



House of Commons  
Business, Energy and Industrial  
Strategy Committee

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# Leaving the EU: implications for the civil nuclear sector

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**Second Report of Session 2017–19**

*Report, together with formal minutes relating  
to the report*

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## Business, Energy and Industrial Strategy Committee

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# Contents

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<b>Summary</b>	<b>3</b>
<b>Introduction</b>	<b>4</b>
<b>1 The decision to leave Euratom</b>	<b>5</b>
<b>2 Regulation—Nuclear Safeguards</b>	<b>7</b>
Role of nuclear safeguards in trade and research collaboration	7
Government position on safeguards	8
Establishing a new safeguards regime: practical considerations	9
<b>3 Market access, non-tariff barriers and trade</b>	<b>13</b>
Civil nuclear and the UK economy	13
Market access and nuclear cooperation agreements	14
Trade opportunities	16
<b>4 Research and development</b>	<b>18</b>
<b>5 Skills</b>	<b>20</b>
<b>6 Transitional arrangements and our future relationship</b>	<b>22</b>
Transitional arrangements	22
Future relationship	23
<b>7 Conclusion</b>	<b>26</b>
<b>Conclusions and recommendations</b>	<b>27</b>
<b>Annex 1: Notes from FORATOM visit, Brussels</b>	<b>29</b>
<b>Annex 2: Notes from Hinkley Point C visit</b>	<b>31</b>
<b>Appendix 1: Letter from Richard Harrington MP with key milestones for the Government’s Euratom exit programme</b>	<b>33</b>
<b>Appendix 2: Briefing from the ONR on the difference between international safeguards obligations and Euratom standards</b>	<b>34</b>
<b>Formal Minutes</b>	<b>35</b>
<b>Witnesses</b>	<b>36</b>
<b>Published written evidence</b>	<b>37</b>
<b>List of Reports from the Committee during the current Parliament</b>	<b>38</b>

## Summary

This report examines the impact on the civil nuclear sector of the UK's departure from the European Union. Our departure from the European Atomic Energy Community (Euratom) is an apparently necessary consequence of Brexit, but not an outcome advocated by anyone in the sector.

At present, 21% of our power is provided by nuclear energy. The flow of nuclear goods and services cannot continue without a safeguards regime which is currently provided by Euratom.

We welcome the Government's commitment to ensure that there is no dilution of our nuclear safeguards from current Euratom standards, underpinned by the Nuclear Safeguards Bill, which is currently before the House. However, we conclude that it is highly doubtful that it will be possible for the UK to implement Euratom-equivalent safeguards by March 2019, and even the less stringent requirements of the International Atomic Energy Agency (IAEA) will be challenging to deliver. The only viable route to achieving the Government's objectives is for Euratom to continue managing our safeguards regime. We therefore believe that the Government should seek to achieve in the negotiations as close as possible an association with Euratom, if we are required to leave. If it is unable to secure this outcome, it should ensure that transitional arrangements last long enough for our own Office for Nuclear Regulation to be able to take over.

We believe that this would be consistent with the terms of the Phase 1 Negotiations Report, agreed between the UK and EU and published on 8 December 2017. In view of our doubts about developing our own capabilities, we call on the Government to indicate clearly, at an early opportunity, its plans for implementing contingency arrangements regarding safeguards and a commitment to keeping the House updated on progress.

The Government must also ensure that the UK is able to continue trading with other countries through Euratom's existing nuclear cooperation agreements until such time as new agreements can be established.

In negotiations on withdrawal, the Government should seek to take account of the significant skills shortages at all levels that might otherwise affect the planned nuclear power station building programme, as well as ongoing civil nuclear activities.

The UK hosts important nuclear research facilities, for example the Joint European Torus (JET) at Culham, and the Government should continue to fund and cooperate on this and other research projects run by Euratom.

It is not possible to provide a meaningful financial estimate of the impact of leaving Euratom but all the evidence suggests that the impact on the UK civil nuclear sector will be considerable. The UK will lose influence and have to bear increased costs. There may be some opportunities for expanding trade outside the EU, but for the most part these are not affected by our membership of Euratom. There are no obvious advantages from regulatory divergence, nor is the industry or Government pursuing this objective. The Government should seek to agree its future relationship with Euratom as early as possible during the negotiations in order to minimise unnecessary expenditure and provide greater certainty to the sector.

## Introduction

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1. This is the first in a series of reports we plan to publish on the impact of leaving the European Union on specific sectors. Our aim is to provide an objective evaluation of the potential costs and benefits of leaving the EU for the civil nuclear sector to inform public debate, in the absence of any similar assessments being published by the Government. By looking at the potential impact on UK investment and jobs in each sector, we hope to contribute to developing a parliamentary consensus on the Government's negotiating priorities.<sup>1</sup> In looking at the civil nuclear sector, and in particular the UK's membership of Euratom, we are building on the work of our predecessor Committee in the previous Parliament, and on the inquiries of other select committees in both Houses.<sup>2</sup> We have timed the publication of this report in order to inform relevant debates in the House in Committee stage of the European Union (Withdrawal) Bill. On 8 December 2017, the Government and the EU reached an agreement on phase 1 of the withdrawal negotiations under Article 50 of the Treaty on the European Union.<sup>3</sup> The provisions relating to Euratom merit further parliamentary scrutiny; in particular in relation to the determination of ownership of fissile material, the security of fuel supply, the impact on nuclear new builds of export controls and border friction, as well as the implications of changes to our relationship with the Internal Energy Market and the EU Emissions Trading System.<sup>4</sup> We have excluded the implications of Brexit for medical radioisotopes from our inquiry, since this matter is being scrutinised by the Health Committee.<sup>5</sup>

2. In this inquiry we received 15 submissions of written evidence, and took oral evidence from key stakeholders, including the Office for Nuclear Regulation, the Nuclear Decommissioning Authority and the Minister for Energy and Industry, Richard Harrington MP. On a visit to Brussels we held meetings with officials from the UK Permanent Representation to the EU and the European nuclear trade body, FORATOM (annex 1). We also took the opportunity of a visit to Hinkley Point to hold discussions with EDF Energy and to visit the Construction Skills Centre nearby (annex 2). We are very grateful to all those who submitted evidence or otherwise contributed to our inquiry.

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1 The other sectors the Committee is considering are: automotive, aerospace, pharmaceuticals and processed food and drink.

2 See, for example: Business, Energy and Industrial Strategy Committee, Fourth Report of Session 2016–17, [Leaving the EU: negotiation priorities for energy and climate change policy](#), HC 909; Energy and Climate Change Committee, Third Report of Session 2016–17, [The energy revolution and future challenges for UK energy and climate change policy](#), HC 705; House of Lords Science and Technology Select Committee, Third Report of Session 2016–17, Nuclear research and technology: Breaking the cycle of indecision, [HL Paper 160](#); and, House of Lords EU Energy and Environment Sub-Committee, [Brexit: energy security inquiry](#)

3 Negotiators of the European Union and the UK Government, [Joint report on the progress during phase 1 of the negotiations under Article 50 TEU on the United Kingdom's orderly withdrawal from the European Union](#), (8 December 2017)

4 EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), Sellafield Ltd ([BRN0016](#)), Annex 2

5 Health Select Committee, [Brexit – medicines, medical devices and substances of human origin' inquiry](#)

# 1 The decision to leave Euratom

3. On 26 January 2017 the Government announced that, as part of the process of leaving the EU, the UK will also withdraw from the European Atomic Energy Community (Euratom—see Box 1).<sup>6</sup> The Government said that the UK’s exit from Euratom necessarily results from the decision to leave the EU because the two Communities are “uniquely legally joined”,<sup>7</sup> rather than from any policy preference.<sup>8</sup> The Euratom Treaty does not have its own provisions on withdrawal, and legal opinion on the requirement to leave remains divided. Our predecessor Committee<sup>9</sup> found that some nuclear lawyers argued that departure from Euratom is unnecessary.<sup>10</sup> The Government has refused requests for its own legal advice on the matter to be published and we have not pursued the matter in this inquiry.<sup>11</sup>

4. It is the overwhelming preference of the civil nuclear sector for the UK to remain very closely aligned with Euratom. None of our witnesses thought the UK should seek anything other than a close association or ongoing full membership.<sup>12</sup> All but two said that the UK should secure a transitional deal, effectively to extend the UK’s membership of Euratom on a temporary basis until alternative arrangements are in place.<sup>13</sup> These views align with the results of a recent YouGov poll, which found that 56% of the public want to remain in Euratom, with only 10% believing that we should depart.<sup>14</sup> We found no-one, in or out of Government, prepared to make a case for leaving Euratom. **The UK’s departure from Euratom is an apparently necessary but unwanted consequence of exiting the European Union. The Government’s task is to minimise the potential adverse impacts of this departure.**

6 [Explanatory notes to the European Union \(Notification of Withdrawal\) Bill](#) [Bill 132 (2016–17) - EN] and HM Government, *The United Kingdom’s exit from and new partnership with the European Union*, [Cm 9417](#), February 2017, p44

7 [“Britain quits European nuclear body”](#), The Times, 27 January 2017

8 The Secretary of State explained that “We have been very satisfied with the arrangements in Euratom [...] The triggering of Article 50 on Euratom is not because we have a fundamental critique of the way that it works. It was because it was a concomitant decision that was required in triggering Article 50.” Oral evidence taken on 19 April 2017, HC (2016–17) 909, [Q267](#) [Greg Clark]

9 Business, Energy and Industrial Strategy Committee, Fourth Report of Session 2016–17, [Leaving the EU: negotiation priorities for energy and climate change policy](#), HC909

10 [“Brexit and Euratom: No rush to exit?”](#), World Nuclear News, 20 January 2017; [UK Could Leave EU Without Withdrawing From Euratom, Says Brussels Law Firm](#), NucNet, 20 July 2016; [Ensuring a ‘soft Brexit’ for the UK’s nuclear industry](#), World Nuclear News, 24 November 2016

11 HC Deb, 12 July 2017, col [97WH](#) and col [107WH](#)

12 Centrica ([BRN0006](#)), EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), New Nuclear Watch Europe ([BRN0004](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), Nuclear Skills Strategy Group ([BRN0005](#)), Prospect ([BRN0003](#)), Sellafield Ltd ([BRN0016](#)), SPRU ([BRN0015](#)), UKAEA ([BRN0002](#)), Unite the Union ([BRN0008](#)), World Nuclear Association ([BRN0013](#)), Annex 1, Annex 2, [Q89](#) [Richard Harrington]

13 Centrica ([BRN0006](#)), EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), New Nuclear Watch Europe ([BRN0004](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), Sellafield Ltd ([BRN0016](#)), UKAEA ([BRN0002](#)), Unite the Union ([BRN0008](#)), World Nuclear Association ([BRN0013](#)), Annex 1, [Q89](#) [Richard Harrington], Annex 2

14 Prior to the poll, 81% of respondents were unaware of Euratom. When the pollsters explained what Euratom is, 56% voted to stay in Euratom, 10% voted to leave, and 34% said they were not sure. [New Poll – public want UK to stay part of Euratom](#), Nuclear Industry Association press release, 16 October 2017;

**Box 1: The European Atomic Energy Community (Euratom)**

The European Atomic Energy Community (Euratom) was established alongside the European Economic Community in 1957. The UK joined both communities in 1973. Euratom is a separate legal entity to the EU, although it is subject to the same institutions (including the European Court of Justice).

