukushima. Interestingly, not having looked at the empirical evidence, I felt it was ethically wrong to go back and re-interview people so soon after such an event. We know that in previous instances—Chernobyl, the London bombings—people who lived around the sites that we had looked at previously said that it made them feel very anxious because it suddenly focused them on the risk question. That is exactly what I would predict—a heightened sensitivity to risk. But the researchers said—I think I would endorse this—that it is not that people believe the likelihood is any different. It is that their thoughts are now focused on what might happen if it goes wrong, and the implication of that is that another conversation has to be had about the implications of an accident. So what would you do, who would you evacuate, and what are the contingency arrangements? Who would be responsible for paying if you had a large accident at a site like Hinkley Point? That is a conversation that probably wouldn't have been had 18 months ago and that probably has to be had now.

You have probably seen the German decision and one of the reports from the Ethics Commission there. One of the reasons why they came out against the German nuclear programme as a result of Fukushima was not just risk of death or risk of injury but financial disruption, psychological damage to a local community, potential major evacuation if you had the same set of circumstances as happened in Fukushima. The consequences would be so immense in a populated country like Germany that maybe the risk wasn't worth taking. It is focused on how one would potentially deal with the consequences if something went to go wrong, however unlikely that is.

Bob Brown: It is fair to say that our communities are aware of all those issues. Those surrounding Hinkley Point are aware of the evacuation process. They are very acutely aware of the impact of a catastrophic event at Hinkley Point, which is obviously not similar to what would happen at a coal-fired power station or anything else. The fact that they have iodine tablets in their home if they live within a certain distance and tablets are available within the community says that there is a separate and different issue. I think communities were affected by Fukushima, but the vast majority of people who live around Hinkley are aware of its safe record, and have friends or family who have worked at the station. The issue, I think, for new power stations as plans come forward is what is different about them? Is there a different or separate risk there? So there are the issues of medium-level waste storage, which is only temporary but could be up to 60 years. What are the different risks that are going to arise at the new station as opposed to the old station, and will there be an opportunity to engage in
discussing those issues? I think people are very conscious that there is a very low likelihood of an accident, but of course the impact is on a significantly different scale to that of accidents at other power stations or other types of infrastructure development.

Q143 Dr Whitehead: Is there any sense in which that process may be iterative or self-fuelling? If you go to the public and say, “There is a very low risk here, but just in case of accidents we’re going to publish our evacuation plans and issue you all with ID and all the rest of it”, the backwash is that people say, “That’s a bit serious. Maybe there is a greater risk of accident than we thought.”

Bob Brown: I think the issue for the local communities is, with Hinkley Point A decommissioned and Hinkley Point B still operating, that is already taking place. All the parish councils have the evacuation processes, they have detailed plans of which areas would be evacuated and at what stage based on different directions of the prevailing wind. They have the iodine tablets issued. When you move into that area, when you buy that house, when you speak to the local community, you are going to be fully aware of that. So people already have that as an issue, and they accept that when they live there. It is not something that is going to come as a surprise or will be new for any new development, which I think is the reason why the sites were chosen as they were. That discussion on a greenfield—for want of a better term—site of a new nuclear power station may be very difficult, but for those communities that already have a jar of iodine tablets in their medicine cupboard it is a different conversation.

Chair: Time is running low.

Q144 Dr Whitehead: I realise that Professor Pidgeon, you covered all your bases when you were asked the original question about Fukushima and why the attitudes are different here and in Germany. I would put it to you that it is pure politics, that the Greens were getting strong in Germany, there were local elections and the Government, who had made a statement just months before that nuclear renaissance was going to begin, back down. It is really then about a local community, you are going to be fully aware of that. So people already have that as an issue, and they accept that when they live there. It is not something that is going to come as a surprise or will be new for any new development, which I think is the reason why the sites were chosen as they were. That discussion on a greenfield—for want of a better term—site of a new nuclear power station may be very difficult, but for those communities that already have a jar of iodine tablets in their medicine cupboard it is a different conversation.

Chair: Time is running low.

Q145 Dr Whitehead: Is it not civil nuclear.

Professor Pidgeon: Yes, but it is very difficult to separate the two because of the history of the industry. I should stress that. The industry struggles against this legacy. Just on the natural disaster, it is true that that is the way it has been attributed, but the independent reports from Japan are saying that one of the key factors was the rather too cozy relationship between the regulators and the operators. That led them to not put in safety—

Q146 Dr Whitehead: But that would not be applicable just to one station.

Professor Pidgeon: No, but—

Dr Whitehead: So that is a red herring.

Professor Pidgeon: Well, it is not a red herring in the sense that you then contrast it with the situation in the UK, where you have a strong independent regulator and that is one of the critical issues in maintaining public trust. I think that is one of the lessons of Fukushima. It is not just about the natural catastrophe side, it is about how the industry goes forward in terms of its regulatory structure.

Years before I did work on public perception of accidents, I did work on the causes of accidents, and rarely is any major accident caused by a single environmental factor, a single human error or a single organisational failing. It is almost always the case that there are a series of things bundled up, and I think Fukushima will be no different from Chernobyl or Three Mile Island. It will be a different set of causes, obviously, but it will be a set of causes and there will be some organisational and human lessons that we can learn from this event, as well as the key lessons about tsunamis and flooding risk and about loss of all power to pressurised water type reactors. Those are the three key sets of lessons.

Chair: Time is running low, but Christopher is going to come in with a last question.

Q147 Christopher Pincher: Just one very last question, Chairman, and away from tsunamis and nuclear meltdowns to the rather more prosaic topic of planning rules and regulations. Looking at issues that do happen rather than risks that might happen, you suggested in your evidence that the biggest issue that faces communities with a new nuclear programme on their doorstep, which is not compensable within the planning framework, is the construction process. Are there other uncompensable impacts of new nuclear development beyond construction?

Alyn Jones: I think to some degree the evidence that we have prepared, for the Hinkley examination but
Ev 31

In terms of a figure or a perception that I understand what the balance is. EDF, for the construction phase.

Christopher Pincher: in terms of a figure or a percentage.

Bob Brown: We don’t know what the figure is. I think the issue for us locally is that we have engaged our communities about community benefits. They see the international precedents of community benefits—it happens in France, Finland, all over the world—and Sedgemoor saw it as an opportunity to get localism working directly. When the construction phase takes place, there are bound to be issues of, “Well, we didn’t see that coming”, and what can the community do to deal with that or invest in itself to get itself out of that situation? A community benefit fund that allows communities to identify the issues themselves and propose solutions and to have the funding mechanisms to tackle those solutions was important for us. That is one of the main areas of community benefit. We have worked with other local authorities who have the potential for new nuclear developments, and Alyn is here representing those.

Alyn Jones: To add to that, the other local authorities we work with and the local communities they represent see an inherent inconsistency in policy terms here, in the sense that some of the key issues that were identified around, say, the wind protocol and supporting business rate retention for all renewables development hasn’t translated into low-carbon energy development, and that is a key part of our evidence to you. In the interests of brevity, I will not go over that point again, but there is no difference, we feel. It is about driving investment, it is about creating those opportunities, it is about incentivising that growth, and we feel that that is absolutely key and just as relevant, if not more relevant, for new nuclear development because of the complexity, the issue of creating that nuclear renaissance, that supply chain issue. The skills that are required for an engineering task are the skills required for an engineering task. A nuclear engineering task is very different. The skills are different, the skills are of a higher quality, and how do we ensure that we are able to access that? That is not something that the planning system can simply address, and that is where we believe the community benefit that is derived from business rates or another suitable vehicle should come in. Business rates appear to be the most logical way forward. There is some concern about how that will impact local government settlements and so on. Some of our partner authorities are concerned about it, but one of the key issues goes back to the principle of ensuring that there is a means of incentivising that growth, ensuring that we do not end up with boom and bust and recognising that, while the planning system can go so far, in a complex development there are going to be issues that need to be resolved. How do we ensure that legacy over a 60-year period? Retention of business rates feels just as relevant, if not more relevant, to a new nuclear station as it would for a
renewables development. That is a key cornerstone of our evidence to you.

Q149 Albert Owen: One final question: do you think that the enterprise zones will help or hinder this? They have been identified as areas, and if nuclear is outside that, then they will not quite get the benefits that enterprise zones will get.

Alyn Jones: I know that some of our key partner authorities are concerned about where those enterprise zones, where those gridlines, are and how that would work in making sure that benefit is retained in the area of impact and that it is retained where it can have its maximum impact. While enterprise zones may be a vehicle, I think something too prescriptive creates an overly prescriptive approach that does not allow the local community to deal with that issue as they wish to.

Chair: Thank you very much for your evidence. It has been most helpful. If there is anything that occurs to you afterwards that you would like to have on the record, certainly write to us. If there is anything we want, we will be back in touch with further written questions. Thank you again for your help.

Examination of Witnesses

Witnesses: John Earp, Fellow, of both the Institution of Mechanical Engineers and The Nuclear Institute but representing the Institution of Civil Engineers, Alasdair Reisner, Director of External Affairs, Civil Engineering Contractors Association, Dr Tim Fox, Head of Energy and Environment, Institution of Mechanical Engineers, and Steve Geary, Skills Strategy Director, CITB Construction Skills, gave evidence.

Q150 Chair: Thank you very much for agreeing to give evidence to the Committee today on our inquiry into nuclear prospects. For the record, could we start on the left and could you each give your name and organisation?

John Earp: My name is John Earp, and I am here representing the Institution of Civil Engineers in respect of the work they did on a project to identify nuclear construction lessons learned from six nuclear stations around the world, including Olkiluoto and Flamanville.

Dr Fox: My name is Dr Tim Fox. I am Head of Energy and Environment at the Institution of Mechanical Engineers and I am representing the Institution of Mechanical Engineers today.

Steve Geary: I am Steve Geary. I am the Skills Strategy Director at CITB Construction Skills, which is one of the training bodies that is looking at the training needs to support the construction phase of the new nuclear build.

Alasdair Reisner: Good morning, I am Alasdair Reisner of the Civil Engineering Contractors Association. Our organisation represents 60% to 70% by volume of the infrastructure contractors working in the UK. Today I look after our nuclear forum that brings together contractors with an interest in the nuclear market.

Q151 Chair: One of the concerns about the potential to deliver the nuclear ambitions of the Government is whether the supply chain bottlenecks could delay delivery of new nuclear reactors in the UK and, if so, how this risk could be minimised? Who would like to go first?

Alasdair Reisner: Would you like me to step in first? We can only speak specifically about the civil engineering aspects. There is far more to building a nuclear power station than that, but that is the area where our members work. I think we have to recognise that, although individual nuclear power stations represent very significant individual projects, they would still only be a small part of the overall output within the infrastructure sector in any given year. Quite a lot of work has been done historically on the capability of the infrastructure sector to deliver large projects. Perhaps the best example of this is Crossrail and in essence carrying out stress tests to see what would happen were such a large project to arrive at a time of feast or famine. As it happens, Crossrail has been delivered in a time when perhaps the industry is in a period of lower workload, but I think even had it been the case that it had been in a hot market that project was shown to be deliverable. I believe that work that has been done by other organisations has shown that there is capacity within the infrastructure supply chain to deliver. There may be certain pinch points around individual skills, which I think perhaps some others here will comment on.

Q152 Chair: Do you have a view on this, Dr Fox?

Dr Fox: Yes. I would like to add that a key component in trying to mitigate bottlenecks and delays is an sufficient planning of the projects and the programme across the decade in which we are planning to do this deployment. In addition to that, there should be a strong dialogue between all the stakeholders that are involved in the process, so a strong dialogue between the vendors, the regulator and the operators of the stations to try to ensure some co-ordination. Our institution would recognise that individually the projects themselves, although they appear to be large—and they are significant projects—are not individually overly resourceful on the supply chain, but when you have to co-ordinate several projects in a commercially driven environment some degree of dialogue and co-ordination is helpful.

Q153 Chair: Can I explore that a bit further? Given that it is the private sector that is delivering, how would that co-ordination come about?

Dr Fox: We certainly see a role for Government, in particular the Department of Energy and Climate Change through the Office for Nuclear Development, in brokering some communication and dialogue in respect of co-ordinating activity. We have certainly recognised that one of the key challenges of delivering this programme in the UK is the fact that it is being
done in a uniquely commercial environment in the private sector, on a time scale that is quite challenging, within the context internationally of increased activity in the nuclear industry. We certainly see the need for Government to broker a dialogue and ensure communication between all the elements involved.

Q154 Chair: Do you have a view on this?

John Earp: I share Tim’s view, but I would go perhaps a stage further, based on the work that was published in the report that I am representing. It is very clear that early engagement of the supply chain within any of these projects has been a factor in success. Where the supply chain has been engaged late, that tends to have caused problems within the construction period. I would go on to the point of saying that early engagement of the supply chain is key, including education of the supply chain in terms of what it means to work on a nuclear site. In history, when nuclear power plants were being built on a fairly regular basis, that was almost inbuilt in the supply chain. Most countries around the world, including this one, haven’t built a nuclear power station now since the mid-1990s, with Sizewell B being the last one here. A lot of that inbuilt understanding of what it means to work on a nuclear site has been lost. I think the importance of engaging with the supply chain and making people aware of what it means to work on a nuclear site is pretty crucial.

Steve Geary: I agree with the early engagement point. We did a bit of modelling of the impacts on output and skills, and it showed that at peak period the programme was forecast to contribute around £1.5 billion per year in construction output, which represents only about 1% of total construction output. So overall, if you look at it, it is a big programme but it has to be seen in context. However, the issue here is the locations where it is taking place. The impact in those particular areas—by its nature it is in areas where there are not large populations or necessarily large construction activity—will be obviously greater, so it is about how we handle those issues. But that early engagement certainly is already happening on the skills side and that is going to be beneficial.

Q155 Chair: The Government are in the process of developing a Nuclear Supply Chain and Skills Action Plan. What specific things do you think this document should contain on the supply chain side?

Alasdair Reisner: I think in essence, certainly from our perspective, a lot of the basic skills around civil engineering are not unique to the nuclear site. So in essence it is a matter of developing the existing UK supply chain almost to get that nuclear sheep dip to make sure that they understand what is different about the nuclear site. When we have done research in this area, the key point that comes back from anyone we speak to, whether in new nuclear, in decommissioning or in defence, is quality assurance and understanding that nuclear QA steps a massive distance away from anything else they may have experienced before because of the rigours that are required.

Q156 Albert Owen: How long does it take to get that extra skill to move from an experienced, qualified engineer to a nuclear site?

Alasdair Reisner: I suppose it depends where you start from. When you look at the supply chain in the UK there will be companies that have experience working on nuclear projects, albeit back at Sizewell, you will have companies that have experience working on decommissioning projects, but you will also have, in essence, new entrants to the market. Obviously it is going to take longer to get those who are entirely new entrants up to speed than those who have experience.

Q157 Chair: How long do you imagine it will take?

Alasdair Reisner: I would suggest if you are an entirely new entrant it is probably not going to be the case that you are working directly on a nuclear new build project in your own right. You may be down the supply chain, but then it will be part of your engagement in that process.

Q158 Albert Owen: A new graduate who is an engineer and wants to go into the nuclear industry; what kind of additional training and what period would that take to become a fully qualified nuclear engineer?

Alasdair Reisner: If you are talking about civil engineering, it would be as part of that process within the work that they are doing. I could probably come back to you at a later date with times, but I don’t have that information today. Perhaps others may be able to help.

John Earp: I would share the view there. Although I am representing the interests of the civil engineers, I am actually a Fellow of the Institution of Mechanical Engineers and the Nuclear Institute. As part of the training of any engineer in the UK, a graduate engineer, they go through a period of becoming familiar, if you will, with the work that they are doing in a particular industry. It depends on the organisation, but that can take perhaps a couple of years, up to three or four years. In the nuclear business, in that period they become very familiar with the QA rigours of working in the nuclear industry. Earlier there was mention of risk and quite a bit of time is spent understanding what is often called the nuclear safety culture. So you don’t go ahead and do something without fully considering it and fully considering it with respect to the nuclear consequences. That is the sort of training that becomes important for a nuclear engineer. Others will say, “But that actually is constraining”. In actual fact it isn’t. What it brings about is an engineer who thinks very clearly about what they are going to do before they do it. To me, in a nuclear power station that is absolutely vital and that is the piece of training that is very, very important.

Chair: We are going to move on to the skills agenda.

Q159 Dan Byles: Just sticking with it for the moment. We have heard huge variations in the estimate of the number of construction workers required for each new nuclear build, ranging from 5,000 to 50,000. I would like a rough idea of where you think that figure probably is, how many of these
construction jobs are likely to be domestic construction jobs and how many are likely to be imported?

Steve Geary: I think the 50,000 figure is usually across the whole of the numbers that are required, assuming the—

Dan Byles: The whole of the supply chain, the whole of the—

Steve Geary: The build programme, but obviously the numbers per site will vary. The piece of work that I think we presented to the Committee will show that where we have been trying to get it really quite specific in terms of trades, you are looking at things like several hundred steel fixers, similar sort of numbers when you get into people involved in concreting, scaffolding and so on. So we are looking at that per site placed on the model and that we did, which we carried out with EDF, using Flamanville, for a particular model. I think you asked the question about local?

Q160 Dan Byles: Yes. How many of those will be UK jobs and how many of those are likely to be imported ones?

Steve Geary: If you talk about Bridgwater, the Hinkley site, EDF has made a commitment that 60% of the work force will be drawn from a local area, which I believe they have categorised as people within a 90-minute travel pattern. That is what we are trying to work towards, and obviously that may vary according to the skill levels because I think in some of the very specialist areas you may be drawing on people from elsewhere around the country. That is the basis that we are working on at the moment.

Q161 Dan Byles: You had quite a long discussion with Albert about what it takes to grow some of the skills that we need. Do you think we have the right programmes in place to deliver that?

Steve Geary: If I talk very specifically about what has been going on at Bridgwater and at Hinkley, we are very encouraged. EDF has already invested considerable sums of money into two of the local colleges, the Bridgwater College and the Community College that is a little way from the site, for a combined one, for a construction centre and engineering centre. Also they have a leadership centre, which I don’t think we should forget. What has been done locally will be of relevance, not just to that area but more broadly for the nuclear sector. So the signs are good in terms of the commitments at this stage. From our point of view, we get into the detailed work of looking at, for example for steel fixing, apprenticeship programmes to make them fit the build need.

In terms of funding and so on, we can draw from both our own sources of funding—as you may be aware, we are funded by a levy on the industry so we plough back a lot of money into apprenticeship programmes—and sources from Government. I think, though, that as we get into the more detailed development of what I would call the employment and skills plan, where we will be working locally with local authorities and other bodies in the area, I would be surprised if we do not find that there is a need for greater flexibility in the design of programmes if we are really to achieve targets around 60%, for example. So we have already been flagging up to DECC, to the Business Department and to Ministers that, with all the skills bodies coming together under the Nuclear Energy Skills Alliance, and as we firm up those plans, we will go to Government, with the support of the employers and the clients, to argue the case for more flexible pots of funding so that we are not always constrained, because it will not always work otherwise in the local context.

Q162 Dan Byles: Does anybody else have a view on this?

Dr Fox: I just wanted to come back to the point that John was making earlier that a large degree of what is involved in the skills and training of individuals to work in the nuclear industry is really in relation to a development and an understanding of the culture and the quality needs of the industry. The core technical skills are generally the same across all areas of engineering and technical practice. There are some nuances where certain very specific skills are needed in welding or in very technical areas associated with nuclear design, but in many of the more general areas of construction and engineering associated with any infrastructure project the basic skills are the same. It is about adding that understanding of the quality needs and expectations of the nuclear industry. I think it comes back to a co-ordinated, communicated and planned approach to ensuring that that additional level of understanding is taken on board by subcontractors and sub-subcontractors. One of the key issues is that many of the individual firms that might like to get involved in the nuclear industry at the fitting level do not necessarily understand the cultural requirements of getting involved, and it is about transferring that understanding and that knowledge to them.

John Earp: Again, I totally agree with Tim. I think you could take it a stage further—and again it comes out in the report—that it is very important to get down to what the report terms the shop floor level in nuclear training so that people understand what they are doing when they are working on a nuclear site. An example that isn’t in the report but was in the material that led to the report was with concrete issues. You will appreciate that there have been problems at both Olkiluoto and Flamanville, and indeed at some of the plants that are currently being built in the USA. The guys pouring the concrete, who were very good, had not worked on a nuclear power station for a number of years and had a mindset that, “Well, if we pour this and it’s a road we can go back and dig it up”. That simple mindset doesn’t exist on a nuclear site, because once you have the nuclear material there, that concrete is there for good. I think it is getting the mindset right down at the shop floor level, at the working level, that this is a nuclear site. The only way you can do that is by ensuring that the leadership—and it is very good that EDF is using a leadership programme in the Hinkley area—understand that; that they walk the site and promulgate that down to the first-line supervisors who can then ensure that it is built in. To go back later and do a quality check on concrete cubes, which is what happened at Olkiluoto where they lost control of the cubes, is no good. You
have to build it in by early engagement and early engagement right throughout the team.

Q163 Dan Byles: Do you think that lesson has been learned, because you said that was a mistake that was made there? Will we benefit from that error?
John Earp: I believe that we will, frankly. If you look again, and it is covered in the report, it basically says that when it was found at Flamanville, EDF quite reasonably stopped work on the site, engaged with the workers and then restarted the work. I think they have picked that up and I believe, in the hope that things go on at Hinkley in a reasonable time frame, the time frame is such that that learning will still be engaged within the process. I would hope that they are taking an incredibly responsible attitude to it, and I suspect that learning will be engaged.
Steve Geary: Just two things to add to that. They are taking it seriously and one of the things that we are working on is the development of programmes aimed particularly at site supervisors. I think we will see increased numbers compared with previous sites. In terms of the supply chain, we have also been looking at developing business support programmes to try to help companies that are not aware of what it is like to work in a nuclear environment to start thinking about that. We refer to it as the nuclearisation of some skills. It is very much this overlay of a different environment and that is why it is important that the behaviours and attitudes in this environment will run through all of the training.

Q164 Dan Byles: We are very short on time, aren’t we? But just a very quick answer from Mr Geary, if that is all right. Should the Government be doing anything different in this? Is EDF on top of all this or do you need anything different at the top?
Steve Geary: As I say, I think it is going to be about flexibility and it is the—

Q165 Dan Byles: So that is the key message: the Government should not be too prescriptive and they should not be too inflexible in terms of the funding?
Steve Geary: Also, we have corrallled the skills bodies to work together, but I think the same is going to apply to different bits of Government—how Jobcentre Plus works alongside the Skills Funding Agency and all of that.
Dan Byles: If we need joined-up government for this to work, then we are in worse trouble than I thought.
Thank you very much.
John Earp: I was going to reinforce that to say that we must not lose sight of the fact that what Government have done in engaging through the Sector Skills Council and setting up NSAN, the National Skills Academy for Nuclear, is looking quite positive. That is probably all I need to say; we should not lose sight of that. They have done that already.

Q166 Chair: My constituency is near Aberdeen, where oil and gas is the big employer, and they are facing huge challenges of recruitment and an aged profile of skilled people. Are they fishing in the same waters for the same background skills? They are competing globally for them. Is there a global challenge to meeting the skills needed?
Steve Geary: I am not an expert, I am afraid, on the gas area but in our areas the key thing is that we have under capacity in the industry at the moment, which means that we don’t anticipate such severe problems. I am sure there will be some specialist areas where, yes, there will be competition in the future, particularly if we get lots of people committing to nuclear build programmes. But at the moment the assessment of the skills needed is not a problem. That thinking dealing with us suggests that there are reasons to be optimistic rather than pessimistic.

Q167 Albert Owen: You mentioned time scales, Mr Earp. Can I ask you all with regard to the timetable for the new nuclear build, are we likely to see the first nuclear power station completed by 2019?
Dr Fox: Maybe I can offer a view on that. From the institution’s point of view, we accept that to deliver the first power station by 2019 is challenging and is becoming increasingly so, but a lot of the work that John has described in terms of lessons learnt and a lot of the work that the Government have already done in terms of preparing the ground for as clear a sail as possible towards 2019 has all been good work, particularly in terms of the generic design assessment and making the planning process robust for nuclear. One view that we would express quite clearly is that it is less important to meet the 2019 date—it is going to be difficult to meet and there may be some slippage as a result of the challenges ahead—than it is to make sure that we set off on the journey in a well-prepared, well-planned and well-co-ordinated fashion. One of the lessons that you learn from all large-scale construction projects is that any significant delays during the project or any significant need to rework the project can lead to substantially increased costs. We would be better advised to ensure that we do the preparation and the groundwork that we are doing now and prepare ourselves for the project than to focus entirely on the 2019 date.

Q168 Albert Owen: There is a second part to my question that I would like others as well as Dr Fox to answer. If there is slippage of the first one and we have a second target by 2025 to get the extra capacity of 16 gigawatts, are you saying it is likely that if we miss the first one but learn the lessons then we can meet that capacity by 2025?
Dr Fox: Yes.

Q169 Albert Owen: That is a more important deadline?
Dr Fox: Yes, than to have significant failings on the first project as a result of—

Q170 Albert Owen: Comments from the others, please, on 2019?
Alasdair Reisner: We took the view that it was looking fairly difficult to hit the 2025 target. I would like to say we had strong evidence to put behind that, but it is just sometimes a gut feeling and talking with our members. You would be looking at basically
having a fair wind behind you from here on in right to 2025.

Q171 Albert Owen: Even if we met the first deadline?

Alasdair Reisner: If we met the first target that would be very helpful because, for the reasons that we have talked about, that would almost set the model and help bring others in behind at the pace that is required. But if we look at where it has been over the last two or three years, there have been significant challenges and to hit the 2025 date suggests that those challenges won’t be as severe going forward. I think we are still to be convinced on it because I still think there are major challenges.

John Earp: If you look at what is happening in, for example, China at the moment, their first reactor at Sanmen 1 was delayed due to concrete pouring problems. They learnt from that very significantly and were then able, on the second one at Sanmen and the first one at Hainyang, to pour the concrete in something like 42 hours continuous pour. The first one took the best part of a month because of problems. I think there is clear evidence that going there, if the first one gives you a problem, providing you learn from it then the others can follow in a reasonable time frame. There are a multitude of issues surrounding that and I just give you that as one example.

I think the first one, whether we meet 2019 in the UK, is a matter for EDF. It has indicated that its financial investment decision is going to happen some time towards the end of this year, and that is a matter for them. If it does, there is a potential that 2019 could happen, but it would want, in sailing terms, a fair wind between the two. Inevitably things go wrong on these large projects. As a young man I worked on the build of Hartlepool and things went wrong there, and they do on big projects. However, with the amount of time—and I think Tim captured it—and with the amount of planning that they have put into it, hopefully they have sufficient contingency, providing there is nothing absolutely major, to be able to work around it and 2019 has the potential to be achieved.

Q172 Albert Owen: If all the go-ahead are there, the business is being confirmed, the money is there and also the planning, you are saying that a six-year timetable is doable?

John Earp: I think it is doable. It is certainly being done elsewhere around the world.

Steve Geary: I suppose the only issue comes if things get bunched together and then you may have some challenges on the skills side, but I have nothing else to add to that.

Q173 Albert Owen: I have two supplementarys. First of all, MrEarp, you mentioned the fact that this is a matter for EDF but it does have wider implications for energy security, and indeed climate-change targets. Do you feel that if there is big slippage there is a risk to energy security? Secondly, is there greater risk on meeting our climate-change targets?

John Earp: I believe that, if there is a significant slip, then the alternative, and I think that has been well published, is perhaps a move towards gas. If we move towards gas, over the period that we are talking about more gas will be imported and therefore—and this is a personal view because I don’t have the data in front of me—there must be an increased risk to energy security; gut feeling. In terms of climate change, I think if we don’t get the nuclear plants built in the timeframe then it will be—I was going to say difficult, I would probably go as far as to say impossible to meet the climate-change targets that the Government has set.

Dr Fox: I would largely agree with John. I think the prime outcome of a slipped programme would be a detrimental effect on our ability to meet our low-carbon aspirations and meet our climate-change goals. The energy security one is a lot harder to call and a lot harder to analyse. There are multiple dimensions to that, depending on what you put in the market in the next 10 years and whether the UK decides to move forward with exploitation of shale gas and other unconventional sources of gas to enhance our own security of supply position. I think that one is much more difficult to be categorical on. Clearly there is some consideration to be taken into account in energy security there. But one thing that our institution would say is that we have recognised that the nuclear programme is largely a programme for decarbonisation, to underpin the longer-term electrification of the UK transportation and energy demand sector. So it has largely been designed and developed as a base-load programme to meet that growing demand for electricity, and therefore its implications for energy security are less of a concern.

Steve Geary: I don’t think it is an area that I have the expertise to answer on.

Q174 Albert Owen: Not the expertise. I am basically asking whether the delay will have an impact.

Steve Geary: Yes. I think from an industry point of view what industry wants—and this is not just about the nuclear programme, it is across all infrastructure, particularly where Government has an influence—is greater certainty of when programmes are going to come onstream. That will help us all in terms of planning, whether it is skills, all the issues that people have talked about, our supply chain, or people having a proper programme to work with. The worst thing that can happen is this chop-chance, stop-start. That creates problems where, at its worst, you have to think about sucking in labour from elsewhere because you have not had a chance to plan and grow it yourself. From an industry point of view, having a clear programme that we can stick to is essential.

The issues around the impact on climate change are the ones I feel I am not an expert to answer on.

Alasdair Reisner: Similarly, I am not going to class myself as an expert on climate change or energy security. However, the impact of delay on the supply chain is palpable. I think you have to look at the fact that companies are employing people who currently, because of the nature of the market, have to be solely focused on the nuclear sector, and as programmes slip you have to be able to justify to your board why that person is continuing to do a job where the outcome is uncertain. I think we will see, if there is continuing delay in the programme, that companies will take a
view on whether they can sustain activity in this sector. You might say that perhaps that is a good thing; it shakes out those who are not fully committed, but it depends on where the programme goes from here, because what you do not want is everyone falling out of the market, the programme then picking up and you not having the resource to deliver.

I think there is also an issue around skills. We talked earlier about skills. If you don’t have confidence that there is going to be a programme of new nuclear, you are a graduate coming out of university and you are making a career choice, are you going to make that choice if you can’t be certain that there is something down the line? That is why I think we can’t expect every stage to be hit bang on the nail, but if there is continuing slippage, it destroys confidence, and that is fatal for aspirations of delivering new nuclear.

Q175 Ian Lavery: Mr Earp mentioned the lessons learned, and you mentioned the construction of the two power stations in China. Engineering the Future published a report in 2010 called Nuclear Lessons Learned. I think you were chair of the group at the time.

John Earp: Correct.

Q176 Ian Lavery: That was based on experiences in Finland, France, China and in the UK. Have the lessons been learned? Have they been adopted in plans for the proposed new nuclear build in the UK?

John Earp: We believe that they have. Certainly currently EDF is involved with the Institution of Civil Engineers in terms of picking up on the lessons learned, so a quick answer is, yes, we believe that they have. One needs to wait and see how things go. There were lessons in three particular areas. That report drove three guidance documents, one associated with concrete, one associated with welding and the other associated with nuclear safety culture. We think certainly the nuclear safety culture one has been picked up and we think the other two have as well. In very simple terms, the answer to your question is, yes, we think that they are being.

Dr Fox: I would add to that that, from the Institution of Mechanical Engineers’ point of view, our power industries division and nuclear power subcommittee have studied these documents in detail and were intrinsically involved in some of the work. Certainly within the industries there is an awareness of the lessons, there is an understanding of the lessons. There is a lot of fundamental intuitive engineering logic in the lessons that is very easy for engineers to adopt. The question now is, we need to move forward and prove that we take these lessons into our practice when the nuclear programme moves forward. So I think the answer is, yes, we are aware of those lessons and we have learnt from them, but we now need an opportunity as a profession to move forward and display that in the nuclear new-build programme.

Steve Geary: I think we have touched on the areas where lessons have been learnt. We have referred to the supervisors, the leadership and management, we have referred to the behaviours. All of these things in our terms, when we get down to the nitty-gritty—it is taking it down to how you build that into national occupational standards, how that feeds through to a qualification, to apprenticeship frameworks and things like that. So the first one that we cover, yes, those lessons have been learnt. In the design and development going forward, having worked very closely with EDF, we are now working with the contractors that are involved—BYLOR as the consortium is called, Bouygues and Laing O’Rourke, and Kier and BAM who are involved in the early work—so that we are making sure that the training programmes are fit for purpose and take on lessons from elsewhere.

Alasdair Reisner: I think it needs to be remembered that there is a strong commercial imperative to learn from these lessons, so there is a strong focus on making sure that they are. The work that was done was excellent. The only sort of concern going forward might be if at any point people felt, “We know that, so we have done that” and it starts to recede into the background. You almost need constant challenge to make sure that those lessons are still at the forefront of people’s minds, because the potential impact of failing to take account of them on future projects would be huge. I think also there needs to be regular updating to bring on board the lessons that are being learnt as projects move into delivery to feed those back into the later projects as well.

Dr Fox: I would add to that that this is partly the reason why we need that first project to get underway and to get underway as soon as possible, because these lessons will then become embedded as an integrated part of the engineering profession’s culture and practice. One of the things that we need to be cognisant of is that we have not built a nuclear power station in this country for many years, and we need to ensure that these recommendations and these lessons become a fundamental part of our practices, of our engineering practice. We have the momentum available to us now to do that, and so the sooner we can move forward with the programme, the sooner that momentum can be carried forward by EDF and then others.

John Earp: Just to add to that, it is an important point from the institutions’ point of view—and I mean all of the institutions involved, including the Royal Academy—that the documents were published without copyright quite deliberately so that it would encourage people to lift sections out of them and incorporate them into their own construction documents. There is indication that that sort of thing might happen. It is too early to be clear, so I wouldn’t want to be definitive on that, but it was done deliberately in that way. They were published without copyright.

Q177 Ian Lavery: One of the findings from the report was that follow-on stations are rather cheaper than first-of-a-kind stations. Would a new EPR at Hinkley C be cheaper than the EPRs that are being built in France and Finland, or do you think within the UK context it means that it will still essentially be a first-of-a-kind project?

John Earp: That is a complex question, and let me try to elaborate on that. In a technical sense, the plant at Hinkley is very similar to the plant at Flamanville...
and very similar to the plant at Olkiluoto. There are some minor changes, but it is very similar, so in a technical sense it is the third-of-a-kind. However, first-of-a-kind also relates to building it in a particular geography and within a particular regulatory environment and a particular business-commercial-industrial relations environment, so, from those points of view, Hinkley will be first-of-a-kind in the UK. Hopefully it will be first-of-a-kind and successful as first-of-a-kind. Some of the technical issues will have been addressed previously, but there will be these other issues that are peculiar to the UK. In that sense it will be first-of-a-kind. Is that helpful?

Q178 Ian Lavery: Yes. Another issue that was raised before was the skills and the experience of the workers in the construction of the power stations. What does that mean in practice, bringing subcontractors in? How do you believe that the employment should work? What sort of skills do they need compared to ordinary building work, for example, and how will it look?

John Earp: I tried to cover that briefly when I gave you the concrete analogy earlier. I think in terms of practical skills they are all very similar. The issue is to engage the workers to know that they are working on a nuclear site, and that has a number of implications. A lot of the work that is done, certainly early concrete, early welding, ultimately will become part of the safety case for the plant. It is part of the argument that allows that plant to go onstream at the end of the construction. The consequences of not getting it right, therefore, are significant and in many cases you can’t go back and repair it. So that sort of understanding needs to be embedded in the workforce right down at shop-floor level, and certainly needs to be observed, monitored and led by the first-line supervisors.

Dr Fox: It is very much about developing a culture of quality. I have worked in both the non-nuclear construction industry and the nuclear construction industry during my career, and the transition is about learning culturally to do the best possible job you can every single time, understanding that this is your one-off chance to get that job right. The difference is that, although there are commercial implications in terms of penalties and fines in a commercial environment, if you are building a non-nuclear piece of infrastructure, it is possible technically to go back and rework often the piece of work that hasn’t come up to the quality standard that is required by the resident engineer, but in the nuclear industry you really don’t have that chance. So you have the added level of responsibility that there isn’t just a commercial outcome from your work, there is also a fundamental risk to the project if you do not deliver that job to the best of your technical competence and skill every single time. It is developing that culture, and that is an add-on to your general technical skills. It is about just ingraining a human behavioural element.

John Earp: There is in the nuclear business a phrase that is used throughout operation and during construction called “conservative decision-making”, and that is something that has developed from the USA initially and has been broadly used here in the UK. What it means is if you are doing something and you get to a point that you are not sure it is right or you are not sure what the consequences will be having done it, stop and seek advice. That is an absolute fundamental within the nuclear business and it is that sort of training that we need to get embedded within the entire workforce. I think conservative decision-making captures it extremely well, and it is used internationally now throughout the nuclear business, probably in all the reactors operating, I suspect.

Steve Geary: We have talked a lot about, if you like, the nuclear overlay on behaviours and the way you work, but there will be a lot that will be similar to other construction activity in the areas that we look at. You are going to have plant operators; you are going to have people involved in concreting. We are looking at a couple of areas at the moment. There is steel fixing where the requirements are quite different, so we are having to look at the upskilling of the programmes that would support that so that you can get people able to operate in the way that is required; carpenters on formwork for the concreting; areas like that where there will be different demands that are more than just about operating in a nuclear environment. With my colleagues who work in the other skills bodies, we are looking at it across the piece where there will be a need for new upskilling developed, as well as nuclear-behaviours overlay.

Alasdair Reisner: In your question you mentioned subcontractors, and it is an important point. Within the nuclear new build context, I think efforts are being made to try to reduce the level of subcontracting down the chain, because each time you have an interface that creates a potential for loss of control. But if we recognise that there is going to be some subcontracting, I think it is worthwhile revisiting something we mentioned earlier about early involvement. That is why this is so crucial, because if you can get the supply chain in long before they are going out onsite to do the work, that is when you can do this behavioural work to make sure that everyone, before they even walk through the site gate, understands this is not building a car park; this is not building whatever. This is building a nuclear project, it is a licensed site, and you will adhere to these very rigorous quality assurance plans.

Chair: Thanks, Ian, and of course of course it won’t happen if it is not financed.

Q179 Dan Byles: I think anything called conservative decision-making sounds absolutely like it is probably the right thing in my books. On the financing side, we have heard that although it might be possible to finance the first nuclear power stations on balance sheet, it is pretty unlikely that the entire raft of generation that we are looking at is going to be done that way, simply because of the sheer level of debt that the companies are going to have to take on. Would you agree with that, and what do you think are the implications in terms of financing these projects?

Dr Fox: As an institution that represents the engineering profession, clearly ultimately at the end of the day we deliver projects that people pay for. Our observation of the investment landscape is such that we would agree with your summary there of the
situation. I know that this Committee is not specifically looking at the EMR, but clearly the EMR is a component in trying to unlock that investment in the UK. One of the things I would say again, as an engineering profession looking at the investment landscape, one of the things that we observe is that there is a strong need for a stable and long-term view in the framework. We have heard a number of times in the evidence already in this session about the fact that what we really need is to settle down and the opportunity to move forward, so set the policy in place. To some degree, the exact nuances of the policy are less important than having a stable, continuous framework that gives us confidence to move forward so that we understand that the decisions we are making is not just to serve the short term. So we would say, let’s get the framework in place and stable as quickly as possible and then, secondarily, we are concerned about the detail of that.

Q180 Dan Byles: But that is about creating a long-term stable investment environment to create investor confidence.

*Dr Fox:* Yes.

Q181 Dan Byles: What about the mechanism, though, for funding the projects? None of these companies have strong enough balance sheets, do they, to be able to take on the whole of this nuclear new build on balance sheet in terms of all these plants they are doing?

*Dr Fox:* Yes, that is certainly our observation.

Q182 Dan Byles: So what do you think the implications are? 16 gigawatts by 2025; are the main companies who are pitching in for this going to do all that on balance sheet, or do you think they are going to have to come up with some other kind of innovative way of raising the cash? I know you guys are not the money men, so maybe you are not the right people to ask that question.

*John Earp:* I was going to offer that comment. I am not sure that I am competent to answer that, but your starting point is absolutely right. If you want 16 gigawatts by the timeframe that we have said to meet climate change, then typically you want about one reactor a year started from 2013 onwards, and that is a huge commitment financially. It is also a huge commitment on industry and all the other things we have talked about. I would respectfully suggest that you ask someone from the City about how to finance it. It is not my area of expertise.

*Steve Geary:* But I think that what we have seen in other areas is that, looking at the first private finance initiatives and things like that, there are markets that are created downstream and then once something is built and there is a business proposition, it may be easier to find ways of financing, which then can be put into further builds, but this is going way beyond my expertise.

Q183 Dan Byles: Perhaps something that is back into your sort of territory. One suggestion we have heard is that nuclear power stations might be easier to finance if they were smaller, for example akin to a typical 350 megawatt CCGT gas plant. Are there any technical problems with that? Is there a reason why they are getting bigger and bigger? Is it easier to build a 1.6 than a 350—

*John Earp:* I can honestly take that one but—do you want to go first, Tim?

*Dr Fox:* I think the key aspect to it is that from a technical point of view, there are a number of companies that are well advanced with their planning of such small-scale reactors. One of the challenges for us in the UK would be to undertake an assessment of those technologies, similar to the generic design assessment, and to reach a conclusion that they can be used and they can be licensed in the UK. There is a significant timescale associated with us doing that. So in the short term—

Q184 Dan Byles: But that is not to say in principle that you can’t do it?

*Dr Fox:* No.

Q185 Dan Byles: It is simply we haven’t done it. Is that basically it?

*Dr Fox:* Yes, and there is also an issue in relationship to the electricity transmission distribution infrastructure, so the National Grid would have to be configured to enable the use of those reactors. In principle, it offers many potential benefits in terms of bringing forward distributed energy generation, allowing localised stakeholding in power generation, and would fit in with the longer-term reconfiguration of the grid, but from our institution’s point of view it is a mid-2030s to 2040 timescale aspiration rather than a short-term aspiration.

Q186 Dan Byles: But would you say it is an aspiration? That is an interesting choice of words.

*Dr Fox:* Certainly it would fit in with the Government’s low-carbon distributed energy infrastructure vision, and it would certainly enable us to help meet those carbon reduction targets.

Q187 Dan Byles: A nuclear power station on every street corner.

*John Earp:* Just to comment, everything Tim has said I totally support. As we jokingly said between us, either of us could answer that question. All I would say is that all of those designs, and there are three or four that I can name here, are literally designs. They haven’t been tried, they haven’t been tested, whereas the plants that we are currently building have.

Q188 Dan Byles: But why is that? Is there a reason why the industry globally has tended towards larger?

*John Earp:* Two reasons; the grid systems that we have developed over the years in the developed economies lend themselves to large centres of power.

Q189 Dan Byles: Is it the tail wagging the dog, really?

*John Earp:* Not quite. I think that is a wrong way of putting it. The other thing is, probably in the short to medium term they would produce cheaper power. Until you get a demonstration plant for one of these
smaller reactors, it would be very difficult to convince yourself what the actual cost would be. On the positive side, however, these small reactors, the designs that I have seen, on the net mainly, look as though they would be a lot more flexible than the big ones. It is wrong to say that big reactors can’t flex with the grid. I have driven big reactors, I have worked on them, and they can. However, they are much more quiescent at full power and that is what they are designed to do. But the small ones will flex rather better and so you could manage the grid better with the small ones, so there are positive reasons to think about small reactors in the timeframes that Tim was alluding to.

Q190 Dan Byles: Could you not have a cluster of small reactors in one location to get around the grid problem?

John Earp: Yes, you could.

Q191 Dan Byles: Then you would have a more flexible site as a whole.

John Earp: Yes, you could. The design that the South Africans developed, the pebble-bed design, was a 160 megawatt reactor, a very neat reactor. They have stopped its development now, for reasons I could explain, but it is not germane to the discussion. They put them forward in what they called a four pack and a six pack alongside each other so that they could effectively become a large power station, but equally well you have a small one so you could sell them in countries within Africa where the infrastructure was poor. So, yes, it is entirely possible to do what you said, but I go back to the point, I don’t think anyone has done sufficient work yet to be clear what the costs of generation would be from reactors such as that.

Q192 Chair: If you went for a distributed model of smaller reactors, would you also then have more of a mid-term waste management issue of distributed onsite waste storage, or would that be something that you would have to confront in a new way?

John Earp: I can only go back to the work that they did in South Africa, which was probably the most developed. I need to caveat this by saying you need to be very careful what you are talking about with waste. Radioactive waste is one thing. Don’t confuse that with spent or used fuel, that is quite different, and I sense that that is mixed up, either through lack of knowledge or deliberately, in the press. The importance is that spent fuel is being designed to be kept on the sites currently in the UK as they develop. I suspect over time it won’t stay there forever, but the current design allows it to. They will also manage radioactive waste, which is developed during the normal operation of the power station but is not spent fuel. The UK’s position on spent fuel is very simple. The plutonium that comes from it, for example, is treated as a zero-value asset, because it could be used for fuel. So you need to separate those two things out. On waste specifically now, with the work done in South Africa they could contain the waste on the site. It is relatively small quantities. Is that helpful?

Chair: Yes. Thank you very much for the evidence you have given us, and if anything does occur to you that you feel we need to know before our inquiry is finished, we are keen to hear from you in writing. Similarly, we may come back to you as it occurs to us we have missed some key questions. Thank you again for your evidence. It has been most helpful.
Tuesday 23 October 2012

Members present:
Sir Robert Smith (Chair)
Dan Byles
Barry Gardiner
Ian Lavery

Dr Philip Lee
Albert Owen
Christopher Pincher

Examination of Witnesses

Witnesses: Mr Vincent de Rivaz, Chief Executive, EDF, Mr Humphrey Cadoux-Hudson, Managing Director, Nuclear New Build, EDF, Mr Rupert Steele, Director of Regulation, Scottish Power/Iberdrola, and Dr Chris Anastasi, Head of Government Affairs, Policy and Regulation, International Power, GDF Suez, gave evidence.

Q193 Chair: Welcome to the third of four sessions on building new nuclear: the challenges ahead. It would be helpful when witnesses are speaking for the first time if you could introduce yourselves. I understand EDF wanted to make a statement, just to set a little bit of the scene. Is it Mr Steele or Dr Anastasi?

Chris Anastasi: I would like to make a few comments, if I may, following EDF’s statement.

Vincent de Rivaz: Good morning, I am Vincent de Rivaz, the Chief Executive Officer for EDF Energy. Thank you very much for giving us the opportunity to set the scene briefly.

Today we face major and far-reaching decisions and we must take them in a difficult economic context, but the need for investment in our energy infrastructure is as real as it has ever been, as Ofgem has recently made clear. We know that gas will have a continuing role to play in meeting our energy needs and in recent months, we have overseen the construction of a 1,300 megawatt combined cycle gas station in Nottinghamshire. But the reality is that North Sea gas is depleting and the UK is now increasingly dependent on imports from Norway and Russia. While shale gas should be investigated, it will not be a cheap and easy ride. Even BP has said that useable shale gas resources in Europe are limited. So our challenge remains the same: we need a balanced energy mix which delivers security of supply, affordability and decarbonisation.

New nuclear has a vital role to play as part of the mix alongside renewables, and gas and coal fitted with carbon capture and storage. Just as we need to be realistic about energy mix, we also must be realistic about long-term prices. We have to pay for very significant investments in our energy infrastructure. While electricity demand today is 25 terawatt hours or 7% below the 2008 peak, this will not remain the case forever. We must be honest, just as Ofgem has been: with investment going in and the demand rising we must expect the unit price of electricity to increase over the coming decades.

I want now to turn briefly to the progress of our project in Somerset. We have taken considerable strides forward in terms of planning; in taking forward generic design assessment; in developing a new industrial covenant with our union partners and contractors; in identifying the right partners for key parts of our project, including the main civil works, and both the conventional and nuclear island; and in submitting to Government our proposal for a funded decommissioning programme. Our project team now numbers some 800 people. We are creating a world class team, including individuals who have worked successfully on delivering major projects such as the London 2012 Olympics. By the end of this year, the project will be ready for a final investment decision. We are shovel ready; we are on the brink of delivering an infrastructure project similar in scale to the London Olympics. We are poised to deliver immense benefits in terms of jobs, skills and economic goals, locally and nationally—but, like all investors in capital intensive infrastructure projects we need to have a compelling business case. In this respect, our final investment decision requires more progress to be made. The Secretary of State has made it clear publicly that he is committed to making progress with the second reading of the Energy Bill before Christmas, and the Energy Minister told me last week of his determination and his confidence that this team has the mandate it needs. Progress requires, above all, the agreement of a Contract for Difference, including the strike price, duration, indexation and the conditions for review. We are engaged with DECC in an intensive process to review our costs, the project risks and delivery arrangements, and to define transitional arrangements.

The CfD will reveal the cost competitiveness of nuclear with all other low carbon technologies. Nuclear is the best low carbon choice for consumers. The CfD will be a simple, transparent and proven instrument. It will deliver a fair and balanced outcome for investors and customers. The transitional arrangement will give legally robust foundations well in advance of Royal Assent to the Energy Bill for the certainty we and our partners need to decide to invest. So the reality is clear: we have workers with high visibility jackets standing ready to go to work on our site. The responsibility now is on the Government and us to deliver the CfD and transitional arrangements, the framework to make it possible for our project to move to the next stage around the end of the year.

Q194 Chair: Thank you very much. Dr Anastasi, you wanted to make a comment.

Chris Anastasi: Yes. I am Chris Anastasi from GDF Suez. I am mindful of the fact that this is the first time either of these two companies have come to this forum and I just wanted to make sure that we frame our questions with a few comments. We are a joint venture between Iberdrola and GDF Suez. NuGen was formed...
in 2009, so we have been going for two or three years. The two companies are major international companies with interest in nuclear operations in Europe already. We have about 18,000 people in total working here in the UK, so we are serious actors in the energy game, but conscious that we are slightly behind the EDF project. We have only just begun our site assessment work and hope to complete that within the year as part of a programme of work leading to a final investment decision in 2015. That is our current status.

**Q195 Chair:** Thank you very much. We have quite a tight session so if answers could be succinct, we will try and make questions succinct as well. We have already done an inquiry into electricity market reform and the Energy Bill, and we are waiting for the Government’s response. In this inquiry, we are looking at some of the other barriers to nuclear as well, and some of the other challenges facing nuclear. It has been put to us that while the Contract for Difference deals with the revenue risk, the construction risk is still going to hold back the investment that is needed to deliver the Government’s declared aim on nuclear. Do you think something more needs to be done to take on board the construction risk?

**Vincent de Rivaz:** There are two aspects to the construction risk. The first and most important one is to reduce those risks from the start, and that is the job that we have to do as the leader of the construction of these nuclear power plants. It is a job we do by having put in place a world class team, which is very clear about what it means to reduce the construction risk: to have a stabilised design before starting; to carry out detailed engineering studies before we start construction; and to have robust project management organisation with the role for engineering, the role for construction planning, the role for project managers, the role for commercial directors, the role for quality assurance, and the role for safety control. We also need to have a one team approach with all the main contractors civil, conventional island, nuclear island—working as one team with the same goal and the same purpose. We need to be clear that we will not start before we are ready, but when we start we will not stop. That should be clear in context where, I repeat, the key issue is to have a stabilised design before we start the construction, and it is all that we are doing. So the first response to the question of construction risks is to reduce them, to mitigate them, to control them as a competent and efficient company.

Now, regarding the investors’ views on this construction risk, the first thing is to give them this clear answer to the question: are we set up to succeed? Secondly, we have never been asked for the construction risk, for instance, to be taken within the Contract for Difference by the consumers. It is not our plan, we are not asking for that.

