V

(Ilmoitukset)

KILPAILUPOLITIIKAN TOTEUTTAMISEEN LIITTYVÄT MENETTELYT

EUROOPAN KOMISSIO

VALTIONTUKI – YHDISTYNYT KUNINGASKUNTA

Valtiontuki SA.34947 (2013/C) (ex 2013/N) Investointisopimus (hinnanerosopimuksen varhainen muoto) uuden Hinkley Point C -ydinvoimalaitoksen hyväksi

Kehotus huomautusten esittämiseen Euroopan unionin toiminnasta tehdyn sopimuksen 108 artiklan 2 kohdan mukaisesti

(ETA:n kannalta merkityksellinen teksti)

(2014/C 69/06)

Komissio ilmoitti 18. joulukuuta 2013 päivätyllä, tätä tiivistelmää seuraavilla sivuilla todistusvoimaisella kielellä toistetulla kirjeellä Yhdistyneelle kuningaskunnalle päätöksestään aloittaa Euroopan unionin toiminnasta tehdyn sopimuksen, jäljempänä 'SEUT-sopimus', 108 artiklan 2 kohdassa tarkoitettu menettely, joka koskee edellä mainittua toimenpidettä.

Asianomaiset voivat esittää huomautuksensa kuukauden kuluessa tämän tiivistelmän ja sitä seuraavan kirjeen julkaisemisesta. Huomautukset on lähetettävä osoitteeseen

European Commission
Directorate-General for Competition
State aid Registry
Rue de la Loi/Wetstraat, 200
1049 Bruxelles/Brussel
BELGIQUE/BELGIË

Faksi: (+32-2) 296 12 42
Sähköposti: stateaidgreffe@ec.europa.eu

Huomautukset toimitetaan Yhdistyneelle kuningaskunnalle. Huomautusten esittäjä voi pyytää kirjallisesti henkilöllisyytensä luottamuksellista käsittelyä. Tämä pyyntö on perusteltava.

Kuvaus toimenpiteestä, jota koskevan menettelyn komissio aloittaa

Yhdistynyt kuningaskunta aikoo taata yksityiselle sijoittajalle varman tulon ja antaa luottotakauksen, joka liittyy Hinkley Point C:hen rakennettavaan uuteen ydinvoimalaitokseen. Toimenpide perustuu Yhdistyneen kuningaskunnan hallituksen ja mainitun sijoittajan (Electricité de Francen kokonaan omistama yritys NNBG) väliseen yksityiseen sopimukseen. Sopimus on alustava, ja yksityiskohtainen sopimus tehdään myöhemmin. Sopimukseen ja erityisesti hinnanerosopimukseen, jolla NNBG:lle taataan tietty tulo, kuuluvat toimenpiteet perustuvat energialakiesitykseen sisältyvään välineeseen. Esitys julkaistiin 29. marraskuuta 2012, ja siitä käydään parhaillaan keskustelua Yhdistyneen kuningaskunnan parlamentissa. Siihen sisältyy säännöksiä sellaisen johdetun lainsäädännön hyväksymiseksi, jolla myöhemmin vahvistetaan hinnanerosopimusjärjestely. Johdettu lainsäädäntö hyväksytään vasta, kun energialaille saadaan hallitsijan vahvistus (Royal Assent), joka annettaneen vuoden 2013 lopussa. Yhdistynyt kuningaskunta on vahvistanut, että tulevaisuudessa komissiolle ilmoitettaviin yksittäisiin investointisopimuksiin sisältyvät maksut edellyttävät komission hyväksyntää, mikäli niihin liittyy valtiontukea.

Tuen myöntävä viranomainen on Yhdistyneen kuningaskunnan hallitus ja erityisesti energia- ja ilmastonmuutosministeri.

Tuella on kaksi muotoa. Hinnanerosopimuksen varhaisen muodon, investointisopimuksen, mukaan NNBG saa tuotoksestaan kiinteän määrän tuloja eli toteutushinnan. NNBG saa mitatun tuotoksensa perusteella erotuksesta maksut tiettyyn investointisopimuksessa vahvistettuun enimmäismäärään saakka. NNBG:n tuottama sähkö myydään markkinoille. Kun viitehinta, jolla sähkö myydään, on alempi kuin toteutushinta, valtio maksaa viite- ja toteutushinnan välisen erotuksen ja varmistaa näin, että NNBG saa lopulta kiinteän määrän tuloja toteutushinnan ja tuotoksensa tason perusteella. Sen sijaan kun viitehinta on toteutushintaa korkeampi, NNBG on velvollinen maksamaan erotuksen valtiolle. Myös tällöin NNBG:n tulotaso on kiinteä ja perustuu toteutushinnan ja tuotoksen erotukseen.

Investointisopimus muuttuu hinnanerosopimukseksi heti, kun Yhdistynyt kuningaskunta on ottanut johdetun lainsäädännön käyttöön. Investointisopimus ja hinnanerosopimus ovat voimassa 35 vuotta ydinvoimalaitoksen ensimmäisestä toimintapäivästä. NNBG:n saama toteutushinta on 92,50 Englannin puntaa megawattitunnilta, se on sidottu kuluttajahintainflaatioon, ja sen nimellinen tuottoprosentti verojen jälkeen on 9,87.

Yhdistyneen kuningaskunnan mukaan sillä on kolme tavoitetta. Ensimmäinen on toimitusvarmuus, sillä Yhdistynyt kuningaskunta uskoo tulevan toimitustason olevan uhattuna, kun vanhoja voimaloita suljetaan ja siirrytään vähähiilisiin voimaloihin. Toinen on hiilidioksidipäästöjen vähentäminen, sillä ydinvoimalaitokset pystyvät tuottamaan perussähköä vähäisin hiilipäästöin. Kolmas on energianlähteiden monipuolistaminen. Lisäksi Yhdistynyt kuningaskunta katsoo, että toimenpide on Euratomin perustamissopimuksen mukainen.

Tuen kokonaismäärä riippuu tulevien tukkuhintojen taustaoletuksista ja alennuksesta, ja se voi olla 0–17,6 miljardia Englannin puntaa.

Toimenpiteen arviointi

Komissio uskoo, että toimenpiteeseen liittyy SEUT-sopimuksen 107 artiklan 1 kohdassa tarkoitettua valtiontukea, sillä kyseessä ei ole aito yleistä taloudellista etua koskeva palvelu, ja toimenpide kohdistuu valikoituun yritykseen, uhkaa vääristää kilpailua ja vaikuttaa jäsenvaltioiden väliseen kauppaan.