Euratom was established to promote the growth of new nuclear industries, to improve the security of energy supplies, to ensure high nuclear safety standards and to prevent diversion of nuclear materials from civilian to military uses. The Euratom Treaty also established a Nuclear Common Market to enable free movement of nuclear professionals, materials, equipment and associated investment capital across the Community. Euratom also funds an extensive research and development programme.<sup>15</sup> Over time Euratom's remit has expanded, but the original Treaty remains largely unchanged.<sup>16</sup>

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- 15 European Commission, [Nuclear Energy](#), accessed 24 April 2017; "[What Brexit means for UK nuclear energy policies](#)", *Newsweek*, 31 January 2017; "[Treaty establishing the European Atomic Energy Community \(Euratom\)](#)" EUR-Lex, 19 October 2007
- 16 European Commission, [Nuclear Energy](#), accessed 24 April 2017; "[What Brexit means for UK nuclear energy policies](#)", *Newsweek*, 31 January 2017; "[Treaty establishing the European Atomic Energy Community \(Euratom\)](#)" EUR-Lex, 19 October 2007; Iliana Cenevska, *The European Atomic Energy Community in the European Union Context: The 'Outsider' Within*, (Leiden, 2016), p67, European Commission, [Nuclear fuel supply in the Euratom Treaty: the role of the Euratom Supply Agency](#), accessed 24 April 2017

## 2 Regulation—Nuclear Safeguards

### Role of nuclear safeguards in trade and research collaboration

5. The area of nuclear regulation most severely affected by the UK's departure from Euratom is nuclear safeguards. These are measures, including the inspection of nuclear facilities, to ensure that materials are not being diverted for non-intended (i.e. military) purposes.<sup>17</sup> In the UK, safeguards requirements are currently set by the International Atomic Energy Agency (IAEA) and Euratom.<sup>18</sup> Euratom officials implement both the IAEA and Euratom requirements, monitoring the UK's fissile material to ensure it is in the correct place and being used for its intended purposes.<sup>19</sup> Box 2 explains some of the differences between the IAEA and Euratom regimes.

#### Box 2: IAEA and Euratom Nuclear Safeguards

Euratom's safeguarding requirements derive from those of the IAEA, but in practice they are more onerous in a number of respects, for example the quantities of qualifying material that require inspection. Safeguards are understandably a sensitive matter, but we have heard from the Office for Nuclear Regulation that "Euratom undertakes assurance and verification activities above those necessary to satisfy obligations to the IAEA, in order to draw its own conclusions regarding the diversion of nuclear material in the UK."<sup>20</sup> Civil nuclear facilities currently inspected by the IAEA include parts of the Sellafield facility, and the gas centrifuge enrichment facility at Capenhurst.<sup>21</sup> More than 100 UK facilities or duty holders are currently subject to Euratom safeguards.<sup>22</sup>

Two witnesses suggested that adherence to the IAEA's less restrictive regime *only* would reduce the burden of safeguards compliance.<sup>23</sup> However, facilities with operations involving organisations based in remaining Euratom states, for example storage agents and intermediaries, would need to meet Euratom reporting requirements alongside those of the IAEA.<sup>24</sup>

6. Safeguards are a prerequisite for both international nuclear trade and research collaboration agreements. The parliamentary inquiries<sup>25</sup> that have already scrutinised the UK's proposed departure from Euratom have identified a number of severe potential impacts—confirmed by the evidence that we received - were the UK to leave Euratom without alternative safeguards arrangements in place:

- Disruption or cessation of the imports of fuel, equipment, components, information and skills necessary to operate nuclear power stations. This would

17 Office for Nuclear Regulation, [What are nuclear safeguards](#), accessed 1 December 2017. In contrast, nuclear safety regulations protect the health and safety of the public and the environment.

18 Office for Nuclear Regulation, [What are nuclear safeguards](#), accessed 1 December 2017.

19 Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), World Nuclear Association ([BRN0013](#))

20 Appendix 2, and private conversations with nuclear stakeholders.

21 Office for Nuclear Regulation, [IAEA Safeguards in the UK](#), accessed 1 December 2017

22 Office for Nuclear Regulation, [Euratom Safeguards in the UK](#), accessed 1 December 2017

23 EDF Energy ([BRN0001](#)), Institution of Mechanical Engineers ([BRN0007](#))

24 Sellafield Ltd ([BRN0016](#))

25 See footnote 2

increase risks to the security of electricity supply, and in a worst-case scenario, could lead to the shutdown of nuclear power stations,<sup>26</sup> which in total account for 21% of UK electricity generation;<sup>27</sup>

- Delays to the construction of new nuclear power stations, including Hinkley Point C, due to lack of construction workers and an inability to import components;<sup>28</sup>
- Exclusion from, or substantially increased costs to participate in, the International Thermonuclear Experimental Reactor (ITER), and loss of funding and disrupted supplies for the Joint European Torus (JET) in Oxfordshire. These two international projects lead world research on nuclear fusion, and have provided substantial business opportunities for British companies.<sup>29</sup>

7. In addition, we identified significant potential for disruption to nuclear decommissioning—a sector that has so far not been subject to parliamentary scrutiny in relation to Brexit. Restrictions on the cross-border movement of nuclear materials could force the cessation of processes at Sellafield, compromising remediation of some of the most hazardous nuclear facilities in Europe.<sup>30</sup> Preventative action, including stockpiling, would be needed to mitigate the worst effects of disrupted supplies,<sup>31</sup> as well as to enable the continuation of decommissioning services currently provided by foreign companies.<sup>32</sup> The Nuclear Decommissioning Authority (NDA) could also be forced to default on commercial contracts with overseas customers, leaving it open to legal disputes and potentially financial losses.<sup>33</sup>

## Government position on safeguards

8. The Government's Nuclear Safeguards Bill, introduced on 11 October 2017, provides the Government with powers to establish a domestic safeguards regime, to replace the existing arrangements that are currently delivered by Euratom.<sup>34</sup> These powers will allow the Government to make regulations for, and implement international agreements in relation to, nuclear safeguarding across the whole of the UK. In evidence to us, the Minister for Energy and Industry, Richard Harrington MP, confirmed that the Bill is intended as a contingency plan, to be used “if we cannot negotiate with Euratom to continue with safeguarding”.<sup>35</sup> The Government's preferred position would instead be for Euratom to continue to provide safeguarding functions in the UK,<sup>36</sup> an example of the “practical approach to regulation” to which the Prime Minister committed in her Florence speech.<sup>37</sup>

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26 Centrica ([BRN0006](#)), EDF Energy ([BRN0001](#)), Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Industry Association ([BRN0009](#)), New Nuclear Watch Europe ([BRN0004](#)), Prospect ([BRN0003](#)), Unite the Union ([BRN0008](#))

27 Department for Business, Energy and Industrial Strategy, [Digest of UK Energy Statistics 2017](#), July 2017, p14

28 EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Industry Association ([BRN0009](#)), New Nuclear Watch Europe ([BRN0004](#)), Prospect ([BRN0003](#)), Unite the Union ([BRN0008](#)), Annex 2

29 Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), UKAEA ([BRN0002](#)), Unite the Union ([BRN0008](#))

30 Sellafield Ltd ([BRN0016](#)) and Sellafield Ltd, [Corporate Strategy 2017](#), April 2017

31 [Q34](#) [Andrew van der Lem]

32 [Q35](#) [Dr Mina Golshan]

33 Nuclear Decommissioning Authority ([BRN0012](#))

34 [Nuclear Safeguards Bill](#) [Bill 109 (2017–19)]

35 [Q90](#) [Richard Harrington]

36 [Q79](#) [Richard Harrington]

37 Prime Minister, [Florence Speech: a new era of cooperation and partnership between the UK and the EU](#), 22 September 2017

9. Any future UK safeguards regime will need to comply with international nuclear law, and as a minimum, be approved by the IAEA. The Minister assured us that bilateral negotiations with the IAEA on a future safeguards agreement were underway,<sup>38</sup> and that this would be in place by March 2019.<sup>39</sup> A Written Statement published on 14 September set out more ambitious aims for the UK's future regime:

“it is vitally important that the new domestic nuclear safeguards regime, to be run by the Office for Nuclear Regulation, is as comprehensive and robust as that currently provided by Euratom. The government has therefore decided that it will be establishing a domestic regime which will deliver to existing Euratom standards and exceeds the standard that the international community would require from the UK as a member of the IAEA”.<sup>40</sup>

10. This position leaves little scope for regulatory divergence from Euratom standards, and implies that meeting IAEA standards *alone* would not be acceptable to the Government. These themes are reflected in the Phase 1 Negotiations Report, published on 8 December:

“**On Euratom-related (nuclear specific) issues** both Parties have agreed principles for addressing the key separation issues relating to the UK's withdrawal from Euratom. This includes agreement that the UK will be responsible for international nuclear safeguards in the UK and is committed to a future regime that provides coverage and effectiveness equivalent to existing Euratom arrangements. Both sides have also agreed the principles of ownership for special fissile material (save for material held in the UK by EU27 entities) and responsibility for spent fuel and radioactive waste.”<sup>41</sup>

11. We have not yet investigated the implications of this statement in detail. We note, however, that it is unclear whether designating the UK as “responsible” for international safeguards implies the UK must fulfil this duty itself. It is also unclear whether having “committed to a future regime... equivalent to existing Euratom arrangements” precludes a period—during the development of the new regime—when UK safeguards could be less stringent than existing Euratom arrangements. Clarity is needed on the precise implications of “coverage and effectiveness” equivalent to existing arrangements, and in turn whether this implies a focus on outcomes rather than the means (existing Euratom processes) through which they are achieved. The specification of “existing” arrangements appears to allow for future regulatory divergence.