**Rupert Steele:** I am Rupert Steele, Director of Regulation at Scottish Power, looking after Iberdrola’s regulatory interests in the United Kingdom. Our perception is broadly similar, in that the starting point is to clarify the project and mitigate and reduce construction risks to the greatest extent possible. We are less definitive as to the best way to manage the residual risks that will continue to exist. These are large projects, which are working with relatively new designs that Europe has a relatively limited track record in building, to the extent that there is uncertainty. It will either be necessary to allow for that in the strike price or to have some kind of adjustment mechanism. Our view at the moment is that it is too early to tell which of those two routes has the better outcome for consumers and investors, but that is an issue we will address as we put our business case together later on in the development of our programme.

**Q196 Chair:** Presumably the first one is going to set the agenda for investors. If the first one comes in successfully on the construction risk, it will reduce that, but if it doesn’t then the hurdle for getting the next round of investment is going to be much higher?

**Vincent de Rivaz:** We are conscious of our responsibility being the first, leading the way, paving the way, and we are very clear that it is only when the first project has been kicked off after the final investment decision that we, with other developers, will be in a better position to talk about what should be—has to be—the vision for the country, which is how to deliver a programme in this country for the good of the customers.

**Q197 Dan Byles:** Can I briefly raise the issue of supply chain, and in particular UK supply chain? There have been some estimates that as much as 70% to 80% of the build could be provided from local supply chain companies, but the Institution of Mechanical Engineers is very concerned. They said what we might end up with is a very sharp spike in demand and then a sudden tailing off, rather than a consistent demand that might help lead us to a sustainable supply chain. What is your view on this, particularly in terms of supply chain bottlenecks? Are there any specific bottlenecks in the supply chain that could cause a delay to the overall build programme?

**Vincent de Rivaz:** It is a matter of great importance for us because we cannot succeed in delivering this project or in operating it for 60 years without a strong, competent, dedicated supply chain. That is why over the last three years we have organised a series of events to inform, to engage and to mobilise the UK supply chain, in the view that they take a significant role in the delivery of our project. I am confident that it will be the case. It is probably not appropriate to give any specific number, but our ambition is clearly that more than half the value of our project will be sourced from the UK. We will create through this project, something that has great importance for UK supply chain. This will be the first English speaking supply chain able not only to deliver in Britain, but to deliver projects of this kind in other parts of the world. That is our ambition.

**Q198 Dan Byles:** Do you think the fact that neither Areva nor Westinghouse are UK companies will be a limiting factor on this, in terms of their particular reacting times?

**Vincent de Rivaz:** Taking the example of the main civil works, it is a joint venture that we have selected...
as preferred bidder, made up of Laing O’Rourke and Bouygues. It is a 50/50 joint venture, and I am very confident that in terms of jobs, in terms of headcount working on the project, the huge majority will come from the British side of this joint venture.

Talking about Areva, it is true that the reactor itself of the EPR has to be provided by Areva, and Areva has a policy, as we have, to involve, to engage and to develop more and more subcontractors here in Britain. It is in their interest, in our interest, and it is our vision of this project.

Those projects will be always be sourced partly from abroad and significantly from UK, together in joint ventures. At the moment there are many companies in France and in Britain discussing the creation of joint ventures to deliver their contribution to the project, so we need to have far-reaching views of these. I don’t expect bottlenecks or difficulties of that sort. We have been engaging with the supply chain for the last three years, so things have not been done overnight, and will not. That is also one of the reasons why I am confident that we will deliver this project on cost and on budget, because the supply chain is part of the solution.

Q199 Dan Byles: Some people have suggested that in order to avoid bottlenecks, the UK needs to remain ahead of the game, because a lot of other countries are also considering significant new nuclear builds.

Do you think a delay in us actually starting our new nuclear build could lead to more bottlenecks than if we get on with it, because suddenly other people start catching up and start fishing in the same supply pool?

Vincent de Rivaz: No, the delay is more a fundamental problem than this specific one. This country needs to deliver.

Q200 Dan Byles: I don’t disagree with you there.

Vincent de Rivaz: Everybody I speak to is expecting us to go ahead, and I say, “Well, we are working for that. There is still something to do.” As I said earlier, Government has to do its part through the discussion we have on the Contract for Difference. So the main issue now is to get on with the Energy Bill and to have a clear process leading to the final investment decision in the next few months.

Q201 Dan Byles: Have you had much sight of the Government’s nuclear supply chain of a skills action plan, which is under development? Is there anything in particular you think Government need to put in that to make this work?

Humphrey Cadoux-Hudson: I am Humphrey Cadoux-Hudson, the Managing Director for the new build. Yes, we have engaged with Government on the action plan around the supply chain. Our focus has been to develop the UK supply chain as much as we can, as Vincent said, by being open and transparent about our requirements and giving the companies plenty of notice about the opportunities available to them to enable them to develop and get in the right place. The supply chain programme for Government is really looking longer term at the programme as the follow-on from the actions that we undertake in developing Hinkley Point.

Vincent de Rivaz: Part of the supply chain point you are raising is how we are going to engage with the productive workforce during the construction of our project. I am pleased to say, without entering into too many details, that this new covenant we want to have is now making significant progress. We are involving the unions and we expect to be able, in the next few weeks, to have this framework agreement in place—a tripartite agreement, with us as the client, the main contractors would be the civil works companies, the provider of the equipment for the conventional or the nuclear island, and the unions. That is part of the vision, we cannot engage in such a project without having clear vision of all the key factors to make it a success, and that is what we are doing.

Chris Anastasi: Could I make some general comments on the supply chain, although we are, as I said, slightly behind EDF in this context. I think the supply chain is pretty strong in the UK, and if you look at some of the nuclear operations that have happened over the last decade within the existing fleet, there is no doubt that the supply chain has been instrumental in maintaining the productivity of these plants. So there is a terrific bedrock there, in our opinion, on which to build.

The second thing is that this issue was highlighted several years ago, I think, as a potential bottleneck, as you call it, and the Government, along with the industry of course, has done a tremendous amount in raising awareness of the need, identifying the gaps where possible, and trying to bring forward opportunities for the supply chain, and I think that is probably right. It is unrealistic to think that we can do another Sizewell B at 90% plus of local content and, indeed, an IBM study just a few years ago suggested maybe 70% was a more accurate number. I think probably, as Vincent has indicated, we hope that the majority will be from the UK.

Finally, from our own personal perspective, our Moorside site is, of course, in Cumbria and it is a terrific area for this, with excellent engineering and technical support in the area as a going concern facility. We are hoping that we will lever off that as much as we can with our project, of course. Equally, if we go ahead with the project, and we hope we do, we will be supporting this chain for many decades to come.

Q202 Chair: Can I return to the financing? Have either of the companies looked at the Treasury’s UK guarantee scheme to see if that would fit or help in any way take some of the construction risk out of the project?

Vincent de Rivaz: I wish to be clear about the construction risk: we are not asking the consumers to take the construction risks.

Humphrey Cadoux-Hudson: The guarantee scheme is set up to deliver the financing that a normal commercial lender would look at, so we need to see it in that context. Clearly, as we look forward through the process of financing this project, it could be a very important element of the financing, but the purpose of it is not to go and take construction risk, we will need to be able to show that there is adequate credit protection for credit headroom above the debt
energy and climate change committee: evidence

23 october 2012  mr vincent de rigaz, mr humphrey cadoux-hudson, mr rupert steele and dr chris anastasi

financing element, in order to protect the debt financing. so however we look at it, these projects will require a very large slice of equity funding.

rupert steele: from our point of view, the project obviously is at an earlier stage. we have a big work programme to work our way through before we are at the stage of being able to take a final investment decision and putting the finance together. when we get to that stage, around 2015, then the government's guarantee scheme will no doubt be one of the things that we will look at along with other options.

vincent de rigaz: there are many comments about the financeability of our projects. many of these comments are based on the fact that people, and this is normal, do not know the details of the contract for difference. they do not know the certainty that we will get from this contract for difference in terms of the revenue stream in the long-term, and i do believe that with the mandate that the government still has to work with us—the various elements of this contract for difference—we will reach a situation where when people see it they will believe that it is a solution, and it will address many of the concerns that people have. the problem we have at the moment is that because we are in the stage of doing it, it is impossible to give the end product and to present it. but when it is there—and that is the purpose of what we are doing—it will be a convincing response to the people who are, rightly, asking for certainty on the long-term revenues. it is a big long-term investment, something that is very rare in this country, and asking for this certainty on the revenue stream for the contract for difference is simply the right thing to have asked for.

we will see what the contract for difference will be all about. it will have the strike price; it will have duration; it will have some formulas to take into account the consequence of inflation, for instance, during the construction and during the operation—it will have a series of elements that at the end will have to convince the investors that they can invest in this project because they will have a fair reward for the investments they are making, and they have to convince the consumers that they will be better off with this contract than without this contract. we will have to reveal the competitiveness of nuclear compared to other low carbon technologies. the strike price and the contract for difference will not be the problem; it will be the solution.

q203 dr lee: if you were designing a way of funding nuclear energy, would you have done it this way, with contracts for difference?

vincent de rigaz: i think the world is watching britain and will clearly see that the electricity market reform in general, and the contract for difference in particular, which is one of the elements, is indeed in the current world the optimal solution to get the funding for these type of project. i don't think there is any better alternative.

q204 dr lee: so you think it is the best approach?

vincent de rigaz: yes.

q205 dr lee: there was a recent article in which the strike price went down significantly if there was direct state funding of nuclear power construction—it went from about 140 down to 90. that is quite significant—

chair: phillip, i think we are coming to that later.

q206 ian lavery: looking at the construction of the new power station and the new reactors, i think there was a general consensus that a large workforce would be required to build them, but there were also great concerns about the lack of skills in terms of what would be required to build the reactors. do you think the uk has in place the right programmes to ensure that the right skills will be available to build the others?

humphrey cadoux-hudson: we have in the uk a significant, highly skilled workforce but, of course, we need to look forward to the future and look through the demands that the project will make. on our side, we have put a lot of investment and effort into building the skills up, we have invested in the energy centre at bridgewater college and at the west somerset community college. in construction skills and other skills, we are looking at methods to enable people to move from one industry to another—for instance, out of the defence industry into nuclear construction. in all of those areas, we are looking to make sure that there are skills programmes set up and ready to enable the workforce to be developed, i think that sits alongside what vincent mentioned to you—our engagement with unions to make sure that we have full agreement and that we set up sites that are fit for and give respect to the individuals that come on to our sites and, as a result of that, deliver the productivity that we need. all of that comes together. we currently have about 2,500 people running through the skills centre, building the skills up, particularly locally. there is a very strong interest that somerset are seen to and do benefit from the construction programme when it comes through. so it is a very big area of focus for us.

vincent de rigaz: i was in birmingham last week at a company event where i had the privilege to give accreditation to 48 apprentices who joined the company four years ago; they are now at the end of their cycle and getting this accreditation. we have recruited 70 new apprentices every year in the last years, and the number will go up. i can tell you that when there is a vision, when there is this magnet of something to achieve, we can make great things. with the apprentices, the young apprentices, we have formidable people, ready to spend their career in this industry with passion and skills. with the new graduates, we are getting more experienced people that have joined the project. we have recruited for our project key people who have been working on the olympics, which is a formidable example of something that has been a great success, on time and on budget. we are also recruiting people from outside britain, as well, to put together a world class team that will deliver. the skills will be blossoming in this context.
Ev 45

Q207 Ian Lavery: Is it fair to say that the panel believe that we do have the right skills to construct these power stations?

Humphrey Cadoux-Hudson: We need, as a country, to develop the skills. There are some very specialist skills—for instance, to do with welding the primary circuit—where it would be very difficult to qualify the welders for the first time around. We need to make sure that we bring people on and train them alongside the more experienced people that we may have to bring in, but it is not by any means a significant portion of the workforce doing this—it is just very small areas. For the rest, the country has the skills. They are either in the construction sector at the moment, or they are in other industries where they have skills, or they are the young people that we are bringing forward. I think by having, as a country, a clear strategy and plan as to the number of skilled people required by a programme, we can start training for the longer term. For our project, the Hinkley Point project, we have put in place ourselves the facilities and the programmes that we need.

Vincent de Rivaz: We should not be too downbeat about Britain’s ability to deliver. We have all learned from the stunning success of the Olympics that Britain can deliver something formidable. In a sense, our own Olympics will be in Somerset.

Q208 Ian Lavery: With respect to that, I am not sure if anybody has been downbeat, but I think people are really concerned because of the submissions that this Committee has received on whether we do have the correct skills in which to build these reactors, operate the reactors, and regulate the reactors. There are varying views and opinions on how many people will be required to construct these power stations and reactors, some say up to 50,000 people will be employed in the construction phases. How many will be from the UK?

Humphrey Cadoux-Hudson: We will employ as many as we possibly can from the UK. We are training people. If you talk about operations, we have already taken on over 80 graduates and we are taking on apprentices already, and this is a project that has not actually started. We have a programme that will build our operational workforce up from now through to going live for the station. As part of starting that training, we have sent some 40 graduates to France to work alongside the engineering teams in France and learn those skills and bring them back to the UK. We have an equivalent number of people—around 50 people—from France working with the team in the UK, building the skills up. For the operations, we will build up the skilled teams and train them, and they will be ready for when we run the operation.

Humphrey Cadoux-Hudson: You have quoted a figure of 50,000. Our construction sites will run to a maximum workforce of a bit over 5,500 people at any one point in time, but clearly we have different trades coming through at different stages through the construction. We estimate that about 25,000 will come through, be trained and inducted over the construction phase. The core number we are looking at at any time is, let’s say, 5,500, and as I say, we believe we will be able to find, together with our supply chain, those people. We will also be training people coming through, so we have discussions with our supply chain on the apprentice programme and we expect to engage around 400 plus apprentices on the construction side and around 200 on the operations side. Together with our supply chain and with the Government agencies that are involved in skills training, we will mobilise the workforce that we need in the UK.

Vincent de Rivaz: If I could just conclude on this point. We are investing in a £15 million world class training centre in Somerset, just to address this.

Q210 Ian Lavery: Is that the Bridgwater College?

Vincent de Rivaz: Yes.

Q211 Ian Lavery: Can you say at this stage how many students have actually graduated from courses?

Humphrey Cadoux-Hudson: It has just started. We have around 2,500 people running through those courses at the moment. We expect that to rise to about 5,000 next year. This is a very substantial effort on our part, very early on. We are still looking for the financial approval of the project, but we recognise our duty to make sure that the UK is ready and we are putting in those steps. We did this very early because our engagement in the Bridgwater College, both on our energy centre and construction skills, and with the West Somerset College, has been done very early exactly to meet the point that you raised: because we have a responsibility, both for the country and for the local community, to make sure that this huge opportunity that we are proposing to push through is taken as much advantage of as possible.

Q212 Christopher Pincher: You mentioned the role of community engagement. As I think we all know, there is broad public support for the nuclear programme, and in those areas where the nuclear facilities are or are to be built there is much greater support, but the sense seems to me that public support is fragile, so I wonder what you are doing to deal with those potential concerns head on. What are the actions that you are taking to identify public concern about nuclear, and what are you doing about it?

Vincent de Rivaz: I often say that one key aspect accompanying the business case is the public acceptance case to make it possible. I am pleased to say that the reality is the following: all the polls are showing a national support for nuclear—to the question whether it has to be part of the energy mix in this country, the national support for nuclear stands at 66%. It faced a slight dip in spring 2011, after the Fukushima events, and everybody can understand that. Today, at the national level, the net support in
favour of nuclear is higher than it was before Fukushima.

At local level, I said in my opening statement that we have made stunning progress for our application part of the planning process and are expecting, before Christmas, the planning inspectorate conclusions. I am very optimistic. Why? Because we have—it was in August—a section 106 deal from the three local councils. It has been three years of hard work, consultation, dialogue. It has been extensive—around 3,500 people took part in the three stages of the formal consultation; we held 39 exhibitions and 68 meetings, and there were around 2,000 formal responses and 33,000 comments. Only 5% of the comments we received were specifically about the nuclear issues, which means that the local people have understood what the local consultation was all about—not to challenge the national policy statement that has been voted by your Parliament in July 2011, but to address local issues: transport, housing, training, impact on the environment, and so on. We got this deal with the three local authorities; they have signed a joint letter saying, "For us it is a done deal."

Who would have expected that just two years or three years ago, when we had all the noises about the planning and all the problems? The largest infrastructure project ever in Britain in the new regime is going smoothly. I am not saying it is done easily and overnight, it requires a lot of effort. So I am confident, yes, that we have the support at a national level and we have the support at the local level.

Is it fragile? I would not say that. It is something we need to care about permanently. For me, the cross-party support we have for nuclear is absolutely essential for giving investors confidence. The public opinion support is absolutely essential, and we need to work day in, day out on that. First, as a nuclear operator in this country we have a huge responsibility to operate safely our 15 reactors, and we do it, as the safety regulator said. We have to be open and transparent. I have decided that we will reopen visitor centres on all our sites, which had been closed after 9/11. We opened the first one in Hunterston in Scotland in the presence of the Energy Minister of the Scottish Government, and I will open two others—one in Hinkley and one in Sizewell—on this side of the new year, and the rest in the first quarter of 2013. That is our policy: openness and transparency.

I can tell you the appetite of the local people to understand what we are doing, the trust they are putting in us, is remarkable and encouraging. So, again, we should be confident that if we do the right thing we will get the results.

Q213 Christopher Pincher: Can I ask you one very practical question? Sedgeemoor Council has said that it would like to see retention of the local business rate where nuclear facilities are being built. Do you think that is only something that local councils want and it is not something that the local community, which may not see the benefit of that retention, want. Would they like to see a much more specific on the ground compensation for any disruption there might be?

Vincent de Rivaz: It is a fair requirement.

Humphrey Cadoux-Hudson: We can’t ignore that national infrastructure has to be built in local communities, and I think there is an issue of fairness, as Vincent said, to ensure that there is a balance between the disruption caused to people’s lives and the benefits that they get. Clearly, when we are operational the plant will deliver a large amount of rates, corporation tax, national insurance and PAYE, and all the rest to Central Government. I think it is only fair that a small proportion of that stays with the local community. We have voiced as strongly as we can the fact that it is a policy that should be pursued, and I believe that there is a strong interest now in Government in seeing that. As we look forward to the large amount of infrastructure that needs to be built in the country over the next decades, it is a wise investment in creating that balance between national and local needs.

Q214 Christopher Pincher: But how do you make sure that that retained business rate gets down to the local community and is not simply put away in savings by the local council? What, in concrete terms, can you do on the ground to make sure that local people living on the doorstep of a nuclear facility feel that they are getting some bang for their buck?

Humphrey Cadoux-Hudson: It has been explored in other countries. In France there is a grand chancer mechanism that has been directed exactly at doing that. So I would say let’s not learn from scratch; go and look at what has been done in other countries and other communities, but it is obviously possible that you can make sure that the local communities benefit from such an allocation of business rates.

Rupert Steele: It is also in the gift of local electors, if they feel that the local council is not assisting them properly with the windfall, to take action of their own.

Christopher Pincher: A manifesto commitment?

Q215 Barry Gardiner: I want to turn to financial security, decommissioning and other long-term liabilities. Both EDF and NuGen have said that you support the funded decommissioning programme. What further details do you require from Government about that? Can you just list them—we are very short of time because you have taken so much time answering at length and we need to get through a lot of questions.

Humphrey Cadoux-Hudson: Well, on the funded decommissioning and dealing with the spent fuel over the life of the project, we have had long discussions with DECC and departments and have submitted a funded decommissioning plan to DECC that effectively sets up from day one a fund that will grow through the life of the project as we deliver energy and we consume fuel. Step by step we will build up a fund that is adequate in a protected fund, segregated and separated from the company. It will deliver, well before the end of the commercial life of the project, a fund that is—

Q216 Barry Gardiner: Sorry, with respect, Mr Cadoux-Hudson, I know this. What I am asking you for is the additional necessary detail that you have requested from Government. What is that additional
From our point of view, we are very sensitive to the detail? We know what the shape of the independent fund will look like, but what is the additional detail you require from Government?

**Humphrey Cadoux-Hudson**: I am not sure I understand the question.

**Q217 Barry Gardiner**: Both you and NuGen have said that more detail is needed about the funded decommissioning programme from Government. I am asking you, what is that further detail?

**Humphrey Cadoux-Hudson**: It is a detailed negotiation with DECC, and we have put in a plan. The critical issue that remains is that we need to be sure about is that the scheme—the agreement—we enter into will stay in its form commercially over the life of the project. It is not possible for us to invest and discover one or two years later that the deal has been materially changed. The most significant issue is stability—long-term stability—that allows a financial investment decision to be taken today and stay as a reasonable decision over the life of the plant.

**Q218 Barry Gardiner**: That seems perfectly fair. Let me probe further your own statement, which did not seem to me perfectly fair. It says, “We fully support the principle in the FDP that the operator of a new nuclear power station must pay for the full costs of decommissioning” but then you go on to say, and draw a distinction, “and its full share of waste management costs”. Is that full share less than 100%, if so, why and how do you propose that share should be made?

**Vincent de Rivaz**: There is no mystery in this. The decommissioning of our plant is going to be fully borne by us.

**Q219 Barry Gardiner**: In the independent fund?

**Vincent de Rivaz**: The scheme in general will welcome waste from other operators and what we are saying is that we are going to take the full share of the waste coming from our plants in this funding.

**Q220 Barry Gardiner**: So it is 100% of your waste and everybody else will pay 100% for their waste, but there is no suggestion here, in the distinction that you have drawn, that the taxpayer will be paying any part of the share?

**Vincent de Rivaz**: Your understanding is absolutely correct.

**Barry Gardiner**: Thank you.

**Humphrey Cadoux-Hudson**: There is a fixed cost for a deep depository and the allocation of that fixed cost to the users of the deep depository is a matter for more detailed discussion. The principle is that we will pay.

**Q221 Barry Gardiner**: That is the next question that I wanted to ask you. Thank you for that clarity. The next problem of course is that the Government has said it will not set the waste transfer price until the early to mid-2040s, so it appears that you will not have the sort of clarity that you seek on that waste transfer price for quite some time. What impact is that going to have on your investment profile, your cost of capital and your investment decisions?

**Humphrey Cadoux-Hudson**: The discussions on the waste transfer is that the price will be determined later, but it will be capped. There will be a maximum price. That has been set at a level with a quite a degree of margin, I should say, but for us it is important that that cap is set at a level that we can understand financially and is set at a time when we can take reliance on it.

**Q222 Barry Gardiner**: That is the £370 million figure for the power station?

**Humphrey Cadoux-Hudson**: Sorry, that cap is in terms of the quantity of fuel, so it is per quantity of fuel produced, as opposed to—

**Q223 Barry Gardiner**: Sorry, where does £370 million figure come from then for waste disposal? Indicative figures published by the department suggest that it would create a maximum liability on one station of about £370 million. Is that the figure—

**Humphrey Cadoux-Hudson**: That is an estimate, but the actual cap written into the contract would be based on the quantity of fuel.

**Barry Gardiner**: Thank you very much.

**Q224 Albert Owen**: If I could move on to political leadership, a question for all of you is: is there a supportive political framework for new nuclear in the United Kingdom?

**Vincent de Rivaz**: The answer is yes.

**Albert Owen**: Good. Let’s hear some other voices for a bit, if we may.

**Vincent de Rivaz**: Okay, very good.

**Chris Anastasi**: I don’t think there is any doubt that the UK political parties have supported the new nuclear build. I think it has been terrific that over successive Parliaments there has been strong political support, and even post-Fukushima polls suggest it is in the mid-80% in terms of support.

How has that manifested itself? We are seeing progress in a number of the key elements associated with the new nuclear build, whether it is the generic design assessment, the planning protocols or EMR— all of these have been necessary to bring forward new nuclear build. It is fair to say that was driven with political will. It just remains now for that last step to deliver the EMR framework.

**Q225 Albert Owen**: Again, you are happy with the political support you have had thus far, but can I ask Mr Steele and others: do you feel if EMR had been done sooner, then you would have had spades in the ground now and things would have been moving forward? Has the political process held this back? Because you said yourself, with regards to EDF, that it is up to Government—you mentioned that a few times in your opening statement: it is up to Government. Has Government been dragging its heels? Should we be now further ahead in building of new nuclear power and has the political process or Government held you back?

**Rupert Steele**: From our point of view, we are very happy with the timetable for EMR. It is important that it is kept to because there are a number of investments—not only nuclear but renewables as
well—that depend on it, but it is a complicated process that needs a lot of thought and it is incumbent on the industry to work hard with the Government to make sure that everybody understands those issues and to deliver a functional framework that works for consumers and for investors.

**Q226 Albert Owen:** Mr Steele, very few, with the exception of one or two, of those who gave evidence during our scrutiny of the Bill were happy with the framework. They were concerned about delays. You are now saying that you don’t have those concerns or there was nothing holding us back?

**Rupert Steele:** I am saying the timetable that the Government has set out is fine. It would be a big problem if it slipped further. We are working very hard with the Government to try to help get it delivered and get it right because that is important as well.

**Q227 Albert Owen:** The reason I raise this question—and I will obviously allow more than a one word answer from EDF here—is that Friends of Nuclear Power are saying that there is no clarity and that they have concerns about whether the Government want nuclear power or not. That has been submitted to us in the evidence. Could you comment on that?

**Vincent de Rivaz:** We have no concern about it. I have no concern, because when I read what the Secretary of State said last week about the Energy Bill getting second reading before Christmas, what he said to the CBI—

**Q228 Albert Owen:** Which Christmas?

**Vincent de Rivaz:** Do you believe that as a company we would have invested as much as we have done pre-decision if we did not expect the Government of Great Britain to be serious? It was a policy put in place by the Labour Government, which has been maintained by the current Coalition Government. I remember in the days after the Fukushima events there was a debate in the House when the Prime Minister said clearly that the policy is unchanged, and the Leader of the Opposition stood to up to say, “We don’t want to delay important progress. We need to make new nuclear power in this country.” So there is a cross-party political consensus. The Energy Bill will be presented early November, second reading before Christmas 2012. We hold this Government to account and we believe they will deliver.

People say there was no clarity. When they say that, they just recognise the fact that we don’t yet know what will be the result of the discussion on the CFD, which is precisely about bringing this clarity. Of course we cannot give the results before we have them, but when we have them there will be clarity. If we have no clarity we will not invest. So that is pretty simple. We have to trust ourselves. It is not a negotiation between us and the Government—it is not us trying to twist the arm of the Government and, through the Government, the arm of the consumers of this country in the long-term; it is just the opposite. It is just about building the solutions together, win-win solutions. As investors, it is a big investment, a long-term investment, a major investment, so we need clarity about the returns. It has to be fair for the investors, and consumers have to be clear that they will not pay more than otherwise. I have heard so many things about the strike price of nuclear. People are making noises about things they ignore—

**Q229 Albert Owen:** With respect, I don’t want a statement again. I am very clear and very positive about nuclear power but others are not, and what they are saying is that major investors are pulling out and that has happened in recent months. The question I was asking was, does that have anything to do with the political process and the delays at a political level in your opinion? You don’t think so?

**Vincent de Rivaz:** It is for those who have put it off to answer.

**Albert Owen:** Sorry, I missed that bit. **Vincent de Rivaz:** It is for those who have put it off to answer to the question why they have done that. I just refer to what the German companies said in this Committee a few months ago: they said very clearly, publicly, that it was nothing to do with the framework in this country; it was all to do with the financial situation and other political issues that they have; it is a choice between various priorities. Frankly speaking, when we look at the situation worldwide, we have in the UK the country that is ready to put in place the framework allowing nuclear to happen. It is not yet done, that is for sure, but why is there this feeling of impatience or uncertainty? To be honest, the discussion is going on and we are co-building with the Government the solutions about the Contract for Difference. It is a big issue. I am confident we will get there. I am confident that the negotiation team has a mandate to go ahead, and I am confident that when the Chancellor says what he says, when the Prime Minister says what he says, when the Secretary of State says what he says, we can hold them to account. **Albert Owen:** That is our job and we tried to do that with the Energy Bill, but I think we have had the answers that I wanted.

**Q230 Dan Byles:** We are very short of time so if we could try to keep this fairly tight. Surely, ultimately, whether or not new nuclear is a cost effective way of generating power going forwards is going to come down to what this strike price is?

**Vincent de Rivaz:** Yes.

**Q231 Dan Byles:** So when EDF sit down in a dark room with beer and sandwiches with DECC to work out a bilateral price some time later this year, we are all watching very carefully. Where is going to be, ballpark figure? I know you can’t give us a firm figure. Is it going to be cheaper than offshore winds £100 per megawatt hour that they are trying to get down to?

**Vincent de Rivaz:** It is not a dark and smoked filled room.

**Q232 Dan Byles:** Is it going to be a clear and transparent process?

**Vincent de Rivaz:** You have been—

**Dan Byles:** I am being slightly deliberately—
Vincent de Rivaz: Smoking is forbidden and the light is on so it is not dark.

Q233 Dan Byles: But the process doesn’t seem very transparent.

Vincent de Rivaz: It is transparent. We are in the process of cost discovery, which will be totally transparent.

Q234 Dan Byles: Will it be widely published?

Vincent de Rivaz: We know that it has to be auditable, that we need to face the scrutiny of Parliament and other public opinion, and we are ready for that.

Dan Byles: We are very pleased to hear that.

Vincent de Rivaz: We relish the challenge to have the Contract for Difference revealing the competitiveness of nuclear. There is a cost discovery process going on. We have put on the table for DECC all our costs. There is a risk analysis which has been done in common, and we need to discuss how to mitigate those risks, and so on. That is the work we are doing. Then the result of it will be public. I am sorry, there is a commercial discussion at the moment, and if I give you a number without the context it will unhelpful in all aspects.

Q235 Dan Byles: But without giving us an actual number, do you accept that for it to be cost effective going forward, new nuclear has to be able to stand on its own two feet against the falling cost of offshore wind and the lower cost of onshore wind? Early figures are talking in the 70s in terms of pounds per megawatt hour, and I am now reading figures of about £140, which worries me.

Vincent de Rivaz: Utterly rubbish.

Q236 Dan Byles: Good, I am pleased to hear that. So you can comment on something.

Vincent de Rivaz: I am disappointed this number is still flying around because I have emphatically denied it.

Q237 Dan Byles: The £140 figure?

Vincent de Rivaz: Of course.

Dan Byles: Good, good.

Vincent de Rivaz: People are writing long articles in newspapers based on this flawed assumption. It is rubbish.

Q238 Dan Byles: So you can comment on some figures. Can you comment on £100?

Vincent de Rivaz: No, because I respect DECC and Treasury and I respect the process that is going on. I am not cutting corners, it is too important. We all have to be patient. If we are cutting corners we are going to derail the process. What I have said is that the Contract for Difference, the strike price, will reveal the competitiveness compared to other low carbon technologies. I believe that nuclear is the best low carbon technology available in this country at the moment. That is what we are going to demonstrate through a transparent, open process that is going on, which requires that everybody bears with us positively.

Q239 Dan Byles: Are you expecting to have a price by the end of the year?

Vincent de Rivaz: The purpose of the project is to be ready and we are going to work as project for a figure at the end of the year. Now, the Government has to do its part and I think they will. The Energy Bill will have its second reading before Christmas. We need to have the transitional arrangement in place, and all that will entail. Many months will pass between the moment the CfD is agreed and the Royal Assent to the Bill. We need to have something in place that robustly legally protects us during this period. That is the level of certainty that we need to have. That is the discussion we are having at the moment.

Q240 Dan Byles: Do you think DECC have the capacity, capability and knowledge to able to sit on the other side of the table and robustly discuss this with you?

Vincent de Rivaz: Yes.

Q241 Dan Byles: You do?

Humphrey Cadoux-Hudson: Yes, they have engaged companies to help them—KPMG, Jacobs, and so on—and it is an issue that is involving Treasury and other departments of Government, so I am sure that Government in the round is able to deal with the issues in front of them.

Q242 Barry Gardiner: I’d never seen you say yes so quickly. It is the first one word answer we have been able to get out of you, which means that the answer is clearly no. It is not in your interest to say that they are completely incompetent and can’t negotiate with you.

Vincent de Rivaz: No, you asked me to make short answers.

Q243 Barry Gardiner: Very good, I appreciate that. Let’s go for another short answer then. If you were to increase the estimate of the cost of your reactors at Hinkley Point by 40%, what would that do to the negotiations on the strike price?

Vincent de Rivaz: 40% of what?

Q244 Barry Gardiner: You will have seen the letter from Sir William McAlpine to the Chairman—

Vincent de Rivaz: A letter about what? About the cost of Hinkley? What does he know about it?

Barry Gardiner: Okay, shall I finish asking the question and then perhaps you would care to answer it?

Vincent de Rivaz: Yes, yes, yes.

Barry Gardiner: In your usual curt fashion.

Vincent de Rivaz: I don’t know what you are asking but I can tell you he does not know anything about the cost of Hinkley, so everything he can say is just—

Barry Gardiner: I do not wish to infer in your personal attack on the gentleman.

Vincent de Rivaz: No, no, no, it is not personal.

Q245 Barry Gardiner: All I wish to do is to ask the question, Mr de Rivaz. If you would allow me to ask you the question, we are very limited in time and you
have done a wonderful job of filibustering this session out, but let us now proceed to the question.

In his letter, Sir William says, "Our problem is that the strike price negotiation is anything but transparent. We have no idea why EDF, seeking to build two new reactors at Hinkley Point, suddenly increased its estimated cost of each reactor by 40% to £14 billion in total. Nor do we have any reliable estimates of the annual cost today of operating such large reactors". I don't want to go on to that point. My question to you is: is that statement about the rise in the estimated cost of the reactor true? Was there a rise in the estimated cost of the reactor? Is the estimated cost of the reactors now being quoted, £14 billion, correct? If so, what would that do to your negotiations about a strike price?

Vincent de Rivaz: I hope that after having listened to what I have said, Mr McAlpine no longer thinks what he said in his letter, because I have said just the opposite about the openness of the process and so on and I don’t want to repeat myself. When he says he does not know, he is right—he does not know and he has no reason to know. We, the companies that are part of the project, like Laing O’Rourke, know more than his company, because they are in the project.

Q246 Barry Gardiner: Let’s not answer this in an epistemological way about what he can possibly know; let’s answer it by what you do know. My question is to you, not to what you think about him. What I am asking you is has there been an increase in your estimate to DECC about the cost of those reactors?

Vincent de Rivaz: No. We have—

Q247 Barry Gardiner: So you haven’t increased the costs in your estimate?

Vincent de Rivaz: We have been in a process of cost discovery, which is based on what the design is. We are now finishing the process of having a stable design with the safety authority—generic design assessment. The good news, again, is that the safety authority has said that they have every confidence that at the end of the year, we will have fixed all the problems, we will have a stable design. That is big input. We are discussing with many contractors many civil works, conventional island, nuclear island, to bring with them the cost elements. We have been adding all of these elements and we are now in a position to, and we have done it, give DECC the numbers that we feel at the moment are the most likely to be the cost of the construction.

Q248 Barry Gardiner: Excellent. Are those numbers larger or smaller than the numbers that you first gave them, and if so, by how much?

Vincent de Rivaz: I have no reference. I have started this process recently so there is no comparison to be made with other numbers. It is a process that I started at the right time with the elements that we had, and at the end what matters is, first, that we are able to deliver on cost and on time; and, secondly, that the strike price, which will obviously be commensurate with the cost, is seen as fair for the investors and for the consumers. So do not create a problem that does not exist. We cannot compare with something that did not exist in the past; we are starting a new first of a kind project in Somerset, taking into account all the elements that we have to take into account—what the safety authority is asking for, the regulations that you have in this country and the site specifications. The project in Somerset is not the same project as elsewhere. It is a process, and we are now in a position to be ready to say what costs and timeframe will be for the construction. That is an input that is in the data room at DECC, and with this input they can run their model to see what the strike price is.

Q249 Barry Gardiner: Mr de Rivaz, you have said that the strike price will in part be determined by the costs of the project?

Vincent de Rivaz: Yes.

Q250 Barry Gardiner: Does that imply that there is a perverse incentive at this stage for you to estimate a higher cost for the project, in order to be able to negotiate a higher strike price?

Vincent de Rivaz: We are not having any perverse behaviour in this.

Q251 Barry Gardiner: I didn’t say behaviour—no, no, I am not accusing you of anything. I am saying that there is a perverse incentive built into this process.

Vincent de Rivaz: No. Why?

Q252 Barry Gardiner: Because you yourself have said that the cost of the scheme is going to then influence the strike price that you are able to negotiate. Therefore, the higher the cost of the scheme, the higher the cost of the strike price that you can get. That is a perverse incentive in anybody’s dictionary.

Vincent de Rivaz: No, absolutely not. We are in a virtuous process, which is all about having a balanced deal. I am sorry to repeat myself. I don’t want to sign a deal that is not balanced, because if it is not balanced it will not be stable, not durable. We are in the long-term business, it would be a folly to try to cheat; there would be an immediate backlash. It will not happen. I am not ready to sign a contract based on flawed assumptions.

Q253 Barry Gardiner: Okay, I accept that.

Vincent de Rivaz: No, it is serious—

Q254 Barry Gardiner: Mr de Rivaz, you don’t need to go on because I accept that.

Vincent de Rivaz: If I was increasing the cost to get a strike price that would not be competitive, I would be saying that nuclear is not competitive, that is not my job, I am in the job to demonstrate that nuclear is competitive.

Q255 Barry Gardiner: That is a very good answer and I accept it. Take yes for answer, okay? Now, in equal fashion, in exactly the same way as you have talked about the importance of balance there, do you not acknowledge the importance of balance in relation to Mr Byles’ question, which was about the
need to ensure that this still looks good when the price of onshore and offshore wind has come down, and it still looks competitive going forward, for exactly the same reason as Mr Cadoux-Hudson said earlier was so important to you and that is stability in the regulatory process?

Vincent de Rivaz: Yes.

Q256 Barry Gardiner: You don’t want a Government later on to come in here and say, “Look, we can’t go on with the situation where we are paying less than £100 per megawatt for wind, but we are paying you over those odds,” and yet you refuse to answer Mr Byles’ question. Do you not accept that now, by exactly the same logic, that you have put to—

Vincent de Rivaz: I have answered the question. I have. I agree with you. We are not seeking a deal that will not be sustainable. So that is the main point.

Q257 Barry Gardiner: So it must be sustainable against the future price of wind?

Humphrey Cadoux-Hudson: In as much as we know what the future of the price of wind will be.

Q258 Barry Gardiner: Indeed, of course.

Vincent de Rivaz: You have made an assumption that the offshore price will go down.

Q259 Barry Gardiner: It is DECC’s assumption, actually, it is not ours.

Vincent de Rivaz: Fine. Okay, we will see.

Q260 Dr Lee: It is a straightforward question. Would you have designed it like this? If you were the British Government, would you have designed a Contract for Difference model to fund new nuclear build? Is it the cheapest way of doing it?

Humphrey Cadoux-Hudson: The problem is not to fund nuclear build, it is to fund low carbon energy.

Q261 Dr Lee: No, I am separating it. I take nuclear actually, it is not ours.

Vincent de Rivaz: Fine. Okay, we will see.

Q262 Dr Lee: Why?

Vincent de Rivaz: Because it brings the certainty in the long term that the investors—the funders—are legitimately asking for.

Q263 Dr Lee: But the problem with nuclear is the upfront initial capital costs are the challenge.

Vincent de Rivaz: Yes.

Q264 Dr Lee: The on-going running cost in comparison to others, are marginal.

Vincent de Rivaz: Yes, true.

Q265 Dr Lee: If you are going to guarantee a price floor, that is perverse—it is the wrong way round, is it not?

Vincent de Rivaz: No, because the return that you have is on the whole duration.

Q266 Dr Lee: No, the return for you is on the duration. It looks like it is structured to pay an annuity to the French taxpayer for the next 40 years.

Vincent de Rivaz: Sorry, we should avoid any sort of jingoism on this matter.

Q267 Dr Lee: No, I do not think we should, because it is a state owned company. It is not about being jingoistic; it is about being factual.

Vincent de Rivaz: Okay. We have shareholders. One of them is the French state and the others are in the public, and they are all looking for clear financial discipline, which implies we have a fair return on the investment we are making, and at the same time that requires that there is a fair deal for the consumers, and the EMR is all about bringing certainty in a world that requires certainty, and in so doing reducing the cost of capital to allow the deal to be made.

Q268 Dr Lee: But if the Government borrows the money, they will pay less interest on it than if we incentivise you to go and borrow the money. That is true, yes? Yes or no, sir?

Vincent de Rivaz: Okay, but you are assuming the Government wants to invest in the project.

Q269 Dr Lee: No. I am asking you a simple question: is it cheaper for Government to borrow the money and build, or is it cheaper for me to borrow it to incentivise you to borrow the money?

Humphrey Cadoux-Hudson: I think it needs to put a price against the cost of—

Q270 Dr Lee: It is not a complicated question.

Humphrey Cadoux-Hudson: It is sorry, but it is a complicated question.

Q271 Dr Lee: No, it is not. Can Government borrow money cheaper than you, yes or no?

Humphrey Cadoux-Hudson: The question is the equity cost, not the borrowing cost.

Q272 Dr Lee: No, it is a simple question: can a Government borrow the money cheaper than EDF?

Vincent de Rivaz: And so what?

Q273 Dr Lee: Sorry?

Vincent de Rivaz: And so what?

Q274 Dr Lee: Yes or no? I don’t think this is a complicated question.

Vincent de Rivaz: If the answer is yes, so what? Do you suggest the Government invests in the project?

Q275 Dr Lee: If the answer is yes, I would suggest to you that, in view of the fact that the initial outlay in nuclear is significant and that the on-going costs are marginal, then Contracts for Difference by definition is not the cheapest way of doing it. That is the point.

Vincent de Rivaz: Because you are assuming the Government want to invest in nuclear projects directly.
Q276 Dr Lee: I am saying that if the capital cost outlay is the significant part of nuclear energy, which you agreed that it is at the start.

Vincent de Rivaz: Yes.

Q277 Dr Lee: If you are borrowing that money at a higher interest rate, by definition it is costing more than it should.

Vincent de Rivaz: But you are comparing one scenario to a scenario where the Government invest directly in the project.

Q278 Dr Lee: No. This is simple, do not try to make it complex just because it—

Vincent de Rivaz: No. I am trying to understand what is behind your question. If you suggesting that the Government invest in the project, that is a different story.

Q279 Dr Lee: I am asking your opinion. The problem I see with this is there is one person in negotiation with the Government. It is a great position to be in, particularly when we have legally binding CO₂ emissions targets.

Vincent de Rivaz: Sorry?

Humphrey Cadoux-Hudson: Legally binding CO₂ targets.

Q280 Dr Lee: Is that not the case? EDF is in a very good position here—congratulations—because we have legally binding CO₂ emission targets. Vincent de Rivaz: Sorry?

Humphrey Cadoux-Hudson: Legally binding CO₂ targets.

Q281 Dr Lee: Anyway, I will move on. One final question.

Vincent de Rivaz: I do not accept—

Q282 Dr Lee: I am moving on, sir. Sir, I am moving on.

Vincent de Rivaz: I do not accept the idea that the—

Q283 Dr Lee: When you are in discussions about cost discovery—

Vincent de Rivaz: We invest in the long term. We are in the business—

Q284 Dr Lee: Sir, I have asked you politely—

Vincent de Rivaz: Twisting the arms of the UK Government, it is not the job I am in.
Examining of Witnesses

Witnesses: Sir Bernard Ingham, Secretary, Supporters of Nuclear Energy, and Sir William McAlpine, Chairman, Supporters of Nuclear Energy, gave evidence.

Q288 Chair: Thank you very much for agreeing to give evidence before the Committee. You obviously heard the first session, so you have a fair idea of where the Committee is coming from. We have been asking, for the record, if you could introduce yourselves and give your name and organisation the first time you speak, I will start off with the first question.
You have put in your written evidence that you want to see a stronger focus on nuclear energy as part of the UK mix. By “a stronger focus” do you mean there should be a greater proportion of nuclear, or just more emphasis on delivering the proportion that is supposedly on offer?

Sir William McAlpine: Sir William McAlpine, Supporters of Nuclear Energy. Yes, I think ideally we ought to have 40% baseload nuclear, and we should have had it for some time, but, to answer another question, you cannot get there without wholehearted support from the Government. Although the Government is now supportive, it is not absolutely wholehearted. I think it needs to be.

There is a feeling in the country, and some people we meet say, “Nuclear—no way.” We do not get the debate. We have tried in the past to get a debate on what the actual costs are. The Government tells us—the Ministry of Energy tells us—that nuclear is the cheapest, that wind is fairly well up there and that gas is the next one and so on and so forth, but one of the reasons we believe that nuclear is the right thing to have is because of security of supply; it does not depend on imports from an unstable world, unlike gas and oil. Once you have built the thing it sits there humming away for 40 to 60 years.

Q289 Chair: Its fuel is imported of course.

Sir William McAlpine: The fuel, yes, but in our researches there is no shortage of fuel and it is in friendly countries too.

Q290 Chair: So your main concern about a failure to deliver new nuclear is on security of supply?

Sir William McAlpine: I go back to the Government, and I think about the Government saying, “We have to have nuclear” like we did when we started in the 1950s, and the intention then was to have a large proportion of nuclear as baseload. It did not happen, and every station we built was a prototype. It all went reasonably well, and when we talk about finishing on time, I have no doubt that new stations can be finished on time. I have no doubt that if the thing is set up properly, then it can be done on time. Sir Donald Miller in evidence says Torness was finished on time and on budget. I know that is true because I was there. If a project is properly thought out—and listening to them they obviously are properly thinking it out, how you do it, how you get training, how you get all the resources in place and so on—it can be done on time and on budget. They did it for the Olympics.

Q291 Chair: When do you think energy security will become an issue if we fail to deliver on new nuclear? Is it a short term, medium term or long term risk?

Sir William McAlpine: I think we will probably muddle through for a number of years but it will not be too long before the crunch comes.

Sir Bernard Ingham: I think there is a short term and a longer term problem there. In the short term, if things look tricky then they will go for gas—they are already going for gas now, regardless of where it comes from or what its price is—but they will need it if they keep going down the wind route, so that is the first point. I think the second point is they will keep existing nuclear power stations going for as long as they can. They will try to get the EU to lift the closure of coal-fired power stations—perfectly understandable—and they will have another great drive for energy conservation, which will not yield much but it will sound good nonetheless. In that way they may muddle through. Longer term, I think we are into serious difficulties if you pursue wind.

Chair: Having mentioned gas, I should remind the Committee of my entries in the Register of Members’ Interests in the oil and gas industry and, in particular, a shareholding of Shell.

Q292 Christopher Pincher: Can I just come back on to something Sir William said about energy security, which is of course very important to us. There is something like 87 tonnes worth of plutonium stored in Sellafield at the moment, and there is technology out there to reuse that plutonium. Do you think that technology ought to be explored because that is a way of buttressing our energy security?

Sir Bernard Ingham: Yes, it should be used.

Sir William McAlpine: It should be used, definitely.

Sir Bernard Ingham: It would be absolutely criminal to bury it, as some people want.

Sir William McAlpine: They call it waste, we regard it as spent fuel.

Sir Bernard Ingham: It is probably worth—we are told—about £80 million in terms of the value of the electricity it could produce, and on top of that there is another stockpile of depleted uranium that could be used. Yes, of course it should be. Now the question is how do you do it? Some people want to build a fast reactor. Others want to build another Mox plant that works. The question is how do you do it? One thing is absolutely clear: it would be criminally wasteful not to use it.

Sir William McAlpine: You have to think of the future too. Our grandchildren are going to be a great deal cleverer than we are, and there is no reason they cannot use the so-called waste and turn it into something else or neutralise it or whatever. We should not just bury it and throw it away.

Q293 Barry Gardiner: Sir William, you were in the room. I think, during our earlier exchange with Vincent de Rivaz.

Sir William McAlpine: Yes.

Q294 Barry Gardiner: I wonder whether you would care to comment on those negotiations on the strike price and the idea of what I put to him is a perverse
incentive to increase the cost of the project in order to negotiate up the strike price. What you considered was—if I can put it this way—a walk away price—that the Government should consider that if it is above a certain level it just should say no.

Sir William McAlpine: I do not think we are in a position to do that. It is absolutely true, I do not know what that figure is. It was reported speech, and published, and so we thought, if that is true, the subsidy that the Government are currently giving to nuclear seemed to be excessive, and could be excessive going on and on because the nuclear is all front loaded. You spend all your money now and then you spend minimally, but the subsidy will go on and on and on, so it could come up to enormous figures, but the fact is not that I have said it but somebody else is going to say it. The Government negotiator is going to say this because it is so apparent. We just thought it ought to have a little bit more air.

Q295 Barry Gardiner: You are in a position where you are supporters of nuclear—as indeed, in general, this Committee is—as part of the mix for the UK going forward, but you have raised what many of us consider to be important points about clarity and transparency. If there is not that transparency going forward, then it is difficult to know whether the public is or is not getting a good deal, isn’t it?

Sir Bernard Ingham: It would be up to the Government to justify—

Barry Gardiner: Sorry, Sir Bernard, I was asking Sir William and for you to come in after.

Sir Bernard Ingham: Sorry.

Sir William McAlpine: Can I ask Sir Bernard to answer it?

Barry Gardiner: I did not know it was a double act. You have known each other that long, have you?

Sir Bernard Ingham: We have, very long. Look, it will be up to the Government to justify the outcome of this negotiation. Our concern is that, in the process, nuclear may well lose its cheapest tag. The reason is that nobody in their right mind, in our view, would consider to be important points about clarity and transparency. Of decommissioning? Sir Bernard Ingham: No. The costs of decommissioning are included in these estimates of nuclear power, have no doubt about that. Now, it must be a notional cost.

Q300 Barry Gardiner: We will not know until 2042, at the earliest, what the waste disposal costs are.

Sir Bernard Ingham: But there has been a provision for it.

Q301 Barry Gardiner: Yes. There has been a cap put on it.

Sir Bernard Ingham: Yes.

Q302 Chair: What do you think the consequences are for our low carbon agenda if we fail to deliver nuclear?

Sir Bernard Ingham: It is already bust, isn’t it? But if you do not get nuclear you are in the mire.

Sir William McAlpine: Yes, I do not think the 20% is achievable.

Sir Bernard Ingham: I do not think it is achievable now, but without nuclear longer term you can forget it.

Sir William McAlpine: You regard nuclear as non-carbon, but it is—

Q303 Chair: Or low carbon.

Sir William McAlpine: Low carbon, yes.

Q304 Albert Owen: I just want follow my first line of inquiry with the other panel, who seemed to be saying the Government is doing a fantastic job and is crystal clear on its direction on nuclear power. Can I ask you, tongue in cheek, what you have against this Government’s policy on it? What is it not doing? Am I being too cynical by saying that there is a political difference within the Coalition that is holding back part of that Coalition so they cannot be as pro-nuclear as they want to be?

Sir William McAlpine: It does seem like that. As far as EDF are concerned, yes, they are satisfied because
they are getting support; it is there and we think that is wonderful. If we get one nuclear station, as far as we are concerned it is not enough by a long way, but if you get one and they have the chance to prove it can be built on time and on budget, that would be great.

Q305 Albert Owen: To go back to the political leadership, because you have been very critical in your written submissions about lack of clarity, you heard what the other panel said—and they are the people, with respect, who are going to invest in the future of nuclear. They are saying there is sufficient clarity there for them to make those decisions. It was not just EDF today that said that; it was the other consortia as well. So why do not you take them at their word and accept that they and their potential investors are happy enough to move forward because they think there is political stability?