Komissiolla on vakavia epäilyjä siitä, tavoitellaanko toimenpiteellä toimitusvarmuuden yhteistä tavoitetta, ja siitä, voidaanko sen avulla vähentää hiilidioksidipäästöjä. Komissiolla on vakavia epäilyjä myös siitä, tarvitaanko ydinenergialle valtiontukea ja onko luottotakauksen ja hinnanerosopimuksen yhdistelmä asianmukainen väline.

Komissiolla on tehdyn arvioinnin perusteella vakavia epäilyjä siitä, onko tukitoimien ja erityisesti inflaatioon sidotun hinnanerosopimuksen ja luottotakauksen yhdistelmä oikeasuhtainen tuen mahdolliseen hyötyyn nähden. Komissio uskoo myös, että toimenpide saattaa vääristää vakavasti kilpailua ja kauppaa jäsenvaltioiden välillä.

Komissio pyytää esitetyn perusteella SEUT-sopimuksen 108 artiklan 2 kohdassa määrätyn menettelyn nojalla Yhdistynyttä kuningaskuntaa toimittamaan huomautuksensa ja toimittamaan sille kaikki tiedot, joista voi olla apua toimenpiteen arvioinnissa.

KIRJE

"The Commission wishes to inform the United Kingdom that, having examined the notification supplied by your authorities on the measure referred to above, it has decided to initiate the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union in respect of the notified measure.

1. PROCEDURE

(1) Following pre-notification contacts, the UK notified its proposed measure on 22 October 2013 by electronic notification, registered by the Commission on the same day.

2. DESCRIPTION OF THE CONTEXT

2.1. Background and objectives

(2) Under the umbrella of the Electricity Market Reform ('EMR'), the UK government envisages implementing a diverse range of measures with three explicit objectives: (i) decarbonising the electricity sector by 2050; (ii) safeguarding security of supply; and (iii) ensuring diversity and affordability of electricity supply.

(3) The EMR is a plan to restructure the UK energy sector, which aims to assist with the switch to low-carbon electricity generation, decrease reliance on fossil fuels and ensure adequate supply of electricity.

(4) The notified measures are part of a government initiative to facilitate investment in new nuclear energy plants in the UK, in particular by implementing Contracts for Difference ('CfDs'), i.e. a mechanism similar to a feed-in tariff allowing for payments to generators to guarantee them a fixed level of revenues. The UK intends to set CfDs to support a range of electricity-generating technologies, notably nuclear energy and renewable energy sources. The notification relates to an early form of a Contract for Difference (the "Investment Contract", see also Section 3.1) and to a credit guarantee by HM Treasury under its UK Infrastructure Guarantees scheme.

(5) The economic and business reality in which the EMR situates itself is complex. Like many other Member States, the UK is going through a challenging transition from a carbon-intensive to a low-carbon economy, among other things by adopting policies in support of renewable energy sources.

(6) The UK electricity sector is currently reliant on a high-carbon energy mix. There are around 100GW of installed electricity generation capacity. Of these and in 2011, 40 per cent comprise installations using gas and 30 per cent installations using coal.

(7) About 8.1 GW of current capacity is scheduled to close by 2020, including 3.9GW of nuclear-produced electricity. By the end of 2023 all but one of the existing nuclear power stations (i.e. Sizewell B) are due to close. About 4.2 GW of mainly coal-produced electricity are due to retire by 2015.

(8) The difficulty of this transition is compounded, from the UK government's point of view, by the trend volatility of energy fuel prices, and has led over time to shrinking levels of supplied capacity. Private investors are currently not deploying enough generation installations to cope with predicted demand at the same time when older, carbon-intensive power stations are due to be phased out.

(9) This means that the UK is forecasting that its margin of excess supply of electricity, for which before liberalisation a level in excess of 20 per cent would have been considered common, might decrease to below 10 per cent in 2022 in a base case scenario. [1] Some forecasts are considerably more pessimistic. The de-rated capacity margin, i.e. the average excess of available supply over winter peak demand, is forecast by the Office of Gas and Electricity Markets ('Ofgem') to decrease to below 5 per cent in 2015. [2]

(10) Modelling undertaken by the UK government's Department for Energy and Climate Change ('DECC') points to the fact that new nuclear plants would not be an attractive commercial proposition in the absence of government intervention before 2027 or 2030, depending on the model used. [3] It also shows that capacity margins would be likely to stay at lower levels than those the UK government considers acceptable, while most of the new investment in electricity generation would be in gas-fired plants, and in particular Combined Cycle Gas Turbines ('CCGT').

(11) The UK's plan to facilitate investment in nuclear energy is therefore partly aimed at addressing a perceived generation adequacy problem, while also aiming to reduce carbon emissions, given that nuclear power plants are characterised by very low carbon emissions. [4]

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[1] See in particular Department of Energy and Climate Change, *Energy Security Strategy*, November 2012, available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65643/7101-energy-security-strategy.pdf

[2] See Ofgem, *Electricity Capacity Assessment Report 2013*, 27 June 2013, available at the following address: https://www.ofgem.gov.uk/ofgem-publications/75232/electricity-capacity-assessment-report-2013.pdf

[3] The UK government has relied on two different models to inform its decisions on the EMR. The first model was put together by specialist consultancy Redpoint and was used to model investment in Great Britain's electricity market until 2030 for the purposes of the EMR consultation and the White Paper (respectively published in July 2010 and July 2011, see Section 2.3 below). Subsequently, DECC used its own in-house dynamic dispatch model for the EMR Impact Assessment, published in July 2013. See Redpoint Energy, Electricity Market Reform – Analysis of policy options, December 2010, Figure 3, p. 25, available at the following address: http://www.redpointenergy.co.uk/images/uploads/EMR_Policy_Options_-_Redpoint_v1.0.pdf
See Department of Energy and Climate Change, *Electricity Market Reform Impact Assessment*, July 2013, paragraph 188 and footnote 148, p. 73, available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226020/emr_delivery_plan_ia.pdf

[4] See Nuclear Energy Agency, *The Role of Nuclear Energy in a Low-carbon Energy Future*, OECD, 2012. According to figures presented in this report, the entire nuclear energy cycle would produce a level of greenhouse gas emissions which is among the lowest of existing fuels sources, together with hydroelectric and wind power generation. The report is available at the following address: http://www.oecd-nea.org/nsd/reports/2012/nea6887-role-nuclear-low-carbon.pdf

2.2. **Old and new nuclear in the UK**

(12) There are currently nine nuclear power stations in England, Scotland and Wales, with combined generation capacity of around 9.2 GW. In 2011, nuclear power accounted for 19 per cent of all electricity generated in the UK.