## Establishing a new safeguards regime: practical considerations

12. There is considerable doubt over the Government's ability to meet its objective of maintaining a safeguards regime up to the standard of Euratom by exit day. The Office for Nuclear Regulation (ONR), the UK's nuclear regulatory agency, has repeatedly asserted that it will be unable to implement Euratom-equivalent safeguards standards by March

38 [Q126](#) [Richard Harrington]

39 [Q126](#) [Katrina McLeay]

40 [HCWS137](#) (Energy Policy), 14 September 2017

41 Negotiators of the European Union and the UK Government, [Joint report on the progress during phase 1 of the negotiations under Article 50 TEU on the United Kingdom's orderly withdrawal from the European Union](#), (8 December 2017), Paragraph 89

2019.<sup>42</sup> Around half of the witnesses to our inquiry highlighted concerns about the Government’s proposed timetable for setting up a new, national safeguards regime, with several expressing doubts that this could be done on time.<sup>43</sup> These concerns derive in large part from the lack of existing UK capacity for delivering safeguards: UK safeguards inspections are for the most part conducted by Euratom officials.<sup>44</sup> Further, the majority of UK inspections are currently conducted using Euratom-owned infrastructure, equipment, systems and processes.<sup>45</sup> Mina Golshan, Deputy Chief Inspector of the ONR, told us that the ONR had “a reasonable level of confidence” that IAEA (although not Euratom) standards could be met by the point of our departure,<sup>46</sup> but she also explained that this will be “a tall order: it is ambitious; it is challenging”.<sup>47</sup>

13. A significant part of this challenge arises from the difficulty of recruiting and training sufficient new safeguards inspectors: the UK is currently facing a “critical shortage”.<sup>48</sup> We heard that the ONR has had no need to build resilience in safeguards staff capacity in the past.<sup>49</sup> To deliver the new domestic regime the ONR will need to double the number of its inspectors by 2019, and triple its numbers by 2021.<sup>50</sup> Skilling-up the new recruits on time will present additional challenges, as even existing specialists will require 12–18 months of training to become an inspector,<sup>51</sup> and generalists may need five years.<sup>52</sup> The Minister thought it would be possible to recruit inspectors, noting that the number needed is “not in the hundreds; it is in the tens”.<sup>53</sup> He emphasised the Government’s intention that sufficient inspectors will be recruited and trained on time,<sup>54</sup> but acknowledged that this could not be guaranteed.<sup>55</sup> The UK would be in breach of the terms agreed in the Phase 1 Negotiations Report if the ONR is required to deliver domestic safeguards but ultimately fails to implement standards “equivalent to existing Euratom arrangements” by the point of our departure.<sup>56</sup>

14. Establishing a national safeguards regime not only presents staffing challenges, but is also expected to be expensive. Up to £10 million will be needed to procure a new IT system,

42 [Q3](#) [Dr Mina Golshan]; oral evidence taken on 2 March 2017, [HC \(2015–17\) 909](#), Q129 [David Senior]; oral evidence taken before House of Lords EU Energy and Environment Sub-Committee on 13 September 2017, [Q37](#) [Mina Golshan]

43 EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), Sellafield Ltd ([BRN0016](#)), Unite the Union ([BRN0008](#)), [Q3](#) [Dr Mina Golshan], [Q15](#) [Peter Haslam]

44 European Commission, [Report on the Implementation of Euratom Safeguards in 2014](#), December 2015, p5 and p32; Daniel Davies, “Brexit effects: The future of safeguards in the United Kingdom”, Trust & Verify, issue 153, pp1–5; Oral Evidence taken on 28 February 2017, HC (2016–17) 909 [Q126](#) [David Senior]; EDF Energy ([EUE0033](#)); Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), World Nuclear Association ([BRN0013](#))

45 Evidence taken on 28 February 2017, HC (2016–17) 909 [Q125](#) [Dame Sue Ion], [Q127](#) [David Senior], [Q129](#) [David Senior], Institution of Mechanical Engineers ([BRN0007](#)), Sellafield Ltd ([BRN0016](#)).

46 [Q5](#) [Dr Mina Golshan]

47 [Q6](#) [Dr Mina Golshan]

48 New Nuclear Watch Europe ([BRN0004](#)). See also Prospect ([BRN0003](#)), Nuclear Industry Association ([BRN0009](#)), Unite the Union ([BRN0008](#)), [Q8](#) [Dr Mina Golshan]

49 [Q72](#) [Dr Mina Golshan]

50 [Qq7–8](#) [Dr Mina Golshan]

51 [Q7](#) [Dr Mina Golshan]

52 Prospect ([BRN0003](#))

53 [Q149](#) [Richard Harrington]

54 [Q150](#) [Richard Harrington]

55 [Qq151–153](#) [Richard Harrington]

56 Negotiators of the European Union and the UK Government, [Joint report on the progress during phase 1 of the negotiations under Article 50 TEU on the United Kingdom’s orderly withdrawal from the European Union](#), (8 December 2017), Paragraph 89

recruit and train inspectors, and strengthen the ONR's institutional capacity, to be paid from within BEIS' Spending Review Allocation.<sup>57</sup> However, it has been suggested that this £10 million will be sufficient to deliver safeguards that meet IAEA standards *only* - and that additional work will be required to set-up a Euratom-equivalent regime.<sup>58</sup> Furthermore, the figure does *not* include the purchase of Euratom-owned equipment currently in the UK, which the Government has said it will consider if a "common understanding of the fair value and liabilities" can be reached.<sup>59</sup> Sellafield Ltd has estimated that - should this not prove possible - the cost to remove and dispose of Euratom-owned equipment at its sites would be £22 million, and the costs of purchasing and installing replacement equipment would "likely be well in excess of £150m".<sup>60</sup> Delivery of the regime, once established, is expected to involve an ongoing cost of £10 million per annum.<sup>61</sup>

15. The application of IAEA (as opposed to Euratom) safeguards would not affect the safety of UK nuclear facilities.<sup>62</sup> We are persuaded that IAEA safeguards standards would be sufficient to establish new nuclear trade agreements (so-called 'nuclear cooperation agreements' or NCAs).<sup>63</sup> Nonetheless, application of IAEA standards only would represent a significant relaxation of the UK's current safeguards regime.<sup>64</sup> Whilst this would offer some potential to reduce the bureaucratic burden of safeguards compliance,<sup>65</sup> the majority of witnesses addressing this matter, not to mention the Government and the EU, have stated they would prefer that UK nuclear regulations are not cut back.<sup>66</sup> The Government has provided us with its timetable for establishing a domestic safeguards regime (appendix 1), but in light of the concerns raised by our witnesses, we doubt it can be met. **Establishing a UK-operated safeguards regime by the time of our departure will be difficult, and is likely to be costly. It is highly doubtful that it will be possible to implement Euratom-equivalent safeguards by March 2019, and even the less stringent requirements of the International Atomic Energy Agency (IAEA) will be challenging to deliver. We recommend that the Government provides to the House, before report stage of the European Union (Withdrawal) Bill, a detailed timeline setting out progress in establishing an alternative UK safeguards regime; and that it commits to providing further updates on a quarterly basis up to March 2019.**

16. It is clear that any UK-operated safeguards regime will not be able to maintain Euratom-equivalent safeguards from the point of our departure, unless transitional arrangements are agreed to delay the handover-date. Application of IAEA (rather than Euratom) safeguards would not reduce the safety of British nuclear facilities, nor would it necessarily hinder trade or research collaboration, but this outcome would fall short

57 [Explanatory Notes to the Nuclear Safeguards Bill](#) [Bill 109 (2017–19) -EN], p10

58 Prospect, [Brexit Briefing: Euratom - Update December 2017](#) (December 2017), p3

59 HM Government, [Nuclear materials and safeguards issues: position paper](#), (July 2017), p3

60 Sellafield Ltd ([BRN0016](#))

61 [Explanatory Notes to the Nuclear Safeguards Bill](#) [Bill 109 (2017–19) -EN], p10

62 EDF Energy ([BRN0001](#)), Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Industry Association ([BRN0009](#)), Unite the Union ([BRN0008](#)), World Nuclear Association ([BRN0013](#)), Department for Business, Energy and Industrial Strategy ([BRN0010](#))

63 EDF Energy ([BRN0001](#))

64 See Box 2

65 Oral evidence taken on 28 February 2017, HC (2016–17) 909, [Q138](#) [David Senior, Tom Greatrex, Dame Sue Ion, Robert Cowen], Nuclear Decommissioning Authority ([BRN0012](#)), Institution of Mechanical Engineers ([BRN0007](#))

66 [Q2](#) [Ben Russell, Andrew van der Lem, Peter Haslam, Dr Mina Golshan], [Q27](#) [Ben Russell], EDF Energy ([BRN0001](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Sellafield Ltd ([BRN0016](#)), [HCWS137](#) (Energy Policy), 14 September 2017, Negotiators of the European Union and the UK Government, [Joint report on the progress during phase 1 of the negotiations under Article 50 TEU on the United Kingdom's orderly withdrawal from the European Union](#), (8 December 2017), Paragraph 89

of the Government's own objectives and those of the Phase 1 Negotiations Report. **The Government should honour its commitment not to reduce existing safeguards regulation. As far as we are aware, the only viable route to achieve this aim is for Euratom to continue managing and operating safeguards in the UK, for the short term at least. This could be consistent with the terms of the Phase 1 Negotiations Report, if the UK assumes ultimate responsibility for international safeguards, but contracts out delivery to Euratom. We recommend that the Government should seek to achieve this aim in negotiations, and to do so as soon as possible, in order to minimise the nugatory expenditure on the establishment of alternative domestic arrangements.**

*17. If the Government is unable to secure agreement for Euratom to continue delivering the UK's safeguards regime, it should as a minimum seek transitional arrangements that would extend Euratom's existing role in UK safeguards until the ONR is ready and able to take over safeguarding responsibilities, including adherence to Euratom safeguards standards.*

## 3 Market access, non-tariff barriers and trade

### Civil nuclear and the UK economy

18. Civil nuclear<sup>67</sup> is vital to the country's security of energy supply and a significant part of the economy. It contributed £6.4 billion to the UK economy in 2016, equivalent to aerospace manufacturing and representing 0.3% of the UK's GDP.<sup>68</sup> It employs close to 66,000 people.<sup>69</sup> In total the sector, its supply chains and its workers contributed £12.4 billion to national GDP last year, generated almost £4.5 billion in tax revenues, and sustained 155,000 jobs.<sup>70</sup> Civil nuclear is particularly important for the economies of the northwest and southwest of England, where it supported an estimated £1 of every £50 of economic output in 2016.<sup>71</sup> International trade volumes for nuclear power are small compared to other sectors, with exports being worth £42.5 million and imports £302.5 million in 2014,<sup>72</sup> but they are critical for the day-to-day activities of UK homes, businesses and public services: nuclear accounts for 21% of our electricity supply.<sup>73</sup> Imports are also critical for nuclear decommissioning, the second largest area of BEIS' departmental spend.<sup>74</sup> Sellafield Ltd facilities rely on components and equipment which are manufactured in the US and Japan,<sup>75</sup> while the ongoing remediation by the Nuclear Decommissioning Authority (NDA) depends on continued access to specialist suppliers and contractors in the EU.<sup>76</sup> The UK further benefits from substantial trade linked to international nuclear research projects. British businesses, universities and the UK Atomic Energy Authority have already won contracts worth €500 million to supply the International Thermonuclear Experimental Reactor (ITER) through the EU Fusion for Energy programme: a figure which has potential to rise to €1 billion over the coming decade.<sup>77</sup>

67 Statistics drawn from Nuclear Industry Association, [Nuclear Activity Report 2016](#) (December 2017), which defines the 'civil nuclear sector' as including firms directly involved in the generation of nuclear power, and those in its 'nuclear-specific' supply chain, but excluding the Nuclear Decommissioning Authority (NDA), any activities focussed on defence or military applications of nuclear technology and the majority of the UK's academic nuclear researchers.