Sir William McAlpine: Because they are getting what they want. It is right and proper that we should build nuclear stations, and they are getting that sort of support, but what we do not get is the full support of all parties saying, “What we need, the answer to this country’s fuel problems, is nuclear”—if they believe it. There seems to be this terrible feeling that it is not popular in the country and there are no votes in it—this is me being cynical—and therefore it is not worth pushing it. There are certain people who do not want it anyway.

Sir Bernard Ingham: Could I approach your question slightly differently and say that I don’t think that we have any complaint against the Government for trying to close the circuit to secure nuclear power? I do not think that we have any criticism whatsoever of even an anti-nuclear Secretary of State, Chris Huhne, who behaved very responsibly post-Fukushima. There is no argument about that at all. But in our position, we spend our time getting letters from MPs, who say that they are in favour of nuclear power, and we say, “Cheers” and then we say, “When are you going to do something about it?” Having transferred that from MPs to Government, what we are saying is that Governments in recent years—indeed, in recent memory—have not stood up and said, “We need nuclear power for security, low carbon and reasonable costs.” They have never stood up. You name me a leader, because you have been very critical in your written submissions about lack of clarity, you know it does get very close to that.

Q306 Albert Owen: I have been in a minority within the Labour Party for many years being pro-nuclear, and I think we have changed minds. I think there has been a change of mind for the reasons that you have set out: that we need that baseload electricity in the future if we are going to get energy security and meet our environmental goals. I think there has been a change of mind within Parliament, and each of the parties—with the exception of the Liberal Democrats, who are in the Coalition—have said that they are pro-nuclear. What I am asking is what more can we do, as parliamentarians? I am having a debate tomorrow. Sir Bernard, you will not like this, but I am pro-nuclear and pro-renewables; I think we need both. I think we need wind as well because it is intermittent and there are times when our demand is so low that we need to switch things off, unless we get interconnectors and we sell the surplus. What more can parliamentarians do in your opinion? Should we be calling for debates and saying to the wider public that we are giving that leadership, which is not there now. Is that what you are saying?

Sir Bernard Ingham: I do not think there is any lead to the public from Government at all. For a long time nuclear power has been an optional extra: “We will have it if somebody else will pay for it.” Then suddenly they have discovered that the market is not working, so they are having to rig it.

Q307 Albert Owen: Isn’t that a problem that goes back many years, including to privatisation? That was botched in many ways when it comes to nuclear, was it not?

Sir Bernard Ingham: Initially, but then they sorted it out, yes.

Q308 Albert Owen: They sorted it out? I do not think they did, with respect. I think they parked it up and left it and went ahead with gas and coal, and all the other elements, and now we have to come back with it. The big issue was decommissioning and no Government, of whatever colour, really dealt with that, but now we are dealing with it. We have the Nuclear Decommissioning Authority, so we are moving forward. I am with you on this, but I am going to push this and ask again—maybe Sir William will help you out on this one—what more can parliamentarians do to sell the policy of all the major Governments of the last four or five years, who have said, “We are pro-nuclear and we want the industry to succeed”?

Sir William McAlpine: There has been a big change, I agree with you; but I think all you can do is shout it from the rooftops. If we have two or three bad winters, we are going to be cold; the lights will go out. You know it does get very close to that.


Sir Bernard Ingham: Thank you very much.

Q310 Dr Lee: I am really pro-nuclear. If it was up to me I would make the decision to have a fleet tomorrow. My concern, though, is that if the first reactor we purchase, the first of a kind, is too expensive because we have borrowed money expensively—we have basically been in negotiations with a monopoly provider, essentially, so we all know which way that is going to go—it is going to be so expensive that the politics will come in and people will say, “Well, we cannot do that again because look at what happened last time round.” I presume you heard my exchange. That is my concern. Monsieur EDF is extremely happy at the moment because he knows he is going to get the contract. Would you agree with that assessment?

Sir William McAlpine: I think they are. Yes, they are happy and I think they probably should have it. In fact, I am sure they should have it.
Q311 Dr Lee: But not at any cost, though. That is my concern.
Sir William McAlpine: No, not at any cost. I think that is the thing. But when they come up with the costs—and we do not know what that is—hopefully, they are going to add all the little bits together, come up with a total, add the contingency and say, “That is the figure.” Presumably that will be transparent—they said it would be transparent—so the Government can look at it and say, “Well, you have too much in” or whatever.
Sir Bernard Ingham: You are quite right that we did not know what the costs of nuclear were. Therefore we thought we would look at it from the other end and ask: what would be the revenue? All this was an attempt to protect the brand nuclear, the only route to secure low carbon electricity at affordable cost. What we are seeking to do is to protect that reputation and, we agree: there may be a problem as a result of the strike price negotiations.

Q312 Dr Lee: If you were coming at this afresh, would you agree with me that taking nuclear out of this Energy Bill and treating it differently would be a good idea? Secondly, in doing that, would you also agree with me that if you set up a business—maybe we bought out EDF or we bought out Centrica’s share of what was British Energy—and had a state-owned or a majority shareholder ownership of a company that was tasked with building a fleet of reactors, with underwriting from the Government, that would actually be a better way forward, in terms of managing costs? So leave the market to bear down the cost of construction, innovation, all those sort of things, but actually the capital cost and, indeed, the construction risk, and so on, are on the books of the State. Would you agree with that as a better model than what we are contemplating?
Sir William McAlpine: This is how it started, wasn’t it? It started with the Government wanting nuclear stations. They gave it to the CEGB to set up. The CEGB organised four groups of industrialists to get together and put in competitive bids, and that was the way it went. Unfortunately, we do not have any competitive bids at the moment. EDF are the only kid on the block.
Sir Bernard Ingham: I think what you are really asking is whether, if we were starting, we would start from here. But we are where we are, and therefore, if we are serious about getting nuclear power reasonably soon, we have to take a decision. There are several ways in which you could finance nuclear, though. For example, the Government could simply say, “We will find a way of handling the high upfront costs and we will recover them when you are generating electricity.” I do not see much objection to that, but there may be a political objection.

Q313 Chair: It is still a form of financial subsidy, isn’t it? If the Government takes the risk if the market is not willing to, by definition there is an element of subsidy.

Sir Bernard Ingham: By definition, there would not be a subsidy if it were paid back, would it?

Q314 Albert Owen: I think that is an important one. Let us deal with the subsidies. Some people think that is a dirty word, but every energy source has a subsidy, does it not? Look at “King Coal” and gas. When it first started, it was 100% owned by the taxpayer and we bore the losses as taxpayers. I want to explore this further. Do you think we should be honest and open and say that, yes, they all do need subsidies, and stop playing this political game about whether it is a public subsidy or it is disguised as such? Shall we just be honest and say, “If we want to keep the lights on, if we want the consumer to have affordable electricity and heat in the future then we need subsidise our energy”?

Sir William McAlpine: We have always believed, from all the figures that we have, that nuclear did not need a subsidy. It maybe that costs have gone up, things have changed or something, or it is actually necessary to get the things started to give some kind of a subsidy.

Q315 Albert Owen: Do you still believe it needs a subsidy?
Sir William McAlpine: Until we know all the costs we cannot really, can we? We do not know what EDF are quoting.

Q316 Albert Owen: Okay. But you in your research think it can be done without a subsidy? That is what you are saying.
Sir William McAlpine: All the Government figures that we have been given, taking everything into account, it is the cheapest form for producing electricity.
Sir Bernard Ingham: As distinct from some assistance with the high initial investment, which could be repaid.

Q317 Albert Owen: Those were very direct answers, in contrast to the other panel we had.
Sir William McAlpine: We are totally independent, we are not subsidised. All our money comes from our members.

Q318 Albert Owen: Sir William, can I give you an opportunity to put it clearly on the record that you do know a bit about construction, and you do know a bit about the nuclear programme and huge projects in the future and what we need to be doing. Do you think we have the necessary skills in this country, and do you think we can build these large energy projects on budget?
Sir William McAlpine: Yes, I do. When we started in 1957, the first contract, it was all British, but nobody had done it before. There was a bit at Sellafield and we built Calder Hall, but before that there was no industry. I think the only difference now is that there was a heavy engineering industry in this country—our group came from Newcastle, and we had Parsons, Clarke Chapman, Reyrolle’s, Head Wrightson, and all
You are quite right: Richard George

Does the Government have a Well of course afterwards, Nick Butler

Thank you very much for your evidence, and investment in renewable electricity and a wide variety working towards; some massive and sustained demand reduction in the power sector, which we have

nuclear free energy scenario, would need to be happening if the Government accepts that we are not going to get 16 gigawatts of new reactors by 2025, but, no, you go from project to project—hopefully, it will not be the last nuclear station, so there will be a ready supply of labour to go on to the next one.

Sir Bernard Ingham: The other important point about developing nuclear, of course, is that we do get back on the leading edge of high technology and that we do actually provide a substantial economy for remote parts of this country like Wylfa, for example. They are very considerable. You say we make it sexy, but we cannot get it sexier than having a decent economy in Anglesey or in West Cumbria. That is why people locally are very much in favour of it—they know which side their bread is buttered.

Sir William McAlpine: Well of course afterwards, once the thing is built, then you have a job for life, but, no, you go from project to project—hopefully, it will not be the last nuclear station, so there will be a ready supply of labour to go on to the next one.

Sir Bernard Ingham: The other important point about developing nuclear, of course, is that we do get back on the leading edge of high technology and that we do actually provide a substantial economy for remote parts of this country like Wylfa, for example. They are very considerable. You say we make it sexy, but we cannot get it sexier than having a decent economy in Anglesey or in West Cumbria. That is why people locally are very much in favour of it—they know which side their bread is buttered.

Q321 Albert Owen: But the ones that are operable, the nuclear engineers, can have jobs for life?

Sir William McAlpine: Well of course afterwards, once the thing is built, then you have a job for life, but, no, you go from project to project—hopefully, it will not be the last nuclear station, so there will be a ready supply of labour to go on to the next one.

Sir Bernard Ingham: The other important point about developing nuclear, of course, is that we do get back on the leading edge of high technology and that we do actually provide a substantial economy for remote parts of this country like Wylfa, for example. They are very considerable. You say we make it sexy, but we cannot get it sexier than having a decent economy in Anglesey or in West Cumbria. That is why people locally are very much in favour of it—they know which side their bread is buttered.

Sir William McAlpine: Well of course afterwards, once the thing is built, then you have a job for life, but, no, you go from project to project—hopefully, it will not be the last nuclear station, so there will be a ready supply of labour to go on to the next one.

Sir Bernard Ingham: The other important point about developing nuclear, of course, is that we do get back on the leading edge of high technology and that we do actually provide a substantial economy for remote parts of this country like Wylfa, for example. They are very considerable. You say we make it sexy, but we cannot get it sexier than having a decent economy in Anglesey or in West Cumbria. That is why people locally are very much in favour of it—they know which side their bread is buttered.

Q322 Albert Owen: We pay more for our electricity because of transmission costs—but anyway we will not go down that route. We produce the electricity and we pay more for it.

Chair: Thank you very much for your evidence, and if there is anything you think still needs to be followed up we are quite happy to take further submissions in writing and we will be back in touch if there is anything you feel we have missed out. But thanks again for your time.

Examination of Witnesses

Witnesses: Richard George, Climate and Energy Campaigner, Greenpeace UK, and Nick Butler, visiting professor of Public Policy at King’s College, London, and a contributor to the FT on energy issues, gave evidence.

Q323 Chair: Thank you very much for waiting. I think you heard the direction that the evidence session has taken so far. When you first answer, if you could give your name and position that would be helpful for the record.

The question we are grappling with is: do you think we can decarbonise our electricity power system without nuclear?

Richard George: Richard George from Greenpeace. I think it is entirely possible for us to do so. There are several scenarios out there, which I can run through in a second, but I think the only way that it is likely to happen is if the Government accepts that we are not going to get 16 gigawatts of new reactors by 2025, which we have been talking about since the early 2000s. The four fundamental cornerstones to any nuclear free energy scenario, would need to be demand reduction in the power sector, which we have spent a criminally insignificant amount of time working towards; some massive and sustained investment in renewable electricity and a wide variety of different types; flexibility via interconnectors, thermal storage and pump storage; and finally, greater integration of heat and power policies, particularly in the industrial sector.

I can talk about some of the different scenarios that exist at the moment, but in terms of demand reduction first: we know the McKinsey study, commissioned for the Department over the summer, forecast by 2030 a potential reduction in electricity demand of 40%—translating into annual savings of £10 billion. We also know the Committee on Climate Change’s modelling for 2030 has 40% of our generating capacity coming from nuclear. I am not saying we need to get a full 40% demand reduction to do without nuclear, but there are certainly some major savings that we could make if we combine that with ramping up renewable capacity. There is anything up to, I believe, 88% in one scenario, in a 23 October 2012 Sir Bernard Ingham and Sir William McAlpine

50,000, but it could be because you get down to the fellow who supplies the overalls, and the guy that washes them, and that kind of thing. All the bits and pieces add up tremendously—the spread around the particular project and the catchment area is enormous.

Q321 Albert Owen: But the ones that are operable, the nuclear engineers, can have jobs for life?

Sir William McAlpine: Well of course afterwards, once the thing is built, then you have a job for life, but, no, you go from project to project—hopefully, it will not be the last nuclear station, so there will be a ready supply of labour to go on to the next one.

Sir Bernard Ingham: The other important point about developing nuclear, of course, is that we do get back on the leading edge of high technology and that we do actually provide a substantial economy for remote parts of this country like Wylfa, for example. They are very considerable. You say we make it sexy, but we cannot get it sexier than having a decent economy in Anglesey or in West Cumbria. That is why people locally are very much in favour of it—they know which side their bread is buttered.

Sir William McAlpine: Well of course afterwards, once the thing is built, then you have a job for life, but, no, you go from project to project—hopefully, it will not be the last nuclear station, so there will be a ready supply of labour to go on to the next one.

Sir Bernard Ingham: The other important point about developing nuclear, of course, is that we do get back on the leading edge of high technology and that we do actually provide a substantial economy for remote parts of this country like Wylfa, for example. They are very considerable. You say we make it sexy, but we cannot get it sexier than having a decent economy in Anglesey or in West Cumbria. That is why people locally are very much in favour of it—they know which side their bread is buttered.

Q322 Albert Owen: We pay more for our electricity because of transmission costs—but anyway we will not go down that route. We produce the electricity and we pay more for it.

Chair: Thank you very much for your evidence, and if there is anything you think still needs to be followed up we are quite happy to take further submissions in writing and we will be back in touch if there is anything you feel we have missed out. But thanks again for your time.

Examination of Witnesses

Witnesses: Richard George, Climate and Energy Campaigner, Greenpeace UK, and Nick Butler, visiting professor of Public Policy at King’s College, London, and a contributor to the FT on energy issues, gave evidence.

Q323 Chair: Thank you very much for waiting. I think you heard the direction that the evidence session has taken so far. When you first answer, if you could give your name and position that would be helpful for the record.

The question we are grappling with is: do you think we can decarbonise our electricity power system without nuclear?

Richard George: Richard George from Greenpeace. I think it is entirely possible for us to do so. There are several scenarios out there, which I can run through in a second, but I think the only way that it is likely to happen is if the Government accepts that we are not going to get 16 gigawatts of new reactors by 2025, which we have been talking about since the early 2000s. The four fundamental cornerstones to any nuclear free energy scenario, would need to be demand reduction in the power sector, which we have spent a criminally insignificant amount of time working towards; some massive and sustained investment in renewable electricity and a wide variety of different types; flexibility via interconnectors, thermal storage and pump storage; and finally, greater integration of heat and power policies, particularly in the industrial sector.

I can talk about some of the different scenarios that exist at the moment, but in terms of demand reduction first: we know the McKinsey study, commissioned for the Department over the summer, forecast by 2030 a potential reduction in electricity demand of 40%—translating into annual savings of £10 billion. We also know the Committee on Climate Change’s modelling for 2030 has 40% of our generating capacity coming from nuclear. I am not saying we need to get a full 40% demand reduction to do without nuclear, but there are certainly some major savings that we could make if we combine that with ramping up renewable capacity. There is anything up to, I believe, 88% in one scenario, in a 23 October 2012 Sir Bernard Ingham and Sir William McAlpine

50,000, but it could be because you get down to the fellow who supplies the overalls, and the guy that washes them, and that kind of thing. All the bits and pieces add up tremendously—the spread around the particular project and the catchment area is enormous.
nuclear over almost a decade now and so far failed to deliver.

Q324 Chair: Do you not think that if nuclear was not part of the mix you would end up with more gas on the system to keep the lights on?

Richard George: I do not think we need to. Let me run through a couple of the various scenarios that exist at the moment, because they are very interesting, and what I think we are in a position to do now is to pick and choose slightly the future that we need.

I believe Garrad Hassan did some modelling last year for the World Wildlife Fund. They foresaw 61% of electricity demand being met by renewables by 2030. In order to do that, one option had a high amount of gas capacity, which you are using very little of—
you are using it at about 30% of its utilisation rate—and the vast majority of that was carbon capture and storage.

Q325 Barry Gardiner: What is the cost of its capacity? What capacity payments would you actually be paying and adding to consumers’ bills in order to do that?

Richard George: The other thing you would need to do if you wanted to deliver a no nuclear scenario, is tear the Energy Bill up and begin again. There is absolutely no way that any renewable utility provider would want a Contract for Difference, would design a renewable system—

Q326 Barry Gardiner: Answer my question. You can well say you would not be starting from here, but we are starting from here, so now answer the question.

Richard George: What the capacity payment cost would be?

Barry Gardiner: Yes.

Richard George: That I do not know. It would depend on what your base level of demand was. If we implemented even some of the recommendations—

Q327 Barry Gardiner: If you are saying that 40% of your supply would have to come from outwith renewables and you would have a large element of gas but only using it very sparingly, it implies that you are using it at about 30% of its utilisation rate—and the vast majority of that was carbon capture and storage.

Richard George: Firstly, that is not my model. It is a scenario that is out there; secondly, I do not think it is the best one. I am starting to run through a selection of different scenarios. None of these factor in any level of demand reduction on the scale of what McKinsey say is possible. Another scenario would have a much higher level of interconnectors and a very low level of gas, which you use more of and you have more carbon capture and storage.

What I am saying is there are different scenarios out there. What we think needs to happen is that, because we are not going to get the 16 gigawatts of nuclear that the Government has assumed up until this day will happen, we should sit down and have a proper investigation. I understand the Committee on Climate Change is beginning to look at this, because they have also recognised that we are not going to get the level of nuclear that has so far been assumed to be coming on grid by 2025. We think this is entirely right and proper. We are going to have to have this discussion, because there is going to be an energy gap of about 16 gigawatts, maybe slightly less, in the mid-2020s, because we have been trying to make nuclear work for so long. I think we need to pick and choose from the different scenarios and have this conversation, and then we will know what the various costs will be.

Q328 Chair: Do you have a view?

Nick Butler: Yes. I am Nick Butler, Visiting Professor of Public Policy at King’s College, London, and a contributor to the FT on energy issues. Within the framework that the Climate Committee has set out, we probably could not meet those targets without some nuclear. My concern is that the way we are going and the way it is being negotiated, we are going to end up with a very costly solution for customers. I think some of the questioning earlier on was very pertinent and could have gone further. As I read it, the costs of this design are going up not down. Flamanville, which is EDF’s flagship station in France, has just been put back another two years. The next station that they were going to build, which is on hold because of French Government policy, is over budget and the costs are going up not down. Therefore, I think we need real transparency in what they are asking for in terms of support prices and where that is going to feed through to consumers. I think this should be an open discussion, rather than done in what somebody said was a smoke filled room. It should be an open exchange of what the data is and who is going to take the risks if the costs are higher.

Chair: That takes us to Dan’s question.

Q329 Dan Byles: Yes, absolutely, which is about financing for nuclear new build. Obviously we discussed this a lot and kicked it around with some of the earlier panels. What do you think are the real barriers to raising finance for new nuclear?

Nick Butler: I think EDF have financial challenges of their own: they have significant debt, and they also have quite a high cost of capacity payment, so if you have not done any modelling on that, then the model is not really helping us much, is it?

Richard George: And other people—have sought to bring in overseas funders from outside Europe to cover the cost. The real uncertainty for investors is that there is still no regime against which you can put in a lot of money—and it is a lot of money. I would say it is closer to £14 billion than £10 billion. It was £8 billion or £10 billion when I was working for the last Government and it has certainly gone up, and I think that investors will only put in that sort of money if they can see the framework under which that investment is going to be repaid.

Somebody asked whether there had been delay over the last three years. I think there has been delay; I cannot understand why we are still at the stage of having open ended negotiations and why this is not settled.

Q330 Dan Byles: Obviously we are hoping we are going to see what the strike price is before too long,
but in terms of the actual policy of the Contract for Difference and possibly the Treasury’s UK guarantee scheme, do you think that if they get the right strike price within that framework, it is a framework that could deliver? We heard EDF earlier—were you here for EDF?

Nick Butler: Yes, I was.

Dan Byles: We heard EDF saying they are very happy with the Contract for Difference and it is basically what they would have come up with if they had a blank sheet. That seemed to be what they were saying.

Nick Butler: If I were running a widget factory and had a Contract for Difference that just paid me to have the capacity, I would be pretty happy too. I do not think it is an ideal system, but as Sir Bernard said, we are where we are, so I think we have to look at what the strike price should be, and not be prepared to pay too much.

Q331 Dan Byles: Do you have a view on what too much would look like?

Nick Butler: £100 would be the absolute top band I think.

Q332 Dan Byles: So if it comes to more than £100, then it is basically not going to stack up against other alternatives?

Nick Butler: Yes. This is probably going beyond the scope of your inquiry, but I also think I do not think we should get rigidly fixed on the Climate Change Committee’s model of how we achieve the long term targets. I think it would be much better to invest money in real research on energy advances, which could be used outside this country as well as in it, because if we meet all our targets, and no other country achieves anything, we have not advanced very far; we have just made ourselves less competitive. It would love to see real research on the next generation of the grid, which I think could change the economics, and also on energy storage that could be applied everywhere around the world.

Q333 Dan Byles: It has been suggested to us by some of the financiers that the whole of Europe is taking a €3 trillion punt on the future cost of fossil fuels, and that if we fall on the wrong side of that, we might have problems.

Nick Butler: Yes, you can say that. Actually I would say we are going to have a lot of fossil fuels. It does not help the climate agenda, but I think I can see the gas price coming down quite a lot, and even the oil price.

Q334 Dan Byles: Because of unconventional sources, and so on?

Nick Butler: And technology that is extending the recovery rates from existing fields, such as people moving into deep water for exploration and development activity—costs generally coming down.

Q335 Dan Byles: Mr George, on the Contract for Difference, what is your view on the regime? You have already said one option would be to tear up the Energy Bill, stop nuclear and start again, but given that we are where we are, could you see the current system that is being put in place, despite the gaps still in terms of what the strike price will be, and so on, delivering new nuclear?

Richard George: It may deliver one or two plants. We generally think of a barrier in terms of a new competitor coming into a field or a new technology, but when we talk about nuclear, there are inherent reasons why nuclear is not cost competitive. Investors were choosing not to invest in nuclear before the disaster that struck Fukushima, but also—even more so—afterwards, because every time they have tried to build one of these reactors, it has gone over budget and been delayed by several years. That is true of the two in Western Europe at least: we were meant to be seeing the Finland plant up and running I think about 2009, and Flamanville this year, and neither is showing any signs of being ready. That is what is putting the investment community off. I think EDF could probably get a decent strike price for one of its plants. DECC is so committed to delivering this now, that I think they will sign almost anything in order to deliver at least one plant. I really do not think we will see 16 gigawatt of reactors.

Q336 Dan Byles: It has been suggested to us that one option for reducing the construction risk and the risk of cost overruns, would be using escalators in Contracts for Difference, so that if the construction costs do overrun, the price paid could cover those additional costs.

Richard George: But then you are effectively incentivising—not incentivising; giving the perverse incentive that Mr Gardiner spoke of.

Q337 Dan Byles: It comes back to Barry’s point, yes.

Richard George: If you say to a contractor, “Look, if you run out of budget we will just pay you some extra,” then—

Q338 Dan Byles: It becomes a cost-plus contract, effectively, doesn’t it?

Richard George: Yes. But they tried the reverse in Finland. They had a turnkey contract where the TVO were paying Areva and Siemens, I believe, €3 billion for the reactor—you know, “Give us the key on a certain date, and we will start generating.” There are no signs of finishing. They are in extensive contractual civil litigation at the moment, because they have failed to deliver there. I am not sure that encouraging people by picking up the tab, whether it is taxpayers or investors or bill payers, is a good thing to do.

Q339 Barry Gardiner: On the question of on balance sheet or project financing models, if there were cost overruns or delays to building the first nuclear stations, do you think that would affect the ability to raise project financing for subsequent plants?

Nick Butler: Yes, unless someone like the UK Government or the UK taxpayer was underwriting it.

Q340 Chair: But if the taxpayer is underwriting it, that in itself is a subsidy, is it not?

Nick Butler: It is, but I think the question was that if you cover all the costs and all the overruns, then
investors will say, “That’s fine,” because someone else is taking all the risk.

Q341 Chair: Yes. Did you think, Mr George, that there was any argument from EDF about how they were slightly constrained in putting in the highest possible price by a desire to be able to come back and get some more money in the future, and therefore did not want to kill the goose?

Richard George: I know Ian Marchant of SSE has talked of smoke filled rooms, which obviously Mr de Rivaz today denied—

Chair: He denied the smoke.

Richard George: He denied the smoke, not the rooms. I think the way that the Government is going about negotiating these contracts is a real problem. Something that we would particularly like to see is some honesty in this debate about what the costs of the various technologies will be. We are looking at the moment at EDF attempting to demonstrate that they will be cost competitive with the cost of onshore wind now, for a reactor that has no chance of generating before 2022, so by the time this reactor comes on grid, the cost of offshore wind is already expected to be possibly £100 per megawatt hour. They are denying £140, but somebody is putting these rumours in The Times and elsewhere as to what the electricity prices will be. I would really like to have an honest debate, including decommissioning costs, including grid connection, and including the variability costs of onshore wind, which I believe are about £10 per megawatt hour. Then we could have an informed debate about what sorts of energy we want and how we can meet the climate targets. At the moment EDF has the Government over a barrel, and I think they are enjoying it.

Q342 Albert Owen: Just now you compared nuclear to offshore wind and onshore wind, but is that not the wrong argument? We really do need both. We need the baseload, which you acknowledge. You suggest that we could reduce our demand significantly so we do not need the baseload, but there will be times in peak winter cold periods where there is very little wind, very little sunshine, and we are going to have to rely on either imported gas or even, I dare say, if we have an interconnector, imported nuclear energy from France. These are one of the real scenarios. We had it last winter when we had a situation where most of the wind farms were off. I am pro-wind as I am pro-nuclear. We have to stop polarising between these technologies. If we are going to look at a rich energy mix, then it has to be. I presume you and your organisation come to this argument ideologically opposed to nuclear in many ways. Is that not part of the problem if we are looking for the solution that we need to really look at them all?

Richard George: First, we are not ideologically opposed to nuclear. We believe there are ongoing concerns about waste, proliferation, the potential risks from terrorism or whichever else, and plant, and the cost factors. In terms of baseload, what we need is a flexible grid that has storage capacity involved and the interconnectors we are hearing about—possibly interconnectors to Ireland for their wind and to Norway or to Iceland for geothermal. There are all sorts of possibilities, but if you designed a grid for wind and for renewables, it would look very different from one designed for nuclear. So I think they are incompatible because the technologies do not really work together. You cannot power up a nuclear plant and then power it down when the wind is or is not blowing. Also, if we integrate with the industrial heat sector—

Q343 Albert Owen: We do now. With respect, we do now—we do power up and down with regards to the elements.

Richard George: With gas. We do not power up nuclear because nuclear has—

Q344 Albert Owen: It is stable, yes.

Richard George: When nuclear falls over, as increasingly the ageing plant we have has been doing, that causes far greater problems than when the wind isn’t blowing, because we can predict when the wind will or will not blow.

Q345 Albert Owen: Sorry to cut across. I do not mean to do that, but we do have outages on the nuclear that you can predict, like maintenance, so you can have off peak periods where you can do the maintenance, as you can with wind. When the wind isn’t blowing you can do the maintenance, so the arguments are the same to both ends. I do not think we are having this debate that you are talking about rationally. I know you want to contribute to it, but I do believe that Greenpeace is ideological. I used to be a member and they were ideologically opposed to it.

Barry Gardiner: I agree with you, Albert. It always has been.

Albert Owen: Yes, that is the case. So if you are going to have a broad argument, perhaps you should drop that ideological approach if you want to be taken seriously in many ways. I get it from both sides: I get it from the wind lobby and I get it from the nuclear lobby. The nuclear lobby say to me I am too pro-wind and the wind lobby say I am too nuclear, but I am trying to get a solution to this problem and I think the Government is, too. We have to be serious about it, so in any debate in the future, I think you have got to look at them all and, yes, look at the cost elements, but not be diametrically opposed to one or the other.

Richard George: I do not think it is ideological to say we still do not have a solution to nuclear waste, and continuing to build new waste when we have no solution to the waste we have at the moment is a legacy we should not be leaving our children.

Q346 Albert Owen: But, with respect, it is safe. I live very close to it—I do not know how far away from it you live—and I do not worry about nuclear waste being safely stored in my area, and the community around me do not.

Richard George: There is also a big difference between the existing legacy waste and the new build waste in terms of the radioactive heat and the storage solutions. We should at least solve that problem before we move on to building any new reactors.
In terms of the grid, I really think that you would design a very different grid. Given that we are going to have to have this discussion about how we fill the energy gap when we do not get the number of nuclear plants that we have been forecasting, we should therefore be talking about what the grid would look like and what the interconnector potentials are. One thing you can do when there is excess wind is either sell it abroad or you can sell it to the industrial heat sector. They can then run smelters and the industrial heat processes off the excess wind when it is below market cost, because you have too much of it. You can come up with pump storage, thermal storage. We are not going to research or deliver any of that while we keep thinking that nuclear will work, and I really wish we could get beyond this barrier to energy that the existence of nuclear brings up.

Nick Butler: I do not think we should have a religious view either for or against any of these forms of energy. I think we should look at the most effective way of doing it, and what the costs are. What worries me about the current debate is that the costs are all fuzzy, behind the curtain, and we cannot quite see what this negotiating process is actually doing. Someone asked about DECC. I do not think they have the detailed capability to do this. I wish they did.

Q347 Dr Lee: With regards to the costs, Mr Butler, if you were still advising at No. 10, would you be advising the current Prime Minister to finance it in the way that it is being financed nuclear new build and, if not, why not?

Nick Butler: I thought your question earlier as to whether to do it with direct Government funding, which must be cheaper than doing it through a corporate vehicle, either debt or equity, is interesting, but we are not at that point. I would be encouraging them to put all these figures out on the table and to show why we are going for the mix that we are going for—to come to a decision on what balance of energy supply we want, what part nuclear or anything else has in it, and to justify it openly, rather than suddenly presenting us, at the end of the year or whenever, with a solution.

Q348 Dr Lee: So that is a no, you would not be doing it like this, but because of where we are—is that what you are saying?

Nick Butler: I do not want to get into politics but I think it should have been done two years ago, and I think it should have been done much more openly and upfront, so that people can see what they are getting and what they are going to pay for it.

Q349 Dr Lee: Also, forgive me, we have not actually signed on the dotted line yet, have we?

Nick Butler: No.

Q350 Dr Lee: In which case where we are is where we choose to be, is that right?

Nick Butler: Clearly, where we are is a Government decision not to have closed the debate off yet, and of course EDF would say that they have not come to a decision yet; they have to take it to their board and to get investment approval.

Q351 Dr Lee: My point is that if the Prime Minister had to sign on the dotted line, you would be advising him not to, if you think it is not necessarily the most cost effective way of delivering nuclear new build?

Nick Butler: Yes, that is right. I agree. I would not sign with the degree of uncertainty that there is now.

Q352 Barry Gardiner: Sorry, but is that absolutely true? Surely one of the factors that you would have to consider was on whose balance sheet it would fall. I am sympathetic to what Phillip is saying here, but it strikes me that the key objection will be one from Treasury that says, “If we take this on to our balance sheet, there are other things that we cannot do and we do not have the flexibility in the Treasury.” The key objection, therefore, to going down the road of Government funding this construction up front and then recovering those costs is precisely a balance sheet objection, is it not?

Nick Butler: I was not arguing that the Government should fund it. What I am arguing is that we should have all the figures in front of us. I do not see how this Committee can do its work properly without that solid data. If you saw the figures it may be that Government involvement through guarantees, carefully structured so that it was not creating perverse incentives, might be right.

Q353 Barry Gardiner: Just picking up on the perverse incentive discussed when we had the interaction with EDF earlier, do you believe that the current way of structuring the negotiations around the strike price, and having the costs of the construction met and reflected in that strike price, does constitute a perverse incentive to escalate those costs?

Nick Butler: I do not know enough about the state of those negotiations to know whether that is true at the moment. In any such negotiations you have to allocate exactly where the risks are going to fall between the company—i.e. the French Government—and Britain and the taxpayers and the consumers. I have not seen the detail of that and so it is impossible to say whether there is that. There is the potential for perverse incentives.

Q354 Barry Gardiner: Yes. A perverse incentive presumably either is there or is not, whether somebody takes advantage of it is another matter.

Nick Butler: Sure, yes.

Q355 Ian Lavery: Following very swiftly on to the security issues from investment of foreign companies in the industry. Mr Butler, you have written one or two—possibly more—blogs for The Financial Times expressing some concern about the security indications of Chinese ownership of UK power stations. Can you tell me what you believe are the risks in that?

Nick Butler: Yes. I think in most countries foreign investors would not be encouraged to own key elements of national infrastructure, and that is clearly what this is. I was in France and asked somebody who is very influential in the nuclear industry whether the Chinese would be allowed to invest in France in this way; he simply laughed at me. In Germany it is not
permitted. In America, it would not be permitted, as you saw from the debate last night, the doubts about Chinese investment are very high. So I am sceptical of it on those grounds. I do think that we should keep an open economy and if we are going to keep it open, we should do it on the basis of reciprocity. I think the greatest cost that the Chinese are imposing on the UK, big business and Government now, is through cyber-attacks. I think that if they want to invest here, as part of a Government to Government negotiation around this, they should be encouraged to stick to some proper rules on that. If we could do that, I think we would all advance.

Q356 Ian Lavery: Your thoughts on security, does that apply to, for example, the Japanese and Canadian companies who potentially will buy the Horizon project? Do you have the same view in terms of security risk with these companies?

Nick Butler: It is slightly less, because I do not think either of those Governments are tolerating the sort of cyber-conflicts that we see from the Chinese, according to the speeches from the security services and other people. But I think in general that we should take a view that key national infrastructure should be nationally controlled, and I was surprised that both the French companies involved wanted to bring in such extensive foreign investment. If they think it is such a good project, why are they not doing it themselves?

Q357 Ian Lavery: With regard to foreign ownership of UK power stations, do you think that if the public were aware that the future could be the stations owned by the Chinese, the Japanese, the Canadians, or whoever, that would have an impact on public attitudes towards new nuclear?

Nick Butler: I think it is perfectly reasonable for them to have minority stakes and to be financial investors at 10%, 20%, 30%. I do not think that is a problem. As I understood it, however, in this case the idea was that they would be involved in the operations, and certainly on the Horizon project, because Areva is not an operator; the idea was that the Chinese company would be the operator. That was as reported.

Q358 Ian Lavery: Regardless of that do you think that would have an impact on public attitudes towards new nuclear power stations?

Nick Butler: I do not think it helps, but I have not seen any polling data on that issue.

Q359 Ian Lavery: What about EDF? It is a big company; it is a French owned company. That has not affected any local views?

Nick Butler: No, I think EDF have done a tremendous job in changing public attitudes on nuclear power over the last five or 10 years. They have become part of the community. Somebody the other day asked me if I thought EDF was the only British company with a French chief executive. I think they have done well, and I think they would do even better now if they put all the numbers on the table and showed what they were asking for.

Q360 Ian Lavery: Do you think that people would mainly be happy if the companies involved were European companies, from European nations and with European investment, but would be relatively unhappy if they were non-European? Is that basically your thoughts?

Nick Butler: You are closer to public opinion than I am. My thought is that, as a country, we should not do these things without reciprocity. That is to me the key issue. I cannot speak for the public.

Chair: Again, if there is anything you think, “Oh I wish I had said that” please put it in writing and we will be happy to receive it. Thank you for your evidence and for your time.
Tuesday 6 November 2012

Members present:
Mr Tim Yeo (Chair)
Dan Byles
Barry Gardiner
Ian Laverty
Dr Phillip Lee
Mr Peter Lilley
Albert Owen
Christopher Pincher
John Robertson
Sir Robert Smith
Dr Alan Whitehead

Examination of Witnesses

Witnesses: Ed Mitchell, Director of Environment and Business, Environment Agency, Dr Andy Hall, Deputy Chief Inspector of Nuclear Installations and Director of Regulatory Standards and Acting Chief Nuclear Inspector, Office for Nuclear Regulation, John Jenkins, Chief Operating Officer and Acting Business Head, ONR, and Bruce McKirdy, Managing Director, RWMD, Nuclear Decommissioning Authority, gave evidence.

Q361 Chair: Good morning, and welcome to the Committee. Thank you very much for coming in. You will know that we are reaching the end of our work on this current inquiry on building new nuclear. There is considerable interest in it. The reason we are starting a bit late this morning is we have just had a private briefing from Hitachi, who are new kids on the block for this purpose.

I will skip introductions. We know who you are, and you know who we are. We have a little under an hour to try to get through a range of topics, so I appeal to colleagues to be disciplined in their questions and perhaps also to the witnesses to be concise in their answers. Could you start by telling us a bit about the way in which you engage with local communities and how you try to, I would hope, build their trust in the safety of the UK nuclear regime?

Dr Hall: Yes. The Office for Nuclear Regulation is involved in a lot of activities with local communities. Each of the nuclear sites in the UK has either a site stakeholder group or a local community liaison council that meets every six months or so, at which we provide reports and we talk to members of the local community about the activities on that particular site.

We have also held various events in the locality of potential new build. For example, there has been a public debate in Bristol about nuclear power, including ourselves as the regulator, the prospective operators and the NGOs who are opposed to nuclear power, so we could debate the proposals there and the implications, for example, of Fukushima. We also engage local communities through our website. We have published many documents concerned with Generic Design Assessment for new build there. In addition, we are also publishing project assessment reports for the existing plant, so that people can find out how we have reached decisions on permissions that we have given for that plant.

Q362 Chair: The ONR does have a degree of trust from the public, which is obviously desirable and no doubt reflects on what you have done in the past and is helpful. Do you think the visibility, however, of the ONR among those communities around the sites is sufficient to boost or maximise the confidence that your work could engender?

Dr Hall: It is important that we are recognised as being an expert and independent regulator, and part of the reason we have built that trust is that we are seen to be impartial in our dealings with both operators and other stakeholders. In terms of raising our profile, we think, in order to build confidence in the regulation of these sites, it is important that we are visible to people who have an interest in those sites. We are always thinking of potentially new ways in which we can engage. We have, for example, an e-bulletin that we issue to people who sign up on our website; we attend professional conferences at institutions; and, as I say, we also engage in public debates. But I believe the way to enhance our reputation is to show that we are impartial and that we are working on behalf of Parliament and the public to protect people and society against the risks associated with nuclear operations.

Q363 Chair: Does the pursuit of that impartiality sometimes lead to a situation where you may say something that perhaps cuts across something that the local authority in the area concerned has said, and that might cause some confusion or concern among the public?

Dr Hall: It is certainly the case that sometimes there are local authorities around the countryside who are not supportive of nuclear power, and of course that is quite legitimate. When we are talking to people who are opposed to nuclear power, what is important is that we demonstrate that we are neutral on that topic and what we are doing is trying to ensure that if nuclear operations go ahead then they go ahead securely.

John Jenkins: I would add, on an evidence-based assessment.

Ed Mitchell: Speaking on behalf of the Environment Agency, on this issue of visibility, we notice a distinct difference between the person on the street corner who is not engaged with us or our issues and, for instance, a community around an industrial site or a new nuclear power station where they know us quite well. It does depend. If you have been flooded recently or engaged with us on flood defence issues, you will know us quite well. However, our visibility in the wider community is perhaps slightly less.
Chair: As a matter of observation, it seems to me that often the community near a nuclear site is among the most supportive because they have lived with it for a long time and are very comfortable.

Q364 Albert Owen: I live close to a nuclear power station, and we are waiting for the second one to go ahead, as are many of the people I represent. Can you tell us the status of the EPR design that AREVA and EDF are going ahead with, and how far are they in the GDA process?
Dr Hall: We issued an interim design acceptance confirmation last year. The intention with that was to highlight the regulatory issues that were still outstanding at that time, and on the EPR, there were 31. We issued it on the basis that the requesting party had demonstrated to us that they had a plan for resolving those issues. Over the intervening period, we have been working with them as they have developed their responses. There had been a slight delay, but AREVA and EDF have enhanced their team, who are interacting with us, and the result is that now 13 of the 31 issues are closed. Provided that the requesting parties give us the information in the form that we are expecting, we would anticipate the remaining issues will be closed down by the end of November.

Q365 Albert Owen: Does that just involve them, or are there third parties involved as well that could be delaying the process? For instance, like a school inspection, usually it is just the teachers have to get their act together, but there is a local authority as well that will have certain responsibilities.
Dr Hall: No. It is just an interaction between ourselves and EDF and AREVA. In terms of planning issues, of course, that is the remit of the local authorities, but that is a separate process to the GDA process.

Q366 Albert Owen: Have they got some of the tougher ones out of the way? I know when you are talking nuclear, you can’t be relaxed about this—it is not about ticking boxes—but are there certain issues that can be done very quickly?
Dr Hall: I think that the easier issues had been resolved before the interim design acceptance confirmation was issued, so all of these are important matters that need to be resolved, and I would not like to distinguish between them. They are all important. All of them do need to be resolved before we would be in a position to consider issuing the final design.
John Jenkins: If I may, Andy, I would add that we have reviewed them on a basis of principle as to whether we could move past, and we are happy to say, although we have a lot of work to do, there are no matters of principle outstanding in the 18 that are left.

Q367 Albert Owen: Is it realistic now that this process could be done quicker in the United Kingdom than in the country of origin in France? Is the EPR in Britain going to get the process completed quicker than in France?
Dr Hall: We will benefit from the experience that will have been gained by building in France and building in Finland. We have the advantage in this country that we are dealing with a design where the detail has now been worked out. The original build at Olkiluoto in Finland started before the design had been fully worked out. That is one of the advantages of the GDA process. It does mean that all the detail is considered and issues resolved before construction starts, so once construction does start, it should be able to move ahead more rapidly than it has done in those other two countries.

Q368 Albert Owen: As the Chair indicated, we met with Hitachi, who have thrown their hat in the ring, and very welcome they are in my part of the world. With regard to the GDA process, roughly how long is it going to take before you engage with Hitachi directly?
Dr Hall: The first point to make is that we would not engage in the Generic Design Assessment until DECC informs us that it wishes us to do that—unless a company applies for a licence to build, when we need to be given an indication of whether the Government wishes us to consider this alongside other responsibilities.

In terms of the timescale for GDA, it is difficult to judge. I have made the point that GDA so far has taken just over five years. We have learned from that process, and one of the things we have learned from that is that it is very important for the requesting party to engage with us very early on, so that it understands the regulatory requirements in this country. There will be issues with Hitachi of designs and communications being in a different language. The documentation will need to be put into English. It is very important that a requesting party understands that the regulatory regime in the UK is somewhat different to that in many other countries. We have a goal-setting approach, where the onus is on the requesting party or the licensee to demonstrate its plans are safe, rather than a prescriptive process where, as a regulator, we issue a set of the rules and the licensee simply has to demonstrate that it is complying with those rules. Although all regulatory systems around the world have the same aims, they are achieved safely by different means and in order to facilitate GDA it is important that the requesting party understands the differences and then provides the information to us in a way that clearly demonstrates it is meeting UK requirements. We are, of course, happy to work with requesting parties to help them understand those differences.

In the case of Hitachi, the GE Hitachi ESBWR—the Economic Simplified Boiling Water Reactor—did enter the GDA process some years ago and was taken through to the end of step 2, so they will already have some understanding from that.

Q369 Albert Owen: Does the fact that it is operable give it an advantage because you can go and see a working reactor?
Dr Hall: It means that the design has already been elaborated to every last detail, so we are not simply working with a paper design. We are working with a design where all of the details are known, all of the engineering is known, and indeed there will be results from the commissioning test and so on, so that is an advantage.

Q370 Albert Owen: A direct question for you, do you have enough resources in ONR to do all this work? I raised this as an energy question to the Secretary of State and he assured me that any additional resources would be available if they were needed.

Dr Hall: We are in a position where we are still seeking to recruit safety inspectors. Over the next three years we are hoping to recruit about 100, and we have about 49 vacancies at the moment. We will have to prioritise our work, and we will have to consider the relative primacy to give GDA, as opposed to regulating the existing sites where that already exists.

Q371 Albert Owen: Have you made that request to the Secretary of State, and has he been as helpful as the Secretary of State was with my response?

Dr Hall: I believe that we have permission to go ahead with 80 vacancies with DWP.

Q372 Albert Owen: You mentioned engagement with the pre-application period, and I know that has been a problem in the Environment Agency. What can Hitachi do from day one that others have not done? I was interested, Dr Hall, when you said that they had already got to stage 2, so all that work has been done. Horizon has not done any work thus far—has it?—for the GDA process. So what does Hitachi have to do? They are sitting behind you, I know that, and we have spoken to them, but I am sure that they could welcome your advice.

Dr Hall: Originally, Horizon were considering both the EPR and the AP 1000 design. The AP 1000 design was part of the GDA process. Sometimes it is difficult to engage with local communities until you know which local community you need to engage with. GDA separates out the assessment from specific siting issues and therefore it becomes more difficult, and that is why we try to engage with communities across the country through our website on GDA. As particular sites are identified—and clearly Horizon has intentions for Wyfla and Oldbury—then we can hold more community events to explain what is happening there. Last year, I engaged in a public meeting in Bangor, so that people from the island of Anglesey and other areas in Wales could come and hear about what we have been doing as a result of the Fukushima accident and what was being learned from that.

John Jenkins: If I could add as a direct answer to your question, it is around our regulatory regime to learn from that, to engage with us, to understand the changes, but also they have partners in Rolls-Royce and Babcock who are familiar with working in the nuclear industry at the moment in the UK, understand that regime, so get the internal learning and speak to us as well at the early stage, because that is the big—

Q373 Albert Owen: Am I reading the signals right? It does not have to take anywhere near five years?

John Jenkins: I would not say that. What I am saying—

Q374 Albert Owen: If everything is hunky-dory—and in the past it has been relatively new and it has taken the maximum amount—and we help you get all these extra resources, it could be done quicker.

John Jenkins: The largest issue for us was response back from the requesting party. That added time into our programme. So, in a sort of hunky-dory sense scenario that you spoke about then, yes, we could take some time off it, but that is a big amount and we can’t quantify that.

Q375 Albert Owen: Surely language is not an issue. Dr Hall, you mentioned that, Hitachi have licences in America and Taiwan, and I suppose the Welsh language will be a bit of an issue but not too much.

Dr Hall: The design certification in the States has expired and so they are having to go through the process in the States again. There are differences in regulatory systems around the world and the fact that a company has a licence or a certificate in one country does not mean it can necessarily get that in another because all the regulatory systems are not equal. What we have found and experienced to date is that the speed with which we can progress very much depends on the quality of the submissions that the licensee makes to us and whether or not it provides those on time in accordance with its own programme, and very often that is where delays arise.

The other point to make is that the boiling water reactor design is one that has not been utilised in the UK previously, so it is a completely different type of reactor to the pressurised water or gas-cooled reactors we have. Neither ourselves nor the technical contractors that we use to support us in GDA have detailed knowledge of those designs, so at the start there will certainly be a need for us to develop our understanding of those designs. Of course there are common features with other light water reactors, pressurised water reactors. There are variables that could mean that the process could be shorter, but also there are variables that could mean it could be longer. Without knowing how it will pan out, it is difficult to make that call.

Q376 Albert Owen: Is it realistic for Hitachi to say that a safe generation can come online in early 2020 or 2022?

Dr Hall: I can’t say one way or another about their judgment. It really depends on how effectively they are able to engage with us in the GDA process, and of course the other permissioning processes as well.

Q377 Sir Robert Smith: Just to pin down, Mr Jenkins, you are saying that up until now if there has been a pause it is because you have been waiting rather than the applicant has been waiting for your assessment?

John Jenkins: What I meant to communicate precisely was that in a five-year programme there
were times within it where we were waiting for a response. Does that put it more precisely?

Q378 Sir Robert Smith: Could it have been sped up at all by you having more resources so that when it was—

John Jenkins: No, that would have made no difference.

Q379 John Robertson: A small question, just looking at this article here. It says the Office for Nuclear Regulation, ONR, comes under DWP. I have never known Departments to talk to each other at the best of times. DW? A strange partnership there. Why DWP?

Dr Hall: It is partly because, as an independent regulator, we need to be effectively separated from parts of Government that have an interest in the nuclear industry because otherwise those Departments or other bodies could be trying to exert influence over us and could compromise our independence. This independence and effective separation from parties involved with nuclear power is something that is recognised worldwide as being highly desirable for nuclear regulation and it is written into various nuclear conventions.

Q380 John Robertson: So was it tossing a coin and DWP won? I can see why you would put it under Defra or something like that, but DWP does not strike me as where it should be.

John Jenkins: It is a decision for Ministers rather than ourselves, but we are happy with the sponsorship arrangements. That is the status quo right now, so it is not an issue for us.

Q381 Dan Byles: Following on from that, according to the Institute of Civil Engineers, the lessons from France and Finland are that, “A comprehensive communications network between vendors, licensee and regulators should be made a priority in the early stages of any nuclear new build”. Do you agree with that, and do you have plans in place to establish such a network?

Dr Hall: Yes, we completely agree that good communication is vital. If you look back at our experience with the EPR and AP 1000, we have had over 700 meetings between our staff and the requesting parties over the period of GDA. We have also set up protocols for the way that we interact with the requesting parties, so that when we have meetings we understand what the objectives of those meetings are and we can review at the end of those meetings whether or not those objectives have been met. We do not want parties breaking up after a meeting with different understandings of what has been agreed and what has not been agreed. We have also set up a so-called traffic light system for interactions, so that if we felt that submissions were being delayed or were not of the appropriate quality when we received them and we could see that that represented a risk to resolution of issues, then we would flag up, using the traffic light system, to the licensee or requesting party and it could clearly see the parts of the programme

Q382 Dan Byles: So you are content, as an alternative agency, that that communication network fits in—

Ed Mitchell: Very strong and very close, yes.

Dr Hall: The point is also that we and the Environment Agency are working extremely closely together on GDA, so from the perspective of the requesting parties it is a one-stop shop.

Q383 Dan Byles: Dr Hall, you have already noted that the UK regulatory regime is quite different to that in many other countries because of our goal-setting approach. The ICE also recommended that the provision of adequate regulation resources by the regulator at an early stage would help to improve vendors’ understanding. What resources do you provide specifically to vendors to help them understand the regulations in the UK, so that we could head off potential problems further down the line?

Dr Hall: The first step of GDA is a preparatory step, where we engage with the requesting party to explain what the regulatory system is in the UK and to agree with them the submission of documents and the sorts of documents that need to be provided. In terms of the resources needed, again we have to prioritise, but we recognise the importance of investing in providing information upfront because that then sets the scene for the future submissions and sets the programme rolling.

Q384 Dan Byles: Do you anticipate any problems or delay as a result of the fact that our regulatory regime might be different to other regimes that the players have operated in elsewhere in the world?