(13) Nuclear power in the UK started with the Magnox stations during the decade starting in 1950, almost all of which have been closed after their 40 year design life (one reactor at Wylfa remains but is due to close by 2014). The next generation of nuclear was the Advanced Gas-cooled Reactor, of which 8 stations were built between 1966 and 1988 with an operational life of 35 years. The last nuclear plant was built at Sizewell based on the Pressurised Water Reactor design, with construction starting before the privatisation of the UK electricity market and ending in 1995.

(14) All of the nuclear power stations still operating in the UK were developed by the Central Electricity Generating Board within the framework of a nationalised industry. The Board was broken into four separate companies in the 1990s, two of which were subsequently merged into a new private company founded in 1996 and named British Energy. British Energy is now a subsidiary of EDF Energy Holding Limited, following the latter's acquisition of the former in 2008 and named EDF Energy.

(15) Successive UK governments have publicly consulted on their plans to both consider nuclear energy and provide support for it. The consultation process assessed, among other things, the lifetime carbon emissions, costs, and characteristics of new nuclear power stations, as well as an assessment of the potential environmental costs linked to nuclear energy.

(16) In particular, the UK government undertook a consultation in May 2007, setting out the case for a policy framework considering the full range of low-carbon options, including nuclear energy. The conclusions of the consultation, following consideration of the responses to it, were published in January 2008, and stated the UK government's view that nuclear energy should play a role in the future low-carbon economy, and that the absence of nuclear energy would increase the costs of achieving the policy objectives mentioned above.

(17) The following 2008 Nuclear White Paper reiterated this view, setting out the UK government's position that decarbonisation and security of supply would require investment in new nuclear power stations. ([5])

(18) The need for new nuclear was further examined and subjected to public consultation and parliamentary consideration in the development of national policy plans relating to energy in 2009. The outcome of that consultation was the 2011 Final Over-arching Energy National Policy Statement, which established that "new nuclear power therefore forms one of the three key elements of the UK Government's strategy for moving towards a decarbonised, diverse electricity sector by 2050: (i) renewable; (ii) fossil fuels with CCS; and (iii) new nuclear". ([6])

2.3. **National consultations**

(19) The UK government publicly consulted also in relation to the broader issues of what energy policies would be necessary to achieve decarbonisation and meet rising demand levels in the coming decades.

(20) In particular, DECC put to public consultation in July 2010 a paper outlining different paths to decarbonisation up to 2050. ([7]) The options considered included demand-side management and the provision of interconnection capacity. However the UK government concluded that the range of options considered would be unlikely to allow Great Britain to meet forecast demand levels due to the increase in the use of electricity for domestic and industrial heating. ([8])

(21) The UK government subsequently consulted on the main provisions of the EMR, which includes CfDs for different types of low-carbon generation, and in particular those in support of nuclear energy. ([9]) A White Paper was published on 12 July 2011, which sets out in more detail how the different instruments would be designed, and provided further information on CfDs and a proposal to set up a capacity mechanism in the UK. ([10]) The CfD was chosen as an instrument over the alternatives because, in the UK authorities' view, it would be more cost-effective.

([5]) Department for Business Enterprise and Regulatory Reform, A White Paper on Nuclear Power, January 2008, available at the following address: http://webarchive.nationalarchives.gov.uk/20100512172052/http://www.decc.gov.uk/media/viewfile.ashx?filepath=what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/whitepaper08/file43006.pdf&filetype=4

([6]) Department of Energy and Climate Change, *Overarching National Policy Statement for Energy (EN-1)*, July 2011, paragraph 3.5.6, p. 29, available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

([7]) Department of Energy and Climate Change, *2050 Pathway Analysis*, July 2010, available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/68816/216-2050-pathways-analysis-report.pdf

([8]) Department of Energy and Climate Change, *Overarching National Policy Statement for Energy (EN-1)*, July 2011, paragraphs 3.3.25 and onwards, p. 23.

([9]) Department of Energy and Climate Change, *Electricity Market Report: Consultation Document*, December 2010, available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42636/1041-electricity-market-reform-condoc.pdf

([10]) Department of Energy and Climate Change, *Planning our electric future: a White Paper for secure, affordable and low-carbon electricity*, July 2011, available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48129/2176-emr-white-paper.pdf

(22) A Technical Update to the White Paper was published on 15 December 2011 and invited prospective investors to enter in discussions with the UK government with a view to investing in CfDs in low-carbon electricity generation. ([11]) The UK confirmed that this invitation to discuss did not consist in a formal tender, in particular in relation to prospective investors interested in negotiating CfDs. The UK considers that a tender would not be appropriate as there is not sufficient competitive pressure to make it effective. This is however a position which the UK links also to the timeframe chosen to bring forward investment in new nuclear energy.

2.4. **Hinkley Point C**

(23) The nuclear power plant which is the object of this decision would be located at Hinkley Point C (throughout this decision, 'HPC' will be used to refer to the plant).

(24) HPC is an EPR (European Pressurised Reactor, a design developed mainly by Framatome, now Areva NP, and Electricité de France in France, and Siemens AG in Germany, based on the Pressurised Water Reactor design), two-reactor plant producing a total of 3.2 GWh, or 1.6 GWh per reactor. During its operational lifetime of 60 years it is expected to produce around 26TWh per year of electricity supply, or about 7 per cent of Great Britain's electricity demand as forecast in the 2020s.

(25) There is currently no EPR plant in operation anywhere in the world. The first two projects, Olkiluoto in Finland and Flamanville in France, the construction of which started in 2005 and 2007 respectively, have faced construction delays and cost overruns. Construction of two more EPR plants has started in China at Taishan in 2009 and 2010, where Areva is working with China Guangdong Nuclear Power Company (the latter will operate the plant).

(26) The UK believes that failure to bring forward HPC might translate into a complete lack of investment in new nuclear plants, as it might undermine the confidence of potential investors and industry about the feasibility of carrying out a project of such a financial scale.

(27) HPC is one of eight sites in the UK that has been identified as suitable for new nuclear power stations. It is located at 12km from the town of Bridgewater in Somerset, comprises a development site of about 175 hectares, and is next to the two existing nuclear power stations of Hinkley Point A and B.

(28) The new nuclear power station is to comprise two EPR reactor units (Units 1 and 2) and shared infrastructure and facilities. Heat generated from the reactors would be used to generate steam which will power turbines directly connected to a generator. The generator is designed to be capable of producing approximately 1,630 MW of electrical power per reactor, giving a total site capacity of up to 3,260 MW. The power station would have a permanent workforce of around 900 staff.