68 Nuclear Industry Association, [Nuclear Activity Report 2016](#) (December 2017), p8

69 As above

70 Nuclear Industry Association, [Nuclear Activity Report 2016](#) (December 2017), pp11–12

71 Nuclear Industry Association, [Nuclear Activity Report 2016](#) (December 2017), p2

72 Office for National Statistics, [Main Nuclear Sector Statistics](#) (6 April 2016)

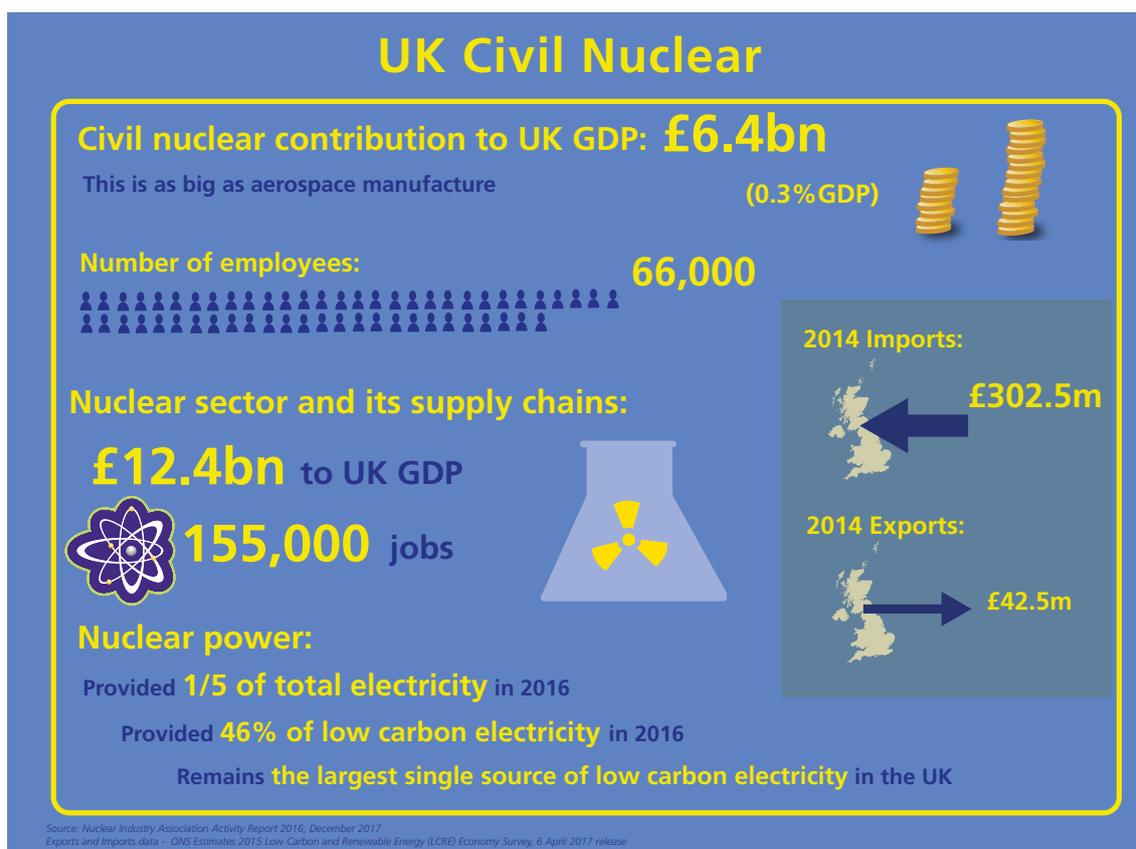
73 [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/643414/DUKES\\_2017.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/643414/DUKES_2017.pdf)  
Department for Business, Energy and Industrial Strategy, [Digest of UK Energy Statistics 2017](#), July 2017, p14

74 National Audit Office, [A Short Guide to the Department for Business, Energy and Industrial Strategy](#) (September 2017), p7

75 Sellafield Ltd ([BRN0016](#))

76 Nuclear Decommissioning Authority ([BRN0012](#))

77 Nuclear Industry Association ([BRN0009](#)), Institution of Mechanical Engineers ([BRN0007](#)), Department for Business, Energy and Industrial Strategy ([BRN0010](#))

Figure 1 Contribution of civil nuclear to the UK economy.<sup>78</sup>

## Market access and nuclear cooperation agreements

19. Euratom facilitates international nuclear trade and collaboration through:
- (1) the Nuclear Common Market, which provides rights for the transport of nuclear materials, goods and personnel within the Euratom Community;
  - (2) Nuclear cooperation agreements held between the Community and third countries. The UK does not hold any such agreements directly, but instead relies on those developed by Euratom (which are themselves predicated on the application of Euratom's safeguards regime).<sup>79</sup>

International nuclear law does not require the presence of nuclear cooperation agreements for trade. However, legal agreements are required by domestic law in certain countries, including the USA. In some other countries, notably Australia and Canada, a nuclear cooperation agreement is a strict policy—albeit not legal—requirement.<sup>80</sup> On departure from Euratom, the UK will need to negotiate new nuclear cooperation agreements before nuclear goods, including intellectual property, software, and skills, can be moved between the UK and other countries.<sup>81</sup> The agreements are expected to depend on the

<sup>78</sup> See footnote 67. Import and export figures are for nuclear power.

<sup>79</sup> Oral evidence taken on 28 February 2017, HC (2016–17) 909, [Q122](#) [Rupert Cowen]

<sup>80</sup> Sellafield Ltd ([BRN0016](#)), Unite the Union ([BRN0008](#))

<sup>81</sup> EDF Energy ([BRN0001](#)), Nuclear Industry Association ([BRN0009](#)), New Nuclear Watch Europe ([BRN0004](#)), Prospect ([BRN0003](#)), Institution of Mechanical Engineers ([BRN0007](#))

existence of a mutually acceptable UK safeguards regime.<sup>82</sup> Witnesses were concerned about any potential gap between leaving Euratom and setting up new agreements, which would cause considerable disruption to nuclear supply chains, as discussed in Chapter 2.<sup>83</sup> We heard that nuclear cooperation agreements with the USA, Canada, Japan and Australia will be crucial for maintaining existing operations and should be prioritised,<sup>84</sup> but that agreements with other countries will be important too.<sup>85</sup> Unless part of a broader agreement, we assume that a nuclear cooperation agreement with the EU will also be required.

20. The imposition of tariffs under World Trade Organisation (WTO) rules is not such a concern for the civil nuclear as it is for some other sectors. Witnesses were in favour of continued tariff-free trade with the EU, but pointed out that WTO tariffs were not significant compared to other costs.<sup>86</sup> Nonetheless, the Nuclear Industry Association (NIA) warned that the cumulative effect of tariffs, applied every time a border is crossed, could result in considerable costs.<sup>87</sup> Civitas has estimated that nuclear equipment manufacture<sup>88</sup> would see the UK industry facing the fifth greatest absolute losses if WTO Most Favoured Nations tariffs are introduced, with an estimated aggregate loss of £210 million,<sup>89</sup> equivalent to an average export tariff of 1.7%.<sup>90</sup> The expected average tariff on imports of such goods would be 1.4%, with losses for EU manufacturers estimated at £366 million.<sup>91</sup> Reversion to WTO rules under a ‘no deal’ scenario could be extremely damaging to the nuclear sector: without safeguards and nuclear cooperation agreements, critical areas of nuclear trade and research collaboration would simply cease.<sup>92</sup>

21. Statements by the Minister and David Wagstaff, Head of Euratom Exit Negotiations at BEIS, indicated that progress in establishing new nuclear cooperation agreements with the USA, Canada, Japan and Australia was well advanced and that these would be completed in time for our departure.<sup>93</sup> Mr Wagstaff explained that draft agreements can be scrutinised by national parliaments ahead of time, in order that they may be ratified and enter into force when we leave.<sup>94</sup> In July, the Minister asserted that our new safeguards arrangements and cooperation agreements can be developed simultaneously.<sup>95</sup>

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82 Institution of Mechanical Engineers ([BRN0007](#))

83 Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Industry Association ([BRN0009](#)), Centrica ([BRN0006](#)), EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Nuclear Decommissioning Authority ([BRN0012](#)). See also the NIA’s series of ‘[Leaving the European Union](#)’ briefing papers.

84 [Q15](#) [Peter Haslam], [Q21](#) [Andrew van der Lem], [Q120](#) [David Wagstaff], Unite the Union ([BRN0008](#)), EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), Prospect ([BRN0003](#)), Department for Business, Energy and Industrial Strategy ([BRN0010](#)), Annex 2

85 [Q21](#) [Andrew van der Lem], Nuclear Industry Association ([BRN0009](#)), Sellafield Ltd ([BRN0016](#)), Unite the Union ([BRN0008](#)), EDF Energy ([BRN0001](#)), Institution of Mechanical Engineers ([BRN0007](#)), Annex 2

86 EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Nuclear Decommissioning Authority ([BRN0012](#))

87 Nuclear Industry Association ([BRN0009](#))

88 This includes nuclear reactors, boilers, machinery, mechanical appliances and parts thereof.

89 Civitas, [Potential post-Brexit tariff costs for EU-UK trade](#) (October 2006), Table 2

90 Civitas, [Potential post-Brexit tariff costs for EU-UK trade](#) (October 2006), Table 4

91 Civitas, [Potential post-Brexit tariff costs for EU-UK trade](#) (October 2006), Table 4

92 New Nuclear Watch Europe ([BRN0004](#)), Annex 2

93 [Q136](#) [Richard Harrington]

94 [Q121](#) [David Wagstaff]

95 HC Deb, 12 July 2017, col [109–110WH](#)

22. The Government's optimistic outlook contrasts with concerns raised by many of our witnesses about both likely duration of cooperation agreement negotiations, and the necessary sequencing of specific events.<sup>96</sup> We heard that previous nuclear cooperation agreements have taken in the region of three years to negotiate.<sup>97</sup> Dame Sue Ion, former Chair of the Nuclear Innovation and Research Advisory Board, has said that it would not be possible to complete new cooperation agreements by March 2019.<sup>98</sup> With regard to sequencing, we heard that the new safeguards systems would need to be implemented in advance of our departure to allow the new nuclear cooperation agreements to be concluded and ratified.<sup>99</sup> Sellafield Ltd noted that this would entail a period where nuclear facilities were required to run both the existing and new safeguards systems concurrently.<sup>100</sup>

**23. The evidence we have gathered does not support the Government's confidence that nuclear cooperation agreements with the USA, Canada, Australia and Japan will be in force by March 2019. Any hiatus in their provision would present a material threat to nuclear trade. No deal in relation to nuclear cooperation agreements is not a viable option. The Government must therefore, at the very least, secure transitional arrangements that enable the UK to continue trading with the USA, Canada, Australia and Japan through Euratom's existing nuclear cooperation agreements until such time as new agreements between the UK and these countries can be established.**

## Trade opportunities

24. There are numerous opportunities for the UK to expand nuclear trade, particularly in areas where we have specialist expertise, such as decommissioning, and in advanced technologies such as small modular reactors, where there is potential to develop an early-mover advantage.<sup>101</sup> The potential value of these global markets by 2035 has been estimated at US\$111 billion<sup>102</sup> and £250–400 billion<sup>103</sup> respectively. The value of investment in new build nuclear is projected to reach around US\$1.5 trillion by the same date, including US\$24–30 billion per year after 2025.<sup>104</sup> Witnesses agreed on the potential for UK nuclear trade to expand, but for the most part did not suggest that Brexit itself opens up *new* opportunities.<sup>105</sup> The Institution of Mechanical Engineers (IMechE) was the only organisation to identify trade opportunities arising as a direct result of our departure, which included the following:

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- 96 Nuclear Industry Association ([BRN0009](#)), Unite the Union ([BRN0008](#)), Horizon Nuclear Power ([BRN0011](#)), Sellafield Ltd ([BRN0016](#)), Annex 1; Oral evidence taken on 28 February 2017, HC (2016–17) 909, [Q122](#) [Rupert Cowen]
- 97 Annex 1, Sellafield Ltd ([BRN0016](#)), Unite the Union ([BRN0008](#))
- 98 Oral evidence taken on 28 February 2017, HC (2016–17) 909, [Q128](#) [Dame Sue Ion]
- 99 Sellafield Ltd ([BRN0016](#)), [Q18](#) [Peter Haslam]
- 100 Sellafield Ltd ([BRN0016](#))
- 101 World Nuclear Association ([BRN0013](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Sellafield Ltd ([BRN0016](#)), Prospect ([BRN0003](#))
- 102 World Nuclear Association ([BRN0013](#))
- 103 UK National Nuclear Laboratory, [Small Modular Reactor Feasibility Study](#) (December 2014), p16
- 104 World Nuclear Association ([BRN0013](#))
- 105 EDF Energy ([BRN0001](#)), New Nuclear Watch Europe ([BRN0004](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), World Nuclear Association ([BRN0013](#)), UKAEA ([BRN0002](#))

- The UK could leave the Almelo Treaty<sup>106</sup> held with Germany and the Netherlands. This would return control of domestic fuel enrichment to the UK, allowing us to supply both domestic and non-European markets;
- Departure from the Euratom Treaty would remove our Article 41 obligations, which require Member States to review investment projects for new-build nuclear activities. This would free up time to focus on UK activities;
- We could increase domestic procurement requirements for new-build nuclear projects, and so develop UK supply chains;
- Once nuclear cooperation agreements have been established with other countries, the UK could more aggressively target these markets to increase procurement of UK goods and services and to develop new research collaborations.<sup>107</sup>

25. Despite the potential of these opportunities, the IMechE advocated remaining in Euratom as “[t]he ideal situation for the whole of the UK nuclear industry”.<sup>108</sup> Our predecessor Committee heard evidence that whilst Brexit may open up new opportunities in the long term,<sup>109</sup> it would be imprudent to pursue these to the detriment of existing nuclear trade.<sup>110</sup> **There may well be opportunities to expand nuclear trade, but the extent to which these arise from Brexit is far from clear. Those which have been identified are neither sufficiently certain nor substantial to justify departing Euratom on economic grounds. In many cases, they arise from less demanding regulatory and supervisory requirements—a route which the industry does not advocate and the Government has rightly rejected. We trust the Government will support trade expansion in its development of the nuclear sector deal under the Industrial Strategy.**

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106 Agreement between the United Kingdom of Great Britain and Northern Ireland, the Federal Republic of Germany and the Kingdom of the Netherlands on Collaboration in the Development and Exploitation of the Gas Centrifuge Process for producing Enriched Uranium (adopted 4 March 1970, entered into force 19 July 1971), [Treaty Series 069/1971](#)

107 Institution of Mechanical Engineers ([BRN0007](#))

108 Institution of Mechanical Engineers ([BRN0007](#))

109 Oral evidence taken on 28 February 2017, HC (2016–17) 909, [Q138](#) [Tom Greatrex, Dame Sue Ion, Rupert Cowen]

110 Oral evidence taken on 28 February 2017, HC (2016–17) 909, [Q138](#) [Rupert Cowen]

## 4 Research and development

26. The implications of Brexit for nuclear research and development (R&D) were covered in detail by our predecessor Committee's inquiry.<sup>111</sup> There are clear advantages to collaborating on R&D via Euratom, which it is in the UK's national interest to preserve; we are aware of no-one who has argued otherwise. We support the conclusions and recommendations put forward by our predecessor Committee on this matter,<sup>112</sup> including the need to maintain the benefits of existing research collaboration in what will always be a multi-national activity. Witnesses to our own inquiry have reiterated the importance of this outcome.<sup>113</sup> This could be achieved through, for example, an association agreement similar to those held by Switzerland and the Ukraine, which allow participation in Euratom R&D programmes.<sup>114</sup>

27. There are specific difficulties facing the Joint European Torus (JET) nuclear fusion research facility at Culham. At present Euratom provides 87% of JET's funding (around £60 million per annum),<sup>115</sup> but the current funding contract is due to expire at the end of 2018. Prior to the referendum it was expected that JET's contract would be extended to 2020, and possibly 2024. It is now unclear whether and by whom the project will continue to be funded.<sup>116</sup> The Government has said it would like to continue and build on existing R&D collaboration with the EU on nuclear power, including on the JET project. It has also promised to underwrite the UK's share of JET's costs provided that the European Commission extends the contract to 2020.<sup>117</sup>

28. The future of JET's funding needs to be resolved urgently because the Austrian Government—not a great supporter of nuclear power—will take the presidency of the European Council from July to December 2018. We have heard that the Austrian government may not be willing to progress Euratom issues during this period.<sup>118</sup> It is vital, therefore, that JET's funding is secured before July 2018 if the facility is to continue operating. This will be a significant undertaking, given that JET's previous programme

111 Business, Energy and Industrial Strategy Committee, Fourth Report of Session 2016–17, [Leaving the EU: negotiation priorities for energy and climate change policy](#), HC909

112 With regards to nuclear R&D, our predecessor Committee concluded that "Exclusion from Euratom's research programmes could disadvantage national nuclear research, limit the UK's future access to global developments in fusion, and reduce the substantial business opportunities for UK firms supplying Euratom research projects." They recommended that "*The Government should explore options to maintain the benefits of our existing research cooperation with Euratom, such as third party membership. Special consideration should be given to funding arrangements that would allow continued operation of, and access to, world-leading research projects including JET and ITER.*" Business, Energy and Industrial Strategy Committee, Fourth Report of Session 2016–17, [Leaving the EU: negotiation priorities for energy and climate change policy](#), HC909, Paragraph 95

113 Department for Business, Energy and Industrial Strategy ([BRN0010](#)), EDF Energy ([BRN0001](#)), Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), UKAEA ([BRN0002](#))

114 [Leaving the European Union: Euratom](#), Library Note [LLN 2017/010](#), February 2017, Institution of Mechanical Engineers ([BRN0007](#))

115 See, for example: EUROfusion, [JET: Europe's largest fusion device – funded and used in partnership](#), accessed 21 April 2017; "[Government ministers visit Oxfordshire to open research centre and highlight risks to UK science and innovation from Brexit](#)", BIS press release, 23 May 2016.

116 Unite the Union ([BRN0008](#)), UKAEA ([BRN0002](#)), Institution of Mechanical Engineers ([BRN0007](#)), Prospect ([BRN0003](#))

117 HM Government, [Collaboration on science and innovation: a future partnership paper](#) (September 2017)

118 [Q41](#) [Peter Haslam], Annex 1

of work took 22 months to agree. Peter Haslam, Head of Policy at the Nuclear Industry Association, told us that the UK needs to confirm its wish to continue JET's operation with the Council "by the end of this year if possible, and, if not, soon afterwards".<sup>119</sup>

29. We welcome the Government's aspiration to extend EU R&D collaboration, and its commitment to underwrite the UK share of JET's funding should the Commission agree to a contract extension. However, in themselves these statements neither ensure ongoing collaboration nor operation of JET beyond the end of next year. ***We recommend that the Government seeks to maintain the existing benefits of EU R&D collaboration, for example through an agreement similar to those held by Switzerland and Ukraine with Euratom.***

30. ***The Government should also seek clarity and update the House with its assessment of how the Austrian presidency may affect the chances of the timely resolution of JET's funding. If this does appear to be a material concern, the Government should fast track the funding negotiations, and put in place contingency arrangements, not dependent on a European Commission decision, to allow JET's continuation until the negotiations are resolved.***

## 5 Skills

31. The civil nuclear sector, like other sectors, has enjoyed the benefits of freedom of movement throughout the EU and is concerned about its ability to meet the demand for the skilled, semi-skilled and unskilled workers that are essential for supporting the supply of nuclear energy. We have already discussed the potential impact of skills shortages on the UK's ability to deliver a safeguards regime in the time available. These concerns extend to construction, decommissioning and R&D.<sup>120</sup> Accurate, sector-wide statistics on the number of EU citizens working in the UK industry are not available. However, we heard estimates that around one tenth of the 2,500 workforce at Hinkley Point C is non-UK nationals, with the vast majority of those being from EU countries.<sup>121</sup> All of the nuclear new build projects currently planned for the UK are designed and financed by foreign firms, with Hinkley Point and Sizewell being developed with French technology. As a consequence, we would expect French workers throughout all stages of construction and operation. Research tends to be even more multinational: for example, of the scientific staff at UK Atomic Energy Authority (UKAEA), approximately half are non-UK nationals, and 32% are non-UK EU nationals.<sup>122</sup>

32. A number of civil nuclear jobs feature on the Home Office shortage occupation list,<sup>123</sup> while a wide range of engineering, construction and project management roles are listed on the 2017 Nuclear Workforce Assessment as being subject to demand and supply pinch points.<sup>124</sup> We heard that over half of the UK's steel fixers would be needed at EDF Energy's Hinkley Point C site at certain times and nuclear construction will be competing for skilled workers with other major UK infrastructure projects.<sup>125</sup> Horizon Nuclear Power also expressed concerns about the potential skills shortages resulting from Brexit; it will need a workforce of 8,500 at peak times at each of its two planned power stations.<sup>126</sup> Measures are being taken to address the expected shortfall in nuclear workers, with EDF and Horizon liaising with education providers to recruit and train workers locally.<sup>127</sup> However, an ongoing annual shortfall of 20,000 engineering graduates is forecast.<sup>128</sup> It will take concerted action to enable the peaks of demand likely to be faced during the planned period of nuclear plant construction to be met with UK workers. Witnesses reported that progress on delivering the Nuclear Skills Strategic Plan, launched in 2016, has been slow.<sup>129</sup>

33. The Minister acknowledged these concerns and fully accepted that there is a skills shortage,<sup>130</sup> which needed to be addressed in the wider negotiations on freedom of movement. The Government's commitment to protecting the rights of EU citizens residing

120 Nuclear Skills Strategy Group ([BRN0005](#)), EDF Energy ([BRN0001](#)), Institution of Mechanical Engineers ([BRN0007](#)), Prospect ([BRN0003](#)), UKAEA ([BRN0002](#)), Unite the Union ([BRN0008](#)), Nuclear Industry Association ([BRN0009](#))