Dr Hall: It would certainly mean that there is a learning curve for the requesting party to climb, although in this case, because GE Hitachi had already submitted the ESBWR for GDA, it will have already gained that understanding, so that is an advantage it already has.

John Jenkins: There were also material amendments made to the EPR as a result of our regulatory regime, so we would expect that to take place as well.

Q385 Dan Byles: So you do not see any clash of regulatory cultures in that respect from a company like Hitachi, that is used to operating in the US and Japan, coming here?

Dr Hall: No, but it needs to understand that demonstrating safety in the UK is not simply a matter of showing that you have met requirements in certain sets of rules, but rather demonstrating that you have thought about the safety of the design and you understand why it is important to protect the plant in a particular way.
Q386 Dr Lee: In what way is our regulatory regime different, and why?
Dr Hall: It all goes back to the Health and Safety at Work Act in 1974. Health and safety regulation in the UK had evolved over 100 or more years and it had done so in a rather prescriptive way. There would be an incident or an event in a particular industry and a new regulation would be developed to specifically address that event, but it meant that the regulatory system grew and grew, almost by a process of accretion, into a large number of prescriptive rules, some of which of course became outdated because the technology changed.

With the Health and Safety at Work Act, building on the Robens Report, the Government decided that we should move to a goal-setting approach, so that rather than setting down how you meet a safety objective, the legal requirement was to meet the safety objective. The primary responsibility for employers and duty holders in industry is to reduce risks to members of the public and workers so far as reasonably practicable. The rest of the health and safety system provides information on ways that can be done but allows flexibility.

The advantage for ourselves in the Office for Nuclear Regulation is that we have what is sometimes described as a technology-neutral system. As we are not developing specific rules for specific technologies, it means that requesting parties can come along with designs from elsewhere in the world and our system is not biased against those technologies because it is technology-neutral. What the requesting party has to do is show why it believes the reactor designs are safe.

Whereas in other countries that safety is demonstrated by showing that the requesting party has met all of the detailed rules for that particular reactor design that have been set down by the regulator. In the UK, the burden of demonstrating safety is on the requesting party, but it is free to choose how to demonstrate that the plant is safe. It then has to persuade us of that.

Q387 Dr Lee: Do you think that we put additional costs on development of new reactors as a result of our regulatory framework in comparison to, say, France or America?
Dr Hall: No, because in developing a reactor or any other nuclear plant, the designer has to consider the hazard that will be present in that plant and to protect the plant because it needs to reduce risks to people in society and it needs to protect its commercial investment as well. The licensee or the requesting party has to do that thinking regardless, but it is not in the UK constrained by a particular prescriptive framework.

Q388 Dr Lee: On a broader point, the fear of radiation is based upon a hypothesis that does not have a lot of evidence base. Mr Jenkins mentioned evidence base driving your work, but a linear no-threshold hypothesis does not have a lot of evidence supporting it. That being the case, is it your responsibility to commission work to educate people about the fact that the hypothesis upon which all radiation regulation is based is potentially nonsense? Is it your responsibility to commission research on that and, if not, who is responsible for that? Do you foresee a situation where we talk about risk and the mitigation of risk from an evidence point of view rather than from a situation where everybody thinks that Wylfa is going to be like Hiroshima, which is what the man in the street thinks? You talk about public opinion. The public do not really understand the risk, so their opinion is not necessarily that informed, is it?

Dr Hall: We enforce the rules and regulations in the radiation area that come out of European directives nowadays. Those directives are based on work that is performed by the World Health Organisation, which periodically reviews the evidence for the relationship between radiation doses and risk and then makes recommendations. This is a collective activity that takes place within the WHO and also with the International Atomic Energy Agency, and it is member states who agree these dose limits through those bodies. I recognise that the linear no-threshold hypothesis is, as it says, a hypothesis, but it is one that has been adopted by consensus within these international organisations as being a hypothesis that provides a degree of protection.

Q389 Dr Lee: I guess my point is there is a certain irony in the fact that people are risk-averse about developing a risk strategy.

Ed Mitchell: If I may, there is a wider point as well about the open and transparent way, and our independence as regulators, that helps communicate those risk issues. The Science and Technology Committee recently took evidence from us and Dr Weightman at ONR and others about communicating risk and radioactive risk in particular. Back to your question about what Hitachi could do, the initial tone of communications and the openness and transparency of those communications, I think, will set the scene for much of the dialogue with local communities, which will enable sensible and rational conversations to go on.

Dr Hall: One thing that does help is to put radiation doses into the context of everyday living. The fact is that we live in a radioactive environment on a radioactive planet. We obtain doses of radiation by flying and so on. Very often when we are talking about the doses that people receive in nuclear operations, they are small compared to the doses you would receive in your own home.

Q390 Dr Lee: That is my point, I guess, that we are engaging in a five-year regulatory process in order to protect ourselves again something that might not actually have any risk attached to it. It does strike me as quite ludicrous.

Dr Hall: Yes. I think what you will find is that people are quite happy to accept radiation doses in their everyday lives. The doses around the UK vary considerably from one region to another, and people do not avoid living in particular regions because there is a higher dose rate there, but that is a matter of choice for them.

Q391 Christopher Pincher: I want to ask you about the regulatory framework post-Fukushima, but before
I do can I quickly pick up on the point that Albert made about boiling water reactors. Given the caveats that you understandably have to employ, would you say that a four-year GDA process for a boiling water reactor would be reasonable and conservative?

Dr Hall: I think that it would be possible, but it really does depend on the factors that I mentioned earlier.

Q392 Christopher Pincher: Nicely skirted around.
All right, to Fukushima. Dr Weightman said in his report last year that there are no fundamental weaknesses in the UK’s nuclear industry but that we need to learn lessons around national emergency preparedness. As a result of those lessons learned, have there been any new regulations applied to the UK nuclear industry?

Dr Hall: There have been no new regulations, but we already had the powers that we would need to ensure that the licensees improved their operations. Since Dr Weightman spoke to you last year, there have been four major reports issued into lessons learned from the Fukushima accident. There was the stress test report for nuclear power plants, requested by the European Council, which was published in December last year. Going back a few months before that, Mike also published the final report on lessons learned from the Fukushima accident, which he had produced as the result of a request from the Secretary of State. In May this year, we produced a stress test report for the non-power-generating facilities. This was not requested by the European Council, but Mike felt that it was appropriate that the stress tests were applied to all of our nuclear facilities. Just last week, an implementation report was published by ONR to set out what licensees have done since last year in terms of making real changes to the nuclear sites as a result of the reviews that they were required to undertake through the previous reports.

In terms of, first of all, regulations, the regulatory system has not changed and we do not anticipate that it will change. Since it is based on this goal-setting approach and the requirements to reduce risk so far as is reasonably practicable, whenever any new information appears, we can immediately turn to licensees and ask them whether they are doing everything necessary to reduce risk so far as is reasonably practicable, so we do not need new regulations to do that.

In terms of emergency preparedness, the body that coordinates planning in the UK, the NEPLG, has been reviewing the way that data can be obtained in an accident about releases of radioactivity offsite. It has been considering ways in which the consequences of those releases can be calculated in terms of where the material is moving to and where people on the ground might receive higher dose rates, so it is enhancing the ability to predict risks to people. There is work going on in that area. In addition, in terms of the emergency exercises that we in ONR witness, there is work going on to perform exercises over more extended periods than we have done in the past and also to encompass more severe conditions as well.

Q393 Christopher Pincher: It sounds as though, although the regulations are not being altered or increased, the processes within them are being changed and strengthened. Would that be a reasonable proposition?

Dr Hall: I think what is happening is that, in the UK and other countries, ways in which safety on sites can be enhanced are being identified. What that means, in our terms, is that relevant good practice is changing. When judging the safety of operations on sites, we often refer to what is the relevant good practice, and internationally that relevant good practice is rising and therefore we would expect that same good practice to apply in the UK.

Q394 Christopher Pincher: We have heard previously that raising the bar of standards, adding new regulations, would increase the cost of roll-out in nuclear. Would you say that the enhanced standards that you are talking about now within the existing regulatory framework will also add to the cost of roll-out, or do you think it will be an insignificant cost?

Dr Hall: It will certainly increase costs. EDF Energy, for example, is purchasing off-road vehicles and pumps, diesel generators and so forth, building facilities for housing mobile equipment. Clearly, that has a cost, but compared to the cost of nuclear power stations themselves it is a relatively minor cost. That is for the existing plant. For new build, the new reactor designs have already taken into account external hazards such as earthquakes, tsunamis and bad weather to a far greater extent than the older designs, so we would not think that the new requirements would significantly add to the costs there.

Q395 Christopher Pincher: They do not add to the development time either. You are not having to do new things within the normal development time, but you are also not increasing the development time for construction of a new facility.

Dr Hall: A lot of the work is around recovery post an event. It is getting generators on to the site after something has happened, so it is equipment associated with an event rather than something on the plant in its own right.

Q396 Christopher Pincher: Is it an immaterial increase in costs, in your opinion?

Dr Hall: I do not think there would be a significant increase in costs, no. That partly reflects the robustness of the systems we already have in the UK as well. For example, if you compare the UK to some other countries where there is some significant construction taking place on the sites in terms of introducing new diesel generators and back-up power supplies, the UK sites already have those and so we are not doing that because we are already in the state that some other countries are now aspiring to.

Q397 Christopher Pincher: One last question related to the Energy Bill, when we see it, we suppose it will enhance your regulatory powers and your flexibility of manoeuvre. Are you content with what you have seen so far or do you think that you need more authority statutorily through the Bill?
Dr Hall: I believe the Energy Bill will provide us with the powers that we need to be an independent, responsive and appropriately resourced organisation, so it will set us up well.

John Jenkins: We have been involved in the drafting as well. Our policy team is on that.

Q398 Christopher Pincher: As a result of it, what would you do differently from what you can and do do now?

Dr Hall: The fact that we will have more resources in the future than we have had in the past will put us in a very much better position in terms of responding to licensees and other stakeholders at the times they would like us to respond, so that we will not have to take perhaps some of the difficult decisions on prioritisation that we have had to take in the past, which have always been to ensure the safety of existing operations. It will mean that we can look over the horizon that bit more and respond to developments in the future, such as new build, in a more effective and efficient way than we have done previously. It will also enable us to be much more open and transparent about what we do, because clearly there are resource implications in that as well. By having adequate resources, we will be able to engage more with local communities and others than we have done in the past.

John Jenkins: We would expect to be more accountable in terms of what we would do differently.

Q399 Christopher Pincher: Would you say that the supply chain to build these extra facilities that you are getting as a result of the Bill, or may get as a result of the Bill, should give more confidence to all of the stakeholders in the communities involved?

Dr Hall: We hope so, certainly, yes.

Q400 John Robertson: Mr McKirdy, you have not had much to do so far, so it is your turn now. I will let you finish the water you have just taken. Does the NDA have any input plans for new nuclear power stations, and obviously particularly into plans for how the waste will be managed?

Bruce McKirdy: Yes. Our involvement is in three different areas. In my part of the organisation, which is the Radioactive Waste Management Directorate, we are involved in assessing the disposability of any fuel or waste that could be generated from the new reactor designs. We are also involved in providing cost estimates of disposal facilities to DECC, which they then use as part of their methodology for assessing pricing unit costs for disposal to charge prospective operators. Finally, we are involved in reviewing the waste management and decommissioning plans that are submitted to Government by prospective operators to provide a technical assurance. We do not do the financial or the legal assurance. That is done elsewhere. That is to DECC, again.

Q401 John Robertson: This Funded Decommissioning Programme was to pay for the disposal. Are you confident that DECC will set out contracts at the right level to cover the cost?

Bruce McKirdy: I think so, yes. From our perspective, we provide two inputs to DECC. One is our best estimate cost, which goes into estimating the expected costs as part of the Funded Decommissioning Programme. We also look at 30 different scenarios for different disposal facilities, calculate costs for all of those scenarios and feed those into DECC, which are then used to estimate the cap.

Q402 John Robertson: Does that include the length of time before these costs will be incurred?

Bruce McKirdy: Yes, it does.

Q403 John Robertson: How are future costs estimated?

Bruce McKirdy: We have something we call a parametric cost model that, because we do not have a—

Q404 John Robertson: Could we have that in English?

Bruce McKirdy: Yes, I will unpack that. Sorry. We have a basic repository design concept, and we look at designs that have been developed in countries that are more advanced in their repository programmes than we are and we benchmark against those. We build up a cost model that enables us to look at different geological settings, different scenarios for the waste inventory, looking at upper bound scenarios with new build, lower bound scenarios with no new build, looking at plant life extensions, and it allows us to look at geographical differences, because transport costs change significantly. All of that information we have benchmarked against geological disposal programmes in France, Sweden and Switzerland.

Q405 John Robertson: I have been to Sweden, and I have seen the Swedish one. It is very impressive, I have to say. What progress has been made on the geological disposal facility?

Bruce McKirdy: I will take this in two strands. One is the siting process and the other is in the development of the designs and the organisation that I am responsible for. Taking the second of those first, as an organisation, we are working towards becoming a site licence company. Since 2009, we have been under regulatory supervision now as if we were already a licence-holding company. There are things that we need to do differently. The regulators will point those out to us, such that when we get to the time when we need to apply for a licence we will be in a good state to do that.

We also published, in February 2011, our disposal system safety case, which is a generic disposal system safety case. That has also been reviewed by ONR and the Environment Agency. We have had constructive, positive review comments with improvements that have been pointed out, primarily to improve clarity of the document but also how we can improve the way in which we present the safety case to regulators when we get to a specific site. That is us getting ourselves prepared to implement the geological disposal facility.

The other important thing that we do need is a site on which to develop the facility. At the moment, this is...
the Managing Radioactive Waste Safely process, which is being run by Government; DECC are heading this up. It is a voluntary process. At the time the White Paper on implementing geological disposal was published in 2008, a call was put out for volunteers to express an interest in the process. So far we have had three formal expressions of interest, all in Cumbria—Cumbria County Council, Copeland Council and Allerdale Council. They have spent three years working in partnership, addressing a whole number of questions, with a comprehensive work programme that was completed in July this year with the publication of a report. It is now with decision-making bodies to decide whether to move into the next stage of the process, which would involve us doing desk-based studies into specific geology and surface areas in the region. That decision was going to be taken in October, and the councils have now agreed that they will defer the decision until 31 January to enable them to get more information.

Q406 John Robertson: I know there is a consultation going on about that in that area. Having said that, it appears to me that some of the things that puts people off nuclear is the fact that we have this waste and there has not been a definitive answer of what we are going to do with it. When can we expect a final decision? By the sounds of it, we are talking Sellafield here. When are we going to get the final decision that there is a place where this waste will be put?

Bruce McKirdy: I can’t give a definitive answer on when we are going to get that decision. It is not with me to make the decision; it is not just with Government to make the decision. It is a volunteer process driven by communities, and we have to, especially at this early stage of the process, operate at the pace at which communities—

Q407 John Robertson: Let me rephrase it then. How long is this process going to take?

Bruce McKirdy: Our current plans suggest that first waste emplacement in a disposal facility will be in 2040, but again that is still heavily dependent on the early stages—

Q408 John Robertson: We will have announced it a long time before then because we have to build it. When can we expect to get a decision? In the process, it will be, “X is going to be the place it is going to happen.”

Bruce McKirdy: On 31 January, the Cumbrian councils will decide whether to move into the next stage of the process. That will be desk-based studies. That will take about five years to identify two sites for further investigation, using boreholes and so on. That could take 10 years to complete those studies before identifying a single site for development of those disposal facilities. I have to come back to this caveat, which does not bode well with trying to get a definitive answer but it is the situation, that it is a volunteer process and we have to work, especially in these early stages, at the speed at which stakeholders find comfortable. To add to that, the volunteer process, with all of its shortcomings in terms of uncertainty, is the only process that has worked anywhere in the world in terms of successful programmes.

Q409 Sir Robert Smith: I must remind the Committee and the witnesses of my interests in the Register of Members’ Financial Interests to do with the oil and gas industry, and in particular a shareholding in Shell. On the earlier discussions, we have certainly in the North Sea seen the benefits of a goal-setting regime. You have mentioned a lot about the fact that we are goal-setting and the others are prescriptive. Does that preclude you from partnership-working, or do you still try to learn lessons from the other regulators?

Dr Hall: Certainly not. We have very good interactions with other regulators, particularly the French and the Finns on the EPR, and also with the Americans, the US Nuclear Regulatory Commission as well. In fact, in our GDA of the EPR and AP 1000, we have reached common positions with regulators in those other countries on certain technical issues, where we have issued joint statements that set out our joint views, so we have benefited from those interactions. We are not only that isolated from the international community, nor do we wish to be. There are huge benefits from working with others. After all, if another regulator has identified an issue and we identify the same one but they have come to a view that that issue has been resolved, we want to understand why that is, so that we are not reinventing the wheel.

John Jenkins: We also operate a target-setting regime for materials transportation because of its international nature, so we are fully familiar.

Q410 Barry Gardiner: You will be familiar with the EU Commission report of November 2011. That was their communication on the comprehensive risks and safety assessments of nuclear power plants in the EU. In that it says that nearly all plants need to undergo safety improvements and that, “Although measures were agreed internationally following the Three Mile Island and Chernobyl incidents, their implementation is in many cases still pending.” Why is that, who is responsible for it and where is the UK on this list?

Dr Hall: We were somewhat disappointed with the communication that came out of the commission because, in the views of a number of members of ENSREG, which is the European Nuclear Safety Regulators Group established by the European Council to provide guidance and advice to the commission, that communication did not reflect the discussions that had taken place in ENSREG.

Q411 Barry Gardiner: ENSREG put its action plan in place in July 2012, did it not?

Dr Hall: Yes.

Q412 Barry Gardiner: That is a bit of a while after Three Mile Island and Chernobyl. Why is it that in the intervening period the recommendations have not been implemented and that there are plants that are falling below the safety standard to the tune of €200 million per reactor unit—a total of €10 billion to €25 billion across Europe?
Dr Hall: What I am saying is that the members of ENSREG do not agree with those conclusions.

Q413 Barry Gardiner: Why did they put in place an action plan this year, in that case? Why do they say that there is that amount of money shortfall in implementing safety procedures?
Dr Hall: ENSREG did not actually identify the amount of money that it would cost to implement these safety measures. There are not similar—

Q414 Barry Gardiner: Do you dispute those figures?
Dr Hall: I do not know what the basis of those figures is. I do not know where those figures have come from. What I do know is the situation—

Q415 Barry Gardiner: Have you made any inquiries as to why the commission thought it right to publish that communication in that case?
Dr Hall: I have been a member of ENSREG, and we did discuss within that body where those figures had come from, because they were not recognised by members of ENSREG. In other words, they were not recognised by the senior regulators from regulatory bodies within the member states.

Q416 Barry Gardiner: Dr Hall, do you categorically repudiate that there were recommendations made for the safety of reactor units following Chernobyl and Three Mile Island that have not been implemented, and you categorically repudiate the figures that have been suggested by the commission of—let me just make sure I am quoting them correctly—between €10 billion and €25 billion in total over the coming years?
Dr Hall: There were lessons—

Q417 Barry Gardiner: Just a straight yes or no. Do you repudiate that or not? Do you accept it, or do you reject it?
Dr Hall: There were no recommendations that resulted from the Three Mile Island accident. There were a lot of lessons learned from that accident in terms of the way that severe accidents should be analysed, but there was no international body that made recommendations as a result of Three Mile Island.

Q418 Barry Gardiner: Do you repudiate what the EU Commission has said?
Dr Hall: I do not agree with that particular statement. Those countries—

Q419 Barry Gardiner: You do not agree, so you repudiate it?
Dr Hall: May I offer to provide a note on this, if that would help?

Barry Gardiner: It would be extremely helpful if you can try to reconcile why your opinion is at variance with that of the EU Commission in November 2011. Thank you very much.

Chair: Thank you all very much. It was a very useful session. We will incorporate some of what you have said in our conclusions, and I am sure we will be keeping in touch with you in the future. Thank you for your time this morning.

Examination of Witnesses

Witnesses: Mr John Hayes MP, Minister of State, Department of Energy and Climate Change, Hergen Haye, Head of Nuclear New Build, DECC, and Emily Bourne, Head of EMR Programme Team, DECC, gave evidence.

Q420 Chair: Good morning, Welcome, Minister, to your first appearance before this Committee. I am sure we shall have a constructive and close relationship with you, as we did with your predecessor over the last two and a half years. You will be aware that there is considerable interest in our current inquiry on building new nuclear. I will not go through introductions. We know who you are, and you know who we are.

I will begin by asking, in view of the delay in publishing the Energy Bill—which was scheduled to appear yesterday and now we do not know quite when it is going to appear, but it is certainly some weeks away—and also in view of the statement by one of your ministerial colleagues in the House that, even when it does appear, the Bill will be subject to subsequent tabling of Government amendments, do you feel the atmosphere of uncertainty this is creating may jeopardise decisions by potential participants in nuclear new build and that we may therefore be putting at risk the prospect of Britain having new nuclear power stations?

Mr Hayes: Let me deal with the three points you make, Chairman, in reverse order, to add a certain colour and excitement to our affairs. The last part of what you said about investment is clearly not the case because, as you know, Hitachi has just committed very significantly to the purchase of Horizon, with a sale price that reflects a significant investment, and plans to build perhaps half a dozen reactors. I think the signs are not that investors are nervous but the evidence is that investors are prepared to commit to nuclear build in the current policy framework.

The second point you make is about the more general uncertainty around the progress of the Bill. What you have said is that the Government will make amendments. You have been in the House a very long time, Mr Chairman, and indeed your Committee is rich in expertise and experience, and you will know that no Bill ends its passage through this House exactly in the way it started. Bills are by their nature amended and, my goodness, a Bill like this where cross-party consensus is critical would be a very odd creature if it was not amended during its passage through the scrutiny and argument in the House, through committee, through the other place and, indeed, through the Government reflecting on some of the arguments that are made.
Your first point is on timing, Mr Chairman. Yes, there are matters to be confirmed before the Bill receives its first and second readings, but in essence, in substance, there is certainly no change of direction. The fundamental importance of reforming the market to create the certainty necessary for investment remains unaltered and unabridged. We want to get the Bill right, and it is important that we do so in detail as well as in substance, and any short delay will be used to make sure that that happens. Of course, you would not expect me to second-guess those responsible for the parliamentary timetable—the Leader of the House would not thank me for so doing—but you can be assured that we are determined to get this Bill on to the Floor of the House, debated in Committee and on to the statute book with appropriate rigour but also appropriate vigour and alacrity.

Q421 Chair: I should have drawn the Committee’s attention to my entry in the Register of Members’ Financial Interests. Responding in the order in which you did, on the point about Hitachi, given that they are several years away from making a final investment decision, given that they need to recruit investment partners for their consortium before any construction takes place, given that the recruitment of those partners depends in turn on the passage of the Energy Bill and agreement over the strike price for Contracts for Difference, I am not sure that the decision they made—welcome unreservedly though it is by me—represents quite the vote of confidence in the Government’s nuclear policy that you claim, but we will put that on one side.

On the point about the Bill, you will know that this is a Bill on which more substantial investment decisions rest than the vast majority of legislation that is brought forward. You will also know that the Bill has been under consideration for several years. It has been subject to pre-legislative scrutiny. This Committee is therefore dismayed that, after all that, we are warned that, even before a Bill of this importance has been published, the Government has not decided what to put in it. That is a very unhelpful background for the investors who are wondering whether to invest in the UK or perhaps to go somewhere else in what is a totally global industry. However, perhaps we can get some more reassurance from some of your later answers.

The lead horse in this race is still the EDF-Centrica consortium. If you are unable to reach agreement that is satisfactory to them on the Contracts for Difference strike price, do you consider using the Treasury guarantee scheme, which was announced in July, as a way of supporting the construction of new nuclear power stations?

Mr Hayes: I think the best answer to that is to draw on the evidence that was given to you by EDF themselves, which I have in front of me, where they argue, “The Contracts for Difference will reveal the cost-competitiveness of nuclear with all other low-carbon technologies. Nuclear is the best low-carbon choice for consumers. The CfD will be a simple, transparent and proven instrument”. Clearly EDF, when scrutinised by this Committee, were arguing that on the basis of the Contracts for Difference—the contracted price that will be agreed after a proper negotiation—there would be a basis for that deal to go ahead. I can tell the Committee that I met them yesterday and we had a productive and positive meeting. I am anxious for the terms of this agreement to be settled before the end of the year, the headline agreement to be in place. They are anxious for that to happen, too. I think with the new energy that I hope I have brought to the role we can do just that.

Your point about the sluggishness before I arrived is not something that I would comment on, of course, but I can assure you that since I have been here we have been very determined to settle this matter and to move ahead with the legislation, too.

Q422 Chair: Will the process of negotiating that strike price eventually be completely transparent?

Mr Hayes: The process will indeed be transparent. It will be brought to the House, as you know, so that the House can be absolutely clear about the process. I think it is important that it should be. I know that that is the view this Committee takes; it is a view that I share entirely. It will be brought to the House in the form of an instrument. You are obviously familiar with the detail of that process, so the answer to that is yes.

Q423 Chair: Would it be possible for the Contracts for Difference strike price to have a provision that, in the event that construction costs overrun the estimate, the strike price could be adjusted to cover those additional overrun costs?

Mr Hayes: Part of the detail that is struck with EDF will be on costs. There will be a price deal, clearly, but there will also be a negotiation around costs, because exactly the point you have made is the point that any commercial organisation would make in these circumstances. These are commercial matters and the Committee, again because of its experience and understanding of these things, will know that the commerciality of this is not something that it would be appropriate to discuss in detail now, but it is absolutely right that once the deal is done the mechanics of that deal should be entirely transparent.

Q424 Albert Owen: Chair, can I just come in on this issue that you raised—I do not think we have had a full answer from the Minister—with regard to the amending of the Bill? The Bill has been delayed significantly, for whatever reason. Only last Thursday, your colleague, Greg Barker, said to the House that they would be including a number of amendments. Is it ready now and awaiting the Leader of the House to formally announce it, or is it not ready and, by definition, you would be able to do those issues that you intend to amend in the future? We have been through this process for a long time, and we are quite frustrated by it. It is hugely confusing that we have been told exactly what you have just told us by your predecessors and Secretaries of State, and yet we were told only last Thursday that this Bill is not quite ready but will need seriously amending. There is a contradiction there.

Mr Hayes: When the draft Bill was published and this Committee reported on it, scrutinised it closely—and
I have your thoughts here, which are extremely useful, if I might say so—there were a number of not insignificant issues of detail. I would not minimise them by calling them details, but the essence of the strategy was not something that you disagreed with. You accepted wholly that there needed to be radical market reform. You argued, I think quite properly, that that decision could have been made much earlier. I don’t just speak of this Government; I speak about Governments. That is not a partisan remark, by the way. Some of the things you said seem to me and to my predecessor and my officials to be not only worthy of consideration but sufficiently worthy of consideration to make changes to the Bill. I can assure you that, when the Bill comes to the House, it will reflect that but it will not be a different Bill, in essence, to the Bill that you looked at.

Q425 Albert Owen: I fully understand that. We are totally in agreement there. Why did your colleague say there is going to be a series of Government amendments, even before the Bill has been published?

Mr Hayes: I think a combination of things, in truth. We are, of course, looking at the commitment that the Prime Minister has given on tariffs. You will be familiar with that. There has been a public debate, heaven knows, and that needs to be in the Bill, because the Prime Minister said it will be in the Bill. That is something that we need to look at closely, because as I have said in the House—

Q426 Albert Owen: That is a more direct answer than your colleague gave last week.

Mr Hayes: I like to give direct answers. That is my style.

Albert Owen: Brilliant. I look forward to it continuing.

Mr Hayes: That is the right way for—

Q427 Chair: On the direct answer, the Department was taken completely by surprise by the Prime Minister’s announcement.

Mr Hayes: No, that is not what I said. What I said was that the Prime Minister had given a commitment, and the commitment was that the Bill would be used as a vehicle to explore the issue of tariffs. Of course, that requires us to look at a number of legislative options within the scope of the Bill, and we are doing that. That is one example. There are one or two other detailed issues in the Bill, but in essence the Bill is ready to run. It is the Bill that we published but with the changes, a number of which were made by this Committee, that reflect our considerations over the last several months.

Q428 Sir Robert Smith: In answer to the Chair on construction risks, you mentioned how costs were going to be taken into account in the Contracts for Difference. Is construction risk going to be reflected in the Contracts for Difference?

Mr Hayes: We are very clear that the commitment given by the previous Secretary of State is that there would be no subsidy for nuclear power. We argued repeatedly, entirely in line with that statement—and I spoke about it last week in the House at questions, as you may have noticed—that there should be nothing available for nuclear that is not available for other technologies. The deals, on a case-by-case basis, will have to be the subject of specific negotiation, but there is certainly going to be no fundamental difference between the approach we take to nuclear and the approach we take to other generating types.

Q429 Chair: On that point—a very interesting point here—let us say, for the sake of argument, that the strike price for nuclear was 100. That does not constitute a subsidy. If we then found that the strike price for onshore wind farms was 90, would that also not constitute a subsidy?

Mr Hayes: Currently, different technologies cost different amounts, if you look at the difference between onshore wind and offshore wind, for example. Indeed, if you look not just within the renewable low, emissions sector but across the energy more generally, a different price is paid for different generating types. So that would not be unprecedented or a subsidy unless one is taking the view that those differences equal subsidy, and I am not sure one could reasonably take that view.

Q430 Chair: No. I wanted to be clear that you are arguing that the strike price for nuclear does not constitute a subsidy and, therefore, you are honouring the commitment given by the previous Secretary of State. I was raising the question that, if that does not constitute a subsidy, the public might think that a lower strike price for different technology also does not constitute a subsidy.

Mr Hayes: Different means of generating energy cost different amounts of money. I think this Committee takes the view—and it is a view taken by this Government and by previous Governments—that it is important that we have an energy mix. As soon as you accept that it is important that we have an energy mix in order to guarantee resilience and sustainability, you are inevitably in the business of accepting the fact that different forms of generation cost different amounts of money. I think the public would favour the idea of an energy future based on that mix, because it is by far the best public policy option.

Q431 Sir Robert Smith: The public would not want that future at any price. You can’t give away the negotiating strategy in detail, of course, but does the Government have a bottom line that, if EDF go too high, the Government are ready to say, “That is too much for the consumer. We are not going to accept that.”?

Mr Hayes: Absolutely. There is absolutely no doubt. As I looked into the eyes of Vincent de Rivaz yesterday, I told him that the Government will always put the national interest first. Where the national interest coincides with commercial interests, and I think it generally does, that is great for both of us, but of course in any commercial arrangement—in the end, this is a commercial arrangement—both sides need to be able to walk away from the deal. As soon as that is not the case, it becomes a rather unhealthy arrangement.
Q432 Sir Robert Smith: You mentioned there will be a process to be followed once the strike price is agreed, in the event of agreement. At that point, for transparency, would the cost calculations become available for public scrutiny, so that the consumer could have confidence that the best deal had been struck?

Mr Hayes: I want to check the exact detail of what will happen, because I think this is very important. The parliamentary process is—and you saw the clauses in the draft Bill in these terms, and those are unaltered—any investment instruments agreed before Royal Assent must be laid before the House during the passage of the Bill, and this may have been what my ministerial colleague was referring to. They will therefore be available for Parliament while they are scrutinising the Bill, and after Royal Assent investment instruments will be laid in Parliament. There will also be a parliamentary scrutiny of any modifications for electricity supply licences or regulation from any connection with investment instruments. So there will be a proper parliamentary process by which these matters are subject to consideration, and this was set out in the draft Bill, as you know.

Q433 Sir Robert Smith: How informed will that process be by actual details? Two sides can agree a price and say, “This is a good deal,” but if no one can then audit or scrutinise the arithmetic that has gone into building up that price then they have to take it on trust. How much will be in the public domain?

Mr Hayes: My view on that is rather similar to this Committee’s stated view, which is that it should be as transparent as possible. I do not think it would be healthy if this was thought to be a kind of smoke-filled room arrangement, not that any rooms are filled with smoke any more.

Chair: Sadly.

Mr Hayes: I make no comment, Chairman. A smoke-filled-room deal would not be what we would seek, and it is certainly not what the House would expect.

Q434 Sir Robert Smith: Are you confident that you have the level of staff and the seniority of staff available to take on this task?

Mr Hayes: I am blessed with wonderful civil servants who bring joy to my heart daily, but we will also be using other experts. There will be KPMG on the financial side; we have legal experts who we are using, too, and specifically on waste, we will be dealing with experts as well. Technical experts, legal experts and financial experts will be used by the Department in order to make sure that we are sufficiently prepared and equipped to do this job. Of course, all of that information will again be entirely transparent and open to scrutiny.

Q435 Chair: On the matter of staff, I came to a rather agreeable party last week at the Department for the retirement of the Permanent Secretary, Moira Wallace. Does the Department plan to appoint a successor and, if so, when?

Mr Hayes: Yes, we are planning to appoint a Permanent Secretary.

Q436 Chair: Sometime next year maybe?

Mr Hayes: We have an existing senior official of the Department, Phil Wynn Owen, acting as Permanent Secretary at the moment, as I am sure you know, Chairman. I understand the Secretary of State is giving these matters urgent consideration, and I know that he would want to move ahead with due speed, particularly given the passage of the legislation we were just speaking of. It is very important that we have strong leadership, given that this will be a landmark piece of legislation, as this Committee has remarked previously.

Q437 Chair: We can’t help noticing, alongside the progress of the Bill, that Moira Wallace’s retirement was announced about four months ago. It is somewhat surprising that the process has moved so slowly—that there is no indication of even when there is likely to be an announcement, let alone an appointment. I just note that in passing.

Mr Hayes: I know the Secretary of State is keen to proceed with speed. Secretaries of State are always determined to get the best people in the Department, which may in part help to understand why I am there.

Q438 Chair: Did the Secretary of State particularly request your appointment?

Mr Hayes: These are matters for the Prime Minister, not for me.

Q439 Christopher Pincher: It is reassuring to know why you are there, Minister, but can I press you a little more on the timeline to transparency. In his evidence last week, Mr de Rivaz said, “We have put on the table for DECC all our costs,” so clearly they believe they have been transparent with you. He then goes on to say, “There is a risk analysis which has to be done in common,” so you are mutually looking at the risks involved for Hinkley C. He said, “That work is what we are doing. Then the result of it will be made public.” When?

Mr Hayes: Without breaching any confidentiality, I can assure you that he pressed that case very firmly with me yesterday and he has, of course, been in discussion regularly with my officials. As a result of all of that, I gave an undertaking yesterday to him and told my officials that I expect, by the beginning of December, to be in a place where I have received advice on what that deal might look like, such that we can put the main part of the deal together by the end of the year. I repeat to this Committee that I expect to have the material by the end of December, such that the terms of the deal can be agreed by the end of this year. I think EDF were pleased to hear that.

Q440 Christopher Pincher: By the end of this year, you will have those terms made public?

Mr Hayes: Yes.

Q441 Dr Lee: My question is about funding the necessary new nuclear that the country needs. People are always loth to say that we need a certain percentage of generation being nuclear but, on the basis that most people say 40% would be a nice target, are you confident that the funding of the Contracts for
One final question. In view of the Minister, we originally had a number of reactors to be evaluated by the nuclear regulator. There is absolutely right. We decided early on to allow for a contingency plan. That will mean gas playing a role. I am not terribly apologetic about that as I think it is fundamental for Government is ensuring energy security, John, as you know. That is best assured by a mix of technologies, of the kind I described at the outset of this Committee, and I am confident we will do it.

Mr Hayes: The important thing is to have engagement from businesses, consortia typically, that are committed to investing. Beyond that, further investment will be necessary to get to the level you describe, Phillip. It is very hard to envisage the growth of the kind you describe without very large-scale investment. Of course, some of these matters are commercial, but Government can play its part in supporting that kind of investment, through the framework it creates, through the environment that pervades, through a strong commitment to nuclear and through a legislative process in the Energy Bill that creates a degree of clarity and certainty, which is fundamental as a prerequisite to building confidence that leads to investment. Growth in the programme of the scale we describe requires that legislative approach: Government to go further and support investment in every way it can and then to attract that kind of investment, some of which will be domestic and some of which I suspect will be from abroad. Infrastructure investment is usually coloured in that way, isn’t it?

Q442 Dr Lee: Is there a particular technological mix you want to see? We now have Hitachi with a particular type of reactor; EDF has a particular type of reactor; there is the AP 1000. Is there a desire to have more than one type in Britain for a reason? Is there a technical reason for that, or is it just a case of having two—

Mr Hayes: Hergen is dying to get in because he feels I am hogging too much of this Committee’s consideration. I am going to let him in a moment, but I want to say that you will understand the Hitachi purchase of Horizon and their proposal is built around a boiling water reactor. You will know that that is a technology that is well established but not established here in the UK. That will require a regulatory process as you also know, which I am told may take some years. I want that to be as thorough as is necessary to assure safety and security, but I do not want it to be an endless process. My anxiety is to ensure that we have high-quality technology that is proven and that is regulated properly.

Hergen Haye: I am not quite sure I am, because that is absolutely right. We decided early on to allow for a number of reactors to be evaluated by the nuclear regulator. Two of them are the EPR, which is the choice technology for EDF and Centrica, and the AP 1000, which has not found an operator yet in the UK market. Due to the recent sale of Hitachi, we now have the boiling water reactor, which has to go through the generic design assessment to make sure it is appropriately suited for the UK market. There is definitely a benefit in diversity, also the ability to develop, for example, two or three significant supply chains, depending on the different reactor designs, but the Government has no particular rule. It needs to work for the investor operator, and they will often decide on commercial grounds which reactor is the most suitable one. The generic design assessment will then validate whether that is possible.

Q443 Dr Lee: One final question. In view of the fact—and I am very encouraged by all this—that there seems to be a commitment towards nuclear in the medium to longer term, our commitment towards the next generation of reactors is sketchy. We are not really in there with Generation IV in the way that other countries are. Is there any desire in the Department to revisit that decision in terms of funding new technology Generation IV reactors?

Mr Hayes: Our determination is to ensure that nuclear plays a central part in the energy mix I described earlier. I think it is quite a good thing that we are going to be going through the process that Hergen described, establishing that this Hitachi offer, this boiling water reactor is right for us because, as you implied, Phillip, it is another kind of technology, different to what we have had in our own nuclear industry previously. I am not uncomfortable with the idea of several technologies running alongside one another, and I think it is probably a very good thing for the long term, as you describe. We are very open-minded about technologies, providing they go through the proper process, they are absolutely safe, secure and reliable, and they can be delivered in an affordable way. We are not close-minded about the technology, provided we are robust in the way we handle it.

Q444 John Robertson: Do you have any contingency plans in case the new build is not forthcoming?

Mr Hayes: We are confident it will be. The fundamental for Government is ensuring energy security, John, as you know. That is best assured by a mix of technologies, of the kind I described at the outset of this Committee, and I am confident we will.

Q445 John Robertson: Minister, we originally had 2017 as the date when we were first going to get new nuclear. Having listened to Hitachi and EDF, they are talking now 2021. It keeps going back. You must have a contingency plan.

Mr Hayes: I know that you speak about these things with great regularity in the House and you have been a member of this Committee for a while. Let me be clear that I understand your point. What you are referring to is the fact that, given the timeline on nuclear, given the age of the existing nuclear stock and given the fact that coal will be coming off stream over time, there will be a pressure on energy security. Your analysis reflects the Ofgem analysis, which you will know just a couple of weeks ago talked about us moving from 14% or so spare capacity down to a figure possibly as low as 4%, in their estimate. That requires investment in technologies to be brought on stream quickly. That will mean gas playing a role. I am not terribly apologetic about that as I think it is...
important that gas does play a role in guaranteeing energy security. I would not want us to have all our eggs in one basket, and over time that is not what the Government intends, but I do not think it is any secret that in order to deal with the demand issues that you suggest, we will need investment in a new generation of gas generation. I have used “generation” in two senses in the same sentence, Chairman, by the way. Part of the basis of the Bill, and the confidence I described that leads to investment, is to bring that about.

Q446 John Robertson: DECC recently commissioned a study by McKinsey, and it was looking at a 40% reduced electricity demand by 2030. If a 40% electricity demand reduction could be achieved, would it be possible then to continue without nuclear?

Mr Hayes: I think it would be very desirable to look at demand reduction and management. You make this point, as a Committee, in response to the draft Bill. It is a point that I am extremely sympathetic with. I know that you shared that with my Secretary of State, and I hope that when the Bill in its final form is published, you will see that that is something we have taken seriously. You are quite right, John, that too much of the debate on energy over time has been conducted wholly around production and not enough around consumption. Supply matters, but demand matters, too. That is particularly true when you are planning a strategy that could take us not over a decade but over several decades. Nuclear may be over 60 years. The patterns of demand over 60 years are hard to model, but what we can be certain about is that more informed consumers, and the more cost-effective consumption that springs from that information, is likely to change patterns of demand, so I agree with you that demand matters. However, I would contest whether that would change fundamentally our view about nuclear. I think nuclear will have a key role to play, even in that environment where demand is something we tackle with seriousness.

Q447 John Robertson: One last question. With what has happened with E.ON and RWE, with obviously the influence of the German Government on those companies in relation to nuclear, and with a Japanese Government now who are relooking at nuclear, thanks to the accident at Fukushima, and if the Japanese Government were to put pressure on Hitachi, we could end up with the same situation again with a company withdrawing its intention of building nuclear power stations. Is there is a risk we could find the Horizon project up for sale again?

Mr Hayes: It is not for me to comment on Hitachi. It is a matter for their Government.

Q448 John Robertson: This is a political thing. Have you talked to the Japanese Government in relation to this bid?

Mr Hayes: My Department has relationships with countries across the world. There is a dialogue that takes place departmentally with all of our partners and friends across the world. On the specific point you make, I think this is an example where Britain can lead the world, rather than follow others. I think we can attract investment, perhaps because of the things you said, because investors will be looking to Britain, which has a very clear commitment to nuclear. I think a cross-party commitment is very important, given that sometimes Governments change and Ministers change, too, and that that is supported by a piece of legislation that underpins certainty and, therefore, builds investment confidence. I am very confident that nuclear can play a key role in our energy supply, and I think Hitachi take the same view.

Q449 John Robertson: I agree with you, but the investment is not coming from the UK Government. The investment is coming from companies outwith the United Kingdom and you can’t control that.

Mr Hayes: You can create an environment where that is made more likely, where that is made more attractive. Investment is not wholly about subsidy. Investment is about ensuring that Britain is the right place in which to invest. Certainty around public policy, and the framework one creates in legislation, is an important part of building that confidence.

Q450 John Robertson: We do not seem to have much confidence in investment from the UK.

Mr Hayes: I am extremely confident about investment in nuclear.

Q451 John Robertson: That is why all these foreign countries are investing in—

Mr Hayes: You are right that there are other sources of investment apart from overseas. Nuclear represents a long-term, steady and pretty sound investment over a 50 to 60-year period. As infrastructure and investment goes, that is very attractive to certain kinds of investors, as you will know. I would expect the UK investment community to be very interested in this, but I think the Chairman’s opening remarks are highly pertinent here: the Bill matters, public policy matters, clarity matters, consensus matters and certainty matters.

Q452 Albert Owen: When questioned about the contingency plan for nuclear if there are delays, you quite rightly and honestly said about gas filling the gap in some sense. Do you not agree that there is a danger that many of these companies who you see as future investors in the nuclear industry have a wide portfolio, which includes gas? We heard from E.ON and RWE, sitting where you are, when they pulled out of the Horizon that they were going to go into the renewables because they felt that was more attractive. I would put to you, and I put it to them, that is more attractive for their shareholders in the short term. Is there not a danger that you are giving signals about a possible dash for gas that would be more attractive to these companies who have this wide portfolio who would otherwise be looking at long-term investment in nuclear?

Mr Hayes: I think you are right that for any Government maintaining that mix is a challenge because we are dealing with a range of international factors—the international gas price is the obvious
factor in relation to your question—and at particular times—

Q453 Albert Owen: No, it is not, with respect. It is you making statements as a Government saying that you are encouraging a new dash for gas. What has been reported is that there is going to be new investment in gas at a time when you have not negotiated a strike price for other technologies, including nuclear. The differential is huge and it is big for the shareholder.

Mr Hayes: When I made the comments I did a few moments ago about gas, I did qualify it by saying one would not want to become too dependent on any single technology. It is clear that we are going to have to have some new gas generating resource, not least because of the age of existing gas power stations. Some of those, as they age, will be replaced by more efficient and lower emission gas generation, so gas is an important part of the mix. I would not want to suggest at all, Albert, that it is the only part of the mix that matters. You are right, renewables will continue to be—

Q454 Albert Owen: Enough is enough on wind; nuclear is delayed; gas is the option—that is what could be interpreted.

Mr Hayes: This Committee knows very well, and in fact it has commented previously, there is a long lead time on nuclear because the build time, for example, is such that to bring it on stream is going to take many years. Getting the legislative framework in place now, attracting the interest of businesses, getting the investment behind that will allow us to plot that development over time. You are also right that energy demand—notwithstanding John’s very good point about demand management, which I think he is right needs more attention than it has had previously—necessitates us putting in place sufficient resource to meet that demand. That can be done by a variety of means and I think gas is part of that. We are going to be publishing our gas strategy very shortly, which will set this out. You fleetingly mentioned shale—

Q455 Albert Owen: I don’t think I did, but I mentioned wind. Do you want to take that one up?

Mr Hayes: I think you did.

Albert Owen: I did mention wind. Perhaps it sounded like shale from over there.

Mr Hayes: Maybe in that case it was Freudian, and I will wait until someone does.

Albert Owen: Okay. I am a big supporter of that as well.

Q456 Sir Robert Smith: On this contingency planning, given the delays in construction in France and Finland and given that the financial model we have come up with to incentivise nuclear means that a construction delay is a big risk for the investor, do you not think that if the first project has any hiccups there is going to be a serious problem maintaining the target?

Mr Hayes: You are right about France and Finland, and I assumed that the Committee would raise that example. To be fair though, Hitachi have a good record of building on time and on price. One of the encouraging—

Q457 Sir Robert Smith: Hitachi are not going to be the first. If EDF’s project gets into any kind of trouble then the allure for investors is going to be a lot less. Mr Hayes: We think time and price are important, and we think we can do better.

Q458 Ian Lavery: The supply chain and the potential opportunities for UK businesses are extremely important, particularly at this point in time. There have been many witnesses writing to the Committee to express concern about the lack of capacity in the UK supply chain. That in itself will have the potential for huge bottlenecks because of the limited suppliers, both in the UK and abroad. Do you think that the potential for the bottlenecks could delay the construction of new reactors? If that is the case, do you have any idea how you would minimise this?

Mr Hayes: We have. In fact, Chairman, in my previous capacity as the Minister for Skills, working across BIS and DECC, I was able to bring together a meeting under the banner of the Nuclear Skills Alliance that we formed, using the Nuclear Skills Academy as the conduit for the expression of demand from the industry, so that we could then put into place the necessary policy levers to meet that demand with supply. You are right though, Ian, this is a significant challenge. Part of the reason it is a significant challenge is that, in modern times, we have built only one new nuclear plant: Hinkley C in 1985. The skills base has to some degree aged and eroded over time. We will need to put in place a significant investment in skills. The process that I began, working with the officials that I am now working with more directly, means that we will have a very clear quantitation of the skills that are required, with a degree of specificity around new build but not just around new build—around the whole process from build to managing, running stations to disposal of waste. I am going to work with colleagues in BIS, with the HE and FE and training community to ensure that we are equipped to provide those needs.

Your other point—forgive me for the verbose answer, Chairman—was on the supply chain, which is a slightly different point but equally important to me. I am a pretty unabashed patriot, Ian, like you, and I think Britain has to benefit from this in more ways than one. The obvious benefit we get from this investment is energy security, providing the power needs of our households and businesses, but there must be another very substantial benefit and that is in jobs and skills. That does mean a very strong commitment to ensure these projects have a very close relationship with a supply chain that is equipped to do the job. This can be a very exciting development. You will know that in the case of a nuclear power station there will be perhaps 6,000 people, or more, involved in the process of construction. There will be 1,000 long-term jobs. The benefit that this new work brings should not be underestimated. I will personally commit to this Committee that I will use every avenue possible to ensure that that supply chain relationship
is central to our considerations around what we build, where we build it and who builds it.

Q459 Ian Lavery: That is extremely important. Are there any parts of the supply chain that you believe are more likely to suffer bottlenecks than other parts of the supply chain?

Mr Hayes: When you build this kind of plant there is a range of the kinds of skills required. There are a number of generic skills that are drawn upon and then, as you move through a project, the skills become more tailored, more specific. It is ensuring that we have those specialised skills in sufficient volume to do the job. The Hitachi project, even in its early stage, has engaged both Babcock and Rolls-Royce and that is only the beginning of their relationship with a wider supply chain. Part of this is about ensuring that at the outset key businesses with crucial strengths are engaged in the process, and I think that is a good example. Using that as a model, we can learn from that and do still more. I am very committed to this, Ian so having given the commitment I have given, I expect you to test me on it.

Q460 Ian Lavery: With regard to that, there was a visit by members of this Committee to Hinkley. It was raised there that there were some potential supply chain organisations who might fail to get the proper accreditation needed to access business opportunities with new nuclear build because the upfront investment is seen as too risky. Would you be in a position to assist these types of businesses?

Mr Hayes: I think that risk needs to be quantified and explained. Some of this will be about perception as well as about reality. The more work one can do early on to explain the commercial opportunity and risks associated with that, the better. My own view is that when you are dealing with very small businesses that may be able to benefit from this, you need, as I said earlier, to provide conduits—because if you are a very small company your exposure to risk is perhaps greater—such as mechanisms through which the Nuclear Skills Alliance could be a conduit for their work. It is really important to find vehicles by which you can engage a whole range of smaller organisations that may be able to bring particular skills, rather than just the big boys—much as I value them—soaking up the whole of the opportunity. In the case of Hinkley, the involvement of the local training community will be important in this respect, too. Bridgwater College and West Somerset College are involved in providing the skills, working with the industry, needed and in making it clear to people that there are real employment opportunities here. Engaging the education community in this as well is really important.

Q461 Ian Lavery: Will you provide assistance to businesses, regardless of size, who basically need to get into the process? It is pretty specialised.

Mr Hayes: It is specialised. There are generic skills, but you are right; there are specialist skills, too, which is why I mentioned the colleges. Honing those specialist skills to demand is an important part of making sure as many people benefit as possible. One of the questions I asked is, are training frameworks sufficient? Are they sufficiently shaped by the industry, by demand? As a direct result of this Committee and your question, I am going to go away and do more on this. My intentions are very clear, I hope, but I think we will look again at how the process we have already begun can be tailored to bring about exactly what you suggest, which is the opportunity for as many smaller businesses as possible to engage. When I have done that I would be more than happy to write to the Committee setting out what we have done already and what more we think we might be able to do to ensure that outcome.

Q462 Ian Lavery: Thanks very much. That would be a great advantage for this Committee and obviously to business as well. Can you say what progress has been made on the Nuclear Supply Chain and Skills Action Plan to date?

Mr Hayes: Yes. We have been proceeding with that for a while, and I mentioned it a moment or two ago. I hope to be having a further meeting on that before the end of the year—very shortly—to bring together the parties that have been involved in the action plan to review progress, given the Energy Bill. I think it is very important we do this in parallel with the Bill. Again, I would be more than happy to report back, following that meeting, to this Committee.

Q463 Ian Lavery: Do you have any idea when it will be published?

Mr Hayes: As you know, we have talked about publishing it this year. Rather as I described earlier, I am a great man for alacrity and I will tell my officials that this Committee and I both want it published by the end of the year. How would that do? Shall we say December?