(29) Each reactor would have an estimated operational life of 60 years, with the decommissioning period forecast to start in the 2080s and estimated to last for 20 years. Construction is expected to take place over approximately 10 years. Unit 2 would be completed 12 to 18 months after completion of Unit 1. Assuming the Investment Contract is concluded in 2013, the two reactors are expected to become operational between 2023 and 2025 according to the proposed timeline.

2.5. **Legal basis**

(30) The draft Energy Bill was published on 29 November 2012 ([12]) and is at the time of writing going through Parliamentary debate. It passed the third reading in the House of Commons on 31 July 2013 and is now under discussion in the House of Lords.

(31) The draft Energy Bill includes provisions to enact subordinate legislation, which at a later stage will be used to establish the CfD regime. In particular, Schedule 2 of the Bill relates to investment contracts and Chapter 2 of Part 2 relates to CfDs.

(32) Any subordinate legislation will only be enacted after Royal Assent of the Energy Bill, which is expected by the end of 2013.

(33) The UK confirmed that any payments under individual Investment Contracts, which might be notified to the Commission in the future, will be conditional on Commission approval, provided that they involve State aid.

2.6. **The beneficiary**

(34) The notified measures concern an Investent Contract to be entered into with NNBG and a credit guarantee to be provided to NNBG.

(35) NNBG, or NNB Generation Company Limited, was incorporated in 2009 as a private limited company. NNBG is a wholly-owned subsidiary of NNB Holding Company Limited. Until February 2013 NNB Holding Company Limited was a joint venture between EDF Energy Holdings Limited (which owned 80 per cent of the equity) and Centrica plc through its subsidiary, GB Gas Holdings Limited (which owned the remaining 20 per cent).

(36) In February 2013 Centrica announced that it no longer wished to pursue its investment in HPC and sold its stake to NNB Holding Company Limited, which is therefore now a wholly owned subsidiary of EDF Energy Holdings Limited.

([11]) Department of Energy and Climate Change, *Planning our electric future: technical update*, December 2011, available at the following address: http://www.decc.gov.uk/assets/decc/11/mæting-energy-demand/energy-markets/3884-planning-electric-future-technical-update.pdf

([12]) Available at the following address: http://services.parliament.uk/bills/2012-13/energy.html

(37) EDF Energy Holdings Limited ('EDF') is a fully owned subsidiary of EDF Energy, which in turn is a subsidiary of EDF International SA, a company fully owned by Electricité de France SA.

(38) The UK government and EDF have announced that they expect other investors to join the joint venture and that NNBG's equity would be shared between the EDF Group, Areva, China General Nuclear Corporation, China National Nuclear Corporation and potentially other investors. In particular, EDF announced on 21 October 2013 that it expects NNBG's equity to be composed as follows: EDF: 45 to 50 per cent; Areva: 10 per cent; China General Nuclear Corporation and China National Nuclear Corporation: 30 to 40 per cent; other investors: up to 15 per cent.

(39) NNBG is structured to have sole responsibility for licensed and permitted activities relating to the control of design, construction, commissioning, operation and eventual decommissioning of NNBG nuclear power plants.

(40) In addition to the HPC nuclear power plant, the UK government indicated that NNBG plans to build and operate a further EPR plant in the UK, in particular in Somerset. NNBG is also carrying out preliminary work to consider the development of further twin units at Sizewell, in Suffolk.

(41) In November 2012 the Office for Nuclear Regulation granted NNBG the Nuclear Site Licence needed to operate the HPC plant, and the Office together with the Environment Agency issued final design acceptances for the EDF/Areva EPR reactor on 13 December 2012. The Secretary of State granted planning permission for the HPC plant on 19 March 2013.

(42) It is intended that the UK fleet of EPRs will use the same technology as the rest of the EDF Group international EPR fleet. The nuclear plants under construction in Flamanville, France and Taishan, China will be used as the base design. The EPR plants in Taishan are being built by a joint venture between the EDF Group and China General Nuclear Corporation.

3. **DESCRIPTION OF THE MEASURE**

3.1. **Investment Contract and ancillary agreements**

(43) The notified measure consists of an Investment Contract, defined as an early form of CfD, as well as ancillary agreements.

(44) The Investment Contract is a private law agreement between the Secretary of State, hence the UK government, and a private investor in nuclear energy. The investor in nuclear energy is an entity called NNBG in the notified case.

(45) Under the Investment Contract, NNBG will receive a fixed amount of revenues for the output it produces, for which it will receive a fixed price level, the 'Strike Price.' The Commission understands that NNBG will be obliged to maintain a level of performance which can be considered standard for this type of plant and is not committed to produce a pre-determined output level. NNBG will receive difference payments based on its metered output, up to a maximum level of output ('cap'), which will be set in the Investment Contract. No payments will be made for the output sold on the market above the cap. The electricity produced by NNBG will be sold into the market.

(46) When the reference price at which the electricity is sold is lower than the Strike Price, the Secretary of State will pay the difference between the Strike Price and the reference price, ensuring that NNBG will ultimately receive a fixed level of revenues based on the Strike Price and its level of output. Conversely, when the reference price is higher than the Strike Price, NNBG will be obliged to pay the difference to the Secretary of State. Also in this case, therefore, NNBG will receive a fixed level of revenues, based on the Strike Price and its level of output.

(47) The Investment Contract will be accompanied by a Secretary of State Agreement which will include provisions to deal with the eventuality that the nuclear power plant is shut down as a result of a political decision and not related to health, safety, security, environmental, transport or safeguards concerns, or other specified circumstances. In such circumstances, the counterparties will have options: the Secretary of State will have a 'call' option requiring the shares in NNBG (which now owns the HPC site) to be transferred to it (or its nominee); and Holdco, i.e. the holding company which owns NNBG, will have a 'put' option requiring the shares in NNBG to be transferred to the Secretary of State (or its nominee).

(48) Under those circumstances, NNBG's owners will be entitled to a level of compensation […] (*). The level and the exact scope of circumstances of compensation for such a shutdown are currently being negotiated and are not yet fully known.

(49) The Investment Contract will be accompanied by lender direct agreements. These are agreements between the counterparty (the Secretary of State in the first instance) and lenders to NNBG. These agreements will provide that, in the event NNBG defaults on its obligations under the Investment Contract, the counterparty will not terminate the Investment Contract without first observing a period in which the lenders have an opportunity to cure the default. Such agreements are a standard feature of financing arrangements for infrastructure projects.

3.2. **Credit guarantee**

(50) The HPC project, and NNBG, will not only benefit from an Investment Contract, but also from the provision of a guarantee by the UK Treasury under the UK Guarantees scheme.