121 Annex 2

122 UKAEA ([BRN0002](#))

123 Home Office, [Immigration Rules Appendix K: shortage occupation list](#) (accessed 8 December 2017) Table 1

124 Nuclear Skills Strategy Group ([BRN0005](#))

125 [Q71](#) [Ben Russell], Nuclear Industry Association ([BRN0009](#)), Annex 2

126 Horizon Nuclear Power ([BRN0011](#))

127 EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Annex 2

128 Prospect ([BRN0003](#))

129 Institution of Mechanical Engineers ([BRN0007](#))

130 [Q154](#) [Richard Harrington]

in the UK should help to mitigate immediate impacts.<sup>131</sup> In this context, we welcome the increased clarity and assurance provided by the Phase 1 Negotiations Report and the repeated statements from the Government that it wishes to retain skilled EU workers in this country, especially in critical sectors. But the impact of Brexit on EU citizens currently working in the UK, and the longer-term ability to attract the necessary skills from the EU, remains a concern. It may be that the Government will need to consider an immigration carve-out for specified projects, if UK skills shortages persist, as suggested by Horizon.<sup>132</sup> The Migration Advisory Committee has been asked to report by September 2018 on the impact on the UK labour market of Brexit and the alignment of immigration policy with the Industrial Strategy.<sup>133</sup> We trust that this will quantify the extent of potential shortages in specific nuclear construction and decommissioning roles in the light of the planned nuclear new build programme. **In determining its negotiating objectives on freedom of movement and subsequent immigration policy, the Government must ensure that progress on strategically vital projects such as nuclear power plants is not jeopardised by restrictions in the supply of workers at all skill levels.**

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131 Negotiators of the European Union and the UK Government, *Joint report on the progress during phase 1 of the negotiations under Article 50 TEU on the United Kingdom's orderly withdrawal from the European Union*, (8 December 2017), pp1–7

132 Horizon Nuclear Power ([BRN0011](#))

133 *Migration Advisory Committee (MAC) commissioned by Government*, Migration Advisory Committee Press Release (27 July 2017)

## 6 Transitional arrangements and our future relationship

### Transitional arrangements

34. It is vital that the transitional or implementation period that the Government is seeking to agree is long enough to allow the Government to meet its welcome objective of maintaining regulatory standards at their present level. The Prime Minister, in her Florence speech, signalled a pragmatic, rather than dogmatic, approach to the length of this period, saying that this period should “be determined simply by how long it will take to prepare and implement the new processes and new systems that will underpin that future partnership [between the UK and EU]”, and that “as of today, these considerations point to an implementation period of around two years”.<sup>134</sup> Several witnesses questioned whether two years would be long enough to establish a UK safeguards regime of equivalent standards to that provided by Euratom (see Chapter 2).<sup>135</sup> Witnesses from the Office for Nuclear Regulation and the Nuclear Industry Association were planning on a two year transition period, although they would welcome additional time, if necessary.<sup>136</sup> The Minister told us that it would “make a lot of sense” for the Euratom transition to fit into the general transition period for leaving the EU, but he gave no commitment to seeking a separate timeframe if necessary.<sup>137</sup>

35. Witnesses were also clear that during the transitional period the UK should maintain its existing relationship with Euratom as far as possible and there should be one change to the new relationship, rather than two.<sup>138</sup> We welcome the intention of the Government that there should be only one change and that during the transitional period the UK would stay in all the EU regulators and agencies.<sup>139</sup> We assume that this includes membership of Euratom, although the Government has not said so explicitly. It is also important that the Government clarifies whether it is seeking to extend coverage of existing Euratom nuclear cooperation agreements to the UK for the transitional period, to provide continuity of trade and collaboration arrangements for companies, research institutions and public bodies.<sup>140</sup>

36. In her Florence speech the Prime Minister spoke about being “pragmatic” about resolving the challenges facing both sides in the negotiations.<sup>141</sup> We welcome this approach, as it provides the necessary flexibility for the Government to seek transitional arrangements that best meet our interests. **The Government is right to press ahead with establishing alternative arrangements as quickly as possible, facilitated by the**

134 Prime Minister, [Florence Speech: a new era of cooperation and partnership between the UK and the EU](#), 22 September 2017

135 [Q114](#) [Dr Mina Golshan]; [Q15](#) [Peter Haslam], Institution of Mechanical Engineers ([BRN0007](#)), Sellafield Ltd ([BRN0016](#)), Unite the Union ([BRN0008](#)),

136 [Qq59–60](#) [Dr Mina Golshan, Peter Haslam], Horizon Nuclear Power ([BRN0011](#))

137 [Qq114–118](#) [Richard Harrington, Katrina McLeay]

138 [Q56](#) [Dr Mina Golshan, Peter Haslam], [Q57](#) [Ben Russell], Centrica ([BRN0006](#)), EDF Energy ([BRN0001](#)), Institution of Mechanical Engineers ([BRN0007](#)), New Nuclear Watch Europe ([BRN0004](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), UKAEA ([BRN0002](#)), Unite the Union ([BRN0008](#))

139 Rt Hon David Davis MP, [Speech to the Suddeutsche Zeitung Economic Summit](#), 16 November 2017

140 [Q57](#) [Ben Russell]

141 Prime Minister, [Florence Speech: a new era of cooperation and partnership between the UK and the EU](#), 22 September 2017

necessary legislation. There should be no delay. But it is important to establish by early 2019 that should we need longer than two years, there is sufficient flexibility to allow an extension, whether as part of the overall agreement or as a separate arrangement relating to Euratom.

## Future relationship

### General principles for a future relationship

37. The vast majority of witnesses raised concerns about the potentially severe impacts of leaving Euratom without alternative arrangements for the nuclear industry.<sup>142</sup> Only two identified any potential benefits of leaving.<sup>143</sup> The Government itself has indicated that its preferred option would be for existing arrangements to remain as they are. Richard Harrington told us that “if there is a way we can be as close as possible to being a member of Euratom, I would be very happy”,<sup>144</sup> and that “we want to get as close to business as usual as we possibly can”.<sup>145</sup> This position aligns with the views of witnesses to our inquiry.<sup>146</sup>

38. One constraint governing our future relationship with Euratom is the Government’s objective to bring about an end to the direct jurisdiction of the European Court of Justice (ECJ).<sup>147</sup> We heard no complaint from the industry about the role or decisions of the ECJ. The Institution of Mechanical Engineers indicated that they would be willing to see continued recognition of the ECJ on nuclear matters, if this enables us to secure a closer relationship with Euratom.<sup>148</sup> This is in line with the pragmatic approach agreed by the Government in the Phase 1 Negotiations Report on the role of the ECJ in decisions on citizens’ rights. The Minister admitted that he was not aware of any Euratom case affecting the UK that had been brought before the ECJ,<sup>149</sup> and disclosed his view that there may be potential to reach a “sensible solution” which includes ECJ involvement.<sup>150</sup>

**We welcome the Minister’s pragmatic suggestion that the European Court of Justice may continue to play a role in the UK’s civil nuclear sector, and we see no reasoned objections to this approach. *The well-established and significant economic benefits of close association with, or membership of, Euratom should not be put at risk to escape any hypothetical and unidentified adverse impact on the civil nuclear sector arising from European Court of Justice jurisdiction.***

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142 Centrica ([BRN0006](#)), EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), New Nuclear Watch Europe ([BRN0004](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), Nuclear Skills Strategy Group, Prospect ([BRN0003](#)), Sellafield Ltd ([BRN0016](#)), UKAEA ([BRN0002](#)), Unite the Union ([BRN0008](#)), World Nuclear Association ([BRN0013](#)), Annex 1,

143 Institution of Mechanical Engineers ([BRN0007](#)), Nuclear Decommissioning Authority ([BRN0012](#))

144 [Q89](#) [Richard Harrington]

145 [Q90](#) [Richard Harrington]

146 Centrica ([BRN0006](#)), EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), New Nuclear Watch Europe ([BRN0004](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), Sellafield Ltd ([BRN0016](#)), UKAEA ([BRN0002](#)), Unite the Union ([BRN0008](#)), Annex 1, [Q46](#) [Dr Mina Golshan]

147 HM Government, [Enforcement and Dispute Resolution, A Future Partnership paper](#), (August 2017), p2

148 Institution of Mechanical Engineers ([BRN0007](#))

149 [Q84](#) [Richard Harrington]

150 [Q85](#) [Richard Harrington]

## Models for future relationship

39. Models for the UK's future relationship with Euratom can be divided into three broad categories: complete exit; continued Membership; and a 'closest possible' relationship outside the Treaty and the Community. The following summarises arguments surrounding each option.

### Complete exit

40. The default option for our future relationship would be a full exit from Euratom alongside our departure from the EU. However, this is neither desirable, nor is it being considered in realistic terms by either industry or Government. Whilst a complete departure from Euratom regulation would slightly reduce the burden of safeguards compliance, the UK would need to implement new safeguarding arrangements, establish new nuclear cooperation agreements, and either replace Euratom research funding or cancel research projects, all to a very tight deadline.

### Continued Euratom Membership

41. The Government has stated that departure from Euratom is a legal requirement of Brexit and we have not pursued this legal question in this inquiry. We understand that ongoing UK membership is unlikely to be politically viable from a European perspective, since it would legitimise an *à la carte* approach to Euratom, undermining the Treaty<sup>151</sup>— which is itself already facing significant challenges from some EU Member States.<sup>152</sup> Over one third of witnesses to our inquiry would prefer the UK to remain a full Euratom member.<sup>153</sup> None indicated a preference for the UK to leave Euratom.

### 'Closest possible' relationship

42. All witnesses stating a preference, including the Minister, would like the UK's relationship with Euratom to remain very similar to that which we have currently.<sup>154</sup> This could be achieved through a range of mechanisms: for example an association agreement or a nuclear cooperation agreement. Witnesses were indifferent to the delivery mechanism selected, emphasising that it is the outcome of a 'closest possible' relationship that is important.<sup>155</sup>

43. ***We agree with the Government that the UK should seek an association with Euratom that is as close as possible to existing arrangements, and which replicates the functions already conducted on the UK's behalf by Euratom.***

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151 Annex 1

152 Annex 1, [Austrian parties plan to use Brexit to reopen EU nuclear power pact](#), Reuters, 1 December 2017

153 EDF Energy ([BRN0001](#)), Institution of Mechanical Engineers ([BRN0007](#)), New Nuclear Watch Europe ([BRN0004](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), Unite the Union ([BRN0008](#)), Annex 2

154 Centrica ([BRN0006](#)), EDF Energy ([BRN0001](#)), Horizon Nuclear Power ([BRN0011](#)), Institution of Mechanical Engineers ([BRN0007](#)), New Nuclear Watch Europe ([BRN0004](#)), Nuclear Decommissioning Authority ([BRN0012](#)), Nuclear Industry Association ([BRN0009](#)), Prospect ([BRN0003](#)), Sellafield Ltd ([BRN0016](#)), UKAEA ([BRN0002](#)), Unite the Union ([BRN0008](#)), Annex 1, [Q89](#) [Richard Harrington]

155 [Qq45–51](#) [Ben Russell, Peter Haslam & Dr Mina Golshan], Nuclear Decommissioning Authority ([BRN0012](#))