Chair: That sounds like the end of the year to me, yes.

Mr Hayes: Would that be reasonable?

Chair: I know the Treasury have a rather flexible interpretation of the seasons but—

Mr Hayes: Yes, but I feel that my relationship with this Committee has special sovereignty.

Chair: I am delighted to hear that. It is a very welcome start to our co-operation. We do not have very much time.

Q464 Barry Gardiner: Minister, in 2009, the EU issued the Nuclear Safety Directive. That put into community law the IAEA Convention on Nuclear Safety, and it set a deadline for 22 July 2011 for the implementation of that by each of the countries within the EU. Of course, the UK did not meet that. We now find that at that point we became subject to infraction proceedings that were started by the EU against us. Could you give us a progress report on what is being done to combat the infraction proceedings and to ensure that we have in fact complied with the IAEA Convention on Nuclear Safety?

Chair: I am delighted to hear that. It is a very welcome start to our co-operation. We do not have very much time.

Chair: I am aware of the events you describe, and I am anxious to ensure that we are not in the unhappy position that you set out. I have asked my officials to give me urgent advice on that matter, and I expect to be able to draw it to a conclusion very quickly. I
understand that we are now compliant as a result of that, but I am sure Hergen will want to say more.

**Hergen Haye:** We are a signatory to the IAEA; we play an active role; and we are compliant with their safety standards. Post-Fukushima, we have worked very hard to develop the new safety standards that we are pressing for all member states to adopt. With regards to the directive, we will be compliant and that will be implemented in an appropriate way.

**Q465 Barry Gardiner:** The deadline that we agreed in the convention was 22 July 2011. We agreed that as the deadline for being in compliance back in 2009. Why weren’t we, and how soon will we be? Are you, Minister, satisfied with the regulatory regime that allowed that to take place?

**Mr Hayes:** As you—

**Barry Gardiner:** Perhaps Hergen could answer the first bit, and you answer the second bit.

**Mr Hayes:** The reason I hesitated is because this anticipates my arrival.

**Barry Gardiner:** Anticipates your Government’s arrival.

**Mr Hayes:** I did raise it because I was familiar with the issue, and I have asked for urgent advice on the matter. Hergen may want to say another word in direct relation to your question. It is important officials are scrutinised as well as Ministers.

**Hergen Haye:** It is best, probably, that we write to the Committee on the later stage of implementing the directive as required. There is absolutely no question that the UK does not want to be compliant and is putting all the resources to be compliant with all regulatory requirements as agreed at the European level.

**Q466 Barry Gardiner:** If you cannot now, could you please include in that note to the Committee a full explanation of why we failed to be compliant by the deadline? If you can do it now, please do. If you can’t do it now then please put it in the note.

**Mr Hayes:** I think that would be absolutely the right thing to do. You have now a commitment from the Minister that that will happen.

**Q467 Dan Byles:** Minister, I would like to talk about community engagement in terms of nuclear power. Obviously, it is hugely important to have community buy-in. A nuclear power station in an area will be there for decades. There are some common issues of community engagement in terms of wind farms and other energy infrastructure. What factors do you think are most likely to affect the public view of the new nuclear programme, particularly in terms of the local communities where the new programme is likely to be?

**Mr Hayes:** You are absolutely right that community engagement is important. You will also know, Dan, that we have had two recent debates that I have spoken in on this very subject, particularly around Hinkley, which has been brought to the House’s attention by Ian Liddell-Grainger. Of course I refer the Committee to what I said then, but let me rehearse briefly what I feel about it. I do think that community engagement is fundamental. I think an explanation of

the opportunities that I mentioned earlier, in terms of jobs and skills, is critical to that. I also think there is a broader issue of community benefit. It seems to me that, as with any major infrastructural development, engagement early on with both that explanation of opportunity but also a real payback to the local communities is pretty fundamental. I think there is a parallel issue around disposal and waste, where there is a very similar set of arguments about how the community engage. I am entirely committed to that and, as I said when I spoke in the House about it, I think it takes several forms. There is the community engagement over time and the understanding that this is a considerable investment over time, so we need something that is an ongoing investment, that is of a scale that is sufficient to both garner support for the development but also which reflects its significance, that is defined and shaped by the community, so that it is not something that is imposed upon them. The community should have a real dialogue, through their local representatives—namely the local councils and so on.

Finally, linking your point to Ian’s, it should ensure that the wider economic benefit is felt within the community. The point that Ian was making about the supply chain relationship, particularly in respect of SMEs, is it often has a very local character, and that should be understood, too. It is not just about business; it is about the colleges and others, too. I am very committed to the idea of community engagement, Dan. I think we do need to do some fresh thinking on it. I tried to begin to set that out in what I said in those two Adjournment debates. For me that is a fundamental part of achieving our ambitions on nuclear new build.

**Q468 Dan Byles:** The Committee visited Hinkley last week, and one of the issues that was raised with us was that local councils felt they were not sufficiently advised on the challenges involved. They said they had not been allowed that to take place?

**Mr Hayes:** That is why I was making the point about the Committee to what I said then, but let me rehearse briefly what I feel about it. I do think that community engagement is fundamental. I think an explanation of
was one, but not just because I was one but because I think they are an important part of our democratic infrastructure. I am not in any way apologetic about our local councillors. I think they do a wonderful job. You are right that the widest possible aspect of community engagement needs to be taken into account, and I wholly agree that it has to extend beyond the confines of the 106 agreement.

Q469 Dan Byles: Mrs Miggins in number 32, who is going to have hundreds of lorries going past her previously quiet cottage every single day for years while it is being constructed, might not care that the council has some 106 money that they are going to spend on the other side of town.

Mr Hayes: I do not know her, but I would be delighted to visit.

Q470 Dan Byles: Very finally, what about the idea of more innovative ideas, such as cheaper energy bills and shares in the energy company? In particular, some wind companies at the moment are looking at innovative solutions around, for example, paying the first £100 or £200 of local people's energy bills—that sort of thing. Do you think there is a role for Government in looking at that sort of innovative approach, or do you think that is really down to the individual companies?

Mr Hayes: Yes, I do. I do think there is a role for Government in creating that different view about the kind of engagement with energy use. This relates to the arguments that John raised around demand. If we are going to create intelligent energy communities, that means individual consumers being more proactive in their interface with energy but I think could mean whole communities being more actively engaged too. I was on the Isle of Wight recently, where you will know they have this concept of an eco-island. Albert has left, but I know he has made this case in Anglesey, too. I suppose there is a certain logic in the fact that both of those places are islands, but none the less the idea of a local communal engagement with energy seems to me a very important one. It is an argument that has been rehearsed for a long time, but it needs to be given greater seriousness, and I think that the nuclear new build is a chance to look at that afresh. As I say, this has been debated in the House a couple of times recently. I have used those debates as a means of me going back to the Department and talking to officials about fresh ways we can engage. You are right that some new and exciting thinking around community engagement is essential if we are going to get the buy-in, the sense of ownership, the sense of direction that is necessary.

Q471 Sir Robert Smith: Can I reinforce that the important thing with a project like Hinkley is that it is not the end product that is so much of an intrusion on the community; it is the 10 years of living on a construction site? As someone said to us, if you start school, most of your school life will be on a construction site; if you are in retirement, most of your retirement will be. The community mitigation and the community engagement needs to be done very much in the early stages when the disruption is there.

Mr Hayes: Yes. It is fair to say that—we know this from the history of nuclear power in this country—once a site is established the engagement with the community is very different. Clearly, there is a benefit in all kinds of ways, not least in terms of local employment and so on. But you are right that during the build phase, particularly for nuclear because of the very long build phase, there needs to be an active policy engagement and a perceived and real benefit, and that is why I mentioned the timeline in these terms as being highly significant. We should not look at it as a package at one point in time. We should look at it as part of a process.

Chair: Minister, you have been generous with your time. We have had a very fruitful hour and 10 minutes with you, for which we are grateful. We look forward to seeing you again very soon on some of the other issues we have touched on but not really addressed in detail this morning. Thank you.

Mr Hayes: Thank you for your time and attention.
Written evidence

Written evidence submitted by the Department of Energy and Climate Change (NUC 01)

The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

Overview

As with other low carbon technologies, investment in new nuclear plant involves high upfront capital costs with low operational costs which makes them particularly exposed to fluctuations in the price they can achieve for the electricity they generate. However, the sheer size of the investment and the complexity and associated risks of these projects means there is lower scope for new entrants in the short term.

Financing First Plant

Analysis published by KMPG\(^1\) concluded that new nuclear investment in first plant will be funded against the balance sheet of existing development consortia members at least until the operational phase. This is because there are limited sources of external finance (with the exception of new consortia partners with existing nuclear experience) likely to come forward due to uncertainty and risk with first plant and in particular the history of cost overruns in the pre-operational phase for new nuclear plant.

The role for HMG is to facilitate this investment by working with industry to take actions to minimise the risk of delay or cost over-run to first plant and to increase regulatory and market certainty. Timely deployment of first plant could also have knock on benefits for securing financing for subsequent plant.

Issues with Financing Multiple Plant

Although it is expected that the current consortia will be able to finance first plant against balance sheet is not clear how many plant could be financed in this way and it is considered unlikely that large scale and rapid expansion of nuclear generation involving multiple parallel build could be financed in this way.

Current development consortia are already highly leveraged and as currently configured will have access to a limited amount of capital to use for UK new nuclear projects which faces competing demand from different technological and geographical markets.

If the first new nuclear plant are built to time and cost in the UK this could open up different sources and approaches to financing the construction phase of nuclear plant in the UK.

Issues with Refinancing Operational Plant

Given that a major risk for nuclear investment is the uncertainty in the construction phase it should be easier to refinance operational plant provided that there is greater certainty on revenues, Government policy, liabilities and performance.

Greater certainty over revenues and government policy is expected to be addressed by EMR policies whilst certainty over the level of liability is being addressed to some extent through the work on Funded Decommissioning Plans and Paris/Brussels.

What have been the political and policy impacts of the Fukushima incident?

Political Impacts

Following the accident at the TEPCO Nuclear Power Plant in Fukushima the UK Government remains committed to ensuring energy security through a diverse energy mix that includes nuclear energy.

To ensure the UK position on nuclear remained robust in terms of safety the Secretary of State for Energy and Climate Change commissioned Dr Mike Weightman, the Chief Nuclear Inspector, to undertake a review of the impacts of the accident on the UK civil nuclear industry. Dr Weightman delivered an interim report in May 2012 and a final report in September 2012. His report included a number of recommendations that Government, industry and the regulators are working towards implementing.

However, the report was clear that there were no significant weaknesses in the UK system and therefore there were no grounds to change the position that nuclear energy should form part of the UK’s energy mix. The Government’s position on nuclear is therefore unchanged.

Dr Weightman’s report and the Government’s response can be found at:

OTHER POLICY IMPACTS AND ACTION

Stress Test

In addition to the review undertaken by Dr Weightman the UK has also fully participated in the European Union’s (EU) comprehensive safety assessment for the EU’s 143 nuclear power plants—the so called stress tests. The stress test followed the following steps:

- Operators applied the stress test criteria in June 2011 and provided a progress report to national regulators in August and a final report at the end of September 2011.
- National regulators assessed the reports and provided a national progress report to the Commission on 15 September with the final report being submitted at the end of 2011.
- The Commission provided an initial report of the findings of the Stress Test to European Council in December.
- This was followed by a peer review of the national reports between January and April 2012.
- This process was completed on 25 April 2012 through a published statement where ENSREG (European Nuclear Safety Regulators) and the Commission jointly endorsed the final report of the Peer Review Board on the EU nuclear safety stress tests exercise.

The UK National report was in line with the assessment undertaken by the Chief Inspector of Nuclear Installations on the impact of the Fukushima accident on the UK nuclear industry (as requested by the Secretary of State) and the UK’s interim report on progress with the implementation of the stress test exercise. The final report indicates that they are no fundamental weaknesses in the definition of design basis events or the safety systems to withstand them for UK NPPs. However, like earlier findings the report does identify some areas that will need to be strengthened in light of the lessons learned from Fukushima.

Licensees and the ONR have derived a number of potential improvements, mainly to enhance resilience of emergency arrangements but also to enhance safety margin assessment methods. There are also potential improvements to the type or number of barriers to some hazards, eg flooding, which should increase defence in depth to beyond design basis events. The outcomes from these assessments will be considered and where necessary addressed as part of each sites commitment to continuous improvement under the requirements of the existing UK nuclear safety regime.

The results of the stress test exercise (including the UK’s national report) can be found at: http://www.ensreg.eu/eu-stress-tests

Dr Weightman has also committed to publishing an update in the Autumn that will combine the progress from both his lessons learned report and the stress tests—this will also most likely be located on DECC website.

EU NUCLEAR SAFETY FRAMEWORKS

As an EU Member State the UK is obliged to comply with the EU Nuclear Safety Directive (Council Directive 2009/71—Euratom). The Directive came into force in July 2009. The UK implemented the Directive using the existing UK nuclear safety regulatory regime and confirmed this position (through a transposition note) with the European Commission within the transposition deadline—in July 2011.

In ensuring the Directive had been fully implemented consideration was given to the outcome of the review undertaken by Dr Weightman and the interim results of the stress test (both mentioned above). The UK regulatory regime requires operators to seek continuous improvement and take all reasonably practicable steps to ensure nuclear safety (ie operators are obliged to consider international best practice and apply lessons learned from Fukushima). It was therefore decided that the legislation in place was robust as it already took account of the need to learn lessons from accidents such as those at Fukushima and also gave effect to the Directive. The Commission have confirmed the UK have implemented the Directive.

European Commission are currently undertaking a review of the EU Nuclear Safety Directive in light of the lessons learned from the Stress Test exercise. The review is due to be complete by the end of 2012. While it would be premature to comment on the outcome of the review DECC have already confirmed that we will be fully participating in discussions on any proposals to change the current Nuclear Safety Directive to ensure they are proportionate and evidence based. This is in line with normal practice.

OTHER INTERNATIONAL ACTIVITY

In addition the UK has participated in the development of the IAEA’s Action Plan on strengthening the international nuclear safety framework in light of lessons learned from the accident at Fukushima. The Action Plan requires the IAEA, IAEA Member States and operators all to undertake tasks. As a Member State of the IAEA the UK will therefore need to report against progress in helping to deliver the objectives of the Action Plan. Initial analysis by DECC and the Office for Nuclear Regulation has indicated that through our planned actions at both domestic and European levels, as well as our continued participation in the development of IAEA standards, etc, that the UK is meeting its obligations to contribute to the success of the IAEA Action Plan. That said, as the IAEA are yet to formally request progress updates a more detailed analysis and report on the action taken is yet to be made.
What lessons can be learnt for building new reactors to timetable and within budget from the experiences of France and Finland and elsewhere?

OVERVIEW

The progress of construction of the first new nuclear power station will be watched keenly by potential investors and developers. We know that an inability to deliver to time and budget will affect the level of interest in nuclear new build in the future, and could therefore severely limit the potential for a new nuclear programme.

Implementing lessons learned from other nuclear power plant construction projects has the potential to reduce UK construction risks, validate timings for activities, identify design changes and allow for more efficient construction practices. This will result in improved planning and project management, cost savings and greater certainty for both costs and planning.

HIGH LEVEL LESSONS

The high level lessons learned for new build, that apply across past and current nuclear projects include:

— The risks attached to “first of a kind” stations are much greater than those of follow on replica stations.
— The design must be mature and licensing issues resolved prior to the start of construction.
— The importance of establishing a highly qualified team to develop the design, secure the safety case, plan procurement and build schedules in collaboration with main contractors.
— Ensuring sub-contractors are of high quality and experienced in nuclear construction or are taught the necessary specialist skills.
— Establishing and maintaining good communication with the community local to the site.

SPECIFIC LESSONS LEARNED FROM NEW BUILD IN FINLAND, FRANCE AND CHINA

DECC has visited Olkiluoto (Finland) to get first-hand experience of the build programme as well as the other EPR builds at Flamanville (France) and Taishan (China). Experience gained through the “EPR family” is now being systematically shared between the three sites and experience in Finland and France, particularly about the order in which key parts of the nuclear island are built and how they are fabricated has benefitted the project in Taishan (where two units are being built) such that this project (unlike its European counterparts) is running to time and budget.

IMPLEMENTING LESSONS LEARNED IN THE UK ENVIRONMENT

Some of these lessons have already been dealt with by Government. For example, the Generic Design Assessment has mitigated risk by making sure regulatory requirements are understood and that designs are completed on time.

Other lessons remain which are for developers to implement; it is strongly in their economic interest to do so. The Taishan project is 30% owned by EDF and the Hinkley Point project manager has visited the development. Whilst some savings at Taishan are related to the differing regulatory environment, and size of workforce (10,000 as opposed to 3,000 at Flamanville), it is clear that the Taishan project has incorporated lessons from both Olkiluoto and Flamanville.

Even for those lessons which are for developers to implement, understanding from Government enables more informed and constructive challenge to the companies and better awareness, on our side, of risk.

DECC will continue to engage with industry, regulators and others to learn the lessons from early build programmes and how they can be applied in the UK context. DECC will also use this engagement to ensure issues that have the potential to delay new nuclear build are identified and addressed through work with industry and other Government Departments.

What impact might global demand for nuclear power put on plans to build new nuclear power stations in Britain (there are currently 60 new nuclear power stations under construction worldwide and a further 150 planned)?

We refer the Committee to the 2008 report on UK Supply Chain commissioned by BIS and compiled by Namtec which said:

SUMMARY

There are a number of supply chain issues related to global capacity, as in the case of ultra-large forgings for the manufacture of Nuclear Steam Supply System (NSSS) equipment and turbine generator rotors, and the fabrication of NSSS equipment itself. This relates to both new build projects and to nuclear fleet lifetime extension programmes which require replacement parts.
In addition, there are significant issues associated with the availability of skilled workers, across the whole supply chain, and there will be strong competition from overseas new build programmes for nuclear skills (eg, in engineering/technical consultancy).

GLOBAL CAPACITY AND CONSTRAINTS

The following highlights some of the major issues in the global supply chain for a UK nuclear new build programme:

— There are a number of areas in which the UK would be reliant on the global supply chain for a nuclear new build programme.
— There is no UK-based reactor designer/vendor.
— Potential “pinch-points” exist with regard to reactor pressure vessels, steam generators, large turbines, and components from other large forgings. There is no UK based capability for the fabrication of such components.
— The global market will likely be able to provide the systems and sub-systems that the UK market is unable to supply, although the global capacity for some key items appears to be limited.
— There is a risk that if a number of countries place orders for nuclear reactors at the same time as the UK, the vendors may not have the capability to increase their operations.
— Timing of any orders from the UK would be important if operators were to avoid the possibility of significant delays.
— Even a large programme of nuclear new build in the UK might be considered relatively small in the context of global expansion in this sector and, therefore, might not be a priority for potential suppliers, operators or investors.

These conclusions we believe are still valid, although we are awaiting completion of a BIS funded report by the NIA which aims to confirm the capability of the UK supply chain to support new nuclear build as of 2012 and whether any capacity issues exist, along with a report on global supply chain capability by the World Nuclear Association (WNA) expected to be published in September 2012.

MITIGATION

A Programme Management Board, led by the NIA (Chaired by Lord Hutton) and supported by DECC has been set up to support a coordinated approach to a nuclear programme in the UK.

The Government is developing a Nuclear Supply Chain and Skills Action Plan, in partnership with developers, professional bodies, trade associations and industry has the following objectives:

— Projects are built to budget and there are no delays to nuclear new build in the UK due to the quality and capacity of the global or domestic supply chain.
— The domestic nuclear market provides a platform for enhancing a sustainable and successful UK civil nuclear industry and with areas of global commercial advantage enabling a domestic platform for export and economic growth and jobs.
— Economic activity from a new nuclear programme in the UK is maximised, including employment and business opportunities for the UK supply chain.
— To maintain and develop a vibrant supply chain covering all key skills to deliver safe, innovative and cost effective clean up of the legacy facilities and to exploit synergies with new build.

The Action Plan will be published in late 2012.

Other than reforming the electricity market and planning process, what steps could the Government take to remove barriers to the delivery of new nuclear power stations in the UK?

The Government is committed to removing unnecessary obstacles to the development of new nuclear build and has undertaken or is embarking on a number of facilitative actions to remove unnecessary blockages in the development of new nuclear build and to ensure that the UK secures maximum economic benefit stemming from the high levels of capital anticipated in new nuclear build. We have taken decisions on the sites we think are suitable and the list has been approved by Parliament. We have also reformed the planning system, taken a decision that reactor designs are justified, completed a generic assessment of those designs, created an independent regulator, and put in place arrangements to ensure that waste management costs are met. We are also progressing the biggest reform of the electricity market since privatisation, all intended to bring forward low carbon investment. In addition, the Government, working with Industry and stakeholders across the sector, will publish a Nuclear Supply Chain and Skills Action Plan in the Autumn that will detail ambitious actions for both Government and Industry to ensure that the UK is best placed to capitalise on the economic opportunities arising from a new build programme.

Two consortia are currently taking forward plans to build new nuclear power stations in the UK (see below).
Industry has set out its plans to develop up to 16GW of new nuclear power in the UK by 2025.

Two consortia are currently taking forward plans to build new nuclear capacity:

— NNB GenCo, a consortium of EDF and Centrica, intends to build four new EPR reactors (amounting to 6.4GW) at Hinkley Point.

— NuGen, a consortium of GDF SUEZ (French/Belgian) and Iberdrola (Spanish) have also begun site characterisation work on land which will be developed as part of NuGen’s plans to build up to 3.6GW of new nuclear capacity at Moorside near Sellafield.

Currently EDF and Centrica are due to make the Final Investment Decision (FID) for Hinkley Point C in Q4 2012. Hinkley Point C is the most developed of all the UK new build projects with the preliminary civil works already underway with permission from the Local Authority. Their draft timelines, which are dependent upon the FID, indicate the construction of the first reactor will be completed in 2019 and completion of the second reactor 18 months later.

E.ON and RWE npower recently announced that they would not be proceeding with their plans to develop their joint venture Horizon Nuclear Power and so to develop around 6GW of new nuclear capacity at sites in Wylfa and Oldbury. Both companies clearly explained that this decision was based on pressures elsewhere in their businesses and not any doubts about the role of nuclear in UK’s energy future. E.ON and RWE npower, with their sales advisors Nomura, are now leading a sales process to find a new owner for Horizon.

With new investors in Horizon it would still be possible to deliver 16GW of nuclear power by 2025

Government has completed facilitative actions to remove obstacles in new nuclear build. We have taken a decision on the sites we think are suitable and the list has been approved by Parliament. We have also reformed the planning system, taken a decision that reactor designs are justified, completed a generic assessment of those designs, created an independent regulator, and put in place arrangements to ensure that waste management costs are met. We are also progressing the biggest reform of the electricity market since privatisation, all intended to bring forward low carbon investment.

The progress of construction of EPR’s in Olkiluoto, Flamanville and Taisha and the AP1000 projects in Sanmen and Haiyang and other new build projects around the world are being closely followed to capture lessons learnt in order to reduce construction risks and provide greater certainty in planning.

What will be the consequences of failure to deliver a first new nuclear power station by 2019? Should any contingencies be put in place?

**The Impact of Delays to New Nuclear Deployment**

— It will be for private sector companies to decide to invest in new nuclear power stations and thereafter construct, operate and decommission the facilities. All private sector timetables are subject to change for commercial reasons.

— The Government is clear that we should address the twin challenges of tackling climate change and maintaining our energy security in a way that minimises costs and maximises benefits to the economy. Government aims to achieve a cost effective and diverse generation mix by encouraging a portfolio of low carbon technologies in which the most cost effective succeed over time. This will include nuclear, renewables and CCS on gas and coal.

— Internal analysis undertaken by DECC for the Impact Assessment on EMR Final Investment Decision (FID) Enabling demonstrated that early investment decisions in nuclear power is likely to deliver a more socially cost-effective generation mix out to 2030, in terms of both generation capacity and capacity utilisation.

— The analysis suggests that in the absence of new nuclear power stations, meeting our 2030 decarbonisation target will be technologically challenging and significantly more expensive. There would be increased gas generation in 2020s leading to increased generation and carbon costs; and investment in gas becomes more favourable as wind cannot cover demand. Large wind penetration means more strategic reserve plant are needed to maintain security of supply and extensive CCS and offshore wind deployment is necessary, which would require relatively high CfD strike prices under EMR arrangements. Overall it is estimated that cancellation of the nuclear programme would lead to a welfare reduction of £22 billion relative to the baseline scenario where plants are deployed in line with lowest cost.

---

2 Analysis conducted using DECC’s Dynamic Dispatch Model (DDM) of the electricity system.

3 These results are influenced by three targets: (i) meeting the renewables obligation target of 110TWh of renewable generation in 2020; (ii) meeting an assumed decarbonisation target of a grid intensity of 100gCO2/kWh by 2030 (it is recognised that this target is not agreed across Government); and (iii) keeping the de-rated capacity margin above 10% by using a strategic reserve capacity mechanism.
Should any Contingencies be put in Place?

The Role of New Nuclear

— For the UK to meet its energy and climate change objectives, the Government believes that there is an urgent need for new electricity generation plant, including new nuclear power. Nuclear power generation is a low carbon, proven technology, which is anticipated to play an increasingly important role as we move to diversify and decarbonise our sources of electricity.

— It is Government policy that new nuclear should be able to contribute as much as possible to the UK’s need for new generation capacity. In a written statement to Parliament in October 2010, the Government reconfirmed its policy that there will be no public subsidy for new nuclear power. The Government believes that nuclear power is economically competitive with other generation technologies including the lowest cost renewable technologies. It is therefore anticipated that industry will want to bring forward a number of applications for new nuclear power stations beyond that submitted by EDF for development at Hinkley Point C.

Diversification of Electricity Supply

The EMR White Paper (July 2011) sets out the Government’s commitment to transform the UK’s electricity system to ensure that our future electricity supply is secure, low carbon and affordable. At the heart of the EMR strategy is a framework of policies, including long-term contracts for both low carbon energy and capacity, aimed at delivering the diverse portfolio of generation we need to meet our objectives as efficiently and cost effectively as possible. Diversity in the electricity generation mix will also increase security of supply and reduce our reliance on imports. There are many different ways to achieve the decarbonisation of the power sector. It is impossible to predict which will be the most cost effective route and what the power generation sector will look like in 2030.

Therefore, nuclear has a key role to play in our electricity mix, new low carbon generation capacity will include renewables and CCS on gas and coal. It is clear that fossil fuels without CCS, especially gas, will also have a key role to play in the coming years.

One of the key criteria for assessment of Electricity Market Reform proposals was durability and flexibility. The reforms are intended to be robust to a number of outcomes regarding carbon prices, fossil fuel prices and technology costs. It is not therefore a plan to pick winners: no one knows what the most successful low carbon technology will be in the future. Using the EMR reforms as a framework, we expect Government and investors to retain the flexibility to pursue the lowest cost technology options.

What are the prospects for extending the life time of existing reactors?

REGULATORY REQUIREMENTS

The UK’s nuclear Regulators (ONR and EA) do not set prescribed lifetimes for UK nuclear power stations.

In terms of safety, security and environmental impacts, the decision on how long to operate a plant is a matter for the plant operator, subject to them being able to provide the Regulators with sufficient information that the plants can continue to be run in line with regulatory requirements, including the principle of continuous improvement.

Dependent upon the site there may be a number of limiting factors that can impact upon length of time a reactor can continue to generate within regulatory requirements.

Operators also assess the cost and benefits of continued operation as plants may require significant additional investment in replacing worn components and maintaining the plant to modern standards. Dependent upon both the length of time since the last periodic safety review and the amount of previous improvements, these costs could run into multiple millions of pounds.

On 16 February 2012, as part of their end of year results, EDF announced that they intended to undertake a programme of investment that will allow their AGR fleet to run for an average of seven years beyond their indicative closure dates and the PWR at Sizewell for 20 years.

NUCLEAR LIABILITIES FUNDING AGREEMENT (NLFA)

Under the provisions of the NLFA (one of a suite of agreements struck between British Energy (BE) and the then Department of Trade and Industry to enable a solvent restructuring of BE) the company is required to submit all applications for station life extensions to the Secretary of State for approval.

The Nuclear Decommissioning Authority is charged by DECC with undertaking an assessment of the case and making recommendations to DECC on whether or not to agree to the extension, based on an assessment of the net present value (NPV) benefit outcome. Agreement can be subject to conditions.

The assessment is to ensure that costs of dealing with the additional liabilities arising from extended operational life are offset by the opportunity cost savings in deferring the expenditure on clean-up by the equivalent period. This ensures that the taxpayer does not indirectly subsidise BE’s commercial business,
since the costs of decommissioning BE’s existing nuclear power stations is met by the Nuclear Liabilities Fund (NLF).

DECC underwrites the NLF in the event of a short-fall. The terms of the NLFA are very narrowly defined and, unless the NPV value turns out to be zero or negative, approval for a lifetime extension under the NLFA is automatic.

July 2012

Supplementary written evidence submitted by the Department of Energy and Climate Change (NUC 01a)

Following my appearance today at the Energy and Climate Change Select Committee on Building new nuclear: the challenges ahead, I thought it would be helpful to set out how we see the payment and legal framework model for Contracts for Difference working under a reformed electricity market given that this is a key concern for industry.

I want to stress that our overriding objective is to design a system that gives investors confidence in the system such that they are willing to invest in low-carbon generation supported by CfDs. Alongside that, the design of the payment and legal framework and mechanics of the CID also has to balance a number of considerations, as follows:

— Providing appropriate accountability to Ministers. In the near term, decisions on the low carbon supply mix will ultimately reflect the policy objectives of Government;
— Complying with EU guidelines on state aid;
— Ensuring no adverse liabilities are encountered by suppliers, low-carbon generators or Government and safeguarding the public finances; and
— Administering the CID in a practical and efficient manner, drawing on existing systems where possible.

My officials have been working with industry to understand the concerns that have been raised on the legal and payment framework. Whilst we believe that the model we will propose can meet them, we recognise the strength of feeling on this issue and wish to continue to take the thoughts of industry and yourselves on our proposals. You will be aware that we intend to publish more details on our proposals next week, including a draft Energy Bill that will undergo pre-legislative scrutiny, and I welcome this as an opportunity to do so. I am therefore including detail on what we intend to publish below, and will expect to return to these issues with you over the coming weeks.

BACKGROUND

Our proposed model is that the CID will be an instrument created by statute, which sets out obligations on two parties. On one side is the generator, who has applied for a CID. On the other side is all licensed suppliers, who will have obligations imposed upon them (which is similar to how the Renewables Obligation operates). The main obligation is expected to be to make payments on the basis of the difference between a reference price and a strike price; with other obligations to facilitate the administration of this.

Whilst the generic terms of the CFD will be set out in regulations, each project will be issued with a specific instrument by the System Operator (National Grid).

Once a CID has been issued it will effectively require suppliers to meet their share of the obligations to the generator as set out under the CID terms (or receive payments should the generator be “paying-back”). A supplier’s share of the obligations will be determined by their market share, defined by metered use. This will enable costs of the mechanism to be passed through to consumers. Payments under the CID will be administered by a settlement agent, likely to be Elexon. In effect, suppliers as a whole will act as counterparty, but the model is based on obligations put on suppliers through law rather than them being a signatory to a contract. Generators sign a CID which is issued by the System Operator on behalf of all suppliers.

A key risk for low carbon investors is that payments do not flow from suppliers (known as credit risk). We believe that the credit risk under this model will be low. CID payments flowing from suppliers to generators and vice versa will be facilitated by an agent settling payments in a manner similar to the settlement of payments under the Balancing and Settlement Code. We propose that Elexon, which is a well established and trusted organisation that manages payments under the Balancing and Settlement Code (BSC), would be able to perform this role.

To minimise credit risk for generators, payments will flow regularly and suppliers will be required to post collateral as under the Balancing and Settlement Code. This system has been highly effective in minimising the impact of supplier default. The proposed Energy Supply Company Administration Scheme will address the credit risks to generators resulting from a large supplier going into administration. Whilst the scale of any unsecured losses are therefore expected to be very low, these losses would be spread across all suppliers and generators.
This model will also ensure accountability, as Government will retain responsibility for setting out the policy approach and objectives, and for taking final decisions on the key parameters for the System Operator [National Grid] in administering the system.

Do contact me if you or your secretariat would like any further detail on any aspects of the Electricity Market Reform programme.

May 2012

**Supplementary written evidence submitted by the Department of Energy and Climate Change (NUC 01b)**

I am writing following the evidence session I attended on 6 November as part of your inquiry Building New Nuclear: The Challenges Ahead. At that session I committed to writing to the Committee in response to questions from Mr Lavery regarding the actions being taken to make it possible for smaller businesses to engage in the nuclear supply chain, and to update the Committee on progress on the nuclear supply chain and skills action plan. I also committed to respond to Mr Gardiner’s question during the evidence session regarding UK compliance with the Nuclear Safety Directive.

My department has been working very closely with BIS on the development of the UK nuclear supply chain, including SMEs. Officials in BIS and DECC meet regularly with supply chain companies to understand barriers to growth which they are experiencing and their ambitions, with a view to identifying where HMG can offer support.

One particularly notable and recent example of specific support to the supply chain is the selection of Sheffield University to go forward to final contracting and due diligence for a £37 million project, funded by the Regional Growth Fund, and involving continuing support for the Nuclear Advanced Manufacturing Research Centre (Nuclear-AMRC). The Nuclear-AMRC has launched a large-scale program of nuclear supplier development and manufacturing research in partnership with key industrial members. DECC and BIS officials worked closely together to confirm the value of this initiative to the supply chain and then to ensure this was recognized.

Additionally, in early 2012, recognising the importance of, and a clear requirement for, additional support in this field my department created a new post with specific responsibility for nuclear supply chain development and recruited an experienced nuclear industry secondee to fulfil the role.

Moving forward, my department has led the development of the nuclear supply chain action plan, which is intended to support SMEs as well as larger companies to maximise growth opportunities in the supply chain. Within the action plan we, along with industry, have identified a number of issues that are currently preventing companies, including SMEs from entering, or growing their involvement in, the nuclear sector.

For example, the supply chain will need to make timely investments in capability and competitiveness to ensure they are ready to compete for nuclear contracts. But to do this, they will need improved access to relevant information, such as enhanced clarity on the forward pipeline of nuclear contracts. To address this there are actions in the plan relating to the Government working with industry to convey confidence regarding the future of nuclear, to encourage developers and vendors to provide better information on the timing and requirements of future contracts, and to ensure easier, more straightforward access to key information on the nuclear sector.

The action plan is close to completion and I intend to publish the document in December 2012, and I will, of course, ensure that the Committee receives copies of the publication when issued.

Mr Gardiner raised a question on the transposition of the EU Nuclear Safety Directive. I can confirm that the UK supplied the relevant information to show transposition of the Nuclear Safety Directive in the UK mainland on 19 July 2011. This was within the transposition deadline. However, the Government of Gibraltar had not passed the necessary legislation to transpose the Directive within the deadline largely due to Parliamentary elections in Gibraltar. As a result, in the Autumn of 2011, the Commission issues a Jumbo infraction letter which, despite the fact that there are no nuclear facilities in Gibraltar, stated that the UK had not fully implemented the Directive.

Following the conclusions of the elections, and a clearing of the backlog of Parliamentary business, the necessary legislation to transpose the Directive was passed in Gibraltar in March 2012. The Commission formally notified the UK Government that the infraction case against the UK had been closed on 17 April 2012.

Therefore, while Mr Gardiner was correct to state the UK were challenged by the Commission on the transposition of the Directive there was never a question of not having implemented the Directive on the UK mainland. I trust that this additional information is useful.

November 2012
Written evidence submitted by CITB ConstructionSkills (NUC 23)

INTRODUCTION

1. CITB-ConstructionSkills is the Industry Training Board for the construction industry across Great Britain. We are also the licence holder for the Sector Skills Council for construction—a partnership between CITB-ConstructionSkills, the Construction Industry Council and CITB-ConstructionSkills Northern Ireland. Established as a Sector Skills Council in 2003, we use our skills intelligence and insights to ensure “right skills, right place, right time” for the construction industry. We have levy raising powers and invest these employer funds in training grants and the delivery of skills and training solutions.

2. We welcome the opportunity to respond to the Energy and Climate Change Select Committee’s inquiry into “New Nuclear Build: The challenges ahead”. Our views are based on the findings of research we have conducted with EDF Energy “New Nuclear Build Employment Scenarios (2012)”—using our leading labour market intelligence model the Construction Skills Network (CSN). This research, combined with our extensive ongoing work with the energy and construction sectors, as part of the Nuclear Energy Skills Alliance (NESA), give us a unique understanding of the future skills challenge we face in successfully accomplishing New Nuclear Build (NNB) in the UK.

3. The UK faces increasing energy demand and tougher CO$_2$ emission reduction targets as its nuclear power stations reach the end of their operational life. Eight potential next generation nuclear reactor sites have been identified, with the first three located at Hinkley Point C (HPC), Sizewell C and Wylfa in that phasing.

4. NNB will contribute around £1.5 billion per year in construction output and create an additional 1.5% to 2.6% of construction employment at peak build in 2018. The NNB programme is the largest construction programme in UK history. Each of the eight new nuclear build projects will need more than 50,000 employees. 60% of the workforce will be construction workers and need to be secured early in the project.

5. Each reactor will consume enough steel to build 11 Eiffel towers, enough concrete (400,000m$^3$) to fill the Empire State building and 50,000 tonnes of reinforcement. Each reactor build is the size of an Olympic build, three times the length of the build and the volume of ground to be removed is three times Wembley Stadium (700,000m$^3$). NNB Mechanical and Electrical work requiring 2,500km of cables and 100km of pipe-work.

6. The UK has not built a nuclear reactor since the completion of Sizewell B in 1995—a project that took eight years to construct. Firms involved in planning and preparing for the NNB are asking CITB-ConstructionSkills for help and support to prepare their employees and future employees with the right skills.

7. Below, we have answered the following three inquiry questions relevant to our remit:

Q4. Are there any other potential barriers to the construction of new nuclear power stations in the UK?

8. We need a robust programme to make sure that the skills needed for the UK’s next generation of NNB are developed in the right numbers and at the right time for economic growth locally and nationally.

9. There are five key skills barriers to the construction of NNB that have to be addressed if the Government is to meet its indicative build timelines for the programme:

---

Energy and Climate Change Committee: Evidence  Ev 89
— **NUCLEARISATION**—With the last NNB construction in the UK taking place in 1995 years ago a new generation of construction workers will be constructing today’s nuclear reactors. This will mean a change in culture, attitude, behavior and compliance amongst the construction workforce, to support rigorous safety and security for workers on site and quality workmanship in the construction of NNB. Clearly our grants system is being reviewed to ensure we meet this demand.

10. Full scenario based projections of employment and skills demands at a UK, devolved nations and regional level are available in our CSN research report “Nuclear New Build Employment Scenarios (2012)”, produced in partnership with EDF Energy. This research has been submitted in conjunction with this consultation response to outline specific timing, targeting, volumetric and proximity issues associated with delivering the necessary construction skills for the NNB programme.

11. Our research has identified a number of pinch-points where future NNB demand is not currently being met by the supply of appropriate skills in construction. We have identified a range of training offers to address volumetric demand, nuclearisation and quality issues arising in the construction of NNB. Below are some examples of the kind of courses we will be rolling-out to meet skills demands around NNB to address these pinch-points, including the potential for creation of New Apprenticeship routes:

— **Steel fixers**—Starting with a two–three month training programme, 500–600 jobs will be generated in this area by NNB. There will also be a need for supplementary training to raise and test the technical competency and capabilities of each of these employees through a through a two t.

— **Form workers**—NNB will generate 800 jobs within the civil’s phase of the programme, which we will meet the training demand for. There is a need to provide supplementary training to raise the competency and capabilities of employees with a track record in carpentry through short course interventions.

— **Lab technicians**—10–15 specialists are required via an apprenticeship focusing on quality checking. Currently there is no existing route or awarding body, but there are clearly attractive long-term sustainable employment opportunities.

— **Geotechnical operatives**—50–100 trainees are required during the earthworks phase of NNB construction. This requires a new Standard Assessment Procedure (SAP) with a nine–12 month lead in period. There are currently no specialist sub-roles in this category including drilling, shot-blasting and anchoring. There is no existing apprenticeship framework for this role. This creates the opportunity to establish a short-term plant skills foundation course to act as a feeder for earlier commencement of training, leading on to the SAP.

— **Plant operatives**—The earthworks phase requires 200–250 operatives, with the civil’s phase requiring 2,000 plant operatives. The Construction Plant Competence Scheme will provide familiarisation on a wide range of Plant and reinforce the core competency of the plant operative.

Q5. **Other than reforming the electricity market and planning process, what steps could the Government take to remove barriers to the delivery of new nuclear power stations in the UK?**

12. The cost of training for the UK new nuclear build programme across all sectors to overcome skills barriers to the delivery of NNB is estimated to be around £100 million. NESA is committed to looking at accessing further funding.

13. In response to the challenge of delivering the skills necessary for NNB construction CITB-ConstructionSkills has provided a £2 million training fund to support changes in qualification design, attainment and the funding of new qualifications. We are also reviewing our Industry Training Board grant system to ensure that the available employers training grants strongly support the NNB programme.

14. We are working to enhance the current construction qualifications to ensure they meet the higher standards required for nuclear construction. A Nuclear Industry Training Framework has been developed which sets out all the nuclear job roles, qualifications and industry standards and underpins the Nuclear Skills Passport. The National Skills Academy for Construction and National Skills Academy for Nuclear are working together after agreeing a Memorandum of Understanding to ensure the integration and recognition of construction industry standards of competency onto the Nuclear Skills Passport. The Triple bar NNB standard has been developed in conjunction with EDFs as the minimum nuclear industry standard to allow unescorted access to a nuclear site, which will sit alongside different sectoral skills accreditation schemes.

15. We have begun to develop training solutions, working with City and Guilds Institute of Leadership and Management, to develop bespoke construction training programs that are contextualised for the New Nuclear Build programme for supervisors and managers. We are working with industry, so the employment skills programmes are in place to be used on sites, bedding contractors to ensure their training needs are addressed and where there is no training or qualifications in place we will establish them.

16. The whole construction supply chain is being engaged in preparation for the NNB programme. We have developed a Nuclear Business Skills Diagnostic tool to ensure that construction SMEs can identify and address
nuclear construction skills gaps for emerging work in their area, to meet the differing demands of developers across the new build sites. We are also working closely with the “Employment Brokerage team” at HPC and soon at the Wylfa site to develop supply chain skills locally.

17. Working collaboratively with HE and the science and engineering sectors, we are also preparing the advance level skills the industry will need for NNB. For the first time, nuclear safety culture will be an essential part of construction engineering courses, embedding critical safety behaviours from day one.

18. A large proportion of those who will build the next generation of nuclear power plants in the UK are currently studying in our schools. Therefore we are engaging with education providers to deliver new career events such as the “Big Bang” in partnership with ECITB and EDF Energy. We are also working with existing and new contractors to support the Inspire & Education Strategy.

19. EDF Energy have provided £19 million for skills and training provision at HPC. We want to work with EDF Energy to maximise the impact of this investment and ensure it transcends to other NNB sites. We want Government to use their influence to help us continue to leverage the best skills outcomes and a lasting skills legacy out of the Nuclear New-Build programme.

Q6. How feasible is the Government’s indicative timeline, which shows the first new nuclear power station being built by 2019? And what level of nuclear capacity is likely to be available by 2025?

20. If the issues outlined in our response to inquiry question 4 and question 5 are adequately addressed the Government’s current indicative timeline on the construction of NNB can be met.

References

1 Construction Skills Network (CSN)—is the leading labour market intelligence on skills needs in construction. Developed with Experian and supplemented with the views of over 700 industry and government members through a network of national and regional observatories—CSN can be used to understand future skills needs at a national, regional and local level to develop and deliver products to support the construction industry’s skills needs.

2 The Nuclear Energy Skills Alliance (NESA)—is a grouping of the key strategic skills bodies and organisations with an interest in nuclear skills, and Government. The Alliance works to address the current and future skills needs of the UK nuclear programme and all members have agreed to work together in order to ensure an agreed frame of reference regarding nuclear skills and to minimise duplication and overlap of work. Members agree to leverage their collective resources and expertise to address the issues identified and also maximise the opportunities for job creation in the UK.

July 2012

Written evidence submitted by the Civil Engineering Contractors Association (NUC 12)

CECA provides the voice for those companies who create, improve and maintain the UK’s vital transport and utility networks. Our membership of more than 300 companies together delivers an estimated 70–80% of all infrastructure construction work carried out nationwide. Our industry supports the employment of around 200,000 people with annual activity worth up to £25 billion.

Given recent developments, CECA believes that that the Committee’s inquiry is extremely timely. We have focused our response on:

— The impact of the Fukushima incident;
— Lessons learnt for building new reactors from the experiences of France, Finland and elsewhere;
— The impact of global demand for nuclear power on plans to build new nuclear power stations in Britain;
— Potential barriers to the construction of new nuclear power stations in the UK; and
— The feasibility of the Government’s nuclear timeline, which shows the first new nuclear power station being built by 2019. And the level of nuclear capacity likely to be available by 2025.

What have been the political and policy impacts of the Fukushima incident?

1. The Fukushima incident of March 2011 focused the world’s attention onto nuclear power. According to the World Nuclear Association, the accident was rated seven on the International Nuclear and Radiological Event Scale (INES), due to high radioactive releases in the first few days. INES states that there have been no deaths or cases of radiation sickness from the nuclear accident, but over 100,000 people were evacuated from their homes to ensure this.4 The World Health Organisation (WHO) found that radiation exposure was below levels thought to increase the risk of cancer in almost all parts of Japan.5

2. Given the scale of the incident, there has understandably been much public concern and caution over the perceived safety of nuclear power. Government rightly asked Dr Mike Weightman (Chief Inspector of Nuclear Installations and Executive Head of the Office for Nuclear Regulation) to report on lessons learnt from Fukushima for the UK nuclear industry. He concluded that he remained confident that there are no fundamental weaknesses in the regulation of the UK nuclear industry or indeed in the industry itself. He found a “consistent and well-founded approach to safety assessment in the UK, including for extreme natural hazards”.

3. One of the report’s recommendations was to develop stress tests for nuclear power in the UK and across Europe. A UK national report on stress tests was submitted in December 2011. Weightman also required all non-power plant licensed nuclear installations in the UK to undertake similar tests of relevant safety margins. CECA support Weightman’s approach, conclusions and recommendations and welcome the government’s final response to the report.

4. Despite this immediate responsive work, there remains a perception within the industry that progress has been pushed back by at least a year. The incident, and the subsequent delay, has created some uncertainty for supply chain members in terms of investment decisions on pursuing nuclear new build as viable in the UK. Apart from the delay, the main other impact upon infrastructure contractors will be the additional regulatory requirements that the industry will need to respond as a result of the Weightman report. Anecdotally, CECA has witnessed a slight fall off in activity among its members in relation to the nuclear sector. Globally the impact of Fukushima is confirmed by evidence from the University of Greenwich that the number of new nuclear power stations entering the construction phase fell substantially last year compared with previous years. From 2008 to 2010, construction work began on 38 reactors around the world, but in 2011–12, there were only two construction starts.

5. Clearly the experiences in the delivery of Olkiluoto in Finland and Flamanville in France provide valuable lessons for the promoters of new reactors in the UK. The industry will also look to draw from experience gained in the delivery of major UK decommissioning projects, such as the current Evaporator D project at Sellafield. In this regard we welcome the Engineering the Future report Nuclear Lessons Learned and subsequent best practice guidance.

6. However the industry will not draw solely on its experience from previous nuclear projects in order to deliver better results on any new reactor projects. In the last decade the UK infrastructure construction industry has made significant strides forward in terms of delivering the right quality, both on time and within budget.

7. We hope and expect that new reactor projects will take on board best practice from other major infrastructure projects such as the 2012 London Olympics and Crossrail projects. We anticipate that this will lead to projects being delivered by more integrated, collaborative supply chain teams, with early appointment of key suppliers to support promoters in the detailed development of the projects.

8. CECA members stress the importance of completing design before starting construction, involving contractors at an early stage and using standard designs.

What lessons can be learnt for building new reactors to timetable and within budget from the experiences of France and Finland and elsewhere?

9. The UK nuclear industry is well placed to respond to planned proposals for construction across the UK. This is because the UK infrastructure construction supply chain has historically shown itself to be capable of flexing to respond to changes in demand such as that which might be experienced should there be a significant programme of new reactors built in the UK. Parts of the supply chain have been working in detail to understand client requirements in the nuclear sector to ensure they are able to meet them. The supply chain is also keen to engage to demonstrate that willingness and knowledge. We do not anticipate that any rise in nuclear projects overseas would lead to a significant drain on UK nuclear civil engineering contracting capacity. One exception to this relates to senior level specialists, where there may be some limitation in the pool of capable individuals with UK experience, and it is imperative to seek to ensure adequate resource in this regard.

10. Similarly, the future availability of fully trained and skilled employees will be important. The recent announcement of an expansion to the National Skills Academy for Nuclear will go some way to ensure that the UK workforce can take full advantage of the job opportunities that will be created by a new build nuclear programme. We hope that this investment will be maintained in the future. If there is to be a renaissance in nuclear power in the UK, it is vital that as the current workforce reaches retirement age, steps have been taken to ensure that a new generation of works is coming through to replace them.

6 Dramatic fall in new nuclear power stations after Fukushima, The Guardian, 8 March 2012 http://www.guardian.co.uk/environment/2012/mar/08/fall-nuclear-power-stations-fukushima

Are there any other potential barriers to the construction of new nuclear power stations in the UK?

11. It is vital that any new generation of nuclear power stations has the support of the population, both locally and across the UK. While survey work continues to suggest that the general public broadly understands and is supportive of the need to build new generating capacity in the UK, and that nuclear power will play a role in delivering this, new build remains a complex and at times controversial subject. Without the support of the public it will be extremely challenging to develop and implement new projects. As such, it is crucial that work continues to develop the public understanding of, and comfort about, the use of nuclear power. At the same time there is significant concern over EDF’s recent muted report on the prospects for a new fleet of reactors in the UK.  

12. While not directly relating to civil engineering, CECA is also concerned about capacity in the market for heavy forgings for new nuclear, which will impact on the development of nuclear power stations. With a limited number of global suppliers capable of creating pressure vessels, steam turbines and generators, there is clearly a risk to the UK programme if this capacity is soaked up by other projects around the world.

13. One member suggested that the situation had somehow improved with Sheffield Forgemasters securing the loan required to allow them to competitively expand and produce for the nuclear market. This is further to the cancellation of the £140m of funding announced under the previous Government. However, there is a view that valuable time has been lost.

How feasible is the Government’s indicative timeline, which shows the first new nuclear power station being built by 2019? And what level of nuclear capacity is likely to be available by 2025?

14. CECA members are of the view that the Government’s indicative timeline—to have delivered 16 GW of new nuclear capacity by 2025 is unrealistic. Instead they estimate that, at best, the UK may have only three or four new reactors by 2025. This failure to achieve the government’s aspirations is likely to be bad for future investment, as it will reduce confidence among potential project promoters. A reduced programme also risks a general de-skilling of the domestic supply chain. At the same time, failure to deliver will result in increased dependence on gas in order to maintain a functioning economy.

15. The prospects for extending the life time of existing reactors is quite good, however, CECA seek clarification from Government on its commitments to offshore wind as this will impact on capacity for new nuclear.

16. Lessons must also be learnt from the experiences of Electricity Market Reform. This was a lengthy process and does not yet define the price that the utility company will receive. Therefore the final decision to invest will be delayed until this is clear for each project.