(*) Business Secret

(51) Details of the guarantee have not yet been set. It however seems that the guarantee would be linked to the level of credit actually obtained by NNBG. However NNBG has not yet structured its financing needs and the UK government indicated that it would expect it to do so in the period immediately after the agreement with the UK government and before taking a final investment decision. The final investment decision is expected to be taken by […] at the latest.

(52) The UK government refers to discussion with EDF Energy which would point to the possibility that NNBG's equity will be shared between EDF Energy, Areva, China General Nuclear Corporation and China National Nuclear Corporation (see paragraph 2.6 above). However, both the equity structure and the potential recourse to debt in addition to equity have not been decided upon yet.

3.3. **Overall functioning of the CfD mechanism**

(53) While in the notified measure the counterparty to the Investment Contract is the Secretary of State, the current intention of the UK government is for all CfDs, including the CfD for nuclear, to develop into a contract between two counterparties, of which one is the investor in nuclear energy, and the other is an entity which would be funded through a statutory obligation on all of the licensed suppliers collectively.

(54) Under this framework, the UK government would envisage licensed suppliers to be liable collectively for any obligations arising from the contract, and the counterparty to the contract to be liable only to the extent that funds have been transferred to it from licensed suppliers, or from the UK government. Each supplier would be liable based on its share of the market, defined by metered electricity use. Under this framework, in case of non-compliance with payment obligations, the Secretary of State would designate a different counterparty, collect payments from other suppliers, or pay generators directly. Some form of mutualisation of potential losses, due for example to non-payment by suppliers, is also being considered. Further regulations are expected to clarify more in detail how the mechanism would work, for example in the event of a shortfall in payments from licensed suppliers.

(55) Therefore the UK government mentions that it intends to transfer the contract with NNBG to a counterparty to be designated as soon as CfD regulations and supplier obligations have been established.

(56) The counterparty in the future CfD framework will be a UK government-owned private company. The role of the counterparty will be to enter into contracts with low-carbon generation operators (including NNBG) and administer the payment scheme.

(57) Separately, the counterparty will entrust a Settlement Agent with revenue raising power (i.e. the power of collecting payments from suppliers) on the one hand, and the obligation to make payments to, and receiving payments from, generation operators on the other hand. The UK government intends to designate a subsidiary of Elexon as the Settlement Agent.

(58) Elexon ([13]) is currently the settlement agent for the GB electricity system, i.e. the administrator of the balancing and settlement code, which is a fully owned subsidiary of UK's Transmission System Operator ('TSO') National Grid. National Grid also fully owns the electricity System Operator, National Grid Electricity Transmission, which under the Electricity Act 1989 is entrusted with the obligation to develop and maintain an efficient, coordinated and economical system of electricity transmission, balancing supply and demand and ensuring that supply meets demand at all times. National Grid Electricity Transmission is regulated by Ofgem, the UK National Regulatory Authority for electricity, in particular through a five-year price control which limits its maximum revenues and provides the cost methodology to set the price of access to, and use of, the electricity transmission and distribution systems.

(59) The UK government intends to entrust National Grid with the administration of all CfD schemes, including for example also those supporting renewable energy. The UK authorities believe that National Grid is best placed to fulfil this role, based on its current remit as TSO, which includes estimating and assessing overall capacity levels and running balancing services for short-term needs through competitive tenders.

(60) The counterparty to the generation operator under the CfD will be enabled to take decisions and exercise discretion, for example by deciding that a generation operator is fulfilling its obligations, or needs to post collateral to guarantee its payments under the scheme, or waive certain requirements, depending on the specific market conditions. The UK government intends to provide further guidance on the parameters which might limit the discretion of the counterparty to take decisions in relation to the CfD operation.

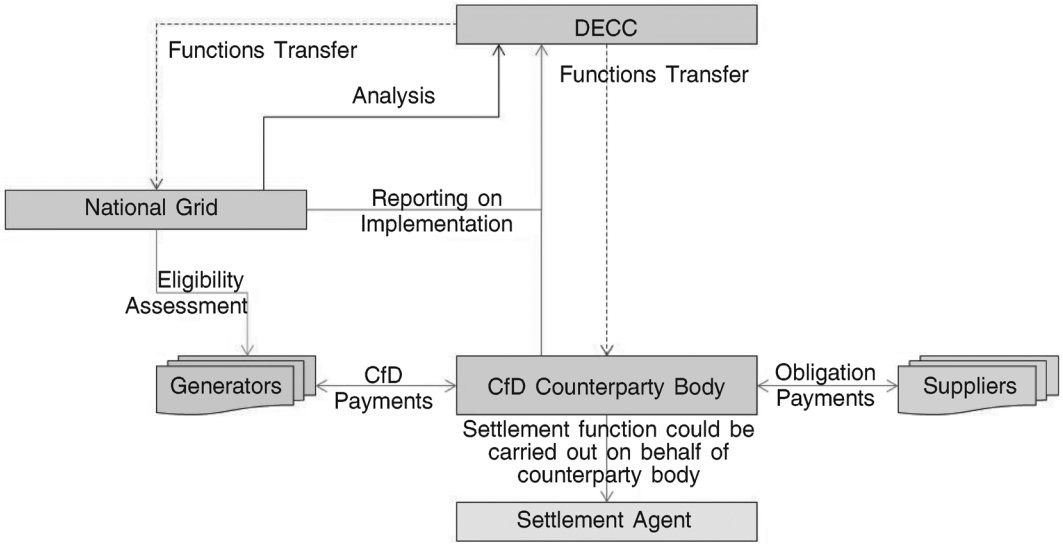
(61) The Energy Bill will set the framework for the designation of the counterparty. The detailed arrangements for the supplier obligation are expected to be set in secondary legislation. The counterparty's constitutional documents will include Articles of Association, and the body will be subject to UK company law. The company's articles would not be amended without the Secretary of State's consent. The UK government intends to appoint the minority of the counterparty's Board (the Chair and Senior Independent Director) and set out the process for appointing the remainder of the board.

(62) Figure 1 explains what the respective roles are for each of the agents envisaged in the functioning of the CfD system.

([13]) See the following address: http://www.elexon.co.uk/

Figure 1

Roles and responsibilities in the operation of the CfD



Source: UK authorities.

3.4. **Bilateral negotiations**

(63) The UK government published an Expression of Interest to select an undertaking to enter into an Investment Contract (in particular, to enable the final investment decision by the undertaking) in March 2012, after several months of informal contacts. Following NNBG's submission, the UK Government has been in discussions with NNBG on an Investment Contract for the HPC project. Formal negotiations on the terms of the Investment Contract commenced in February 2013.