### **UK influence in the Euratom Community**

44. In civil nuclear, as in other areas of the economy, there is a trade-off between pooling sovereignty and, on the other hand, greater policy flexibility. The former implies restrictions in terms of policymaking; the latter reduces the scope for integration and resource sharing. However, unlike some other sectors the international nature of civil nuclear—particularly the scope and stringency of international nuclear law—means that there are only minor advantages to greater sovereignty. Witnesses, including the Government, favoured ongoing alignment with Euratom policy, but they also expressed concern about the UK becoming a rule-taker.<sup>156</sup> The Minister provided different views of the UK’s likely level of influence in future Euratom decision-making. He initially admitted that “to have a full say on everything, you have to be a member of Euratom”,<sup>157</sup> but later claimed that “because of our excellence in this field [nuclear], in practice we will have as much influence as we have now”.<sup>158</sup> We heard in Brussels that the UK, as a prominent nuclear power, has been a driver of policy at an EU level.<sup>159</sup> We agree with the Minister’s initial analysis that the UK would need to remain a Member of Euratom in order to retain our existing—and historically strong—level of influence in policymaking.<sup>160</sup>

45. A number of multinational bodies provide advice on EU and Euratom nuclear regulation, with which we suggest that the UK should seek to retain membership—or at least strong engagement.<sup>161</sup> These include the European Nuclear Safety Regulators Group (ENSREG—the Commission’s official independent advisory group), the Western Europe Regulators Association (WENRA) and the Heads of European Radiological Competent Authorities (HERCA). Witnesses most commonly cited our ongoing role in ENSREG as key, but also noted that it may be difficult to retain membership of the group once we leave the EU and Euratom.<sup>162</sup>

***46. Given the Government’s stated intention to achieve the “closest possible” relationship with Euratom, it is essential that the UK retains the maximum level of influence possible in Euratom policy making. As a minimum, the UK must maintain ongoing engagement with, and preferably membership of, existing advisory European bodies.***

***47. The international nature of civil nuclear, and the reach of international nuclear law, mean that the advantages of securing greater sovereignty are negligible. The British public deserves clear communication of the implications of any Brexit deal ahead of it taking effect. The Government should acknowledge that any gain in sovereignty arising from our departure from Euratom will come at the cost of diminished influence.***

156 EDF Energy ([BRN0001](#)), New Nuclear Watch Europe ([BRN0004](#)), Prospect ([BRN0003](#)), [Q48](#) [Dr Mina Golshan], [Qq62–64](#) [Peter Haslam]

157 [Q98](#) [Richard Harrington]

158 [Q103](#) [Richard Harrington]

159 Annex 1. New Nuclear Watch Europe ([BRN0004](#))

160 EDF Energy ([BRN0001](#)), New Nuclear Watch Europe ([BRN0004](#)), Annex 1

161 [Q48](#) [Dr Mina Golshan], EDF Energy ([BRN0001](#)), Nuclear Industry Association ([BRN0009](#)), Annex 1

162 [Q48](#) [Dr Mina Golshan], EDF Energy ([BRN0001](#)), Nuclear Industry Association ([BRN0009](#)), Annex 1

## 7 Conclusion

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48. Civil nuclear is a global business relying on internationally agreed standards and multinational collaboration. As a leading member of Euratom, the UK has been able to drive standards and ensure that our national interests are to the fore in the development of the industry in Europe. No-one has advocated to us—or identified any significant advantages of—leaving Euratom. It is a wholly unwanted and potentially unintended consequence of our leaving the European Union. The impact on the UK civil nuclear sector of leaving Euratom will be profound. The UK will be in a much weaker position to drive regulatory standards at a European level, although we will still retain influence at a global level via the IAEA. There may be some opportunities for expanding trade outside the EU, but for the most part these are not hampered by our membership of Euratom and should be pursued regardless of Brexit.

49. Any small advantages to be gained from regulatory divergence are liable to be counterbalanced by the burden of adhering to two sets of standards. Further, outside Euratom, there will be increased costs to the UK in developing our own regulatory framework, which will replicate that of Euratom. We welcome the Government's objective of maintaining regulatory standards at current levels. However, we have found that this is unlikely to be possible without an extended transitional period for civil nuclear, or the continuation of Euratom support. The Government is in the process of resetting arrangements for nuclear safety and regulation for decades to come: it should put the safe transition to new long term arrangements well ahead of any short-term deadlines sought for other purposes. It should signal this approach at the earliest opportunity, and seek agreement from Euratom on its continued involvement as soon as possible. Any delay will increase investment in contingency arrangements which may ultimately not be required.

50. It is not possible to provide a meaningful financial estimate of the impact of leaving Euratom on the civil nuclear sector due to the extent of the variables currently surrounding alternative arrangements. But the evidence relating to costs, regulation and trade point decisively in one direction. We conclude that the Government should seek to retain as close as possible a relationship with Euratom, and that this should include accepting its delivery of existing safeguards requirements in the UK.

## Conclusions and recommendations

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### The decision to leave Euratom

1. The UK's departure from Euratom is an apparently necessary but unwanted consequence of exiting the European Union. The Government's task is to minimise the potential adverse impacts of this departure. (Paragraph 4)

### Regulation—Nuclear Safeguards

2. Establishing a UK-operated safeguards regime by the time of our departure will be difficult, and is likely to be costly. It is highly doubtful that it will be possible to implement Euratom-equivalent safeguards by March 2019, and even the less stringent requirements of the International Atomic Energy Agency (IAEA) will be challenging to deliver. *We recommend that the Government provides to the House, before report stage of the European Union (Withdrawal) Bill, a detailed timeline setting out progress in establishing an alternative UK safeguards regime; and that it commits to providing further updates on a quarterly basis up to March 2019.* (Paragraph 15)
3. The Government should honour its commitment not to reduce existing safeguards regulation. As far as we are aware, the only viable route to achieve this aim is for Euratom to continue managing and operating safeguards in the UK, for the short term at least. This could be consistent with the terms of the Phase 1 Negotiations Report, if the UK assumes ultimate responsibility for international safeguards, but contracts out delivery to Euratom. *We recommend that the Government should seek to achieve this aim in negotiations, and to do so as soon as possible, in order to minimise the nugatory expenditure on the establishment of alternative domestic arrangements.* (Paragraph 16)
4. *If the Government is unable to secure agreement for Euratom to continue delivering the UK's safeguards regime, it should as a minimum seek transitional arrangements that would extend Euratom's existing role in UK safeguards until the ONR is ready and able to take over safeguarding responsibilities, including adherence to Euratom safeguards standards.* (Paragraph 17)

### Market access, non-tariff barriers and trade

5. The evidence we have gathered does not support the Government's confidence that nuclear cooperation agreements with the USA, Canada, Australia and Japan will be in force by March 2019. Any hiatus in their provision would present a material threat to nuclear trade. No deal in relation to nuclear cooperation agreements is not a viable option. *The Government must therefore, at the very least, secure transitional arrangements that enable the UK to continue trading with the USA, Canada, Australia and Japan through Euratom's existing nuclear cooperation agreements until such time as new agreements between the UK and these countries can be established.* (Paragraph 23)
6. There may well be opportunities to expand nuclear trade, but the extent to which these arise from Brexit is far from clear. Those which have been identified are neither

sufficiently certain nor substantial to justify departing Euratom on economic grounds. In many cases, they arise from less demanding regulatory and supervisory requirements—a route which the industry does not advocate and the Government has rightly rejected. We trust the Government will support trade expansion in its development of the nuclear sector deal under the Industrial Strategy. (Paragraph 25)

### Research and development

7. *We recommend that the Government seeks to maintain the existing benefits of EU R&D collaboration, for example through an agreement similar to those held by Switzerland and Ukraine with Euratom.* (Paragraph 29)
8. *The Government should also seek clarity and update the House with its assessment of how the Austrian presidency may affect the chances of the timely resolution of JET's funding. If this does appear to be a material concern, the Government should fast track the funding negotiations, and put in place contingency arrangements, not dependent on a European Commission decision, to allow JET's continuation until the negotiations are resolved.* (Paragraph 30)

### Skills

9. In determining its negotiating objectives on freedom of movement and subsequent immigration policy, the Government must ensure that progress on strategically vital projects such as nuclear power plants is not jeopardised by restrictions in the supply of workers at all skill levels. (Paragraph 33)

### Transitional arrangements and our future relationship

10. The Government is right to press ahead with establishing alternative arrangements as quickly as possible, facilitated by the necessary legislation. There should be no delay. But it is important to establish by early 2019 that should we need longer than two years, there is sufficient flexibility to allow an extension, whether as part of the overall agreement or as a separate arrangement relating to Euratom. (Paragraph 36)
11. We welcome the Minister's pragmatic suggestion that the European Court of Justice may continue to play a role in the UK's civil nuclear sector, and we see no reasoned objections to this approach. *The well-established and significant economic benefits of close association with, or membership of, Euratom should not be put at risk to escape any hypothetical and unidentified adverse impact on the civil nuclear sector arising from European Court of Justice jurisdiction.* (Paragraph 38)
12. *We agree with the Government that the UK should seek an association with Euratom that is as close as possible to existing arrangements, and which replicates the functions already conducted on the UK's behalf by Euratom.* (Paragraph 43)
13. *Given the Government's stated intention to achieve the "closest possible" relationship with Euratom, it is essential that the UK retains the maximum level of influence*

*possible in Euratom policy making. As a minimum, the UK must maintain ongoing engagement with, and preferably membership of, existing advisory European bodies.*  
(Paragraph 46)

14. The international nature of civil nuclear, and the reach of international nuclear law, mean that the advantages of securing greater sovereignty are negligible. *The British public deserves clear communication of the implications of any Brexit deal ahead of it taking effect. The Government should acknowledge that any gain in sovereignty arising from our departure from Euratom will come at the cost of diminished influence.*  
(Paragraph 47)

## Annex 1: Notes from FORATOM visit, Brussels

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FORATOM is a Brussels-based trade association for the nuclear energy industry in Europe. Its membership is made up of 15 national nuclear associations, including the UK's Nuclear Industry Association, which together represent more than 800 firms.

- All 28 Member States are signatories of the Euratom Treaty. The Treaty promotes nuclear energy, which is not a comfortable position for all Member States, hence the more limited membership of FORATOM.
- The nuclear industry in Europe has a 70bn euros turnover and 800,000, mainly high-skilled, jobs.
- FORATOM set up a task force to examine the impact of Brexit immediately after the referendum vote. It set up 6 strands of work, with a focus on the safeguards regime. Transitional arrangements are needed to protect this regime: a prerequisite of a Nuclear Cooperation Agreement (NCA).
- Members were worried about skills shortages arising from constraints on freedom of movement.
- There were lots of unanswered questions and a need for progress as uncertainty is very unsettling for business.
- Politically, FORATOM wants to avoid any sense that Euratom is a pick and mix affair. So the UK staying IN the Treaty while leaving EU would also be problematic: it would legitimise an a la carte approach which undermines the Treaty. NB: one company representative said that it seems impossible legally and politically for UK to remain in Euratom, regardless the desire of many that it would be beneficial to do so.
- It is difficult to estimate the time needed to negotiate a new NCA but previous ones have taken three years.
- No deal is inconceivable for the nuclear sector. FORATOM recognises that a nuclear deal includes many aspects of the single market, such as freedom of movement and that they have to be realistic about position of Commission.
- It is possible to have several agreements on different topics with third countries, eg the Swiss and Ukraine model. There could be one NCA between UK and Euratom, plus several bilateral agreements on specific issues.
- The main headings of any agreement are trade, nuclear safeguards, and research, plus free movement of workers. It is recognised that the single market will work differently in future: the UK will have to have its own regulatory system.
- The Austrian presidency in July 2018 IS an issue for the progress of negotiations (they do not want to discuss nuclear issues). It comes at a bad moment but, to be positive, it only lasts for 6 months.