*July 2012*

---

**Written evidence submitted by EDF Energy (NUC 02)**

**Executive Summary**

- EDF Energy is one of the UK’s largest energy companies and is firmly committed to the UK as one of its core markets.
- We are investing in our existing plant and in new CCGT, renewables and new nuclear.
  - Investing £300 million each year in our current nuclear fleet, to deliver life extension and maintain our high standards of plant safety.
  - Investing £860 million in a new, high efficiency, 1.3GW CCGT gas station at West Burton.
  - Investing £100 million each year in our existing 4GW coal fired power stations at West Burton and Cottam, which continue to have an important role to play as we transition to low carbon generation.
  - And investing in renewables, particularly onshore and offshore wind. Today we operate 260MW, a further 260 MW will come on-line by the middle of next year, and we plan to have up to 1,200 MW by 2020.
- We believe that new nuclear will play a key role in delivering the UK’s energy policy objectives of ensuring secure, affordable and low carbon energy supplies.
- We have begun our site preparation works at Hinkley Point for our first new nuclear project and remain fully committed to our projects at Hinkley and Sizewell.
- Continued progress on EMR and reaching agreement on transitional arrangements will be vitally important for our final investment decision for Hinkley Point C. This includes making good progress with the legislation and achieving royal assent as soon as possible next year.

---

8 UK nuclear plans “need saving by David Cameron and Francois Hollande”, *The Guardian*, 12 June 2012 [http://www.guardian.co.uk/environment/2012/jun/12/uk-nuclear-power-david-cameron?newsfeed=true](http://www.guardian.co.uk/environment/2012/jun/12/uk-nuclear-power-david-cameron?newsfeed=true)
EDF Energy's Response to Your Questions

Q1. The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

2. EDF Energy is committed to delivering an affordable, secure, low carbon energy mix for the UK and we believe new nuclear will play a key role in delivering this objective. We plan to invest in four new nuclear plants in the UK, starting with two plants at Hinkley Point in Somerset. With our co-investor Centrica, we aim to take a final investment decision for Hinkley Point C around the end of the year. These investments will make a major contribution to delivering the secure energy supplies that our economy demands, help to secure UK competitiveness and will create thousands of skilled jobs, in engineering, construction, and manufacturing industries.

3. EDF Energy believes it is vital to have a stable long-term policy framework for major infrastructure projects, and is why we welcomed the Government's designation of the National Policy Statements (NPSs) for Energy Infrastructure last year. This makes it clear that the country needs a programme of new nuclear power stations to meet its need for new baseload capacity and to achieve economies of scale. The cross party support for the NPSs has allowed us to make our application to the Infrastructure Planning Commission (now replaced by the Planning Inspectorate) for a development consent order. We have a clear timetable for when a decision will be made by the Secretary of State, and are making good progress. In addition to this, we also received interim regulatory approval for the design of our chosen reactor, the UK EPR, in December last year.

4. The importance of national support for such major infrastructure projects cannot be underestimated, and we are encouraged that recent polling has shown that 66% of the public believe that nuclear should be part of the energy mix. Similarly, we believe it is critical to garner local support for major infrastructure projects as engaging communities during the development of proposals helps to improve people's understanding of the infrastructure, its impacts and mitigation measures required, as well as fostering a sense of trust. As an example, prior to submitting our application for development consent for Hinkley Point C, EDF Energy undertook extensive consultation over a three year period. This involved engagement with some 6,500 consultees resulting in around 2,000 responses and allowed us to identify specific issues, and develop our plans in order to mitigate, or compensate for, those issues should we receive development consent.

5. As EDF Energy continues to make progress, we have also worked to learn lessons from events at Fukushima last year. We believe that one year on, the UK's new nuclear plans remain on track. There is no weakening in our resolve and determination. For example, we have begun our site preparation work at Hinkley Point, and at the British-French summit earlier this year, held between our Prime Minister and the French President, EDF Energy signed an agreement with Kier/BAM, worth over £100 million. However, as we will elaborate later, it is important that investors have confidence in the UK's ability to deliver such major infrastructure projects and this will require having a suitable supply chain and a workforce with the relevant skills. We are playing our part, and have announced a £15 million investment to establish a world class training centre in Somerset. EDF Energy is delivering jobs now, and leaving a legacy of skills development.

6. EDF Energy firmly believes that our determination on all fronts has to be matched by visible momentum from Government. In particular, it is absolutely critical that the Government continues to make steady, tangible progress with its Electricity Market Reform (EMR) plans and the framework for enabling investment decisions for early projects. The planned Contracts for Difference will give low carbon projects the revenue certainty they need to justify the large upfront investment required. It is important that investors are allowed to make a reasonable return with an acceptable sharing of risk so that the final outcome benefits both consumers and investors. We believe the Government's plans will help us and others deliver the investments that we need to maintain secure, affordable energy supplies.

7. We welcome the announcement in the Queen's speech that the Government will propose reforms to the electricity market, and we understand from DECC that a draft Energy Bill will be published later this month. The Energy and Climate Change Committee has a key role to play in ensuring that momentum is maintained and that the proposals are scrutinised effectively. We look forward to responding to the forthcoming call for evidence on the EMR proposals and help ensure they deliver their objectives. A robust evaluation of the proposals should help maintain the cross-party political consensus and commitment we have on UK energy policy and the stability that investors require.

Ev 94   Energy and Climate Change Committee: Evidence

About EDF Energy

1. EDF Energy is one of the UK's largest energy companies with activities throughout the energy chain. We provide 50% of the UK's low carbon generation. Our interests include nuclear, coal and gas-fired electricity generation, renewables, combined heat and power plants, and energy supply to end users. We have over five million electricity and gas customer accounts in the UK, including both residential and business users.

EDF Energy's Response to your Questions

Q1. The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

2. EDF Energy is committed to delivering an affordable, secure, low carbon energy mix for the UK and we believe new nuclear will play a key role in delivering this objective. We plan to invest in four new nuclear plants in the UK, starting with two plants at Hinkley Point in Somerset. With our co-investor Centrica, we aim to take a final investment decision for Hinkley Point C around the end of the year. These investments will make a major contribution to delivering the secure energy supplies that our economy demands, help to secure UK competitiveness and will create thousands of skilled jobs, in engineering, construction, and manufacturing industries.

3. EDF Energy believes it is vital to have a stable long-term policy framework for major infrastructure projects, and is why we welcomed the Government's designation of the National Policy Statements (NPSs) for Energy Infrastructure last year. This makes it clear that the country needs a programme of new nuclear power stations to meet its need for new baseload capacity and to achieve economies of scale. The cross party support for the NPSs has allowed us to make our application to the Infrastructure Planning Commission (now replaced by the Planning Inspectorate) for a development consent order. We have a clear timetable for when a decision will be made by the Secretary of State, and are making good progress. In addition to this, we also received interim regulatory approval for the design of our chosen reactor, the UK EPR, in December last year.

4. The importance of national support for such major infrastructure projects cannot be underestimated, and we are encouraged that recent polling has shown that 66% of the public believe that nuclear should be part of the energy mix. Similarly, we believe it is critical to garner local support for major infrastructure projects as engaging communities during the development of proposals helps to improve people’s understanding of the infrastructure, its impacts and mitigation measures required, as well as fostering a sense of trust. As an example, prior to submitting our application for development consent for Hinkley Point C, EDF Energy undertook extensive consultation over a three year period. This involved engagement with some 6,500 consultees resulting in around 2,000 responses and allowed us to identify specific issues, and develop our plans in order to mitigate, or compensate for, those issues should we receive development consent.

5. As EDF Energy continues to make progress, we have also worked to learn lessons from events at Fukushima last year. We believe that one year on, the UK’s new nuclear plans remain on track. There is no weakening in our resolve and determination. For example, we have begun our site preparation work at Hinkley Point, and at the British-French summit earlier this year, held between our Prime Minister and the French President, EDF Energy signed an agreement with Kier/BAM, worth over £100 million. However, as we will elaborate later, it is important that investors have confidence in the UK’s ability to deliver such major infrastructure projects and this will require having a suitable supply chain and a workforce with the relevant skills. We are playing our part, and have announced a £15 million investment to establish a world class training centre in Somerset. EDF Energy is delivering jobs now, and leaving a legacy of skills development.

6. EDF Energy firmly believes that our determination on all fronts has to be matched by visible momentum from Government. In particular, it is absolutely critical that the Government continues to make steady, tangible progress with its Electricity Market Reform (EMR) plans and the framework for enabling investment decisions for early projects. The planned Contracts for Difference will give low carbon projects the revenue certainty they need to justify the large upfront investment required. It is important that investors are allowed to make a reasonable return with an acceptable sharing of risk so that the final outcome benefits both consumers and investors. We believe the Government’s plans will help us and others deliver the investments that we need to maintain secure, affordable energy supplies.

7. We welcome the announcement in the Queen’s speech that the Government will propose reforms to the electricity market, and we understand from DECC that a draft Energy Bill will be published later this month. The Energy and Climate Change Committee has a key role to play in ensuring that momentum is maintained and that the proposals are scrutinised effectively. We look forward to responding to the forthcoming call for evidence on the EMR proposals and help ensure they deliver their objectives. A robust evaluation of the proposals should help maintain the cross-party political consensus and commitment we have on UK energy policy and the stability that investors require.

Source: ICM Omnibus, approximately 2,000 respondents, 6 November 2011.
Q2. What have been the political and policy impacts of the Fukushima incident?

8. Following events at Fukushima, regulators in the UK, Europe and around the world set up a number of reviews and examinations of existing nuclear power stations. The European Commission announced that all 143 nuclear power plants in the European Union would be assessed using EU wide criteria, in the so-called “stress-tests”. The aim is to learn from what happened in Japan and help prevent a similar accident occurring in Europe. The Commission is expected to present its final report on the stress tests to the European Council of 28–29 June 2012.

9. The UK’s response to Fukushima has centred upon the work of HM Chief Inspector of Nuclear Installations, Dr Mike Weightman, who published his Final Report Japanese earthquake and tsunami: Implications for the UK nuclear industry in October 2011. This examined the lessons to be learnt for the UK nuclear industry from the events and found no fundamental safety weaknesses at UK nuclear facilities. The report did make a number of recommendations for Government, regulators and industry. EDF Energy is committed to addressing these, and will continue to work with the Office for Nuclear Regulation. We commend the cross-party leadership that has been evident in the UK following the events at Fukushima. The Government and the Opposition have shown clear-headedness in their response and have avoided knee-jerk reactions. We are pleased that new nuclear is still seen to have a key role in the UK’s generation mix and believe that this is the right outcome for the UK.

10. EDF Energy is aware that events at Fukushima have led other EU Member States, most notably Germany, to reconsider their position towards nuclear power. However, we would point out that many more have decided to go ahead with their nuclear plans (eg Finland, Poland, Czech Republic). In fact, on 15 December 2011, the European Commission adopted the Communication “Energy Roadmap 2050”. This concluded that “nuclear energy will be needed to provide a significant contribution in the energy transformation process in those Member States where it is pursued” and that “it remains a key source of low carbon electricity generation”.

Q3. What lessons can be learnt for building new reactors to timetable and within budget from the experiences of France and Finland and elsewhere?

11. The design of modern nuclear power stations has become increasingly complex as the standards required in terms of protection against all types of hazard have progressively risen. As a result the challenge of building the complex structures and supplying equipment to the exacting standards of the nuclear industry has also increased. The hiatus in orders for new plants in Western Europe and North America since 1990 has also meant that there has been a need to re-establish design and construction capability.

12. The EPR being constructed at Flamanville 3 is the “first of a kind” to be built by EDF in France, and it is not unusual for such projects to incur additional costs, and take longer, than follow-on plants built to the same design. The EPR project in Taishan, Guangdong province in China, which EDF has a 30% interest in, is proceeding as planned. Admittedly there are significant differences in the regime than those across Europe but it all adds to the experience and knowledge gained by EDF and Areva.

13. Experience from the nuclear construction programme in France has shown that there are many advantages in replicating designs across a fleet of power stations. There are 58 operating reactors in the EDF fleet in France, which all conform to one of three basic designs. Many lessons have been learnt in terms of large nuclear construction from these projects, and experience gained from the first EPR projects in Finland, France and China will be incorporated in setting a realistic schedule for the UK construction programme.

14. The key lessons from recent projects, and in particular the Flamanville 3 project, that will be incorporated into the execution plans for EDF Energy’s new build project in the UK are:

   — A clear chain of command with strict controls over design changes. Decisions to proceed with the start of construction only when the project is ready to do so.

   — The importance of clear leadership and strong cohesion across all parties involved in the project, with an emphasis on effective project management and a “one team” approach, engaging early and working in partnership with key contractors.

   — Tracking progress and integrating lessons learned on other EPR projects in a systematic way, and capitalising on experience of other UK construction projects.

15. We are not in a position to comment on the Olkiluoto 3 project as EDF is not directly involved. However, Areva, as the prime contractor, will be learning valuable lessons that will be incorporated into their business.

Q4. What impact might global demand for nuclear put on plans to build new nuclear power stations in Britain (there are currently 60 new nuclear power stations under construction worldwide and a further 150 planned)?

16. While global demand may create risks of pinch-points arising in terms of availability of specialist skills and components, there will also be benefits in that the experience base, supply chain and worldwide capacity to build nuclear power stations will grow.

17. The global resurgence in nuclear construction projects, with construction underway in China, India, Russia, Finland, France and elsewhere is already providing stimulus to the international supply chain, and increasing demand for experienced project managers and engineers. This presents some risks to the availability of such skills in the UK but it will also increase the experience base worldwide over time.

18. Nuclear construction requires adherence to demanding quality standards, but the majority of the skills are transferable from other sectors of the civil and engineering construction industry. The UK has considerable capacity in both civil and engineering construction, and the Nuclear Industry Association has reviewed this in the past, and is undertaking an update to this work, with a view to reporting later this year.

19. The primary circuit of the EPR requires specialist steel forgings, including some very large forgings for the reactor pressure vessel which can only be made currently by Japan Steel Works. Very large forgings are also required for the turbo-generators for an EPR. There is therefore a risk that forging capacity could limit worldwide construction of EPRs. Areva, the supplier of the nuclear steam supply system for the UK EPRs, is well aware of the likely demand, and able to place advance orders for forgings to meet anticipated customer demand. Over time, increased demand is likely to trigger further investment in worldwide forging capacity.

20. Forward planning and good programme management should allow the UK needs to be anticipated and met, and we remain confident that there will be significant net benefits to UK industry from nuclear new build.

Q5. Are there any other potential barriers to the construction of new nuclear power stations in the UK?

21. EDF Energy is making significant investments to mitigate the risks we have identified in terms of potential skill shortages. We are making several investments near the site of our first new build project in Somerset. For example, we have invested £3 million in an Energy Skills Centre at Bridgwater College, £1.5 million in a Construction Skills Training Centre and £1.6 million in West Somerset Community College to specifically address training in skills and apprenticeships. As stated earlier, we are also planning a £15 million World Class Training Campus in Bridgwater addressing potential skills shortages in the energy sector. This work is complemented by the recruitment of 60–80 apprentices into the nuclear business each year, part of a population of 250 apprentices across our company.

22. Tackling on site productivity will also be another important factor in ensuring that we maximise the benefit and value for money for each of our projects. On this basis we are engaging with our trade union partners and other stakeholders to discuss the sort of industrial framework required to boost productivity. Our aim here is to drive enhanced safety, productivity and quality, supporting our project ethos of ‘one team’, with all sharing in the responsibility for, and rewards of, success.

23. Around 25,000 people are expected to work on our project at Hinkley Point throughout the construction phase and thousands more in the supply chain. We are committed to ensuring British companies have the maximum opportunity and our intention is to leave a lasting skills and jobs legacy. We have worked constructively with the Government to build up knowledge and understanding of the opportunities available, via national Supply Chain conferences in London and at the British-French Summit earlier this year.

24. We have already committed to contracts worth £650 million with 300 UK companies giving the signal to the supply chain to gear up for the opportunities ahead, and companies wishing to benefit from the project now need to make the investments necessary to ensure they are ready for the major construction phase of our project.

Q6. Other than reforming the electricity market and planning process, what steps could the Government take to remove barriers to the delivery of new nuclear power stations in the UK?

25. There are a number of areas linked to EMR and the planning process that the Government could address to tackle some of the barriers to new nuclear build. EDF Energy, and our co-investor Centrica, are seeking to start discussions with DECC on Transitional Arrangements to support our final investment decision on Hinkley Point C. Ensuring the Government publishes meaningful transitional arrangements in a timely manner will be essential for industry and investor certainty.

26. The ability of the Transitional Arrangements to reassure investors to proceed with significant investment will also depend on securing any necessary State Aid approvals for the new arrangements. It will be essential that the UK Government is supported by the European Commission in its efforts to decarbonise the economy and we feel that it is in the Commission’s interest to support all efforts by Member States to decarbonise power as quickly and affordably as possible. We believe that State Aid clearance for the EMR proposals should be taken forward as a matter of priority.

27. At the national level, EDF Energy welcomed the publication of DCLG’s Local Government Resource Review last year, which set out proposals for business rate retention for local authorities. We believe that additional revenues from local growth should be used to encourage further growth through targeting investment in infrastructure and amenities. We strongly urge that the proposal to allow local authorities to keep the business rates from renewable energy projects should be extended to include retention of some of the business rates from all low carbon infrastructure, including new nuclear power generation. The rationale for encouraging growth in renewables applies equally to nuclear power—it will help make the UK more energy secure, will
help protect consumers from fossil fuel price fluctuations, drive investment in new jobs and businesses and help keep the UK on track to meet carbon reduction objectives.

28. EDF Energy recognises the importance of a strong and independent regulator assuring high safety standards that will support an enduring nuclear industry. We therefore welcome the Government’s inclusion of this issue in the forthcoming Energy Bill and believe that making the Office for Nuclear Regulation an independent statutory body outside of the Health and Safety Executive will reinforce confidence in the industry.

29. Another key component for new nuclear is the need to have clarity on the proposals for a Funded Decommissioning Programme (FDP). The Government has made progress to clarify the long term costs facing new build stations. We fully support the principle in the FDP that the operator of a new nuclear power station must pay for the full costs of decommissioning and its full share of waste management costs through establishing an independent ring-fenced fund. We expect to enter into negotiations with Government shortly to progress the details further and consistency of the arrangements here will form an important part of EDF Energy’s final investment decision for nuclear new build.

30. Finally, we believe that a greater emphasis on nuclear R&D will help the rollout of new nuclear power stations in the UK. These new power stations are expected to last for at least 60 years and so it is important that the policy framework that takes into account the needs of the industry over the long term. The House of Lords Science & Technology Committee’s inquiry into nuclear R&D suggested a long term strategy for energy policy is required. Responding to the Committee’s recommendation, DECC has committed to publishing a framework later in the year. We believe this will help to deliver a revival of the nuclear industry, giving it direction and clarity for long term investments such as R&D. This is an opportunity for the Government to demonstrate leadership and reflect on how best to develop R&D infrastructure for the long term, focusing on the areas of expertise already in existence in the UK.

31. Such leadership will naturally include delivering a highly skilled workforce (as per our response to Question 5) to maintain the strategy for decades. The Government should also bring together the key organisations that can help them determine and then implement a UK new nuclear capability delivery strategy and it should consider how to exploit infrastructure investment as part of re-establishing the UK as a major player in the international nuclear scene, with the ability in the future to benefit through exporting expertise worldwide.

Q7. How feasible is the Government’s indicative timeline, which shows the first new nuclear power station being built by 2019? And what level of nuclear capacity is likely to be available by 2025?

32. EDF Energy will be able to give a firm and final completion date when we make our final investment decision on Hinkley Point C towards the end of the year. In order to make that decision, there are three key elements that are required:

(a) transitional arrangements for the Contract for Difference are in place;
(b) arrangements for the funded decommissioning plan are set; and
(c) a high level of confidence in the cost and timetable for construction.

33. However, until then the indicative timetable included in our development consent order application which is currently being examined provides the basis for our planning assessments. We will, in due course, move from this to a firm and final construction timetable.

34. EDF Energy’s current plans over the next two decades mean that we should replace the current 7.6GW of ageing AGR (Advanced Gas-cooled Reactor) nuclear generation capacity with 6.4GW of new EPR nuclear generation capacity, while continuing to operate the 1.2GW Sizewell B PWR (Pressurised Water Reactor) plant. Assuming that other companies follow our lead in developing new nuclear, then it is likely that the UK will at least maintain, and probably increase, the current level of nuclear generation capacity over that period.

Q8. What will be the consequences of failure to deliver a first new nuclear power station by 2019? Should any contingencies be put in place?

35. Delivery of new nuclear is important for three reasons: to meet carbon reduction targets; to contribute to security of supply; and to help protect customers against fossil fuel price volatility. To meet these long term goals, there needs to be a focus on safety, reliability, quality and cost and not just on arbitrary dates. We recognise, for example, that there is concern about the security of supply risk. Security of supply depends on a combination of factors, including demand growth and investment decisions about both existing and new plants.

36. However, we believe the Committee is right to ask about the delivery of the first new nuclear power station. The first project is by its very nature a pathfinder project and this has helped drive the facilitative actions required to deliver new nuclear. These actions include, the approval of the generic designs, developing the legal framework for funded waste and decommissioning programmes, and re-establishing the nuclear supply chain for new build. There is no doubt that putting our efforts into ensuring the first project gets built successfully will build confidence in the development of our subsequent projects and those by other developers.
EDF Energy believes it will be hugely important to build on this learning and use it to develop a successful programme for UK nuclear new build.

37. We regularly review the evidence available to us about the adequacy of capacity to meet demand on the UK system and we believe that, in the absence of further new plant build, it is unlikely that a security of supply problem would arise until the early 2020s. We note that the central scenario described by DECC in its December 2011 EMR Technical Update leads to a similar conclusion.

38. The Government has taken two positive steps: (1) it has asked Ofgem, supported by National Grid, to produce an annual report on the adequacy of generation capacity, and (2) it has included proposals for development of a Capacity Market in the EMR framework. The annual generation adequacy report will be a useful development, with the first document to be delivered by September 2012.

39. We look forward to seeing more details on DECC’s proposals for a Capacity Market over the next few months, and to working with DECC and other stakeholders to develop these ideas through to implementation. We believe that the Capacity Market should be brought into operation as soon as is practicable and this will help inform decisions on whether to close, or to extend the life of, existing plants.

Q9. What are the prospects for extending the life time of existing reactors?

40. EDF Energy owns and operates eight existing nuclear power stations in the UK; seven AGRs and one PWR with a total installed capacity of nearly 9GW. EDF Energy’s strategy is to seek life extensions for all its nuclear power stations where it is safe and commercially viable to do so. The attached table provides a lifetime summary of EDF Energy’s eight nuclear power stations.

<table>
<thead>
<tr>
<th>EDF Energy's Existing Nuclear Station Lifetime Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EDF Energy</strong></td>
</tr>
<tr>
<td>Dungeness B</td>
</tr>
<tr>
<td>Hinkley B</td>
</tr>
<tr>
<td>Hunterston</td>
</tr>
<tr>
<td>Heysham 2</td>
</tr>
<tr>
<td>Torness</td>
</tr>
<tr>
<td>Hartlepool</td>
</tr>
<tr>
<td>Heysham 1</td>
</tr>
<tr>
<td>Sizewell B</td>
</tr>
</tbody>
</table>

Note:

(1) Capacities are stated net of all power consumed for the stations’ own use, including power imported from the National Grid.

**Expected Additional Lifetime Beyond Scheduled Closure Date**

“An additional seven years on average for AGRs”

NB: Seven year average based on an initial scheduled closure date of 2014 for Hartlepool and Heysham 1-they achieved formal five year extensions in December 2010.

“+20 years for SZB”

Note:

(2) As per February 2012 Investor communication.

41. It should be noted that there are inherent uncertainties within the above schedule, not least due to the uniqueness of AGR technology and what we expect to be the life limiting areas (graphite core and boilers). We announced to our investors on 16 February 2012 that we are now expecting an average life extension of seven years across the AGR fleet, and that the strategic target for Sizewell B remains at 20 years. We have also shared some of the detail and necessary context underpinning this guidance with a number of key stakeholders and have committed to providing regular updates of our lifetime expectations as appropriate.

May 2012
Further written evidence submitted by EDF Energy (NUC 02a)

This inquiry was called as a result of the decision by RWE and E.ON to withdraw from Horizon. They have said their decision relates to their finances, and the consequences of Germany’s decision on nuclear. They have maintained that nuclear has an important role to play in the UK, and we expect there will be strong interest from investors to acquire Horizon. This is because the UK needs investment in new low carbon generation and nuclear will have an important role to play in that. We are widely seen as a welcoming market for nuclear investment, the Government is making good progress in its facilitative actions, and our own project remains on track and will illustrate what can be delivered.

Firstly I wanted to take you through the progress we have already made. Together with our partner Centrica, EDF Energy has the most advanced plans for nuclear new build at Hinkley Point. Our plants will include Areva’s European Pressurised Reactor (EPR) which EDF is building in France and is a partner in building in China. The lessons learned will be built into our own project so that it is completed in a timely and affordable manner.

We have already completed three years of consultation with the local community at Hinkley Point, Site Preparation Works have begun and Planning Inspectorate examination of our application is underway. We have announced a series of contracts worth £650 million with 300 UK companies and we are moving ahead with investment in skills to support our project, investing millions in colleges in the South West. Our aim is to deliver a more affordable project and leave a lasting legacy of highly skilled people. We hope to begin our Stage 1 Consultation for our next project at Sizewell later this year.

Turning to the progress already made on nuclear new build by Government, Parliament and the regulators, the EPR has now received interim design approval from the Office of Nuclear Regulation (ONR) and we are working to resolve remaining issues. Other projects in the UK have the chance to benefit from our plans and progress to achieve the synergies of an industrial programme. Past experience in France demonstrates the benefits of standardised design whereas the UK has previously faced challenging experiences from fragmented design decisions.

Additionally, the approval of the National Policy Statements and the Carbon Price Floor, progress on Electricity Market Reform, and the expected establishment of the ONR as a fully independent regulator are all essential to help build confidence ahead of our Final Investment Decision at the end of the year. Continued progress with the legislation for EMR and achieving royal assent as soon as possible next year will be important for that decision.

Lastly, I felt it might be helpful to set out the areas where we believe further progress still needs to be made.

The Government has confirmed that transitional arrangements (TA) will be established for projects coming into force ahead of full implementation of market reform. This is dependent on State Aid clearance from the European Commission and we believe this needs to be taken forward as a matter of priority. We have already formally expressed our interest in TA and look forward to discussing this further with DECC.

The planned Contract for Difference will give low carbon projects the revenue assurance they need to justify large up front investment. Our shared task with Government is now to make progress with negotiations and show that the outcome will be a “win-win” for customers and investors.

We have also made progress in working with Government to secure clarity about the long term liability costs facing new build stations. We fully support the principle in the Funded Decommissioning Programme (FDP) that the operator of a new nuclear power station must pay for the full costs of decommissioning and its full share of waste management costs through establishing an independent ring-fenced fund. We expect to enter into negotiations with the Government shortly to progress details further.

In the Local Government Resource Review, the Government proposed that local authorities retain business rates paid by renewable energy projects. We believe this principle should be extended to all low carbon generation, including nuclear. It is important that an environment exists in which host communities appreciate the national need for infrastructure development and see direct benefits flowing from them. This principle is expected to be enshrined in law by the Local Government Finance Bill.

I hope we have made clear that there is much to do but also reasons to be hopeful that the necessary elements will be in place for our Final Investment Decision on the project at the end of 2012. I believe this point of view will be important as your Committee gathers evidence.

May 2012
Written evidence submitted by the Environment Agency (NUC 26)

SUMMARY

The Environment Agency recognises fully and welcomes its role in enabling investment in new nuclear power stations that meet high standards of environmental protection and waste management. Our decisions, in common with those of other regulators, provide a key input for developers to consider when they decide whether or not they should commit to an investment.

Early constructive engagement between regulators and developers brings a number of consequential benefits:

— for the Environment Agency it enables the early scrutiny of proposals when regulators have the greatest opportunity to influence decisions and so helps ensure that the proposals will meet high standards of environment protection and waste disposal; and

— for developers it enables them to proceed with reduced regulatory risks and with increased definition of design so that cost and timescales can be better assessed.

In this memorandum we provide our experience so far of working on new nuclear build. We support the approach of early engagement with developers and assessment of their proposals well in advance of construction beginning. We consider that this will help build a culture of “right first time” within projects’ lifecycles and especially during construction, commissioning and operations when changes that are then found to be necessary can have very significant impact on costs and timescales. It is important that regulators have an appropriate level of resources so that they can make their decisions in timescales consistent with developers’ investment expectations.

1. Introduction

The Environment Agency is the principal environmental regulator of the nuclear industry in England and Wales. At nuclear sites we regulate discharges and disposals of radioactive waste, the operation of significant combustion plant such as standby generation, and discharges of process effluents and turbine condenser cooling water.

We also provide relevant advice to planning authorities and others on matters falling within their responsibilities, including flood risks.

2. New Nuclear Build Experience so far

For new nuclear build, the Office for Nuclear Regulation (ONR) and the Environment Agency have been working together to assess two new designs of nuclear reactors for potential deployment in the UK in our Generic Design Assessment (GDA) work. GDA is one of Government’s main facilitative actions for new build. We have also received and are currently determining permit applications for a proposed new nuclear power station at Hinkley Point in Somerset. With ONR our goal is to ensure that any new nuclear power stations in the UK meet the high standards of safety, security, waste management and environmental protection.

Gaining regulatory approvals of new reactor designs and operator and site specific proposals is a key enabler for new nuclear development.

2.1 Generic Design Assessment

We have been carrying out Generic Design Assessments of two new nuclear reactor designs: EDF Areva’s UK EPR and Westinghouse’s AP1000. Both of these reactors are currently being constructed on sites outside the UK but neither is yet in operation.

Generic Design Assessment is a step wise process that progressively examines proposals in more detail. It began in 2007 with preliminary assessments of four reactor designs, including those above. We recover our costs for generic design assessment from the reactor vendors.

The Environment Agency and the ONR have both completed their planned assessments and have issued interim statements about the acceptability of the UK EPR and AP1000 designs. The statements identify a number of issues that remain to be resolved and the vendors have provided resolution plans to address these issues. EDF/Areva are now carrying out the resolution plans for their design. Once all of the issues are resolved to the satisfaction of the regulators we will consider issuing final statements of design acceptability. This work is being carried out well in advance of construction of new reactors and helps avoid the need to modify designs during construction to meet regulatory requirements. Experience shows these changes can have a significant impact on project cost and timescales.

The Environment Agency and ONR have adopted project management disciplines for this work and built openness and transparency into it from the beginning, for example by requiring the vendors to make available via their websites the information that they were providing to us for assessment. Members of the public could ask questions of the vendors and receive answers from them and the regulators saw both and could use these to help inform their considerations. We have published our assessment reports at each step of the process and the Environment Agency consulted on its findings so far during 2010. More recently we have published
quarterly progress reports as part of our transparent and no surprises approach, with RAG status metrics (red/amber/green), which have helped to focus efforts of the reactor designers.

Key lessons learned from this work relate to regulatory resources. It took both regulators time to build assessment resources at the start of the work and there was inevitable back end loading in some assessment topic areas. If a second round of GDA is to be carried out, it is essential that sufficient resources are secured from the start of the programme. Securing and maintaining the regulatory resources with the necessary nuclear skills is a significant issue given growth in nuclear projects worldwide.

We and ONR published guidance and advice about what was needed for GDA in advance of beginning this work. However it was evident from submissions made by the reactor vendors at the beginning of the GDA that, in essence, they provided design documentation immediately available rather than targeted at our UK regulatory requirements. Consequently, there were gaps in documentation in some areas of design that took time for the reactor vendors to address. For any future GDA, more effort is needed working with the reactor vendors during the pre-application period so that the information provided to us is more advanced and targeted at UK regulators’ needs.

An important benefit of the Generic Design Assessment approach is the close working that has developed between ONR and the Environment Agency so that developers are clear on our joint expectations rather than potentially being pulled in different directions. We also set up a Joint Programme Office that provides a single interface with the reactor vendors to coordinate interactions with regulators.

2.2 Permitting

The Environment Agency is currently determining a number of applications for “operational” environmental permit applications for the Hinkley Point C site including for discharges of radioactive waste, operation of standby generators and cooling water discharges. The information provided here is without prejudice to this work. We have already issued a number of environmental permits relating to the site preparation/construction stages, for example for site clean up and for discharge of surface and excavation waters.

In addition to the work we have carried out on the Generic Design Assessment, we have put considerable effort into the pre-application period for environmental permits for Hinkley Point C. This helps ensure that the applications made address our requirements. We recover our costs for the advice we provide during pre-application through agreements we make with the potential applicants. Receiving applications that are “right first time”, or as near as possible, helps enable an effective and efficient regulatory process. We are also applying strong project management disciplines to our permitting work.

A range of skills and expertise is necessary to carry out this work. Not just in nuclear issues but also in the key areas of marine biology and habitats regulation assessments.

2.3 Planning

Providing planning advice on matters relevant to the functions and duties of the Environment Agency, including flood risks, makes significant demands on our resources. The advice is provided not just to planning authorities but also to applicants via the extensive consultations that they undertake as part of the planning process. For this work we have again implemented a strong project management approach.

Key lessons from this work include:

— More effort is required on scoping studies prior to development of planning application documents. This would help to ensure that all the information required to be in an application is available when needed, mindful that ecological studies can take significant periods of time to carry out.

— We have worked throughout on the planning advice and permitting work with Natural England and the Countryside Council for Wales. This is to help ensure that, where possible, the environment bodies have a common position on any potentially significant impacts.

— We have improved the way in which we provide planning advice by identifying and explaining not just what our concerns are but also providing a proposed or recommended solution where possible. Developers and planning authorities have found this helpful as it enables clarity about the actions that we consider should be carried out to resolve the issues.

3. Conclusions

We support the early engagement with developers and assessment of their proposals well in advance of construction beginning. We believe that this will help build a culture of “right first time” within project lifecycles and especially during construction, commissioning and operations when changes that are then found necessary can have very significant impact on costs and timescales. It is important that regulators have an appropriate level of resources so that they can make their decisions in timescales consistent with developers’ investment expectations.

July 2012
Written evidence submitted by Greenpeace (NUC 17)

Greenpeace UK is the autonomous regional office of Greenpeace, an international campaigning organisation whose main objective is the protection of the natural environment. Greenpeace has worked on the issue of nuclear power since its inception. It has gathered expertise and access to expertise on all issues to do with nuclear power—including safety, health, security, economics, transport, waste and proliferation.

The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

There are two separate investment decisions which bear closer examination by the Committee. Firstly, there is the decision by a utility or separate decisions by utilities within a consortium to build a specific plant. For instance, Centrica and EDF will be taking separate final investment decisions on the Hinkley Point plant in spring 2013. Secondly, there is the decision by a private sector investor to provide capital towards a specific project headed up by a utility or consortium of utilities. An example of this would be a decision by a pension fund on whether or not to provide capital towards the Hinkley Point plant. Each investment decision will be influenced by different factors, although they share some commonality.

The EMR process is central to this, because it should (in principle at least) provide some certainty of future revenues and make it easier for an investor or utility to calculate reliably the rate of return. Politicians may be motivated by political decisions (such as the pledge not to provide public subsidy for new nuclear) or the need to keep the lights on, but the private sector is only concerned with the return for its shareholders.

Potential investors will be mindful of the nuclear industry’s propensity for overspend. They will also be aware of the considerable delays and cost overruns that plague the on-going construction of the European Pressurised Reactor plant at Olkiluoto in Finland and Flamanville in France. Investors will understand that the trend for nuclear projects going over budget was the case even before the Fukushima disaster, because KPMG warned in January 2011 that nuclear new-builds were “high risk” with a “historical precedent for significant delay claims, cost growth, and—ultimately—investor disappointment.”

More recently, the credit ratings agency Moody’s said that investing in new nuclear generation projects has historically had an adverse impact on credit ratings. In an earlier oral evidence session, RWE told the committee that it had been concerned that building new nuclear plant would have led to its credit rating being downgraded.

Given its appalling track record, it is no surprise that the private sector is wary of funding the nuclear industry’s new build projects. Construction risk is a key issue and investors want cast-iron guarantees that bill payers will pick up the tab when the nuclear industry does not deliver what it promised. In addition, the companies want the Government to cover the cost of capital and any risks arising from financing the deal.

This is a troubling state of affairs. The nuclear companies already has a track record of underestimating construction costs. The French nuclear watchdog, the Autorite de Surete Nucleaire, recently accused the French nuclear industry of agreeing to sell reactors at “pure dumping-price” and said that “prices accepted by vendors and obtained by buyers are unsustainable”. If the Government were to sign contracts for difference which insulated utilities and investors from construction and financing risks, that would encourage this sort of behaviour by removing any incentive for the industry to deliver on time and to budget.

If the Government agreed to the industry and investors’ demands, then the cost to consumers of new nuclear power would be far higher than DECC suggests. Peter Atherton of Citigroup believes that it could be as high as £166 per GWhour; this would make it more expensive than off-shore wind. Tom Burke of E3G and Steve Thomas of Greenwich University have suggested that the cost of EDF’s four EPR reactors paid for through a contract for difference could be £155 million over 30 years.

What of the utilities? Centrica will be acutely aware of the risk of being downgraded and the effect this would have on its ability to finance other projects. As the junior partner in the consortium and with no experience of building nuclear plant it would have to rely upon EDF, whose track record leaves much to be desired. That may go some way towards explaining the rumours in the financial press that Centrica has already decided to not to invest in the Hinkley Point plant.

15 “Nuclear New Build Generation Company, the consortium including EDF which own the Hinkley site, has indicated that its key issues for the contract for difference include the contract term, risk allocation, strike price and financeability.” Written Answer, Charles Hendry, 18 April 2012. http://www.publications.parliament.uk/pa/cm201213/cm120418/text/120418w0001.htm
18 “Hinkley and Sizewell will cost us £155 billion over 30 years under the Cld”, TomBurke.co.uk, 28 May 2012. http://tomburke.co.uk/2012/05/28/hinkley-and-sizewell-will-cost-us-155-billion-over-30-years-under-the-cld/
As a primarily state-owned company, EDF’s investment decisions will be guided by the political inclinations of the French administration. Francois Hollande has a very different energy policy than his predecessor and has pledged to reduce nuclear from 75% of the French electricity mix to 50% by 2020. EDF has considerable costs associated with its French plant and is forecast to spend around €55 billion over 15 years on life extensions and post-Fukushima safety upgrades. EDF’s credit rating was downgraded at the end of 2011; some analysts have suggested that EDF may be unable to raise the necessary capital even with a high strike price. The company has already scaled back its ambitions from four sites (Heysham, Sizewell, Hartlepool, Bradwell and Hinkley Point) to just two (Sizewell and Hinkley Point).

Of these two sites, Hinkley Point is the most advanced, but there are signs that even EDF is hedging its bets. The project has got off to a rocky start: the cost of construction is rising fast and one reactor is now said to cost £7 billion. EDF has found local politicians less amenable than it had expected, and has accused them of trying to “straitjacket” the project by restricting lorry movements. The trade press speculates that this could add two years and £600 million to the construction project. Parish councils, which are unhappy with the disruption that would be visited upon them if Hinkley C goes ahead, are pushing for further traffic restrictions. The preliminary works have been delayed further after asbestos was discovered; phase 2 is said to have been put back to early 2013. The company has taken care not to box itself in: it initially deferred a £1.2 billion civil engineering contract, and has now chosen a preferred bidder whilst making the contract conditional upon its Final Investment Decision (FID) and the project receiving planning permission.

What have been the political and policy impacts of the Fukushima incident?

It is important to recognise that the much-heralded nuclear renaissance had turned into a damp squib long before the disaster at Fukushima. Nonetheless, the disaster dealt a serious blow to the nuclear industry. The cost of building new reactors has increased, with companies forced to incorporate new safety measures and investors less willing to lend money to risky projects. As public opposition to nuclear increased, several countries cancelled, or put on hold, their plans for new reactors. The biggest policy shift occurred in Germany, where Chancellor Merkel announced that all of Germany’s existing nuclear plants were to be closed by 2022. Italy and Switzerland cancelled their plans for new reactors. Belgium has provisionally agreed to go nuclear-free by 2025. Scottish and Southern Energy sold its stake in a consortium planning to build new nuclear reactors in the UK. Even France, the most nuclear-dependent country in the world, is starting to reconsider the extent of its commitment to nuclear power in the aftermath of the disaster.

The disaster at Fukushima put further dampers on investors’ already sceptical outlook. HSBC’s Global Research team put out an immediate reaction, saying that they expected “higher safety and other costs for new and existing nuclear facilities” to be introduced, “which would render nuclear power less economic or uneconomic”. In June 2011, investment consultants Oxera produced an in-depth report which examined Fukushima’s impact on the economic viability of new-build in the UK. The report concluded that some investors would be put off by the present hurdle rates, and that any shift in policy risk which affected hurdle rates would be likely to render new nuclear in the UK “uneconomic”.

Finally, the disaster at Fukushima highlighted the impact that impossible-to-plan-for changes in policy (so-called “black swan” events) can have. The German phase out has impacted RWE and E.ON’s future revenues and was one factor in their decision to pull out of new nuclear in the UK. Investment in nuclear power is front-loaded and capital intensive. The question begged of investors in a post-Fukushima world is: why provide capital towards a more expensive nuclear plant given that there is a foreseeable risk that an unpredictable event may produce a change in policy that results in the plant being decommissioned before the end of its working life?

Other than reforming the electricity market and planning process, what steps could the Government take to remove barriers to the delivery of new nuclear power stations in the UK?

For a Government that describes itself as unwilling to “pick winners”, the coalition seems very eager to support the nuclear industry, despite the growing body of evidence that nuclear power is a very costly way to...
generate electricity. This is evidenced by its framing of perceived “barriers” to delivery of nuclear. In practise, these are not barriers in the traditional sense. We can speak honestly of barriers in respect of nascent technologies which have yet to achieve economic parity, entrepreneurial ventures involving new markets that are still finding their feet or start-up businesses competing against established competitors.

However, when the Government and nuclear industry speak of “removing barriers” to new nuclear, they are not talking about an emerging industry or a new market that deserves our support. Instead, they are talking about a mature technology that can only be made to work with widespread subsidies, transfer of risk from the private sector to taxpayers, removing communities’ right of challenge and having a monopoly of the GDA process. Even for EDF’s new EPR reactor, which the Government and nuclear industry claim is further advanced than it actually is, the GDA process is being delayed. The “barriers” to nuclear are its up-front costs and capital intensiveness, widespread public opposition, the cost of managing its waste, its history of overspend and construction delays and so on. These are intrinsic and are increasing as the technology matures. These “barriers” are the reasons why the private sector cannot make nuclear work without support. They are also the reasons that we should choose instead to invest in more affordable and sustainable alternatives. Ultimately, if the Government providing billions of pounds of taxpayer subsidy, offering to transfer the construction and financing risk to the state and turning the planning process into a box-ticking exercise cannot persuade utilities to build new nuclear reactors, then perhaps it is time for the Government to accept that nuclear power simply is not economical and that its programme of ten reactors is not going to be delivered.

How feasible is the Government’s indicative timeline, which shows the first new nuclear power station being built by 2019? And what level of nuclear capacity is likely to be available by 2025?

It is looking increasingly unlikely that any nuclear reactors will be built before 2025. Over the last year, we have gone from forecasts of ten reactors at eight sites to forecasts of four reactors at two sites (Hinkley Point and Sizewell). The timeline for the Hinkley Point plant has reportedly slipped to 2021. The trade press—which is often the most insightful source of information about major construction projects—suggests that there may be more delays in the pipeline. The discovery of large amounts of asbestos has slowed the preliminary works. EDF is no longer willing to give an official estimate of when it would expect to start generating electricity. The Infrastructure Planning Commission, presiding over an examination into EDF’s application for planning permission, has pressed them for a revised timetable.

If Centrica decides to pull out, as seems increasingly likely, then the project would be delayed further as EDF would have to work harder to finance the project. Similarly, EDF may decide not to continue (whether because of the change of political direction in France, because it cannot raise the necessary capital or because it cannot squeeze enough subsidy through the contract for difference negotiations). There are also 30 unresolved issues with EDF’s application for a Generic Design Assessment of the EPR. If these cannot be resolved very quickly then the timetable will slip further, according to the Office of Nuclear Regulation.

There have been several reports that Middle Eastern sovereign wealth funds or Chinese and Russian nuclear power companies are looking to buy the Horizon consortium and its Wylfa and Oldbury sites. We remain very sceptical that these reports have any substance behind them. Even if the Chinese or Russians were to look to invest, the thorny issue of reactor design remains. The EPR has proven very difficult to build; there is no reason why either company would want to use that design. The primary alternative, Westinghouse’s AP1000, has an interim Generic Design Assessment but no work is being done to progress it to the next level. A new Russian or Chinese design would take at least five years to progress through the GDA process, and could not be built until the reactor had been fully approved.

What will be the consequences of failure to deliver a first new nuclear power station by 2019? Should any contingencies be put in place?

There is an urgent need for a Plan B to deliver decarbonisation of the power sector, because the nuclear programme is not going to be delivered. The Government is working on the basis that 10 new reactors will be built. Far more plausibly, it will get four: two at Hinkley Point and two at Sizewell. It is equally, if not more likely that it will not get any at all.

Unfortunately, the Government’s misplaced confidence in the nuclear renaissance is disrupting the electricity market and working against our decarbonisation objectives. As the committee will have heard in its parallel inquiry into the draft Energy Bill, the reforms would drive up the cost of capital and thereby undermine investment in renewables, because the Government wants contract for difference feed-in tariffs to cover nuclear and renewables. Only support for the latter is permitted under EU law. To avoid a state aid complaint, the Government has designed an unnecessarily complicated mechanism involving multi-party countersigned contracts between the suppliers and the generators.

Companies and investment analysts have said that they believe that this would be more complicated than the present Renewables Obligation Certificates regime and would therefore increase the cost of capital for renewables schemes. They also say that the scheme would be insufficient to make nuclear economically viable and that overt subsidy and state guarantees would be necessary, despite such support being unlawful. Investors and the utilities are well aware that the EMR package is likely to be the subject of legal challenges in relation to state aid, which adds yet another layer of uncertainty. This is why there are growing calls from the non-nuclear utilities to abandon CfDs altogether.

With nuclear unable to deliver, and the Government undermining investors’ confidence in renewables, there is a very real risk of a new dash for gas. The climactic impacts of this would be alarming indeed. The Committee on Climate Change (CCC) have said that “any path to an 80% reduction by 2050 requires that electricity generation is almost entirely decarbonised by 2030”. The CCC defines this goal more specifically as meaning that by 2030 our electricity system should produce no more than 50g of Co2 for every kilowatt of electricity generated. DECC state that the emissions intensity of a modern gas plant—a Combined Cycle Gas Turbine (CCGT)—is 350g/CO2/kWh at the point of generation. Becoming even more dependent on gas would also leave households exposed to the vagaries of the international gas markets which are already driving up energy bills.

In order to avoid these problems we must lock in 2030 decarbonisation by placing an explicit and legally binding goal of decarbonisation of the power sector by 2030 into the draft Energy Bill. Further, new emissions standards should apply to all fossil fuel plant and be set at a lower level that is consistent with ensuring power sector emissions in 2030 are no more than 50g/Co2/Kwh.

As we said in our response to the draft Energy Bill consultation, the Government must stop trying to lump support for renewable energy in with nuclear subsidy. Instead, it should design a separate renewable energy support mechanism which brings predictability, Government backing, and simplicity, whilst limiting taxpayer liabilities and promoting diversity of ownership and scale. Smaller-scale community energy is particularly ill-equipped to deal with the complexity of current and proposed trading arrangements and the enhanced complexity of a CfD mechanism. It should also support for a Europe-wide 2030 renewable energy target backed by binding national targets, which would be insufficient to make nuclear economically viable.

To avoid this, the government must develop a plan B for energy, based on four principles: demand reduction and management, expansion of renewable generating capacity, flexibility and an integrated power and heat policy, especially in the industrial sector.

Supplementary evidence submitted by Greenpeace UK (NUC 17a)

During the oral evidence session on 23 October, I argued that it was possible for the UK to decarbonise electricity without nuclear power. I also cited several public domain scenarios to illustrate some of the different ways in which we could do so and to show that each had different costs and benefits for households, businesses and taxpayers.

It is for government and the Department for Energy and Climate Change, and its advisors at the Committee on Climate Change, to decide which strategy has the best net benefits for the UK and put in place policies and financial support mechanisms to deliver it.

For the reasons outlined in our initial submission, we believe that there will be very few, if any, nuclear reactors built in this country. This risks a supply crunch in the mid-2020s when the 16GW of new nuclear that the government is anticipating fails to arrive.

To avoid this, the government must develop a plan B for energy, based on four principles: demand reduction and management, expansion of renewable generating capacity, flexibility and an integrated power and heat policy, especially in the industrial sector.

Government Energy Scenarios

The Committee on Climate Change has modelled a number of scenarios for 2030. These are based on modelling by Poyry, which sought to identify maxima levels for renewable deployment by 2030 and 2050.


July 2012
Although Poyry modelled demand of 409TWh, the CCC starts from a baseline of 440TWh of electricity demand in 2030 and deliver carbon intensity figures of below 50 g/KWh. This is a very high baseline and does not incorporate the impact of any meaningful demand reduction or management policies. As we shall see, demand management has the potential to reduce our electricity needs by considerably more than the amount of electricity that is supposed to be generated by new nuclear plant.

### Table 1

**COMMITTEE ON CLIMATE CHANGE ENERGY SCENARIOS: ELECTRICITY GENERATED IN TERRAWATT HOURS**

<table>
<thead>
<tr>
<th>CCS (coal and gas)</th>
<th>Nuclear</th>
<th>Gas</th>
<th>Onshore</th>
<th>Offshore</th>
<th>Marine</th>
<th>Other renewables</th>
<th>Net imports</th>
<th>Other unabated fossil-fired generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>10.2 TWh</td>
<td>48.1</td>
<td>88.3</td>
<td>34.2</td>
<td>44.1</td>
<td>4.0</td>
<td>34.8</td>
<td>12.9</td>
</tr>
<tr>
<td>2030–30% renewables</td>
<td>56.4 TWh</td>
<td>227.6</td>
<td>29.8</td>
<td>34.2</td>
<td>74.1</td>
<td>4.0</td>
<td>29.4</td>
<td>0.0</td>
</tr>
<tr>
<td>2030–40% renewables</td>
<td>66.1 TWh</td>
<td>175.1</td>
<td>32.8</td>
<td>52.0</td>
<td>87.9</td>
<td>12.3</td>
<td>32.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2030–50% renewables</td>
<td>20.4 TWh</td>
<td>170.8</td>
<td>37.8</td>
<td>52.0</td>
<td>138.5</td>
<td>12.3</td>
<td>26.4</td>
<td>0.0</td>
</tr>
<tr>
<td>2030–65% renewables</td>
<td>18.7 TWh</td>
<td>103.7</td>
<td>38.2</td>
<td>52.0</td>
<td>176.5</td>
<td>20.7</td>
<td>49.2</td>
<td>0.0</td>
</tr>
</tbody>
</table>

The 40% scenario, which the CCC has adopted as the baseline, has 40% nuclear electricity in terawatt hours—i.e. generated electricity, not generating capacity. (This is the scenario that I referred to in my oral evidence session.) The 50% scenario has nuclear generating 39% of our electricity and in the 65% scenario nuclear provides 24% of our electricity.

The Poyry modelling only provides installed capacity figures for the “high” scenario (50% renewables) and the “very high” scenario (65% renewable). It suggests that there would need to between 11GW and 19GW of nuclear on grid by 2030—assuming, of course, that our electricity demand is 409 TWh (in other words, that the government does not introduce policies to manage and reduce electricity demand).