(64) Both the selection of the undertaking and the definition of the terms to be used in the Investment Contract have been based on bilateral negotiations between the UK government and NNBG. The negotiation focused in particular on the terms of the agreement which would have been acceptable to the parties, including, and especially, the level of the Strike Price and the duration of the contract.

(65) The UK government claims that the negotiating process allows it to maintain a competitive tension in setting the terms of the agreement, by making use of various benchmarks and comparisons which enables it to identify acceptable values for the key terms of the agreement. The UK authorities have consistently claimed that they were not prepared to offer an Investment Contract at any price.

(66) During the negotiations, the UK government made use of expert external technical and financial advisers to provide reports on the detailed costs of the project and the likely returns to NNBG, as well as in-house expertise. The purpose of the advisory work was, the UK government claims, to provide a final recommendation on whether it would be reasonable for the Secretary of State to conclude that NNBG's return on its investment in the HPC project is reasonable from a financial point of view. Evidence of such work undertaken by KPMG and Lazard has been provided to the Commission.

(67) The UK government and EDF announced on 22 October 2013 that they had reached an agreement on the key commercial terms of the Investment Contract, including the Strike Price, the rate of return and the duration of the contract. The UK authorities notified the measure object of this decision on the same day.

(68) The agreement, as well as the notification, relate to the key parameters of the Investment Contract (a Head of Terms agreement), as opposed to a final Investment Contract. The Investment Contract itself, as well as the detailed and final structure of the measure, including the financing structure of NNBG, are to be finalised in the course of 2014. The agreement reached is not legally binding.

3.5. **Terms of the agreement**

3.5.1. *Strike Price and net present value*

(69) The purpose of the Investment Contract is to provide a high degree of certainty over the level of revenues that the HPC plant will achieve over the duration of the contract, subject to the plant achieving its forecast level of output. A summary of the terms of the agreement can be found in Annex 1.

(70) The Strike Price is set at GBP 92.50 per MWh (as an average of the 2012 price), which would become GBP 89.50 per MWh if EDF undertakes to build a second nuclear power plant at Sizewell C using the same

design. The Strike Price will be fully indexed to the Consumer Price Index from the date of signature of the contract. Based on current assumptions, this would translate into a nominal Strike Price of GBP 279 per MWh in 2058, the last year of application of the CfD scheme.

(71) The Strike Price has been derived by using a financial model, where the Strike Price is the main output of the model subject to a number of other project parameters being set and assumptions being made, including assumptions on the macroeconomic context. The Strike Price is the result of the negotiation between the UK government and EDF. Several of the assumptions being made, and in particular a large part of the construction and operation cost base, is based on information provided by EDF. The Strike Price of GBP 92.50 per MWh corresponds to a (post-tax and nominal) rate of return of [9.75 to 10.25] per cent for the HPC project as a whole, i.e. taking into account the lifetime of the installation.

(72) The net present value ('NPV') of total revenues is GBP […]bn, while the NPV of the difference payments, i.e. the difference between the Strike Price and the reference price, is calculated to vary between GBP 3.5bn and GBP 9.0bn, depending on whether the carbon price in the UK is higher (lower NPV of the differences) or lower (higher NPV of the differences).

3.5.2. *Rate of return*

(73) The UK claims that the rate of return implied by the measure is consistent with a range of analyses carried out to inform the government's decision. In particular, the assessments described in Table 1 were carried out. The resulting rate of return, as specified above, is [9.75 to 10.25] per cent in post-tax and nominal terms.

Table 1

Assessments of rate of return of the HPC project

[…]

Source: UK authorities

(74) The UK authorities claim that in the absence of an Investment Contract, the rate of return required by the investor would be substantially higher, and potentially well above 10 per cent, based on work undertaken by consultancy KPMG and commissioned by DECC. Such a high rate of return would however not be realistic and the project would not go ahead. An Investment Contract would allow the HPC project to meet returns which are more comparable to those of a regulated utility in the UK government's view.

3.5.3. *Costs*

(75) The project costs are based on a review undertaken with the support of two external advisers commissioned by the UK government: KPMG and LeighFisher. The consultants were asked to provide technical advice (on assessing construction, operation and decommissioning information), and financial and economic knowledge.

(76) The UK authorities submitted to the Commission a financial model of the HPC project, which is the result of discussions with NNBG and takes account of an agreed cost base. While the notified measure is based on the cost base underpinned by the financial model, which the UK government considers reasonable, it also states that the full costs of the projects will be subject to revision at the time of the signature of the final Investment Contract.

(77) The construction costs will total about GBP […]bn, with yearly operating costs of about GBP […]. ([14]) This assumes a 91 per cent capacity availability rate after […] years of operations. Under the agreement, NNBG has […] years to complete construction starting from the commissioning date, and a further period of […] years before the counterparty, i.e. the UK government during an initial period, has the right, but not the obligation, to terminate the contract. This implies an […]-year window for NNBG to complete the construction, after which it will expose itself to the risk of termination of the contract.

3.5.4. *Duration*

(78) The duration of the contract is 35 years for each of the two reactors of the HPC plant. The UK government considers this duration reasonable to ensure that the project can find adequate financing funds, given the uncertainties surrounding future electricity prices. It states that their own estimates show a great deal of uncertainty over the long-term trends of wholesale electricity prices, which at least in part depend also on uncertainties on the price of carbon, either under the ETS or under the UK carbon price floor.

(79) The UK government also believes that any duration shorter than 60 years, which is the operational lifetime of the plant, exposes NNBG to market risks. For this reason, NNBG is reported as having a preference for a […]-year contract. In particular, the UK government argues that NNBG would not be able to achieve adequate revenues to cover the cost of servicing the debt and maintain an A rating with less than 30 years of stable revenues. ([15])

(80) NNBG is expected to seek a substantial level of debt-financing from the market, subject to the UK credit guarantee, although the UK government could not yet specify the definitive financing structure. EDF is reported as seeking to raise as much as […] per cent of financing needs through debt, with the remaining […] per cent being equity, possibly to be shared with EDF's partners as specified in paragraph (38).

(81) According to the UK authorities, this level of debt would require an Investment Contract duration of at least […] years for the debt to maintain A rating to ensure a more favourable level of interest repayments. The required duration becomes longer if a 'tail', or a safety buffer

([14]) Figures in 2010 prices.

([15]) In order to determine the credit rating of NNBG the UK government relied, among others, on the debt service cover ratio, or the ratio of cash available to service the debt to the debt principal and interest repayments, which is a financial metric used to determine the credit rating of a project.

period, is required by funds providers. Advisors to the UK government indicated that a 30- to 35-year Investment Contract providing certain and stable revenues would be needed to secure a leverage ratio, i.e. the ratio of equity to debt, of between 50 and 65 per cent, assuming a 5-year tail is also required.