- **Regulation:** there are two clubs. WENRA is the group of Western European Nuclear Regulatory Association which gather the countries with nuclear installations with deeper knowledge of the industry in a technical supporting body. It drives the development of new regulations. The UK has been a very active member and, ideally, should retain membership of this informal club. A second body, ENSREG, has all EU countries as members. It would be more difficult for the UK to retain membership of this body: it would maybe need special agreement via a NCA.
- There would also need to be special provision in the NCA to allow a continuing role for the UK ONR in regulation, post Brexit.
- **Research:** FORATOM are keen on the UK retaining involvement in research projects such as JET. It might be possible to replicate Swiss model of a deal on this respect.
- The overwhelming priority was to resolve nuclear safeguards as soon as possible that will trigger the resolution of other issues.

*5–6 November 2017*

## Annex 2: Notes from Hinkley Point C visit

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### Departure from Euratom

#### *General issues*

The Euratom Treaty has a much wider scope than the proposed Safeguards Bill. The Treaty covers the movement of personnel, materials and information, and R&D collaboration. The Bill is concerned with safeguards to ensure nuclear non-proliferation only.

There are no World Trade Organisation rules allowing the movement of these goods and services to which the UK may revert, in the event that we depart without alternative safeguards arrangements and new nuclear cooperation agreements in place.

It is important for EDF operations that the UK establishes nuclear cooperation agreements with Euratom and third party countries, in particular the USA, Japan, Australia and Canada.

EDF have asked the Department for Business, Energy and Industrial Strategy, and the Department for Exiting the EU, for information on the Government's proposed timetable to put in place new safeguards arrangements and new nuclear cooperation agreements with key countries. This information has not yet been provided. EDF said it would be challenging to have these alternative arrangements set up by March 2019.

#### *Implications for existing and new nuclear power stations*

It is very important to resolve issues regarding the movement of nuclear personnel, materials, equipment and information. Under Euratom these can be moved freely without tariffs. If alternative arrangements are not put in place, our departure from Euratom could hinder the delivery of equipment and/or the cross-border movement of detailed design information for existing nuclear power stations and the Hinkley Point C project.

EDF and CGN are continuing with construction of Hinkley Point C on the assumption that the Government will not allow Brexit to cause the project to fail.

Only small stocks of nuclear fuel are held in the UK. In theory, facilities could be developed to enrich and manufacture nuclear fuel, but it would take a number of years before the UK could produce a 'qualified' fuel.

#### *Future relationship*

EDF's preferred position would be for the UK to remain in Euratom at least in the short term, possibly under transitional arrangements. They noted that 'Associate Membership' of Euratom does not exist, and that the nine new nuclear cooperation agreements negotiated by Euratom with third countries have all been approved by majority voting from member states.

EDF would prefer to see the UK remain in the Internal Energy Market. This would facilitate trade of electricity and gas via interconnectors, which is expected to expand to 2030. They were however concerned about becoming a ‘rule-taker’, in the event that we retain regulatory parity but lose formal decision-making powers.

### **Construction Skills centre - Bridgwater and Taunton College**

The centre is located very close to Hinkley Point. Bridgwater & Taunton College provides business training for more than 15,000 full and part-time students and employs more than 1,000 staff. The student population comprises approximately 3,500 16 – 18 year olds, as well as 700 students following higher education programmes. There is a growing international community, with students from over 35 different countries.

The numbers of apprentices (2750 at present) are growing as the levy is implemented.

The college runs five different degree level apprenticeships, with around 100 students on them per year. The content of the courses is demand led, and based on engagement with around 1,200 employers.

The Construction Skills Centre has been operational for 5 years. The aim is to respond to changing phases of construction to ensure that the skills are there 9–12 months down the line.

The College is trying to address the gender imbalance but it is challenging.

The National College for Nuclear is opening shortly to create a vocational pathway and meet the skills gap in level 3–6 skills. Both practical and technical/theoretical skills taught.

There are 2,500 people working on Hinkley Point C, of which 500 are directly employed by EDF. Some are long term EDF employees and others are recruited from other companies. 17 of the 500 employees are apprentices. Around one tenth of those working on site at Hinkley Point C are non UK nationals, most of whom are from EU countries.

There remain concerns about the availability of skills for the project. They will be short of skills if, post-Brexit, the supply of skilled labour from Europe dries up. For example, EDF will require half of all the steel fixers currently working in the UK.

*15–16 October 2017*

## Appendix 1: Letter from Richard Harrington MP with key milestones for the Government's Euratom exit programme

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At the end of my evidence to your committee on 1 November 2017 you requested that I provide a set of milestones setting out the implementation of the Euratom Exit programme.

I am pleased to be able to provide you with the attached milestones.

Richard Harrington MP, Minister for Energy and Industry

13 November 2017

### Euratom Exit Programme Plan – Key Milestones

UK-EU Separation Negotiations	Q2 2017—Q4 2017
ONR establish UK State System of Accounting & Control Project Governance	Q2 2017
ONR build capacity and capability to implement UK SSAC project	Q2 2017—Q4 2018
Engagements and negotiations on civil nuclear cooperation agreements with USA, Canada, Australian and Japan	Q2 2017—Q4 2018
Drafting, negotiations and finalising a new Voluntary Offer Agreement (VOA) and Additional Protocol with the IAEA	Q3 2017—Q3 2018
UK Nuclear Safeguards Regime: Nuclear Safeguards Bill (subject to parliamentary procedures and timings)	Q4 2017—Q4 2018
UK-EU Future Relationship Negotiations	Q1 2018—Q4 2018
UK Nuclear Safeguards Regime: Secondary Legislation preparation, consultation and passage	Q1 2018—Q1 2019
Finalise civil nuclear cooperation agreements with USA, Canada, Australian and Japan to enter into force on Day 1 of Exit	Q1 2019
IAEA VOA and AP entry into force on Day 1 of Exit	End—March 2019
ONR State System of Accounting & Control into action	End—March 2019

## Appendix 2: Briefing from the ONR on the difference between international safeguards obligations and Euratom standards

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The UK's future international safeguards reporting obligations will be negotiated by the government with the IAEA. The terms of this future agreement will dictate the UK's international reporting obligations in relation to safeguards upon withdrawal from the Euratom treaty. In order to meet these international obligations, the UK will need to establish a UK State System of Accountancy for and Control of Nuclear Material. (SSAC)

This entails:

- obtaining, processing and ensuring timely submission to the IAEA of all Nuclear Materials Accountancy;
- arrangements to facilitate and otherwise support IAEA verification activities in the UK at facilities chosen for inspection; and,
- arrangements to ensure that the reporting provided to the SSAC and that of the UK to the IAEA is complete and correct.

Currently, Euratom delivers these functions on behalf of the UK as required by the existing tripartite safeguards agreement between the UK, Euratom and the IAEA. In addition, Euratom undertakes assurance and verification activities above those necessary to satisfy obligations to the IAEA, in order to draw its own conclusions regarding the diversion of nuclear material in the UK.

As the domestic safeguards regimes of other countries such as the US, Canada and Japan demonstrate, the involvement of a supra-national inspectorate such as Euratom is not required in order to satisfy our international non-proliferation obligations.

ONR is working to establish a UK SSAC that will meet our international obligations to the IAEA following withdrawal from Euratom. This will then be developed over time to include all the activities necessary for an assurance regime which is robust and as comprehensive as that of Euratom.

The UK SSAC will also meet the UK's safeguards-related obligations in respect of Nuclear Co-operation Agreements upon exit from the Euratom community.

The Office for Nuclear Regulation, 4 December 2017

# Formal Minutes

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**Tuesday 12 December 2017**

Members present:

Rachel Reeves, in the Chair

Vernon Coaker	Mr Ian Liddell-Grainger
Drew Hendry	Albert Owen
Stephen Kerr	Mark Pawsey
Peter Kyle	Antoinette Sandbach

Draft Report (*Leaving the EU: implications for the civil nuclear sector*), proposed by the Chair, brought up and read.

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

Paragraphs 1 to 50 read and agreed to.

Summary agreed to.

Annexes agreed to.

Appendices agreed to.

*Resolved*, That the Report be the Second 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.

[Adjourned till Wednesday 13 December at 9.45 am]

## Witnesses

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The following witnesses gave evidence. Transcripts can be viewed on the [inquiry publications page](#) of the Committee's website.

### Wednesday 1 November 2017

*Question number*

**Dr Mina Golshan**, Deputy Chief Inspector and Director for the Sellafield, Decommissioning, Fuel and Waste Division, Office for Nuclear Regulation; **Ben Russell**, Head of Policy and External Affairs, Horizon Nuclear Power; **Peter Haslam**, Head of Policy, Nuclear Industry Association; **Andrew van der Lem**, Head of Government and Public Affairs, Nuclear Decommissioning Authority

[Q1-75](#)

**Richard Harrington MP**, Minister for Energy and Industry, Department for Business, Energy and Industrial Strategy; **Katrina McLeay**, Head of Safeguards and Delivery, Department for Business, Energy and Industrial Strategy; **David Wagstaff**, Head of Euratom Exit Negotiations, Department for Business, Energy and Industrial Strategy

[Q76-162](#)

## Published written evidence

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The following written evidence was received and can be viewed on the [inquiry publications page](#) of the Committee's website.

BRN numbers are generated by the evidence processing system and so may not be complete.

- 1 Centrica ([BRN0006](#))
- 2 Department for Business, Energy and Industrial Strategy ([BRN0010](#))
- 3 EDF Energy ([BRN0001](#))
- 4 Horizon Nuclear Power ([BRN0011](#))
- 5 Institution of Mechanical Engineers ([BRN0007](#))
- 6 New Nuclear Watch Europe ([BRN0004](#))
- 7 Nuclear Decommissioning Authority ([BRN0012](#))
- 8 Nuclear Industry Association ([BRN0009](#))
- 9 Nuclear Skills Strategy Group ([BRN0005](#))
- 10 Prospect ([BRN0003](#))
- 11 Sellafield Ltd ([BRN0016](#))
- 12 Sussex Policy Research Unit, University of Sussex ([BRN0015](#))
- 13 UK Atomic Energy Authority ([BRN0002](#))
- 14 Unite the Union ([BRN0008](#))
- 15 World Nuclear Association ([BRN0013](#))

## List of Reports from the Committee during the current Parliament

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All publications from the Committee are available on the [publications page](#) of the Committee's website.

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

### Session 2017–19

First Report	A framework for modern employment	HC 352
First Special Report	Industrial Strategy: First Review: Government Response to the Committee's Second Report of Session 2016–17	HC 337
Second Special Report	Corporate governance: Government Response to the Committee's Third Report of Session 2016–17	HC 338
Third Special Report	Apprenticeships: Government Response to the Second Joint Report of Session 2016–17	HC 450
Fourth Special Report	Leaving the EU: negotiation priorities for energy and climate change policy: Government Response to the Committee's Fourth Report of Session 2016–17	HC 550