### Table 2

**POYRY SCENARIOS: INSTALLED CAPACITY IN GIGAWATT HOURS**

<table>
<thead>
<tr>
<th>Peaker</th>
<th>CCGT</th>
<th>CCS</th>
<th>Nuclear</th>
<th>Other renewables</th>
<th>Solar</th>
<th>Marine</th>
<th>Onshore wind</th>
<th>Offshore wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>1GW</td>
<td>3GW</td>
<td>4GW</td>
<td>19GW</td>
<td>6GW</td>
<td>3GW</td>
<td>4GW</td>
<td>21GW</td>
</tr>
<tr>
<td>65%</td>
<td>35GW</td>
<td>4GW</td>
<td>11GW</td>
<td>25GW</td>
<td>8GW</td>
<td>21GW</td>
<td>47GW</td>
<td></td>
</tr>
</tbody>
</table>

The Poyry modelling includes a very reasonable and achievable 10GW of installed interconnector capacity. Poyry say that, in practice, this would be almost net zero with north-western Europe and Ireland—i.e we would sell electricity as much as we bought. The interconnector to Norway would have net annual imports of 7.5TWh, 2% of total demand.

**McKinsey Demand Reduction Potential**

The Committee will have seen the McKinsey study on the potential for demand reduction in the power sector. The Committee is right to have advised the government to incorporate measures to deliver better electricity efficiency into the upcoming Energy Bill.

McKinsey’s headline figures were:

- 411TWh baseline demand in 2030 (+5 -15% for electric vehicles and heating).
- 155TWh (40% of total demand) of demand reduction potential in 2030.
- 80% of potential is across residential, services and industrial sectors.
- Current policy is estimated to capture just 54TWh (35% of total potential).

McKinsey concluded that implementing these measures would save £10 billion annually, and reduce our total electricity demand to 256TWh. Interesting, the case studies McKinsey examined had considerable success at reducing peak demand, so implementing similar policies would reduce the need for peaker capacity.

The full 40% of potential demand reduction would not need to be achieved before we could be confident about meeting our energy needs without nuclear. That could—and should—be met by combining ambitious demand reduction policies with sustained investment in renewable electricity.
Under the Committee on Climate Change’s 50% renewables scenario, renewable electricity generates 229TWh—90% of what total demand would be if we were to fully realise the potential for demand reduction. In that scenario, non-nuclear power sources provide 287TWh of electricity a year. In their 65% renewables scenario, non-nuclear power sources could provide 355TWh. If we adopted this latter scenario as our preferred pathway to decarbonisation, then we would only need to achieve about a third of the demand reduction potential identified by McKinsey—although going further would be advantageous from the perspective of security of supply, balance of trade and cost effectiveness.

The Poyry/CCC study in conjunction with DECC’s McKinsey report demonstrates that a sustained push for renewable electricity combined with a commitment to demand reduction should be sufficient to meet our electricity needs without nuclear power. However, these are not the only studies to demonstrate this. I shall now explore in brief some illustrative scenarios that explicitly exclude nuclear power, which show that there are a number of different ways in which we could decarbonise without nuclear. Each scenario would have different impacts and require different support mechanisms to deliver.

However, none of these scenarios would be the natural result of the government’s energy policies and the Electricity Market Reform package as presented in the draft Energy Bill.

GARRAD HASSAN MODELLING FOR WWF

In 2011, WWF commissioned Garrad Hassan to model six different electricity scenarios that explored different ways to achieve a 2030 carbon intensity limit of 50 grammes/kilowatt hour.36

Central scenario for electricity demand with system security maintained with gas

In this scenario demand is high and security of supply comes from lots of gas plant with very low utilisation. This scenario risks oversupply of gas and under present policy would involve considerable capacity payments that would drive up bills. Regrettably, it is the most likely scenario given the Secretary of State’s misguided support for up to 20GW of new gas plant and the implausibility of 16GW of new nuclear coming on stream by the mid-2020s.

— 425 TWh demand.
— 73GW renewables capacity.
— 261 TWh renewables production.
— 56GW gas capacity (18GW requires carbon capture and storage (CCS)).
— 3GW interconnection capacity (already existing).
— Average utilisation rate for gas capacity: 33%.

Build rate: level 1—3 in DECC 2050 Pathways study. On- and offshore wind are at or below level 2.

Central scenario for electricity demand and system security maintained with interconnectors

This scenario has the same (high) demand as the previous scenario, but meets security of supply issues through interconnector capacity.

— 425 TWh demand (7–7.5% less than CCC demand scenarios).
— 73GW renewables capacity.
— 261 TWh renewables production.
— 24GW gas capacity (17GW requires CCS).
— 35GW interconnection capacity.
— Average utilisation rate for gas capacity: 78%.

Build rate: level 1—3. On- and offshore wind are at or below level 2.

Ambitious reduction of electricity demand and system security maintained with interconnectors

This scenario involves some progress towards the level of demand reduction potential identified in the McKinsey study, which brings capacity well within achievable limits.

— 338 TWh demand.
— 59GW renewables capacity.
— 210 TWh renewables production.
— 20GW gas capacity (13GW requires CCS).

— 27GW interconnection capacity.
— Average utilisation rate for gas capacity: 73%.

Build rate: below level 2 in DECC 2050 Pathways study.

Stretch scenario—renewables, demand reduction and interconnectors

This scenario assumes that CCS does not deliver and focuses instead on more ambitious renewables deployment coupled with interconnectors and low-utilisation gas plant.

— 338 TWh demand.
— 83GW renewables capacity.
— 295 TWh renewables production.
— 16GW gas capacity.
— 27GW interconnection capacity.
— Average utilisation rate for gas capacity: 31%.

Friends of the Earth no-nuclear scenario

Friends of the Earth has also modelled a scenario that achieves decarbonisation without new nuclear.37 Their scenario is based on DECC’s 2050 pathways work and assumes:

— 470 TWh demand.
— 350 TWh renewables production.
— 30GW interconnection capacity.
— 20GW storage capacity.

Other third party scenarios using DECC’s 2050 pathways

Other organisations and members of the public have also produced scenarios based on DECC’s 2050 pathways work. For example, the Association for the Conservation of Energy has produced 10 illustrative scenarios that would meet demand through to 2050 without new nuclear.38 As with the other studies I have considered, there will be strengths and weaknesses to each of these pathways. Although they are not considered here, their existence is further evidence that it would be technologically possible to achieve decarbonisation and maintain energy security without new nuclear capacity.

Decarbonisation Without Nuclear Would Need A New Approach to Energy

The question is not whether or not we can decarbonise our electricity without nuclear power, but what pathway to decarbonisation would be best for the UK. Each approach has some positive and some negative impacts. It is for government to weigh these impacts up and decide what scenario it prefers—and then put the necessary policies in place to deliver it.

If the government chose to deliver a no-nuclear scenario, then it would need to introduce support mechanisms and other measures to deliver demand reduction, interconnectors and other means to increase flexibility in the grid. This will not result from the present energy policies, including those outlined in the Electricity Market Reform and the Energy Bill. Indeed, it will only happen when the government puts the same level of effort into delivering an alternative to nuclear that it has spent thus far on trying (and failing) to deliver nuclear.

Given the risk that nuclear does not deliver, it would be prudent for government to firstly set out a plan for Britain’s future electricity that includes little or no new nuclear capacity and then implement the policies necessary to deliver it.

November 2011

Written evidence submitted by the Institution of Civil Engineers (NUC 19)

1. SUMMARY

1.1 The recent new build projects in both France and Finland offer some important findings for the delivery of future nuclear plants within the UK. These practical lessons cover a number of issues arising from the design, construction and commissioning of the new nuclear power stations Flamanville 3 (France) and Olkiluoto 3 (Finland). Both these projects have been delayed for a number of reasons, resulting in increase in cost.

1.2 For ease of reference the lessons arising from experience have been discussed under the following sections headings:

— Communication.
— Preparation.
— Time management.
— Cross-party involvement and the sharing of evidence-based knowledge.
— Project management.
— Recommendations from international regulators.

2. COMMUNICATION

2.1 In both cases a key lesson was that early communication between regulator, licensee and vendors has been stressed as key to a smooth running new build nuclear project. This is emphasised as a necessity across the planning and construction stages of new nuclear plants and across all parties. The research suggests that:

— a comprehensive communications network between vendors, licensee and regulators should be made a priority in the early stages of any nuclear new build;
— communication is especially important, if relevant parties are geographically separated;
— contractors should be involved with the project management and design teams in the production of integrated programmes and detailed schedules from the start;
— the vendor and contractor should have a clear understanding of nationally-specific regulation and should not rely on the regulation set by, and learnt in, a different country as a guide; and
— regulatory understanding can be improved by the provision of adequate regulation resources (including the safety assessment of nuclear plants) by the regulator at an early stage. Notably:
— These should be specific to the design so the vendor can identify crucial safety issues.
— This action would help prevent the vendor proceeding in a manner that contravenes regulator guidelines and a cause for delays in the future.

3. PREPARATION

3.1 Selection and management of knowledgeable and able contractors (and sub-contractors) is necessary in the preparation stage of new build nuclear plants.

— When initial tenders are issued it should be made explicitly clear, and as prerequisite to bidding, that a contractor has an awareness (and preferably prior experience) of nuclear specific construction practices. In particular:
— Contractors’ ability ‘on the shop floor’, should be evaluated to ensure the contractors have the right skills and knowledge base necessary for the building of a nuclear power plant.
— Auditing of work done and quality control is insufficient and cannot sufficiently reduce the risk of a nuclear project stalling.

4. TIME MANAGEMENT

4.1 The research shows that insufficient time allocation to specific construction plans has caused great problems. Projects have been delayed because of the need to resubmit poor and hurried design plans to the regulator. Ironically, delay due to resubmission raises the amount of time spent on the design element of the process. In particular reference to Olkiluoto 3, detailed designs of construction came too late—causing a delay in the schedule of the build programme and past nuclear projects have been delayed because construction has started on site before all the detailed plans have been submitted and approved by the regulator.

4.2 The risk of a project stalling can be reduced by:

— allocating the necessary time to each stage of the project and allowing for the timely completion of each design;
— not starting construction with incomplete designs (which can be detrimental to the implementation of a project to a pre-determined schedule);
— transferring responsibility and knowledge from construction teams to commissioning teams, and on to the station’s operation staff (a process facilitated by appointing commissioning and station operations teams’ early);
— actively encouraging collaboration between all parties; and

— as a rule, new stations should be based on the application of proven technology and established
design to avoid delays at the design and construction phase (follow-on replica stations are cheaper
and take less time to construct than those that use “first of a kind” technologies).

5. CROSS-PARTY INVOLVEMENT AND THE SHARING OF EVIDENCE-BASED KNOWLEDGE

5.1 A lack of awareness of nuclear-specific work practices amongst contractors and sub-contractors in nuclear
new build projects was the cause of delay at Flamanville and Okiluoto. Therefore:

— the awareness of nuclear quality and understanding of nuclear safety culture must be taught to
companies that may have little or no previous nuclear experience; and

— management of work conducted by subcontractors represents a challenge in its own right and quality
of work cannot be guaranteed by auditing a prospective contractor alone—the evaluation of a
contractor’s (and subcontractor’s) work in a practical setting is also important.

6. PROJECT MANAGEMENT

6.1 The lack of management of subcontractors has been an issue that contributed to delays on nuclear new
builds and adding costs as a result. Flamanville 3 was delayed by the work of subcontractors—the base layer
of concrete cracking and due to crane failure. A lack of adherence to a specific brief meant there were the
following (delay invoking) issues at Flamanville 3:

— the specification of concrete, particular to a nuclear plant, was not adhered to by the sub-contractor
responsible;

— the crane provision did not follow a bespoke design specific to a nuclear build;

— there was a high rate of repair reported on certain sections of the steel liner (giving the nuclear
reactor its domed roof);

— the absence of comprehensive quality control provision by the operator meant the welding conditions
needed were not adequately controlled; and

— limitations around technical supervision on the part of the operator of the plant meant mistakes
were made.

6.2 These issues were remedied by the regulator requiring the operator to submit monthly reports on the
actual implementation of its design plans and to assess their effectiveness. Following this, the operator was
commended by the regulator for its improvement measures. The following points can be learned for future
projects:

— nuclear plant construction requires a greater degree of adherence to specification than other forms
of construction;

— the inspection of work carried out at each stage is advisable; and

— a requirement of regular design implementation reports should be beneficial if delays to the schedule
of any new build nuclear project are to be avoided.

7. RECOMMENDATIONS FROM INTERNATIONAL REGULATORS

7.1 The UK, Finnish and French regulators have all raised concerns about the instrumentation and control
systems for the EPR reactor (one of the designs deemed suitable for the UK). The three national regulators
asked the AREVA-EDF consortium to make improvements to the EPR design (which the consortium has
agreed to do). The three regulators recommended that:

— independent control systems for the construction of new builds that are different from the day to day
operation of the power plant (independence is deemed necessary because, if a safety system provides
protection against the failure of a control system, then they should not fail together); and

— a close collaboration between parties to promote the harmonisation of regulatory standards to achieve
the highest levels of safety during construction and during the operational lifetime of EPRs.

7.2 This example highlights how different countries’ independent regulators collaborate to promote a shared
understanding and application of existing international standards.

July 2012
Written evidence submitted by the Institution of Mechanical Engineers (NUC 08)

EXECUTIVE SUMMARY

1. The Institution of Mechanical Engineers represents around 100,000 professional engineers who will have a pivotal role in building new nuclear power stations in the UK. The IMechE believes that nuclear new build has a significant role to play in delivering a balanced energy portfolio, which will provide the UK with affordable, low-carbon and secure electricity supply, while simultaneously helping to stimulate economic activity, creating jobs and providing export opportunities for UK businesses.

Our response to selected questions is as follows:

Q1. The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

2. The Institution is pleased that the Committee is aware of the significance of the Electricity Market Reform (EMR) process in determining the viability of investment in new nuclear power stations and looks forward to the timely completion of it. Any delay in publishing the full details associated with this critical and as yet unresolved piece in the framework would be most unwelcome. The Institution is particularly concerned about the degree of complexity that may be in the EMR, particularly the implementation of the Contracts for Difference (CfD) mechanism and the lack of transparency on where the ultimate liability will rest for the electricity supply contracts entered into.

3. The Government has done a significant amount of work over the past two years to remove the barriers to investment in new nuclear power stations in the UK, particularly with regard to planning, reactor design approval and regulatory justification. Many of these barriers were identified in our March 2010 report “Nuclear Build: A Vote of No Confidence” and we are pleased to see that they are being addressed. The Institution welcomed the introduction of the National Policy Statements for Energy Infrastructure. The Government must follow-through on this and ensure that if and when the development of the new nuclear power stations are provisionally approved by the Infrastructure Planning Commission or its successor, that the Secretary of State does not delay in making the decision to approve (or reject) the submission. The Institution also appreciates the essential role of the UK’s independent nuclear regulator. We therefore welcome the Government’s plan to make the Office for Nuclear Regulation an independent statutory body outside of the Health and Safety Executive.

4. The Government should be applauded for this progress in creating what is now one of the best environments in the world for a nuclear new build programme, however it should also be recognised that it is taking a courageous approach to its policy on new build. No nuclear programme in the world has as yet moved forward without State funding and to rely entirely on the market to deliver the desired capacity in the timescale preferred, particularly in the context of a dependence on overseas companies to take lead roles and deliver the projects, is a considerable act of faith. As pointed out two years ago in our March 2010 report “Nuclear Build” the principle threat in such a context is the fact that the key factors that contribute to the investment decisions for new UK nuclear power stations are externalities that the UK government has no control of, evidenced by the recent departure of RWE and E.ON from the UK new nuclear build market with their decision to sell Horizon. The Government can therefore create the best and most attractive investment framework in the world but events abroad and decisions taken in boardrooms overseas, for a plethora of commercial, business and strategic reasons, can mean no investment, or curtailed investments, in UK nuclear new build. It is the Institution’s belief that the Government has not adequately considered the possibility that externalities and business decisions outside of the UK could result in no new nuclear power stations being built in the UK and it has not prepared contingency plans for action in the case of such an outcome.

Q2. What have been the political and policy impacts of the Fukushima incident?

5. The Government and the UK media reacted with clarity and assurance to the Fukushima incident, unlike a number of other countries who may already regret their knee-jerk response to reject new nuclear. As the UK already had one of the most stringent and well considered nuclear regulatory regimes, there was very little impact on the proposed reactor designs. However, the decision by the German Government to close their nuclear plants early has clearly had a negative impact on E.ON and RWE contributing, along with a number of other factors, to their decisions to withdraw from Horizon Nuclear Power. Whilst this is likely to delay the construction of new plants at Wylfa and Oldbury, new owners for Horizon are now being sought and the developments may proceed smoothly in due course.

6. There may however be a further more fundamental political outcome for the UK from these recent developments with Horizon. In this regard, until now the Government has enjoyed a benign environment in the public opinion landscape, which in the majority ranges on a spectrum from ambivalence to positive support for new build, with little significant opposition. The entry of non-European players into the new owner consortium for Horizon might change this significantly, particularly if public perception shifts to one where the new consortium is seen to be composed of developers either in some way responsible for or connected with Fukushima, or as being in the same peer group. Arguments about the UK having the world’s best regulated industry, in the form of the Nuclear Installations Inspectorate, might not make much difference. It is conceivable...
that such a shift in public thinking might undo much of the good work that the Government has done to date on creating an attractive investment environment in the UK for new build. The Institution believes that one of the key factors that potential investors look for when making their investment decision is a positive public opinion environment, alongside a stable long-term robust policy framework and guaranteed investment returns.

Q3. What lessons can be learnt for building new reactors to timetable and within budget from the experiences of France and Finland and elsewhere?

7. The Institution provides a comprehensive response to this question through its participation in the Engineering the Future Report, “Nuclear Lessons Learned”, referred to in the Engineering the Future response to this Inquiry. However, we note here some key lessons from Flamanville 3 and Olkiluoto 3:

— Do not start construction until the design is fully approved and the method of construction is fully understood and approved by the regulators and the developer’s organisation.

— Ensure that quality requirements are specifically defined before the work is started so that the regulator, the developer and the contractor all understand the acceptance criteria for the work.

— It is important to have clear, informed leadership and strong cohesion across all parties involved in the project, engaging early and working in partnership with key contractors.

— Engage with the local community and the supply chain early and regularly during construction to ensure that skill shortages are avoided and that training can be undertaken well ahead of the requirements.

— Engage with the regulators early and regularly to ensure that there are “no surprises”.

— Only use contractors with an exemplary safety record as nuclear projects will need to demonstrate an excellent safety record.

Q4. What impact might global demand for nuclear power put on plans to build new nuclear power stations in Britain (there are currently 60 new nuclear power stations under construction worldwide and a further 150 planned)?

8. Increased global demand will stimulate increased capacity such that more competition will emerge and prices should be more attractive, quality should also increase. As the UK is not at the front of the queue for new nuclear plants there may be some initial delay as new capacity comes on-line but other countries are now forging ahead and so the UK should benefit from this stimulus. This factor mainly applies to manufacturing facilities. However, the demand for qualified engineers and skilled workers is likely to also grow and the lure of exciting nuclear construction jobs around the world at a time of low demand in the UK is likely to pull resources overseas. It is therefore essential that the momentum is maintained in developing new nuclear projects in the UK to retain the skills that we will need. If there is a hiatus then engineers and skilled workers will give up waiting for the UK and be tempted abroad to work on international nuclear projects.

Q5. Are there any other potential barriers to the construction of new nuclear power stations in the UK?

9. The Institution sees the following potential barriers in addition to those already discussed:

10. The combination of poor European economic and energy trading conditions, uncertainty around the financial attractiveness of new nuclear projects and the occurrence of the Fukushima incident have all contributed to a loss of momentum in the overall new build programme. This means that rather than having a steady build-up of resources required to build a fleet of new nuclear power plants, there is likely to be a rapid spike in demand once the projects proceed with an associated rapid decline as they are completed. This is not the most efficient or desirable situation and will increase cost or potentially cause delay as resources become scarce.

11. The Government must also achieve demonstrable and significant steps towards addressing the public’s valid concerns about long-term nuclear waste management. Whilst the Institution appreciates that the volunteer approach to the selection of a site for the Geological Disposal Facility (GDF) for nuclear waste takes time, surely it is time to move forward.

12. It is essential that the transmission grid is ready to accept the new generating capacity.

Q6. Other than reforming the electricity market and planning process, what steps could the Government take to remove barriers to the delivery of new nuclear power stations in the UK?

13. Implementation of EMR is now the most essential enabler.

14. With regard to the potential barriers identified in response to Q5:

15. It may be advantageous for the Government to broker a more sustainable schedule of construction, potentially bringing forward the start of construction of some plants (Sizewell C and Wylfa B). In addition, the potential plans for additional new nuclear beyond 2025 should also be considered soon to ensure that the right level of resources are trained such that a build-up in capacity can be sustained over a longer period of time at a steady level without sharp peaks and troughs.
16. Proposals have been brought forward to accelerate the siting and construction of the GDF, these must be examined and, where achievable, implemented as soon as possible. The Institution believes that it would be unreasonable to expect the public to accept the construction of new nuclear power stations without having a fully defined plan for dealing with long term nuclear waste.

17. In particular the more remote sites on Anglesey and in West Cumbria need to be robustly connected to the main transmission grid well ahead of the new plants coming online. Whilst this is the responsibility of National Grid Company, the Government can support the development of the supporting infrastructure projects where it is environmentally acceptable to do so.

18. Additionally, the Institution believes that a greater emphasis on strategic nuclear research & development (R&D), supported by the Government, is essential to demonstrate to the public that nuclear power has a long term future and that progress is still being made to design safer and more cost effective power plants in the future. This will also draw in new scientists and engineers who will be needed to support the operation of the new fleet of nuclear plants. The House of Lords Science & Technology Committee’s inquiry into nuclear R&D suggested a long term strategy for energy policy is required. This would be a good opportunity for the Government to demonstrate leadership and commit to the public that this technology has a valid contribution to make over the long-term. The Institution would welcome the opportunity to help the Government devise the route forward for nuclear R&D.

19. Finally, it is important the Government prepares a strategy for dealing with the potential barrier that may be created if, as raised in our answer to Q2, public perception and opinion shifts to include a substantial component which does not, or no longer, supports a nuclear new build as a result of a non-EU composition in the consortium that emerges as the new owners of Horizon.

Q7. How feasible is the Government’s indicative timeline, which shows the first new nuclear power station being built by 2019? And what level of nuclear capacity is likely to be available by 2025?

20. If permission is granted for EDF to start full construction of Hinkley Point C by the start of 2013, it may be possible to have first electricity generation by the end of 2019, but the first project in a programme is always likely to hit problems so it will certainly be challenging to meet this timescale. However, if there is a good business case for building the first plant, others will follow and they will learn from the lessons which are likely to be discovered on the first plant. Of course, the first plant will attract the best resources so there are advantages to starting first.

21. Provided that there is no hiatus between the starting dates of the subsequent plants then it should be possible to build all the five plants now being considered by around 2025 but this will require coordination between the developers, the contractors and the training organisations to ensure that sufficient, suitably qualified and experienced resources are available at the right time.

22. The issue about peaking raised in answer to Q5 should also be considered. If resources do become limited, then the programme is likely to be pushed back so that the last of the planned reactors will not come on-line until perhaps 2028.

Q8. What will be the consequences of failure to deliver a first new nuclear power station by 2019? Should any contingencies be put in place?

23. Whilst it would be disappointing if the first new nuclear plant is not on-line by 2019, the delay ahead of the start of construction are less costly than delays during construction so it is more cost effective to fully plan the project before proceeding. It is also essential that lessons learnt during the construction of the first plant are passed onto subsequent projects. However, new nuclear was never likely to address the reduction in generating capacity that will occur toward the middle of this decade, for which other technologies such as gas-fired plant will be required. If there is a delay in first generation of new nuclear by a few years, this, in itself, should not directly lead to a security of supply problem.

24. Of greater concern is the infrastructure required to support the delivery of generation from these new nuclear plants and it is essential that the transmission grid reinforcement proceeds without delay to meet the completion dates for the generating plants.

Q9. What are the prospects for extending the life time of existing reactors?

25. This is a matter for EDF Energy. Whilst some life extension is likely to be achieved we cannot rely on the generation of electricity beyond the end of current operating lives of the existing plants. If inspections indicate any reduction in the margins of safety, EDF in consultation with the nuclear Regulator will have to implement a cease of operation with the associated loss of generation.
Written evidence submitted by the New Nuclear Local Authorities Group (NUC 16)

1. SUMMARY

1.1 NNLAG authorities that are being asked to host Nuclear New Build (NNB) Power Stations on behalf of the nation recognise and welcome the potential opportunities new nuclear development can bring to an area.

1.2 NNLAG believe that, in view of the impacts and disturbance placed on local communities by the construction, operation and decommissioning of NNBs, which cannot be dealt with via the planning system, that it is necessary that Community Benefit Contribution (CBC) packages are delivered as appropriate to the communities hosting such development.

1.3 In line with the principles of the Localism Act, NNLAG consider it important that local communities should have “the opportunity to exercise influence over decisions that make a big difference to their lives”. The Act also seeks to provide “appropriate support and recognition to communities who welcome new development” (both quotes from the CLG Plain English Guide to the Localism Act).

1.4 NNLAG request that the Committee consider how Community Benefit can be considered through a suitable formal mechanism such as regulations, which:

— Provides a clear and transparent framework which formally enshrines the concept of Community Benefit under appropriate legislation or associated guidance.
— Addresses the inherent inconsistency between renewables and other low carbon energy generation technologies.
— Recognises the role communities play in hosting such developments morally, politically and practically.
— Reflects the overall scale, nature and national significance of the development and the particular local circumstances of the host communities.
— Provides short and long-term benefits to host communities, reflecting the longevity of nuclear new build.

1.5 Given that the first NNB application is currently at Examination, with a decision expected to be taken by the Secretary of Stage for Energy and Climate Change by March 2013, NNLAG are of the view that resolution of the community benefit issue is urgent. In the interim NNLAG suggests that whilst regulations are being drawn up we would welcome Government intervention to ensure appropriate consideration is given to a voluntary community benefit protocol.

2. INTRODUCTION

2.1 The New Nuclear Local Authorities Group (NNLAG) welcomes the opportunity to provide written evidence to the committee regarding their inquiry into “Building New Nuclear: The Challenges Ahead”.

2.2 The group would also like to express their interest in providing oral evidence at one of the further evidence sessions to be held as part of this inquiry later in the year.

2.3 NNLAG is a Special Interest Group of the Local Government Association (LGA). The group comprises of senior members and officers from Local Authorities that are affected, or likely to be affected by new nuclear developments in the UK.

2.4 NNLAG Authorities as of June 2012 are:

— Allerdale Borough Council.
— Anglesey County Council.
— Copeland Borough Council.
— Cumbria County Council.
— Lancashire County Council.
— Lancaster City Council.
— Sedgemoor District Council.
— Somerset County Council.
— South Gloucestershire Council.
— Suffolk Coastal District Council.
— Suffolk County Council.
— West Somerset Council.

2.5 The group also works with another LGA Special Interest Group—the Nuclear Legacy Advisory Forum (NuLeAF)—on areas of mutual interest as and when appropriate.
3. **The NNLAG Response to Committee’s Questions**

3.1 The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

3.1.1 From a local authority perspective we would anticipate that the strength of feeling from potential host communities and policies expressed in Local and Neighbourhood Plans regarding new nuclear power, may contribute to a company’s investment decision for a particular site. Awareness raising and consultation at the earliest opportunity with local communities, beyond that envisaged by the Planning Act 2008, will be mutually beneficial for both developer and host community in setting expectations, establishing positive dialogue and understanding the level of support for a new nuclear development.

3.1.2 Other factors include:
- Developer and Local Authority commitment to partnership/proactive working.
- Evidence of stability in local populations or levels of work related migration to guarantee succession planning in the workforce.
- Infrastructure/environmental implications of siting a new nuclear development and the associated mitigation costs.

3.2 What have been the political and policy impacts of the Fukushima incident?

3.2.1 Where substantial local opposition to new nuclear schemes arises, the Fukushima incident will be the highest profile example used to highlight potential dangers of new nuclear. It can be expected that material relating to the incident will be used in counter evidence requiring thorough and robust technical rebuttals during any new nuclear Development Consent Order process.

3.2.2 Events at Fukushima appear to have triggered nervousness around long-term safety implications of nuclear power stations (eg Germany now moving away from nuclear power). However, these events have led to thorough reviews and stress testing of nuclear facilities which may provide some comfort to nuclear host communities.

3.3 What lessons can be learnt for building new reactors to timetable and within budget from the experiences of France and Finland and elsewhere?

3.3.1 It is important to recognise that there is a certain element of uncertainty regarding the timescales for construction of a nuclear new build. Consequently, some flexibility is required regarding any agreements entered into on mitigation of impacts.

3.4 Are there any other potential barriers to the construction of new nuclear power stations in the UK?

3.4.1 The need for engagement with local communities

3.4.2 In line with the principles of the Localism Act, NNLAG consider it important that local communities should have “the opportunity to exercise influence over decisions that make a big difference to their lives” (CLG Plain English Guide to the Localism Act). A decision to build a new nuclear power station will make a big difference to the lives of local people in the short, medium and very long-term.

3.4.3 The views of local communities, local authorities and organisations are therefore crucial in the decisions that are taken around the development of proposals for new nuclear projects and their associated developments.

3.4.4 Local economic opportunities

Without the right interventions at the right time there is a risk that local economic opportunities may not be realised from new nuclear build proposals. If the appropriate skills are not in place for the various phases of a project there is the risk that developers will need to employ larger numbers of workers from outside the local area or that they will not be able to adequately resource the programme which could result in delays to the project.

3.4.5 Timely work should be carried out by developers to lay foundations for a local supply chain—ensuring local businesses have equal access to opportunities and are able to prepare for their input into projects. For example, in Cumbria 12% of businesses already sell goods or services to the nuclear sector but many organisations, especially smaller ones, say they find it difficult to meet the tender requirements and bid for contracts.

3.4.6 The DECC draft supply chain and skills action plan is a crucial piece of work that Local Authorities should engage and input to.
3.4.7 Addressing the Legacy Created by New Nuclear Power

3.4.8 One of the serious problems that the country has to address in relation to the decommissioning of existing nuclear power stations is the lack of provision that has been made for their wastes. There is concern that lessons are not being learned from this experience and that nuclear new build is being pursued with no requirement to include proposals for managing these wastes. It would appear logical that this matter should be taken into account at the design stage.

3.5 Other than reforming the electricity market and planning process, what steps could the Government take to remove barriers to the delivery of new nuclear power stations in the UK?

3.5.1 Industry

3.5.2 NNLAG welcome the Electricity Market Reform as part of the Energy Bill. This is a clear step that needs to be taken to ensure that stable conditions/the right mechanisms are in place to attract the level of investment that is necessary to enable secure, renewable and low carbon sources of electricity to be developed at the required pace within the UK.

3.5.3 The key role of local communities

3.5.4 Communities that are likely to play host to new nuclear developments require certainty with respect to the way in which impacts will be mitigated and what level of compensation/reward can be anticipated in relation to hosting a nationally significant project of this nature.

3.5.5 The Localism Act seeks to provide “appropriate support and recognition to communities who welcome new development” (CLG Plain English Guide to the Localism Act). In line with this, we see Community Benefit as the means by which local communities can be fairly and reasonably recognised for hosting an infrastructure proposal which will have a transformational effect upon their lives. Given the scale of the development proposed, particularly during construction, the planning system will not address all of the potential long-term and far reaching effects. The following matters are examples of impacts that could not be fully addressed through planning obligations:

- Creating sustainable economic growth to support the delivery of new nuclear in a new build area (and the wider UK).
- Ensuring that the locality sustains existing business communities and continues to attract investors from other sectors (eg agricultural sector, recreation and tourism industries).
- Scale and duration of disturbance to the social, economic and environment of local communities (a nuclear new build takes approximately nine years and involves a temporary influx of up to 5,000 construction workers, and substantial traffic movements. This scale of disturbance is very significant in comparison to, for example, a new retail scheme or new road which on average may take two to three years to build).
- Residents’ perceived impacts on quality of life and wellbeing.
- Impacts on those that will not receive any direct benefits, such as employment opportunities.
- Long-term well being of an area (eg avoidance of a “boom and bust” scenario).

3.5.6 Given the nature of nuclear facilities in most cases host communities are more remote from larger centres of population with their own challenges in terms of popularity of location. By way of example, most home grown graduates will elect to stay away after graduation attracted by different lifestyles. Equally, attracting inward migration might be hampered by lack of attractive local facilities, schools and amenities to incentivise potential migrants. It is this related work which goes far beyond planning obligations.

3.5.7 NNLAG would urge the Committee not to overlook the key role local communities’ play in the delivery of new facilities that will generate the low carbon energy that the UK requires. Furthermore, the role, function and importance of engaging with local communities has been elevated following the enactment of the Localism Act. NNLAG believe that host communities of new nuclear developments see direct benefits from hosting these vital projects in the short and long-term.

3.5.8 The National Infrastructure Plan 2011 issued by HM Treasury states at paragraph 3.81: “...Engage with developers and local authorities on community benefit and bring forward proposals by 2012 for reform of the community benefit regime to provide greater certainty for all parties.” It is the firm belief of NNLAG that the means by which this could be achieved is, in part, through appropriate regulations that recognises the burden that is borne by those local communities most affected by new nuclear build, and enables host communities to receive/retain an appropriate element of the financial benefits that would be generated from a new operating nuclear power station. That said, NNLAG acknowledge that new nuclear build is capital intensive during the construction phase and that this may be reflected in how much and when communities could expect to receive community benefits.

3.5.9 NNLAG would also like to highlight support for comments made by EDF Energy’s CEO, Vincent de Rivaz at the Nuclear Development Forum on 15 May 2012, that: “It is also important that host communities
appreciate and see direct benefits from hosting these vital projects. I hope we will see this principle enshrined in regulations.”

3.5.10 Whilst the planning system enables the direct impacts of nationally significant infrastructure to be mitigated, it will not go far enough in the case of new nuclear development. We believe a Community Benefit Contribution scheme could be used to recompense communities outside of the Section 106 Agreement, ie outside the direct negative impacts that are quantifiable and evidenced before development starts.

3.5.11 The purpose of Community Benefit is to recognise communities for significant infrastructure projects that they host. The Wind Industry currently operates a per megawatt community benefit scheme for new on-shore wind farms and the Renewables sector as a whole has a commitment for business rate retention.

3.5.12 All the criteria used in the Government’s Consultation on Business Rate Retention—including “creating a diverse energy mix; decarbonising our economy; creating energy security; protecting consumers from fossil fuel price fluctuations; driving investment and jobs; meeting carbon emissions reductions commitments; and incentivise development for growth”—are equally applicable to new nuclear development.

3.5.13 Regardless of whether business rates is the most appropriate vehicle to deliver community benefit what NNLAG are principally emphasising is that there is an inherent inconsistency between new nuclear and other forms of low carbon energy generating facilities. Why should a community that hosts a biomass generator benefit from the potentially significant sums generated by 100% retention of the business rate, whilst the new nuclear power station host communities receive no such reward?

3.5.14 Clearly local authorities would be concerned about any mechanism which could negatively impact upon any Government settlement and before any final decision is made regarding a delivery mechanism. Should community benefit be forthcoming, a full assessment would be required. It should also be noted that Welsh Government are currently reviewing business rates (proposals for 50% business rates retention for new developments for up to five years) and this may evolve into a different implementation model relating to new build in Anglesey.

3.5.15 Community Benefit funds can be used to stimulate and sustain wider economic growth and indeed tackle barriers to growth, which cannot be met by existing Central Government or private sector finances. An example might be critical infrastructure required to enable UK businesses to participate more fully in the energy supply chain.

3.5.16 In West Cumbria, where the potential for job creation and economic growth through the energy sector is complemented by ongoing diversification of the economy and a growing emphasis on visitors, appropriate transport infrastructure is vital. This is not only to serve narrow energy sector travel-to-work or freight movement needs, but for connecting local labour markets to employment opportunities, connecting businesses of all kinds to local, national and international markets, and attracting visitors to extend their reach from the Lake District to the coastal areas, in a sustainable way. Development and funding of such infrastructure is seen as an intrinsic part of the package for playing host to new nuclear development.

3.6 How feasible is the Government’s indicative timeline, which shows the first new nuclear power station being built by 2019? And what level of nuclear capacity is likely to be available by 2025?

3.6.1 In the case of Hinkley Point C, EDF Energy is not expected to make a final investment decision until the end of 2012. EDF’s decision, like many other energy companies, will inevitably be impacted by what progress is made with EMR (in addition to general uncertainty in international finance/energy markets).

3.7 What will be the consequences of failure to deliver a first new nuclear power station by 2019? Should any contingencies be put in place?

3.7.1 In some cases such as Heysham, there is stability in terms of workforce retention and replacement. If new stations are further delayed, existing plans will move into the decommissioning process and skilled workers will be tempted to migrate to other plants, rather than move onto the new facility. The impact on remoter communities in relation to loss of income from spending in the local economy, even on the local housing market, could be significant.

3.7.2 Clearly failure to deliver new nuclear, and more broadly low-carbon energy generation will result in a continued reliance on fossil fuels which ultimately will have a greater environmental impact associated with the emissions of carbon.

3.8 What are the prospects for extending the life time of existing reactors?

3.8.1 This is an option that should be explored further.

July 2012
Written evidence submitted by Nick Butler (NUC 30)

I should like to add a few comments to the answers given to the Committee’s question on 23 October.

First on the question of whether nuclear new build is essential to meet the UK’s long term emissions targets. I believe nuclear could be part of the story if the price is reasonable but it is not absolutely essential.

I believe that over four decades it is likely that technical advances could dramatically affect both the production and consumption of energy—as they have over the last four decades. The technology to develop shale gas and tight oil has advanced only over the last 10 years but is already beginning to have a major impact on patterns of supply. Engine and grid technology is advancing all the time. We cannot predict which changes will occur (advanced batteries, cost effective methods of carbon sequestration, the use of biology to convert waste into power?) but it is wrong to assume that technology will stand still and that to meet the targets we have to plan only on the basis of what is available today.

If nuclear is too expensive it would be perfectly reasonable to include a significant element of natural gas in the energy mix for the foreseeable future and to use the money saved for spending on targeted research. If successful that research could help achieve global and not just national emissions reductions.

Secondly on the price of nuclear. The secrecy surrounding the negotiations which the Committee encountered is deplorable. The companies claim to be going through a process of cost discovery. They have had years to prepare for the negotiations and are fully aware of the costs of the stations being built in France. I believe every aspect of the negotiations should be made public since in the end consumers and taxpayers will be meeting the bill. A figure of £.100 has been mentioned. That figure is valid if supported by an open demonstration of the cost calculations but must include a complete and unequivocal acceptance of all the risks by the plant operators. It would be unacceptable to find that such a figure had been agreed and then discover that the risks had been transferred to the taxpayer or the consumer.

I believe EDF and the others run the risk of losing the goodwill and support for new nuclear which they have built up by failing to answer legitimate questions on the costs.

Thirdly, I was asked about the capability of the Department. I believe the Department is very stretched and somewhat demoralised. But my comments should not be taken as criticism of the responsible civil servants. From direct experience of working with them when I served in No 10 I know them to be diligent and capable.

The problem is the absence of effective Ministerial leadership in setting policy objectives and in ensuring that the Department has sufficient senior stuff to fulfil all its statutory and policy making duties.

The civil service should not be blamed for the absence of clear policy guidelines within which detailed decisions, including the decisions on new nuclear, can be made.

Nick Butler
Kings College London
October 2012

Written evidence submitted by NuGeneration (NUC 24)

About NuGeneration Ltd

NuGeneration Ltd (NuGen) welcomes the opportunity to provide a written submission to the Energy and Climate Change Committee on the challenges facing new build nuclear in the UK.

NuGen is a UK nuclear company owned by GDF SUEZ and IBERDROLA, with offices in London and West Cumbria. Our Moorside project focuses on 200 hectares of land on the West Cumbrian coast where it aims to develop and build up to 3.6GW of new nuclear capacity.

NuGen’s parent companies, IBERDROLA and GDF SUEZ between them own and operate almost 10,000 MW of nuclear capacity across Belgium and Spain—and have more than 230,000 employees worldwide, with almost 23,000 employees in the UK. They have extensive international experience in project development and have a track record of global energy projects in more than 20 countries.

In October 2009, NuGen announced we had been successful in securing an option to purchase land for the development of a new nuclear power station near Sellafield in West Cumbria from the Nuclear Decommissioning Authority (“NDA”). In June 2011, the UK government confirmed through its National Policy Statement, that NuGen’s site was suitable for a new nuclear power station.

NuGen is preparing detailed plans for developing a new nuclear power station at the site, which will be submitted for consideration by the relevant planning authorities with the aim of a final investment decision being taken around 2015. These plans will be prepared in full consultation with the safety authorities and local stakeholders. On this basis, the expectation is that Moorside Nuclear Power Station would be commissioned around 2023.
(i) **Summary Key Points**

— We believe that new nuclear power stations can make a significant contribution to the UK’s future energy needs, providing safe, secure supplies of low carbon electricity at reasonable prices for future generations.

— NuGen welcomed the publication of the Government’s recent draft Energy Bill as a significant step forward on encouraging investment in new nuclear build. Nevertheless, there remains a great deal of work to do in order to complete the detailed design and we and our shareholders will play our part in that process.

— A number of factors other than successful conclusion of EMR proposals will be considered as part of the investment decision including:
  (a) A robust and effective regime for planning consent and other approvals.
  (b) A supportive political and public opinion framework.
  (c) Equitable treatment in the transmission charging regime.
  (d) A strong, impartial system of safety and other regulation which commands public confidence.
  (e) The availability of a skilled workforce and a suitable supply chain.

— NuGen is committed to learning lessons from other programmes as we develop our project towards a final investment decision.

— The UK has a long history of nuclear operations and is at the forefront of new nuclear development in Europe—as such this is an excellent opportunity to ensure Britain is well positioned to secure the supply chain resources needed for new nuclear orders.

— A potential shortage of nuclear skills is an issue—but positive initiatives highlighting the gaps, and showcasing the attractions of joining the industry, are underway.

— It is important that local communities see a clear benefit from large infrastructure projects—the Nuclear Industry Association is discussing how communities hosting large nuclear developments might benefit from the process.

— An area of crucial importance to NuGen’s development phase is the government’s plans for Funded Decommissioning Programme (FDP)—more detail on this is needed to help inform the investment decision.

(ii) **Response to the ECC Committee Questions**

**Question 1.** The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

New nuclear has a vital role to play in the UK’s energy future, but investment decisions will clearly depend on the detailed financial framework that is in place.

NuGen is working hard to progress the development phase of a major, nationally important infrastructure project. We hope this will lead to a positive investment decision around 2015. Our Moorside project would be the largest-ever private investment into the region of West Cumbria and could boost the regional economy with the associated benefits to supply chains, manufacturing and employment. So we agree with the Committee that EMR is of the utmost importance.

The other key factors that contribute to investment decisions for new nuclear include:

  (a) A robust and effective regime for planning consent and other approvals.
  (b) A supportive political and public opinion framework.
  (c) Equitable treatment in the transmission charging regime.
  (d) A strong, impartial system of safety and other regulation which commands public confidence.
  (e) The availability of a skilled workforce and a suitable supply chain.

**Question 2.** The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

New nuclear has a vital role to play in the UK’s energy future, but investment decisions will clearly depend on the detailed financial framework that is in place.

NuGen is working hard to progress the development phase of a major, nationally important infrastructure project. We hope this will lead to a positive investment decision around 2015. Our Moorside project would be the largest-ever private investment into the region of West Cumbria and could boost the regional economy with the associated benefits to supply chains, manufacturing and employment. So we agree with the Committee that EMR is of the utmost importance.

The other key factors that contribute to investment decisions for new nuclear include:

  (a) A robust and effective regime for planning consent and other approvals.
  (b) A supportive political and public opinion framework.
  (c) Equitable treatment in the transmission charging regime.
  (d) A strong, impartial system of safety and other regulation which commands public confidence.
  (e) The availability of a skilled workforce and a suitable supply chain.

(a) A robust and effective regime for planning consent and other approvals

The Government has already taken a decision on Regulatory Justification of new nuclear using the EPR and AP1000 designs, and implemented a new planning system that avoids the need for energy policy to be debated at great length in the context of individual developments. The National Policy Statements on Energy, including the one on nuclear, set a clear framework that should simplify the planning process.

The designation of these National Policy Statements also underpins a long-term strategic approach that gives greater certainty to investors. To have new nuclear clearly confirmed and understood as official government policy is of great benefit. However, we wait to see how the new planning system works in practice and we will watch the Hinkley process with great interest.
The process of Generic Design Assessment should provide a platform for the more focussed assessment of nuclear safety (especially looking at site specific aspects) for proposed new plants and the arrangements being put in place for Funded Decommissioning Plans should give confidence that the long term liabilities are properly looked after. Together, these measures will achieve a strong and effective regime for planning and other approvals.

(b) A supportive political and public opinion framework

In terms of the political framework, it is of great assistance that both the Government and the Opposition support development of new nuclear in England and Wales.

We commend the Government on the leadership it has shown and note that the designation of the National Policy Statements, including that on new nuclear, was backed in the last Parliament by one of the biggest-ever majorities in living memory. Continued cross-party support, backed up by a strong and committed financial framework, will be of considerable comfort to potential investor like NuGen looking to develop multi-billion pound investments. This was strongly emphasised by the measured response to the Fukushima accident, focusing correctly on the lessons to be learnt in enhancing nuclear safety.

(c) Equitable treatment in the transmission charging regime;

NuGen would encourage an improvement in the economic terms for the Transmission Network Use of System (TNUsoS) whereby nuclear plants in different parts of the UK are subject to very different costs. The cost of transmission charges is a key element for investment decisions and NuGen believes this issue should be the subject of reassessment.

(d) A strong, impartial system of safety and other regulation

The UK system of nuclear safety regulation commands wide public acceptance and the NII has worked hard with vendors to progress the Generic Design Assessments that will facilitate future nuclear site licensing. Organisationally, the NII has developed to equip itself for the need to assess new designs and sites, and it is now appropriate to formalise this through new legislation to create the Office of Nuclear Regulation as a separate statutory regulator. This will enhance the performance and credibility of nuclear safety regulation in the UK.

(e) The availability of a skilled workforce and a suitable supply chain

A key part of the business case for a new nuclear development will be the availability of a suitable workforce and supply chain. In the case of NuGen’s Moorside project, a major part of this consideration is working in a region such as West Cumbria which has world-class training and skills facilities—and a population that understands the nuclear industry. The nearby Sellafield complex provides work for more than 10,000 people on-site—with many thousands more involved in the wider supply chain for Europe’s biggest nuclear-licensed site.

NuGen is very happy to work within this community—and it should be noted that public support in the region is extremely high. We will be working in an open and transparent manner with all of our regional stakeholders while we develop our business case. We will undertake thorough consultation with the community in a partnership approach which could, given a positive investment decision, lead to the region’s biggest private investment.

In terms of the wider supply chain, we are continuing to monitor developments. Some of the supply chain issues are likely to be addressed by the development at Hinkley Point, which is planned to run some time ahead of Moorside, and we hope to build upon that experience where appropriate.

Question 2. What have been the political and policy impacts of the Fukushima incident?

The UK Government provided a measured response to the Fukushima accident, with the emphasis being on thorough and scientific assessment of the implications for nuclear safety. A thorough safety review was carried out by Dr Mike Weightman, who has also played a global role in post-Fukushima safety policy.

His efforts in producing such a clear, concise and important report into the repercussions of the events in Japan are extremely important to the future of new nuclear developments in the UK.

NuGen were pleased that his findings showed there are no fundamental safety weaknesses in the UK’s nuclear industry—and no reason to curtail new nuclear build, or change the siting strategies of new nuclear power stations. We also welcomed the specific recommendations for improvements that he made and will take full account of them in our designs and operating procedures for Moorside.

The sensible and measured approach to Fukushima in the UK has surely contributed to the continued public and political support for new nuclear power; it has been noticeable that public support for nuclear power in the UK has remained positive despite the evident problems arising from the Fukushima accident.
Question 3. What lessons can be learnt for building new reactors to timetable and within budget from the experiences of France and Finland and elsewhere?

NuGen is not in a position to comment on specific issues with new nuclear developments in Finland and France. However, as indicated earlier, our parent companies have a long heritage of developing and running nuclear power stations, and both companies have extensive experience of developing major infrastructure projects in more than 20 countries—and as such we are fully aware of the key issues affecting the development of modern nuclear plants.

The long period of time since new plants were built on a regular basis in Europe and around the globe means that there are issues of capability, supply chain and project management that will need to be addressed.

The very high standards required by the nuclear industry means that modern manufacturers who have perhaps not been involved in nuclear before—or who are thinking about re-entering the market—will need to work to be able to deliver such standards and to put in place the required quality assurance process.

It is also worth noting that other nuclear developments in China appear to be running to time and cost—and the issues of delay that can affect “first of a kind” developments should be greatly lessened when the UK begins building new reactors.

It is clear that the shortest construction experiences have been produced in countries in which a mature building programme was established after a series of plants were built. There is no doubt that the learning effect both at utility and industry levels would improve the construction time in UK after the first of a kind units.

NuGen is committed to learning lessons from other programmes as we develop our project towards a final investment decision.

Question 4. What impact might global demand for nuclear put on plans to build new nuclear power stations in Britain (there are currently 60 new nuclear power stations under construction worldwide and a further 150 planned)?

Many countries around the world are re-assessing their energy policy and plans—and some are looking favourably towards the possibility of new nuclear build. In this context, issues of supply bottlenecks, a shortage of useable uranium and a potential shortage of skilled labour have been cited as potentially problematic to a global nuclear renaissance.

NuGen believes the UK stands at a very important point in the development of its future energy supplies. It has a long history of nuclear operations and is at the forefront of new nuclear development in Europe—as such has an excellent opportunity to ensure Britain is well positioned to secure the supply chain resources needed for new nuclear orders. The UK’s time schedule for new development puts it in a good position to benefit from an international supply chain already working in other European projects. It also provides the opportunity now to encourage and develop excellence in a UK nuclear supply chain, a principle NuGen wholeheartedly supports.

New build in the UK will also benefit UK supply chain companies too as they may also have opportunities to win business as and when other countries decide to build new nuclear abroad. The Nuclear Industry Association is working alongside government to encourage development of nuclear skills and high standards in manufacture to support new nuclear build in the UK.

The World Nuclear Association estimates that at currently known levels of Uranium there are adequate supplies for more than 100 years, and that new mining as a result of a nuclear renaissance will further bolster reserves to meet global demand.

Question 5. Are there any other potential barriers to the construction of new nuclear power stations in the UK?

It is clear that the UK nuclear industry will need to attract a large number of young people into the industry over the next 10–15 years. The potential for a shortage of nuclear skills is an issue—but positive initiatives highlighting the gaps, and showcasing the attractions of joining the industry, are underway.

NuGen is taking a very positive view of supporting UK nuclear skills excellence—and recently became the 100th member of the National Skills Academy, Nuclear. We are also aware that following targeted investment West Cumbria has some world-class facilities, and institutions able to impart the highest standards of training.

NuGen predicts that at the height of construction of a new nuclear plant in West Cumbria some 5,000 people would be needed on-site. There would also be the need for skilled supply chain input into the project involving possibly thousands more skilled workers. A modern nuclear power development of up to 3.6GW in size would also require up to 800 permanent staff and contractors throughout its working life.