(82) The UK also highlights that there is a trade-off between the level of the Strike Price and the duration of the contract, as NNBG would require a higher Strike Price if the Investment Contract had a shorter duration, in order to achieve similar financial results.

(83) The UK government compares the duration of the Investment Contract with NNBG to similar contracts, in particular CfDs, which are considered for wind farms. Such contracts are being considered for a duration of 15 years, to be compared with an operational lifetime of between 20 and 25 years. The UK mentions that payments in support of renewable energy sources are allowed by the Environmental Aid Guidelines ([16]) ('EAG') until the plant has been fully depreciated according to normal accounting rules, which for the HPC project would take 60 years.

(84) The UK government also believes that the obligation on NNBG to set aside funds for decommissioning the plant to comply with the Funded Decommissioning Programme ([17]) would require stable revenues for 35 years.

(85) In particular, the UK Energy Act 2008 ([18]) obliges operators of new nuclear power stations to have secured financing arrangements in place to meet the full costs of decommissioning and their full share of waste management and disposal costs. The Funded Decommissioning Programme must be approved by the Secretary of State before construction of a new nuclear power station begins. NNBG has submitted a draft Funded Decommissioning Programme in March 2012. The definitive Programme has not been approved yet by the UK government.

3.5.5. *Other items*

(86) The […]-year commissioning window will start on the target commissioning date, which is proposed by NNBG and will be agreed with the UK government in the Investment Contract. As mentioned above, the UK government will have the right to terminate the contract without penalties or obligations after a further […]-year period, starting on the last day of the commissioning window. However NNBG will be entitled to difference payments under the CfD regime only within the commissioning window. A 2-year delay after the end of the commissioning window will therefore shorten the duration of the contract by 2 years.

(87) The UK government is discussing with NNBG the possibility to include cost re-opener provisions and gain-shares in the final agreement. The cost re-openers would make it possible to adjust some of the costs to better reflect their levels at specific points in time, in particular in relation to operating costs.

(88) The Investment Contract is also expected to include a 'gain share' mechanism, whereby in case the construction costs were lower than the amount agreed, the implicit gains from it would be shared between NNBG and the UK government […]. Other 'gain share' mechanisms might be put in place, in particular in relation to financing and operational costs.

(89) However, cost re-openers and gain-share mechanisms have not been finalised at the time of writing and are not part of the notified measure.

4. **UK POSITION ON THE STATE AID ASSESSMENT OF THE NOTIFIED MEASURE**

(90) The UK claims that the notified measure does not constitute aid according to Art 107(1) TFEU, in particular since the intervention would not confer an advantage to an undertaking based on the 'Altmark' criteria.

(91) Alternatively, the UK claims that the aid fulfils the conditions of the SGEI Framework.

(92) At the very least, the UK claims that the aid is compatible with Article 107(3)(c) TFEU.

5. **ASSESSMENT OF THE MEASURE: GENERAL CONSIDERATIONS**

(93) The Commission will consider in turn each of the legal bases to which the UK government refers in each of the sections below.

6. **EXISTENCE OF AID WITHIN THE MEANING OF ART 107(1) TFEU**

(94) Article 107(1) TFEU provides that "any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods, shall, in so far as it affects trade between Member States, be incompatible with the common market." The cumulative conditions set out therein are examined below.

6.1. **The Investment Contract: Existence of an advantage**

(95) The UK claims that the notified measure does not constitute aid according to Art 107(1) TFEU, in particular since the intervention would not confer an advantage to an undertaking based on the 'Altmark' criteria.

([16]) Community Guidelines on State aid for environmental protection, OJ C 82/1 of 1 April 2008.

([17]) The obligation on operators of nuclear power plants to set aside funds for both decommissioning and the management and disposal of nuclear waste are enshrined in Commission Recommendation 851/2006/Euratom. See Commission Recommendation of 24 October 2006 on the management of financial resources for the decommissioning of nuclear installations, spent fuel and radioactive waste, OJ L 330/31 of 28 November 2006. More information on the UK Funded Decommissioning Programme are available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/70214/guidance-funded-decommissioning-programme-consult.pdf

([18]) Available at the following address: http://www.legislation.gov.uk/ukpga/2008/32/contents

(96) The 'Altmark' criteria have been set out by the Court of Justice to clarify under what circumstances a compensation provided by a public authority for the performance of a Service of General Economic Interest ('SGEI') qualifies as State aid under Art 107(1) TFEU. ([19])

(97) In particular, the Court stated that four criteria must all be met for compensation provided for a SGEI not to constitute State aid. Those conditions are cumulative, and in particular they are the following ones.

(i) The recipient undertaking must actually have public service obligations to discharge and the obligations must be clearly defined;

(ii) The parameters on the basis of which the compensation is calculated must be established in advance in an objective and transparent manner, to avoid it conferring an economic advantage which may favour the recipient undertaking over competing undertakings;

(iii) The compensation cannot exceed what is necessary to cover all or part of the costs incurred in the discharge of public service obligations, taking into account the relevant receipts and a reasonable profit for discharging those obligations; and

(iv) Where the undertaking which is to discharge public service obligations, in a specific case, is not chosen pursuant to a public procurement procedure which would allow for the selection of the tenderer capable of providing those services at the least cost to the community, the level of compensation needed must be determined on the basis of an analysis of the costs which a typical undertaking, well run and adequately provided with the necessary means, would have incurred in discharging those obligations, taking into account the relevant receipts and a reasonable profit for discharging the obligations.

(98) The Commission has further clarified the conditions under which public service compensation is to be regarded as State aid in its Communication on the European Union framework for State aid in the form of public service compensation ('the SGEI Compensation Communication'). ([20])

6.2. **Existence of a SGEI**

(99) The UK believes that the first criterion is met, in particular since the service to be provided by NNBG would be clearly defined and would not be provided by the market.

(100) The Service to be provided would be the construction of Hinkley Point C, within a specified time schedule, and operating Hinkley Point C within the framework of the Investment Contract. The UK submits that this service is required to achieve the combined general economic interest objectives of i) security of supply, ii) diversity of generation, iii) decarbonisation and iv) electricity price stability/affordability.