NuGen is talking to many skills providers in the West Cumbria region and will be working closely with local schools and universities as we develop our project to ensure a skilled workforce for the future—and leave a lasting and positive skills legacy in the region.
Ev 122  Energy and Climate Change Committee: Evidence

Question 6. Other than reforming the electricity market and planning process, what steps could the Government take to remove barriers to the delivery of new nuclear power stations in the UK?

The Nuclear Industry Association is discussing how communities hosting large nuclear developments might benefit from the process, following publication of DCLG’s Local Government Resource Review in 2011. We are discussing with the NIA and other developers the NIA’s position that authorities may benefit from proposals for an element of business rates retention, broadly in the same way that authorities hosting renewables projects do. We are in close contact with our key stakeholders in West Cumbria on this, and many other issues pertinent to the success of a major infrastructure project.

We note the findings of the Parliamentary Office for Science and Technology’s (POST) report into nuclear research and development. The industry is agreed that greater emphasis on nuclear R & D will help engender the skills and nuclear know-how that will do much to keep the UK at the forefront of a global industry. This emphasis on research and innovation will be of benefit to developers like NuGen going forward.

Another area of crucial importance to NuGen’s development phase is the government’s plans for Funded Decommissioning Programme (FDP). This process will help inform the financial decision needed to be taken on long-term investments. The principle that new developers/operators will pay for their waste storage is established—but again more detail will be needed. We will be discussing this area in detail with government as we move forward to build-up the business case for our Moorside project.

Question 7. How feasible is the Government’s indicative timeline, which shows the first new nuclear power station being built by 2019? And what level of nuclear capacity is likely to be available by 2025?

The timescale for early new nuclear plants will depend significantly on when sufficient information is available from the EMR process and other critical path issues to allow a final investment decision to be taken.

NuGen’s Moorside project is at an earlier stage of development. Our plans are in line with the time-table suggested by the government’s National Policy Statements, and with a positive financial investment decision could see connection of the Moorside project to the grid by 2023. We do not have a view at present on the total capacity of new nuclear that will be available by 2025.

Question 8. What will be the consequences of failure to deliver a first new nuclear power station by 2019? Should any contingencies be put in place?

The precise start date for the UK’s first new nuclear power station is less important than ensuring that the programme is soundly based and successful. Any interim shortfalls in generating capacity can be addressed through additional gas-fired power stations; under the CfD mechanism, this will not affect the nuclear plants from receiving the anticipated return and no immediate contingency plans are needed.

In the longer term, new nuclear power in the UK can play a key role in ensuring security of supply in the future, and in helping the UK move towards a low-carbon energy mix at a reasonable cost for consumers. Nuclear’s share of the current energy mix in the UK is around 18%—but it has been as high as 30% in the past 15 years. If new nuclear developers like NuGen decide to take forward their plans for new nuclear then this percentage of 18% could rise—providing a hedge against over-dependence on imported fossil fuels, helping stabilise prices, and offering low carbon energy supplies.

NuGen is confident under current circumstances of taking forward its plans to build up to 3.6GW as part of its Moorside project and we will be working towards building a credible plan to help assist our investors in making a positive decision to invest in the UK’s energy future.

Q9. What are the prospects for extending the life time of existing reactors?

This is a matter for the owners of the stations concerned.

July 2012

Written evidence submitted by the Office for Nuclear Regulation (NUC 09)

SUMMARY

— The Office for Nuclear Regulation (ONR) operates currently as an agency of the Health and Safety Executive. It is responsible for the regulation of nuclear safety and security on civil nuclear sites, the regulation of nuclear safety on defence nuclear licensed sites, the regulation of the transport of radioactive material and the application of UK nuclear safeguard obligations.

— The ONR Chief Nuclear Inspector’s analysis of the implications from Fukushima for the UK nuclear industry found no major areas for concern, but has highlighted some areas for improvement, particularly in emergency preparedness.

— While ONR is making progress towards completion of Generic Design Assessment (GDA) for the UK EPR, meeting project timetables for the Hinkley Point C station will be crucially dependent on continued delivery to ONR of required information to time and to quality by the industry.
ONR will continue to monitor licensees’ safety cases in order to ensure that any proposals to extend the lifetime of existing reactors do not conflict with their continued safe and secure operation.

The draft Energy Bill 2012, which is currently undergoing Pre-legislative Scrutiny, includes provisions to establish ONR as an independent statutory corporation. The provisions within the draft Energy Bill aim to provide ONR with the independent status needed to create a sustainable appropriately resourced and responsive regulator for the future challenges of the nuclear sector. The building of new nuclear is one such challenge.

Introduction
1. In the UK, the nuclear industry is regulated by the Office for Nuclear Regulation (ONR) as an agency of the Health and Safety Executive (HSE). Our overarching mission is to secure the protection of people and society from the hazards of the nuclear industry. This responsibility covers the regulation of nuclear activities associated with power generation, fuel cycles, certain defence activities, and research, through to decommissioning.

2. Under UK law (the Health and Safety at Work etc. Act 1974) employers are responsible for ensuring the safety of their workers and the public and this responsibility is reinforced on nuclear sites by the Nuclear Installations Act 1965 (NIA65).

3. We regulate nuclear sites primarily through a nuclear site licensing regime under NIA65. We require all licensees to comply with conditions attached to the nuclear site licence and to operate in accordance with an adequate safety case. By doing so, a multi-barrier approach to preventing accidents (defence in depth) ensures licensees carry out their operations in a way that reduces risks to so far as is reasonably practicable.

4. We are also responsible for the regulation of a number of other areas in addition to our nuclear safety role. These include the regulation of civil nuclear security, regulation of the transport of radioactive material and the application of nuclear safeguards to ensure that the UK complies with its international nuclear safeguards obligations.

5. ONR was established as an agency of the HSE on 1 April 2011 in anticipation of legislation (the Energy Bill 2012) to create a new independent statutory body outside of the HSE to regulate the nuclear industry.

Evidence
Recommendations arising from Fukushima
6. HM Chief Nuclear Inspector, Dr Mike Weightman, was tasked by the DECC Secretary of State to compile a report following the earthquake and tsunami in Japan last year, to outline areas where the UK could learn lessons from the Fukushima incident. The conclusions of the report for the nuclear power industry were published in May 2011 and on 11 October 2011 a final report was issued covering all of the UK nuclear industry. These reveal that there are no fundamental safety weaknesses in the UK’s nuclear industry, although lessons should be learnt in several areas such as on-site self resilience and national emergency preparedness. Learning from this incident is consistent with the ONR’s regulatory philosophy of continuous improvement and will ensure sustained safety enhancements by all parties with responsibilities for nuclear safety.

Generic Design Assessment
7. Since 2007, ONR has been working with the Environment Agency on the Generic Design Assessment (GDA) of two new nuclear reactor designs: EDF and AREVA's UK EPR and Westinghouse’s AP1000. GDA allows ONR and the Environment Agency to assess the generic safety, security and environmental aspects of reactor designs prior to construction. ONR will not permit the start of nuclear island construction for a nuclear power station until it is satisfied with the resolution of the associated GDA issues. The GDA process only needs to be undertaken once for each design; putting a design through GDA should speed up the subsequent site-licensing and consents process and provide more certainty to investors at an earlier stage.

8. ONR considers the Government’s indicative timeline for nuclear new build to be reasonable, but it is for the requesting parties (EDF/AREVA and Westinghouse) to allocate resource to the GDA process to ensure that the development project timescales can be met. A number of technical issues remain to be addressed before a Design Acceptance Confirmation (DAC) can be issued to requesting parties, but we are satisfied that the designers have credible plans in place to resolve these. Only when ONR is satisfied that all these issues have been addressed to our satisfaction will we consider issuing a DAC.

9. A key lesson learnt from GDA is that design and safety case development needs to be sufficiently advanced before GDA starts to ensure the generic assessment process is complete before a developer is ready to start construction. The Finnish and French new build experiences have shown that incomplete regulatory assessment before nuclear island construction starts introduces the risk of expensive modifications during construction to meet regulatory requirements. ONR’s approach to GDA should minimise the need for significant design changes during construction and consequential project delays.

39 For example at the Atomic Weapons Establishment (AWE) Aldermaston and Burghfield nuclear licensed sites, and at licensed dockyards where nuclear submarines are fuelled and maintained
The Energy Bill—Independence and Transparency

10. A key recommendation in the Chief Nuclear Inspector’s Fukushima report was that the nuclear regulator should be able to clearly demonstrate to stakeholders its effective independence from bodies or organisations concerned with the promotion or utilisation of nuclear energy.

11. Currently the ONR’s functions originate from a number of different government departments. The core nuclear safety functions are derived through the Health and Safety Executive of which it is an agency. The nuclear security and nuclear safeguards functions were both transferred from what was the Department for Trade and Industry to HSE in 2007. Finally, the radioactive transport function was transferred from the Department for Transport to HSE/ONR in 2011. Different agency agreements and memoranda of understanding govern each of these functions but in practice, the regulatory responsibility remains either with HSE or the Secretary of State.

12. Under the draft Energy Bill, all of ONR’s functions are pulled together in one piece of legislation making it clear to the nuclear industry and others what is within ONR’s regulatory remit. Additionally, the post of the Chief Nuclear Inspector will be established in statute for the first time. The regulatory functions and decisions of the ONR will be delegated to the Chief Nuclear Inspector to ensure that nuclear regulation will continue to be technically based and independent of other interests into the future.

Overcoming potential barriers

13. The UK’s regulatory process for nuclear safety differs from many other nations in that it is largely goal-setting, as is the safety regime for other industries in the UK. This does not mean the UK’s regulatory regime is any more of a barrier to construction of power stations than any other country. In fact, the lack of a large number of rigid regulatory rules allows for flexibility and responsiveness in dealing with different designs and in handling inevitable design changes as construction projects proceed.

14. The introduction of the Generic Design Assessment process allows for the bulk of the generic power station design to be assessed by the regulators well before nuclear island construction begins, and is a means of ironing out substantive issues at the design stage. This allows for much regulatory risk to be minimised early on, giving a greater confidence that the construction can proceed in a timely manner. The availability of the GDA process can be seen as lowering barriers to new build in the UK. Additionally, from a regulatory perspective it enhances regulatory effectiveness by influencing designs earlier.

15. A clear risk to any new build project is limited regulatory resource, meaning that assessments and permits cannot be delivered in a timely manner. Any concerns about the regulator being able to deliver its commitments on time could be seen as a barrier to new build in the UK. ONR’s GDA team is on course to meet all of its current objectives, having committed tens of thousands of staff days and, at peak, 60 staff to the GDA programme. However, ONR will need to have an effective programme of recruitment and retention for many years to come given the extent of the challenges ahead, especially to maintain its international reputation as a world class technical based nuclear regulator. This is particularly important over the next few years given its demographics with around 30% of its nuclear safety inspectors being over 56 years old. The creation of the ONR as an independent regulator, outside the civil service, able to set pay and conditions necessary to attract and retain sufficient technical staff, should address any concerns about ONR’s ability to deliver in the future. As at present, the statutory ONR will continue to be able to draw on HSE’s valuable experience of successfully regulating recent major construction projects, including the Olympics.

Extending the Operation of Existing Reactors

16. A proposal to extend the life of an existing reactor beyond its planned closure date is a commercial decision for the licensee (EDF Energy or Magnox). Whatever the decision is, the licensee needs to demonstrate to ONR that what it plans to do is safe and secure.

17. The licensee must demonstrate that continued operation is either enveloped by its current periodic safety review and all reasonably practicable improvements made or make a case to extend it beyond the extent of the challenges ahead, especially to maintain its international reputation as a world class technical based nuclear regulator. This is particularly important over the next few years given its demographics with around 30% of its nuclear safety inspectors being over 56 years old. The creation of the ONR as an independent regulator, outside the civil service, able to set pay and conditions necessary to attract and retain sufficient technical staff, should address any concerns about ONR’s ability to deliver in the future. As at present, the statutory ONR will continue to be able to draw on HSE’s valuable experience of successfully regulating recent major construction projects, including the Olympics.

Conclusions

18. ONR is fully engaged with the industry to ensure that a new generation of nuclear power stations will represent a step forward in terms of safety, technology and legacy. ONR will ensure that any proposals for lifetime extension of existing reactors maintain adequate levels of safety and security.

19. ONR is putting in place much of the groundwork needed to be a more effective, efficient and transparent regulator. The provisions within the draft Energy Bill will provide ONR with the independent status needed to
Supplementary written evidence submitted by Derek Lacey, Office for Nuclear Regulation (NUC 09a)

At the inquiry session on Tuesday 6 November, Andy Hall gave a commitment to write to the Committee on two points raised by Barry Gardiner MP. I am writing to the Committee with this information.

The points Mr Gardiner raised related to statements made by the European Commission in its recent Communication following completion of the EU stress test process. The statements were that, in many instances, global standards arising from Chernobyl and Three Mile Island had still not been implemented and that 25 billion Euros worth of safety upgrades were needed for nuclear power plants across the EU.

Although these claims were made by the Commission in response to the stress test work, they are not part of the stress test findings. In addition, they have not been discussed or endorsed by the European Nuclear Safety Regulators Group (ENSREG), which designed the stress test process and oversaw its implementation. Following publication of the Commission’s Communication ENSREG took the unusual step of issuing a public statement expressing its concerns over the accuracy of the Communication prior to publication.

In relation to Mr Gardiner’s specific points:

(a) There were no references in the ENSREG reports to international recommendations being agreed for the safety of reactor units following Chernobyl and Three Mile Island. I can confirm that, following Chernobyl, the IAEA Convention on Nuclear Safety (CNS) was agreed, which established a framework for setting international benchmarks to maintain high levels of nuclear safety, but this is not prescriptive and individual nations aim to achieve the safety benefits in different ways. Indeed, following both accidents, individual nations did undertake their own safety reviews, invested in improvements and attended international meetings to share the lessons learned.

(b) The Commission’s Communication states that the total costs of implementing the additional safety improvements across all EU reactors could be in the order of €10–25 billion. However, neither ENSREG nor national regulators were consulted on these estimates and we cannot therefore comment on their veracity.

The Committee may wish to contact the Energy Commissioner for any further information it may require on the specific statements made in the Commission’s Communication.

Yours Sincerely
Dr Derek Lacey
November 2012

Written evidence submitted by Professor Nick Pidgeon and Professor Karen Henwood, Cardiff University (NUC 13)

BACKGROUND

1. Cardiff University is a leading Russell Group University. Within the institution the social aspects of science and technology are a strong focus of internationally competitive research in several academic Schools—including the Schools of Psychology and of Social Sciences. UK public acceptance of nuclear power is a particular focus of Cardiff’s work and peer reviewed scientific publications.

2. The Understanding Risk research group at the School of Psychology Cardiff University is a centre of expertise for the study of public risk perception, risk communication, and public engagement with science and technology. The work of the group is independent of all stakeholders to the current nuclear debate, and has been funded to study acceptance of energy issues over the years through significant grants from academic sources, primarily the Economic and Social Research Council and the Leverhulme Trust, but also with support from NERC, the US NSF and EPSRC.

41 The authors of this submission are Professor Nick Pidgeon and Professor Karen Henwood, Cardiff University.
42 Details of the Understanding Risk research programme and a number of its key policy and survey reports may be found at : www.understanding-risk.org
43 However, the views in this submission represent those of the authors alone, and not of any of the listed funding agencies.
3. We are currently conducting a major project (2011–2013) under the NERC UK Energy Research Centre’s (UKERC) programme, investigating public acceptability of whole energy system change to 2050—including all major elements of energy supply infrastructure (including renewables, carbon capture and storage, and nuclear). 45

4. We have particular expertise in attitudes to nuclear power, having built up unique empirical data sets through studies of British public responses to nuclear energy and radioactive waste disposal, summarised as follows.

— Major nationally representative surveys conducted for us by Ipsos-Mori in 2002, 2005 and most recently 2010.
— Parallel qualitative studies (the earliest in 2002) of how the public talk about nuclear power in relation to their climate change and energy security concerns.
— A major narrative interview and survey study between 2003–2008 on “Living with Nuclear Risk” with residents living close to the Bradwell, Oldbury, and Hinkley Point power stations.
— Work on the relationship between gender and nuclear risk perceptions.

We are the only social sciences centre in the UK to have systematically studied British public attitudes to nuclear power, both empirically and theoretically, over the past 10 years.

We address this memo to the question of “other potential barriers to the construction of new nuclear power stations in the UK” and the issue of public acceptance. It is our view that the future of nuclear power in the UK will be determined as much by public acceptability issues as it will by details of the technology, or financing arrangements adopted. We also submit that the government has much to learn about the issue of public acceptance from UK and worldwide experiences of the past.

**Key factors influencing public risk perception and tolerability of Hazardous technologies**

5. Risk perception and risk communication research 45 is a well-established field of inquiry, dating back to the mid 1970’s.

6. A first general finding of this work is that it is a misnomer to talk of the public as a single undifferentiated entity. In reality many different “publics” exist in Britain as elsewhere—comprising a myriad of attitudinal positions, cultural and other identities, interests and concerns regarding risks. These often need to be factored in when communicating about risk.

7. A second clear finding is that—despite what is often assumed—concerns about risk do not stem from any simple deficit of knowledge about the science and technology, or an “ignorance” of what uncertainty and probability might mean (the so-called deficit model of science communication). There is now ample evidence to show, and the House of Lords “Science and Society” report of 2000 46 makes clear, that simply providing more knowledge does not automatically bring greater acceptability of a technology or risk issue. Rather, the relationship between greater knowledge and attitudes is complex: typically quality of argument improves as people gain more information, while views also become more polarized with stronger opinions voiced on all sides to a debate.

8. Research has shown that public concerns about technological and environmental risks are based upon a set of factors not ordinarily incorporated into traditional risk assessments. In particular:

— (a) **Qualitative characteristics** of the hazard: eg whether a risk is seen as uncontrollable and involuntarily imposed, the perceived catastrophic nature of “worse case” accidents, and perceived lack of knowledge about future impacts.
— (b) **Trust and concerns about risk governance**: in particular whether the responsible decision maker and/or regulation is competent, fair and caring; whether unintended consequences of complex and rapidly moving scientific enterprises will be controlled; and worries about the social commitments that a technology entails (eg the form of society and organisation required to keep a proposed technology or suite of technologies safe). Often this is expressed by many people as a **historical context** in which a hazard arises; eg in the nuclear case past links between civilian technology and military uses resulted in a culture of secrecy which eventually contributed to significant levels of public distrust.
— (c) **Historical context** within which a hazard arises: eg in the nuclear case past links between civilian technology and military uses resulted in a culture of secrecy which eventually contributed to significant levels of public distrust.

44 See Butler, Parkhill and Pidgeon (2012) “Briefing Note: Transforming the UK Energy System—Interim Findings”. At http://www.ukerc.ac.uk/support/tiki-read_article.php?articleId=1931
9. Recognition of the above cautions against relying solely upon communicating engineering concepts of risk (probabilities, damage estimates, expected fatalities etc.) when engaging people and communities, as these are unlikely to meet their actual concerns, which are far wider than mere calculable “risk”.

10. What is also clear from 4 decades of research is that a technology with potential risk but also a very clear and visible personal benefit (e.g., personal benefits of energy use) will be more acceptable to people compared to one which does not have such a visible benefit. Equally, a risk is sometimes less acceptable where risks and benefits are inequitably distributed—e.g., benefits believed to go to others but the risks to ourselves.

**Public Perceptions and Nuclear Energy**

11. Historically, many of the above factors have come into play in shaping perceptions of nuclear power. Concerns about catastrophic accidents (and associations with atomic weapons), the invisible and long-term nature of radiation, involuntariness of exposure, and strong negative affective associations. Regulation and management of nuclear power is also distrusted by many people, in part because of visible failures (TMI, Chernobyl) in the face of past reassurances of safety, but also because of secrecy and lack of accountability. Openness and transparency in risk management and its communication are now thought to be prerequisites, if confidence is to be maintained.

12. In more recent times, but pre-Fukushima, opinion polling had indicated a significant reduction in opposition amongst the public in Britain, as compared to the very high levels of opposition (up to 80%) reached after the Chernobyl disaster. This in part reflected the arguments being advanced over the last decade regarding nuclear power’s possible contribution to combating climate change and to delivery of future energy security, but also the fading collective memory of Chernobyl.

13. A closer look at the national data shows a more complex picture, however, with a large proportion of recent support remaining conditional—a “reluctant acceptance” at best. While many more in Britain have indeed come to support nuclear power over the past decade they do so while viewing it only as a “devil’s bargain”, a choice of last resort in the face of the threat of climate change and energy security concerns. Given the choice individuals still show very clear preferences for renewable electricity generation over both nuclear and conventional fossil fuels.

14. Views become more complex at existing nuclear locations, many of which are now being asked to host nuclear new-build. What we know here is that the response of people in such communities does not always mirror that obtained from national samples. A common assumption is that people in these locations will be overwhelmingly positive about nuclear power, because of long-standing experience with the local station and local economic benefits. While it is true that views in surveys conducted at such locations tend to be somewhat more positive about nuclear power in the aggregate compared with samples living elsewhere in the country, detailed research again suggests a more complex picture and the need to look beyond the headline statistics.

15. Geography certainly matters, as when a station contributes economically or in other ways to nearby communities, but not to others slightly further away who might also nevertheless perceive themselves to be at risk. The latter communities may hold far higher levels of opposition. The detailed history (for example of organised protest over the years) and socio-economic location (degree of dependence upon the station for local jobs) is also important in understanding local views. In this respect the existing UK nuclear sites vary enormously in social, economic and historical circumstance. In approaching public engagement with such nuclear communities each will have to be approached on an individual basis, and with due sensitivity to local circumstances.

16. In our own in-depth interview research conducted over 2004–07 at Oldbury and Bradwell, we found that many nearby local residents did express confidence in local site activities. For most of the time people saw their existing local station as both a familiar and unremarkable feature of the locality, and confidence and trust in plant activities and those who managed the plants locally had also built up over time. However, almost everybody we interviewed could also recount instances (news of the Chernobyl disaster, the London terrorist bombings, a friend being diagnosed with cancer) where the “extraordinary” risks of nuclear power, and with

---

49 House of Lords, footnote 5
this very real personal anxieties, had been brought home to them in a powerful way. People at such locations also deploy various forms of humour and irony in their talk about nuclear power and its potential risks, in order to express uncertainties and anxieties which might otherwise be “unsayable” or difficult to voice in public.  

17. Whatever their position on nuclear power, the vast majority of residents (84%) we surveyed in 2008 at Oldbury and Hinkley Point agreed that the industry and government should fully involve them in plans for siting new nuclear power stations locally. And many also had concerns about radioactive waste (77%).

18. It is too early to reliably judge the full impacts of the Fukushima Disaster on public perceptions in the UK or internationally. Polling internationally has shown large declines in support in many countries (eg Germany, France, Japan). It is genuinely puzzling that in the UK (and the USA) there remain as many people in favour as are opposed to nuclear power in such polls. This may be due to Fukushima’s spatial distance, and/or because people here attribute the primary cause to an overwhelming natural disaster, or because climate change and energy security discourses remain important for many British people. We do know, however, that accident risk is more salient now for people. Detailed empirical work is now needed to build on such findings combined both qualitative and quantitative (ie identical survey items and methodologies) replicating previous studies in order to provide robust and convincing answers to the important question of how the British population are responding to Fukushima.

19. We also know that there remains a wide gender gap (women typically express more concern) in attitudes to nuclear power, although we would strongly caution against any assumption that such a gender divide merely reflects a deficit in women’s knowledge. Empirical findings reporting male-female difference are indicative of many things, including the way that women are less socially regulated to position themselves as knowing subjects in relation to (especially large-scale) technical issues compared to men. The positions we take up as “epistemic subjects” are grounded in our values and ethical sensibilities. These are socially meaningful, and so may be very influential in how we relate to matters of public concern and risk. In the case of gender it is well known that diverse values around care, relationships, environmental protection and futures need to be taken seriously. Related research is also coming to light about the important connections people make (and do not make) between their views of energy consumption and responsibilities towards future generations, raising the salience too of life-course ethics in attitudes to risk and technologies such as nuclear.

20. It is important also to realise that, in the liberalised energy market that we have here, UK nuclear policy and investment is not be immune to changes to attitudes in countries other than the UK. This is due to a well-known phenomenon in the risk perceptions literature—termed a secondary amplification, or ripple effect, from a well publicised risky event or accident—where heightened public risk perceptions regarding one industrial sector or in one region of the globe eventually lead to material consequences in a seemingly unrelated sector or region. That has been the effect of Fukushima in Europe, where declining public support in Germany in particular has placed political pressure on the government there to withdraw its support for nuclear, with the result that German companies have now revised their own plans to invest in the nuclear sector in both Germany and the UK.

21. The impacts of Fukushima on existing UK nuclear communities are likely to be even more complex. As argued above, anxieties always exist below the surface at such sites and external events such as Fukushima have the capability to bring them to the surface, and powerfully so, for many people. Communication, dialogue and engagement with such communities are all likely to become much more difficult—both practically and ethically—as a result.

22. While the current UK policy focus is on siting new-build at the existing nuclear sites, the upper end of potential expansion of UK nuclear power—to 40GW or more—would almost certainly require development at sites without any history of nuclear operations at all. It may well transpire that the Fukushima disaster has made such development almost impossible in the short-term. The social and governance implications of attempting to site new-nuclear in locations with no history of nuclear operations have received little research or policy attention to date.

23. It is worth noting here that there is now an extensive literature on local acceptability and siting of new energy facilities—some in relation to nuclear, but more recently drawing on detailed empirical studies of renewable energy siting.\(^6\) A clear conclusion is that the term NIMBY (Not In My Backyard) is an inaccurate description of the ways that such communities are responding when they raise questions about new developments that might affect them. It both marginalises and denigrates many legitimate local concerns, including: threats to local identity and community fabric; distrust of the motives of powerful outside organisations; concern about the degree of local involvement and control; worries about disruption during construction activities, or despoliation of valued landscapes; alongside any potential risks and long-term uncertainties. Again, this work cautions against relying solely upon communicating (engineering) concepts of risk when engaging such communities. Research evidence, especially from the legacy of attempts to site radioactive waste facilities, suggests rather that siting process, trust and governance, and appropriate forms of community co-benefit, are key things to get right.\(^6\)

**Communicating risk: could it be improved?**

24. Currently there is no unified approach to risk communication either within central or local government in the UK. Efforts have tended to remain fragmented and tailored to the needs of individual Departments.

25. An important issue here is to define what we mean by risk communication. Current thinking is that it should be oriented towards dialogue with people. The US National Research Council has defined risk communication as:

> “an interactive process of exchange of information and opinion among individuals, groups and institutions. It involves multiple messages about the nature of risk and other messages, not strictly about risk, that express concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management” (National Research Council, 1989, p21).

26. Risk communication is now a very mature field of research, with the UK at the forefront of international activity in this field. The core lessons of this research are that:

- **(a)** To succeed such communication should encompass a dialogue rather than progress in a one-way (“expert” to “public”) fashion;
- **(b)** Given the right support and risk representations people can grasp and deal with complex probability information. Here, aids such as visual frequency displays or comparisons with other (qualitatively similar) risks can help, but all techniques have to be used with care and with reference to the evidence on their effectiveness;
- **(c)** While it is important to “get the numbers right”\(^6\) communicating risk is about far more than this—enabling trust, exploring divergent values of varied people, meeting concerns about uncertainty or governance arrangements etc. As such, the public should not be characterised as “irrational” in their responses to risk estimates when they raise concerns about these other matters.
- **(d)** Above all there is a need to continually evaluate the impacts of communications as related to the original purpose of a communication programme.

27. Risk communication becomes particularly difficult when there is sparse or uncertain evidence (the “unknown-unknowns”).\(^6\) Under such circumstances the best advice is to be as open and transparent as possible about what is and what is not understood, how uncertainties might be resolved, and what precautionary measures might be adopted in the meantime. Here, the Food Standards Agency—set up in the wake of the BSE debacle—were particularly proactive under their first Chairman Lord Krebs, especially in relation to risks where evidence was sparse or highly uncertain: FSA's philosophy, generally regarded as successful at that time, was to be as transparent and open as possible about uncertainties.

28. Strategic capacity in risk and uncertainty communication is sorely lacking in the UK as elsewhere. In a paper published last year in *Nature Climate Change* with Baruch Fischhoff of Carnegie Mellon University, completed before the events in Japan, we argued for a strategic approach to risk communications\(^6\) as applied to climate change. As this argument is a generic one, applicable to many complex, uncertain, and socially divisive risk issues, it applies equally to energy risk communications. Pidgeon and Fischhoff argue that one key goal of risk communication is in supporting proper deliberation and decisions—whether this be a government decision to proceed with a piece of new nuclear infrastructure, or a local community debating the implications of hosting such infrastructure for them. What is communicated is then dictated by the requirements of the deliberation/decision problem at hand.

---


29. A strategic approach to risk communication comprises two elements: (1) strategic listening—an approach which treats communication as a genuine dialogue, and seeks to thoroughly understand intended audiences and their decision needs prior to communication design; and (2) strategic organisation. The range of skills needed for such an effort would include natural scientists, decision scientists, social scientists and communications specialists, through to programme designers and evaluators. It should aim to meet basic research needs in risk and uncertainty analysis, risk perception, and risk communication as well as immediate policy goals—in effect operating as a “boundary organisation” between academia and public policy. It should be resourced so as to provide continuity of career progression for its scientists, alongside responsiveness to emerging risk communication needs. We suggest that good models for such an interdisciplinary boundary organisation might be the RAND Corporation (US), IIASA (Austria) or the Tyndall Centre (UK). If this seems challenging then we should not forget that risk communication—not just regarding nuclear power—has become central to a number of critical public policy issues (eg in public health more generally), not just energy and climate change.

Can public perceptions be changed by improving risk communication?

30. In some more straightforward circumstances (such as health protection) we know that risk communication can work well if it focuses upon first understanding where a group holds key misunderstandings, or has gaps in knowledge, and targeting those with appropriate risk representations and messages. If behaviour change is also the goal, such communications also need to be supplemented by information on what practically one can do to avoid the risk.

31. Where legitimate value conflicts exist (as with many questions of nuclear energy infrastructure) the issue of “changing” perceptions becomes more problematic. Here one can easily cross into areas that look (to the recipients of any communication) like propaganda. Under such circumstances people may reject a message and/or question the motives of the communicator. Again, this is why it is better to think of risk communication as a process of participation, dialogue and decision support rather than a simple one-way transfer of information to persuade.

INTEREST STATEMENT

Professor Pidgeon currently serves as a member of the Chief Scientist’s Science Advisory Group (SAG) at the Department of Energy and Climate Change, and vice-Chair of the DEFRA/DECC social sciences expert advisory panel. The opinions here are, however, offered solely in relation to the authors’ professional academic positions.

July 2012

Written evidence submitted by Sedgemoor District Council (NUC 18)

Sedgemoor District Council has a significant interest in the development of Hinkley Point C, the first proposed new nuclear site which is located in the adjacent District Council but where significant impact from the development will take place.

1. SUMMARY

1.1 The local community recognises the national need for new nuclear power stations to decarbonise the power sector and to meet the Government’s energy security objectives. They are supportive of this agenda, accept the community’s role as a pioneer in the new nuclear age. However, this support is not owed, nor will it be offered “at any cost”, without fairness and equity towards the local community.

1.2 The building of any large scale infrastructure project carries with it barriers by means of local opposition. The planning process has been amended to streamline the process for infrastructure projects. This provides a greater degree of certainty for the developers but presents challenges to communities and individuals affected.

1.3 In order to achieve a co-operative and engaged community, we need to seek benefits and positives from such developments which can be determined locally.

2. INTRODUCTION

2.1 Sedgemoor District Council is located in Somerset adjacent to West Somerset District Council in which Hinkley Point C is located. Sedgemoor District Council comprises the area between the M5 motorway and the Hinkley Point site. Sedgemoor contains the major town Bridgwater through which most of the resources to build Hinkley Point C, both human and physical, will need to be transported.

---

2.2 Following the selection of Hinkley Point as a suitable site for a new nuclear power station, Sedgemoor Council is seeking to ensure that the surrounding communities receive fair and reasonable benefits (through a the retention of Business Rates, a Community Benefit Contribution or other mechanism) in recognition of the burden of hosting nationally beneficial energy infrastructure. Current support offered within the planning process is insufficient to address the installation’s significant local impact. A Business Rate Retention/Community Benefit Contribution would represent a fair and just settlement for the community affected and would be consistent with policy in other sectors in the UK and EU.

3. Sedgemoor District Council’s responses to Committee’s Questions

3.1 The Committee is aware of the significance of the electricity market reform process in determining the viability of investment in new nuclear power stations. What other factors contribute to investment decisions for new nuclear?

Not applicable.

3.2 What have been the political and policy impacts of the Fukushima incident?

3.3 From the point of view of the council, the incident at Fukushima has had significant local political and policy impact due to the effect on public perception of nuclear power in our community. Perceptions of risk have undoubtedly risen, and we have become aware that the current planning system fails to deal with these in a way which is fair and appropriate for local communities.

3.4 Communities adjacent to Hinkley Point C have lived with the presence of nuclear energy production since 1957 when construction began. The communities are therefore accustomed to the presence of nuclear infrastructure, which has provided jobs for those living in the adjacent communities. The current nuclear power stations have had no serious or significant events that would exacerbate the issue of risk for local communities. In fact the continued safe operation of the current sites has done much to reassure local communities about the realistic levels of risk in living adjacent or close to a nuclear power station.

3.5 The perception of risk however remains for those communities as they are aware of the implications of a catastrophic event would potentially be more significant and detrimental than a similar event at a coal fired power station, for example. The distribution of iodine tablets to local communities for use in the event of a release of radioactive material acts as a constant reminder of the additional risks that exist for a nuclear power station. The events at Fukushima (and the on-going repercussions) in addition to other historic problems at nuclear power stations have impacted on the perception of risk. It is important to note that whilst communities take comfort from the long period over which the current facilities have operated without incident, it merely has the effect of emphasising the low likelihood of the risk rather than minimising the impact of the seriousness should an event take place.

3.6 Although communities have learned to live with the reality that that all nuclear facilities present a discernable health and safety risk, the timing and extent of global media coverage of Fukushima has brought the issue to life in an irreversible way for local residents who are currently bracing themselves for the impact of a development which will have a defining impact on the area until at least 2111.

3.7 While it may never be possible (given the international events of the last year and our European colleagues responses to them) to lay to rest residents’ concerns entirely, we should however, attempt to compensate them for the loss of this peace of mind. Sedgemoor District Council’s view is that there would be an opportunity for a more rounded discussion about risk and tolerability of risk within the context of the provision of a community benefit fund. Whilst the planning process may provide for compensation through Section 106 Agreements for direct and indirect impacts arising from the construction and operation of the new nuclear facility, there are wider issues of impact and risk that do not fall within the planning process. In particular the perception of risk from a significant catastrophic event at a nuclear power station is one that is not covered by the planning process (either through consideration by the IPC, nor through Environmental Impact Assessments). The National Policy Statement for nuclear energy has stated that the issue of human health and risk are matters for consideration in other regulatory formats where compensation and Section 106 Agreements have no place. The failure of the national policy statement on nuclear energy to address risk and perception of risk from the exposure to radiation is a significant barrier to local and Central Government’s ability to communicate adequately in regard to risk, perception of risk and tolerability. To undertake an objective consideration of such issues requires technical and expert support. Local Government is in a weak position with limited resources to support communities compared with well-resourced Project Promoters such as EDF. Central Government has failed to support Local Government in their work to consider and support communities through a complex and technical process. Communication from Government on the issue of risk has therefore been weak or non-existent and the void is filled by NGO’s and pressure groups who potentially have a single position of being against nuclear power per se. There are inadequate resources for the communities to engage adequately in an objective and open minded manner.

3.8 Local authorities should be empowered to act as a community resource for objective consideration of risk and tolerability of risk. Local authorities should also be adequately resourced to even out the current inequalities of resources between those who promote new nuclear projects and the communities affected.
3.9 In our opinion there is no reason why the Government, through an amendment the NPS or through separate policy or advice, could not ensure that the planning processes adequately deal with and consider risk, perception of risk and tolerability as well as appropriate direct funding to support communities affected. This could also be coupled with a proper consideration of community benefit for each project promoted through the planning process. Specifically permitting these areas to be included in the planning process would remove the alleged perception of “buying” planning permission.

3.10 What lessons can be learnt for building new reactors to timetable and within budget from the experiences of France and Finland and elsewhere?

3.11 Community support for large scale, high impact national projects like Hinkley Point C is essential to ensuring smooth progress during development and in the UK this community support hinges upon fairness, transparency, open, honest engagement and a sense that communities are also benefitting locally from this nationally beneficial infrastructure. In this regard, perceptions of risk, as well as issues of fairness and proportionality for local communities, are particularly important factors which could impact time and budget of new build nuclear in the UK.

3.12 As described above, the planning process for nuclear power has no reasonable mechanism to deal with risk and the perception of risk for the communities affected. Communities and those that represent them have no means of articulating or redressing these issues within the planning process. There is no arena for an objective and considered discussion of these issues or potential solutions. The failure of the planning process to allow for the objective consideration of the assessment of risk in a way which communities are able to understand and participate in (rather than using other technical regulatory processes for nuclear energy which are less understood and more “expert” driven in a technical way) is a significant gap that undermines the creditability and “fitness for purpose” of the process.

3.13 The local community recognises the national need for new nuclear power stations to decarbonise the power sector and to meet the Government’s energy security objectives. They are supportive of this agenda, accept the community’s role as a pioneer in the new nuclear age. However, this support is not owed, nor will it be offered “at any cost”, without fairness and equity towards the local community.

3.14 We believe that current support offered within the planning process to the communities of West Somerset and Sedgemoor for hosting the Hinkley Point facility, which will deliver national benefits, is insufficient to address the installation’s significant local impact and that this should be considered a major consideration in getting the project built on time and on budget. Our responsibility is to put the interests and welfare of the local community first during this process and this is why we are pursuing a programme of engagement around fair and proportionate compensation for local communities in the form of business rate retention and community benefits.

3.15 What impact might global demand for nuclear power put on plans to build new nuclear power stations in Britain (there are currently 60 new nuclear power stations under construction worldwide and a further 150 planned)?

Not applicable.

3.16 Are there any other potential barriers to the construction of new nuclear power stations in the UK?

3.17 The building of any large scale infrastructure project carries with it barriers by means of local opposition. The planning process has been amended to streamline the process for infrastructure projects. This provides a greater degree of certainty for the developers but presents challenges to communities and individuals affected. The planning process is predominantly negative in approach and requires communities and individuals to focus on impacts which fall into one of three categories. Either the impacts are so significant as to mean the development is inappropriate and therefore not go ahead; that they are significant but can be dealt with by means of mitigating action or thirdly the impact is significant but is temporary (potentially up to 10 years) in nature and can be borne by the individuals or communities in the greater national interest.

3.18 There is a fundamental need to redress this balance and provide an opportunity for communities and individuals to focus the potentially positive outcomes of infrastructure projects. With this should come the ability to deliver their own solutions or remedies in a positive way in line with the localism agenda. The provision of community benefit to communities that host infrastructure projects, particular new nuclear developments, that are to be of a scale and magnitude unprecedented in previous nuclear developments, is essential.

3.19 Leaving aside the issue of the greater risk or perceived risk of a nuclear power station, should there be a catastrophic event, there is still a significant impact on rural communities due to the inevitable location of the sites chosen. The remoteness of the sites currently identified by the Government, coupled with the poor rural communications lead to exacerbated community impact. The recognition by the Government of the need to encourage communities to welcome alternative low carbon energy is clearly set out under the proposals for business rate retention for renewables, including wind and biomass generation. It is ludicrous that such a
development of the scale of a new nuclear plant, which carries the same environmental benefits of low carbon energy does not have the same community benefit treatment.

3.20 In order to achieve a co-operative and engaged community, we need to seek benefits and positives from such developments which can be determined locally.

3.21 The international precedents for community benefits either by way of retention of local business tax, like business rates or through a direct contribution from the developers, exists all over the world. From Japan, USA through to Italy, Finland and Ukraine. Local communities in Somerset are aware of these precedents, and feel let down that similar opportunities are not being presented in the development process created for new nuclear development in the United Kingdom. A clear moral imperative exists on developers and on Government to ensure that affected communities are justly and proportionately compensated for the local impact of hosting national infrastructure on this scale.

3.22 There are communities surrounding Hinkley Point who will not benefit from jobs and other investment that will come with such an infrastructure project. Sedgemoor and West Somerset District Council have a disproportionately high elderly population, which is even greater in the communities surrounding Hinkley Point C. These individuals will not benefit from jobs at the site and are likely to find their recreational facilities dominated by a large well paid temporary workforce as well as roads occupied by significant amounts of construction traffic, potentially cutting them off from their normal places of entertainment, shopping and friends. This is exacerbated by other inter-generational equity issues where upon the completion of the construction of Hinkley Point C, there will be a significant out flow of jobs and resources from the area. Those who are children now may not see the benefit of the current jobs and find a boom and bust situation arising should there not be sufficient investment or opportunity to create a sustainable economy post construction.

3.23 Community benefit can be utilised as a local investment vehicle to ensure that businesses and individuals have an opportunity to create sustainable businesses either outside the nuclear project or within the nuclear project.

3.24 Other than reforming the electricity market and planning process, what steps could the Government take to remove barriers to the delivery of new nuclear power stations in the UK?

3.25 By placing community benefit at the heart of engaging with communities and by ensuring solutions to local impacts are at the forefront of the process, it will ensure co-operation and positive engagement.

3.26 Starting the process of proposing a new nuclear power station with a positive message with regard to not only the jobs and economic development opportunities but also in engaging the community more widely, including those who will not directly benefit from such advantages, would be far more positive.

3.27 The continued avoidance of community benefit based on the now discredited notion that it is tantamount to buying planning permission, does the planning process a disservice. Providing that a discussion on such issues occurs at the outset with clear parameters would engender a productive approach from communities and individuals.

3.28 How feasible is the Government's indicative timeline, which shows the first new nuclear power station being built by 2019? And what level of nuclear capacity is likely to be available by 2025?

Not applicable.

3.29 What will be the consequences of failure to deliver a first new nuclear power station by 2019? Should any contingencies be put in place?

3.30 The consequences of not completing Hinkley Point C in 2019 is that the community hosting what will be the United Kingdom's if not Europe's largest construction site, will have had to endure impacts for even longer than anticipated. The need to engage the communities in regard to such a risk and to ensure that community benefit is available throughout the construction period where the greatest impact occurs, is critical to ensuring communities understand and accept any risks in this regard.

3.31 It is important that should a solution to community benefit be by way of business rate retention, that the community benefit funds accessible by the community and determined locally be available during the whole construction period and not just when the power station starts making electricity. It would be deeply unfortunate that any delay in construction leading to a delay in generation, should also impact upon the local communities.

3.32 The experience of local communities in and around Hinkley is likely to shape the level of acceptance of local communities across the country when it comes to future similar infrastructure. It is in the national interest that the first experience is as positive as possible.

July 2012
Supplementary written evidence submitted by Bob Brown, Corporate Director, Sedgemoor District Council (NUC 18a)

I am writing to you as Chair of the Energy and Climate Change Select Committee before which I gave evidence on Tuesday 11 September as part of the inquiry into “Building new nuclear—the challenges ahead”. I was grateful to be given the chance to contribute to the debate by appearing in front of your Committee.

Ensuring the country’s first new nuclear power station has the buy-in of the local community will be a crucial factor impacting on the success of the Coalition’s nuclear programme. The role of your Committee in investigating this area of policy will be also be key. However, I am sure you will agree there is a significant difference in perspective in analysing policy from Westminster, and in seeing first-hand how the outcomes of decisions made there impact on the lives of affected communities. On behalf of these communities, we therefore wish to invite you and your Committee to come to West Somerset to see the site itself, visit local areas that could potentially benefit from compensation payments and hear directly from those that will be living under the shadow of the new facility.

As you were unable to be present last Tuesday, I have also provided below some further background on my council’s ongoing campaign to ensure the community in Sedgemoor receive a fair and reasonable deal for hosting this major infrastructure project.

Fairness and equality for the local community Hinkley Point could mean the project becomes a flagship for the principle of localism and the successful delivery of new infrastructure; failure to achieve this will be an embarrassing contradiction of this agenda and risks stifling or delaying economic growth. For the benefit of the local community, and in the interests of the UK which will benefit as a whole from this new development, I appeal to your Committee to hear our concerns and visit West Somerset as soon as convenient. We have been in regular contact with the Committee clerk to discuss this issue since mid-August, so we very much hope to be able to schedule something in the near future. I look forward to hearing from you.

BACKGROUND

Sedgemoor recognises the urgent national need for new energy infrastructure, including nuclear, to replace the UK’s ageing power stations, decarbonise the power sector by 2020 and meet the Government’s wider energy security objectives. However this support will not be provided “at any cost”. There is a clear moral imperative to ensure that our community, and others like it, are justly compensated for hosting such developments.

While we welcome the recent Section 106 Agreement signed with EDF on 12 September 2012, this is insufficient in itself to address the installation’s significant local impact. S106 benefits must be “directly related” to the tangible impact of the development. The (rather confusingly labelled) “community fund” within the s106 only exists to cater to unforeseen tangible impact which may arise at a later date. Wider issues of intangible impact and perceptions of risk do not fall within this process.

Consequently, as acknowledged by Government, this system remains limited and inflexible, capable of addressing only a narrow range of projects (ie roads for the developers’ vehicles or homes for their employers) and not delivering fair and proportional compensation for host communities throughout the lifetime of the project’s operation. The agreement with EDF is therefore an important first step but by no means the end of the process of getting the fairest possible deal for the people of West Somerset.

We believe that there is a strong case for:

(a) Extension of business rate retention to cover all low carbon projects, not just renewable energy projects as currently proposed by Government; and

(b) Establishment of a community benefit scheme, following precedents set by wind projects in the UK and a wide range of both renewable and nuclear projects abroad.

Progress with Government to date has been frustrating. On the community benefits, whilst we have been assured that work if underway, it is now almost 12 months since DECC committed to publish its proposals for community benefits for nuclear in the National Infrastructure Plan. In July this year, the Government said business rates should extend beyond renewable energy projects, to cover low carbon projects, like nuclear energy.70 However, the following month, DCLG said the principle of business rate retention did not extend to nuclear power stations.71 We have had confusing correspondence from a variety of Departments (including DECC, DCLG and the Cabinet Office) which does not make clear whether the Government is advocating either policy, or neither, or indeed if Government is even communicating internally on the issue.

We have been assured for some time that the Government intends to publish proposals on both community benefits and business rates “shortly”. With the Final Investment Decision set to be taken on Hinkley Point by

70 Letter sent to Sedgemoor District Council by Oliver Letwin, Cabinet Office Minister, July 2012
71 Letter sent to Sedgemoor District Council by Bob Neill, Planning Minister, August 2012
the end of the year, there is an urgent need for clarity about what Government is proposing and when these plans will be brought forward.

September 2012

Written evidence submitted by Supporters of Nuclear Energy (SONE) (NUC 27)

SONE is a group of some 300 individuals—no corporate members—who came together in 1998 to promote nuclear power in the then apathetic if not downright hostile environment to nuclear’s development. It is mainly made up of people, mostly retired, who have direct experience of working in or in association with the nuclear power industry.

Government Position

We believe that the Committee’s questions need to be seen against the reality of the current Government position on nuclear power’s development. This position has gradually evolved since the abandonment in 2006 of the notion that nuclear power was “economically unattractive.” It was then accepted it should be part of the generating mix if the private investor was prepared to put his money in it. There was to be no public subsidy—which so far as we know the nuclear companies were not seeking, as distinct from a level playing field—notwithstanding the massive subsidies being poured into renewables, and notably wind power, which are generally seen as relatively useless and grossly expensive compared with nuclear as a source of secure, low carbon and competitive power.

The logic of the Government’s position is that nuclear is an optional extra in British energy policy. Yet the Government has done much to clear the administrative way for a nuclear renaissance, including proposals for reforming the electricity market. It remains to be seen what flesh is put on the bones of a policy enunciated in a White Paper published 12 months ago but the reality at present is that there is no licensed reactor system available for construction in this country, no firm order and consequently no planning application. That puts the idea of a new reactor feeding power into the grid by 2020 in doubt.

Moreover, the number of possible nuclear developers has fallen from three to two with the abandonment of the Horizon project, envisaging 6,000MW of reactors at Wylfa and Oldbury by RWE/EoN, though there is speculation about Russian, Chinese and other overseas interest. The RWE/EoN decision, it seems, did not emanate from British circumstances but from the impoverishment of the companies by the German Government’s craven decision to pull out of nuclear power generation by 2022. This in turn raises the most serious question now hanging over British nuclear development: where will the private capital come from, especially when renewables (and notably wind) are pre-empting billions of pounds worth of capital on what we would describe as counter-productive investment.

But the situation is even worse than that so far outlined. The stark reality is that British energy policy is failing on all counts:

— There is Ministerial-induced confusion over whether there is a future for onshore wind power, apparently on landscape grounds, though not for the far more expensive and still ultimately useless offshore wind; in any case nobody believes the projected 36,500MW of renewables-generated power by 2020 is remotely feasible. More generally renewables subsidies are having to be cut because of the expense.

— All attempts so far with a £1 billion subsidy to induce a serious demonstration project in carbon capture and storage (CCS) technology have failed. This is perhaps as well given the heavy cost in energy and the likely doubling in the cost of fossil-fuel generated power as a result of CCS, assuming the technology can sequestrate for all time up to 200m tons of CO$_2$ per year under the North Sea.

— Supposed savings from energy conservation and efficiency measures continue to outstrip any likely return on the basis of past experience, though we endorse all efforts to reduce waste on an economic basis.

— Current DECC claims for reductions in CO$_2$ emissions carry little credibility in the face of expert opinion that they have to be seen against the export of energy intensive jobs and the consequent import of energy intensive goods; in the eyes of experts claims of a 23% saving (on 1990 emissions) turn out to be a 20% increase.

— This leaves largely imported gas—at an unknown price or reliable availability—as the Government’s salvation, with the hope perhaps that shale gas will eventually revolutionise the market.

— Given the present uncertainty over nuclear’s development, this does not add up in SONE’s eyes to a viable energy policy. Indeed, with the closure over this decade of a substantial segment of coal and nuclear capacity—about 20% of maximum demand—it represents an entirely unacceptable degree of risk.
ENERGY POLICY OVERHAUL REQUIRED

In these circumstances, we believe that a complete overhaul of energy policy is required to make nuclear power the spearhead of a drive to obtain genuinely secure, low carbon and affordable power generation. We do not believe that British energy policy can continue to be driven by an emotional approach to global warming to the exclusion of any concept of value for money and what are widely felt to be wholly unrealistic and unattainable EU targets. It has to be replaced by a hard-headed exploitation of proven technology with nuclear in the lead, especially as Government projections have consistently seen nuclear as the cheapest lifetime option.

GOVERNMENT LEAD REQUIRED

One thing has been consistently missing from the energy scene so far: a clear indication as to whether the Government really does want nuclear power to be developed in the UK. While—as we say—it is an optional extra, the Government omits to argue the case for it in any noticeable way. The vast majority of MPs, like a majority of the public, may well favour nuclear power’s development but nobody would guess this. This promotional failure is all the more remarkable because public opinion has held up well in the face of the Fukushima disaster.

We think the greatest step forward would be for the Government to decide whether it really does want nuclear power or not and, if it does, to come out powerfully for it. Given the risks being run with current energy policy, we cannot afford rhetoric about being “the greenest government ever” to get in the way of common sense.

In any case, this Government would have some substance to a claim to be “the greenest government ever” if it found the courage seriously to embrace nuclear power.

SUMMARY

We believe this note answers most of the Committee’s questions apart from No 3 (lessons to be learned from French and Finnish delays) and No 9 (prospects for extending lives of existing reactors).

July 2012