(101) In this regard, the UK notes that public service obligations ('PSOs') in the general economic interest are often used in the electricity sector and are explicitly allowed for security of supply reasons under Art 3(2) of Directive 2009/72/EC ('the Electricity Directive'). ([21])

(102) The Commission does not question the possibility of Member States to entrust SGEIs in the electricity sector: It has accepted such entrustment at different times in the past, however in very specific circumstances. ([22]) Nor does it intend to question the legitimate interests of a Member State to implement measure to pursue security of its electricity supply, which as the UK recalls is a duty under the Electricity Directive.

(103) However, the Commission considers that specific undertakings can be seen as being entrusted with the operation of a SGEI if they are entrusted with "a particular task", i.e. the supply of services which, if they were considering their own commercial interest, undertakings would not assume or would not assume to the same extent or under the same conditions. The Commission thus considers that it would not be appropriate to attach specific public service obligations to an activity which is already provided or can be provided satisfactorily and under conditions, such as price, objective quality characteristics, continuity and access to the service, consistent with the public interest, as defined by the State, by undertakings operating under normal market conditions.

(104) It is true that in its decision on case N 475/2003, ([23]) the Commission has accepted a measure which involved the provision of contracts to generators for the purpose of providing a certain level of reserve capacity to be used to meet peaks in demand in a situation where capacity was forecast to be scarce and during the first stages of liberalisation, hence for a security of supply objective. However in that case the service was precisely defined not as the provision of electricity but as the provision of reserve capacity. Reserve capacity is a well-defined type of electricity supply which can only be used under particular demand and supply conditions, and which would not necessarily be provided by the market.

(105) The case being assessed in this decision seems to be very different. NNBG will produce and deliver baseload electricity, that is, electricity which is provided continuously and without interruption – also based on the fact that

([19]) Case C-280/00, Altmark Trans GmbH and Regierungspräsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH, paragraphs 87 to 93.

([20]) Communication from the Commission on the application of the European Union State aid rules to compensation granted for the provision of services of general economic interest, 2012/C 8/02, OJ C 8/4 of 11 January 2012.

([21]) 441. Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, OJ L 211/55 of 14 August 2009.

([22]) See for example the Commission decision of 16 December 2003 on case N 475/2003 – Ireland, public service obligations in respect of new electricity generation capacity for security of supply, OJ C 34/5 of 7 February 2004, or Commission decision of 29 September 2010 on case N 178/2010 – Spain, public service compensation linked to a preferential dispatch mechanism for indigenous coal power plants, OJ C 312/1 of 17 November 2010.

([23]) See footnote 21.

nuclear power plants cannot be easily switched on and off. The electricity provided by NNBG cannot, and will not, be used as reserve capacity or to cover peaks in demand levels.

(106) In particular, also based on the terms of the contract, NNBG will participate in the market and sell electricity through the standard exchange arrangements used to allow buyers and sellers to conclude spot contracts.

(107) The Commission notes, in this respect, that not only electricity generation is normally considered a commercial activity and a market in which competition takes place, but also and in particular nuclear technology has and can generally be considered a viable commercial activity. This appears to be confirmed by the fact NNBG will compete also against nuclear plants which are operated commercially, seven of which are owned by EDF itself. It is therefore at the very last unclear why the market would not invest in the HPC plant, even if it uses a different technology than existing nuclear plants, under normal market dynamics. This is all the more so since, according to the UK's own assessment, the opposite seems to be true, as private investors are forecast by both Redpoint and by DECC to invest in nuclear energy by 2027 and by 2030 respectively in the absence of CfDs or Investment Contracts. ([24]) In addition, life extensions of existing plants might take place on a commercial basis.

(108) It would therefore appear that the UK's main argument to claim the existence of a SGEI is that the Investment Contract will provide incentives for NNBG to build the nuclear plant under a specified timeline.

(109) In particular, it appears difficult to argue that the measure can help the UK achieve security of supply, given that the plant will not be operational before 2023 (assuming the Investment Contract is concluded in 2013 and no delay occurs in the construction,) and that capacity levels are forecast by Ofgem to be relatively low before 2020. ([25]) On this point, see also Section 8.1.1.2.

(110) The measure is argued to contribute to the objective of decarbonisation, but it would merely do so on a different time scale compared to the one which would be provided by the market according to DECC's own forecasts – which are based, among other things, on a government-set price of carbon, which could therefore, and in principle, be an equally effective, and more market-oriented, instrument to achieve the same result, as discussed further in Section 8.1.

(111) The measure, moreover, could hardly be argued to contribute to affordability – at least at current prices, when it will instead and most likely contribute to an increase in retail prices, as discussed in Section 8.1. The notified measure would seem to be able to contribute to affordable prices only under very specific conditions which can only materialise far away in the future. The contribution to higher prices, however, would be very much in the short and medium term.

([24]) See footnote 3.

([25]) See Ofgem, *Electricity Capacity Assessment Report 2013*, 27 June 2013

6.3. **Entrustment act**

(112) The first Altmark criterion requires that the undertaking has a public service obligation to discharge. Accordingly, in order to comply with the Altmark case-law, a public service assignment is necessary that defines the obligations of the undertakings in question and of the authority.

(113) The public service task must be assigned by way of an act that, depending on the legislation in Member States, may take the form of a legislative or regulatory instrument or a contract. It may also be laid down in several acts. Based on the approach taken by the Commission in such cases, the act or series of acts must at least specify:

(i) The content and duration of the public service obligations;

(ii) The undertaking and, where applicable, the territory concerned;

(iii) The nature of any exclusive or special rights assigned to the undertaking by the authority in question;

(iv) The parameters for calculating, controlling and reviewing the compensation; and

(v) The arrangements for avoiding and recovering any overcompensation.

(114) The Commission doubts that in this case NNBG has been entrusted with specific public service obligations to discharge.

(115) The UK submits that NNBG would have been entrusted with discharging the following obligations:

(i) If certain milestones in the construction of the plant are not met by certain dates, NNBG risks losing the CfD, and if the project is delayed by more than […] years, the payment period will be reduced accordingly.

(ii) In particular, NNBG is required to achieve the 'Start Date' for each Reactor by meeting the Conditions Precedent within the 'Target Commissioning Window' for that Reactor in order to receive the full benefit of the CfD. If the 'Start Date' is achieved after the 'Target Commissioning Window' closes, then the payment period for that reactor decreases by an amount which is equal to the length of time between the 'Target Commissioning Window' and the 'Start Date.' If the 'Start Date' is not achieved by the 'Long Stop Date,' the UK government can terminate the contract.

(iii) NNBG can benefit from the differences payments only to the extent that it generates and delivers to the GB transmission system low-carbon, baseload electricity from nuclear generation.

(iv) The Investment Contract would oblige NNBG to pay the difference between the Strike Price and the reference price to a counterparty in case the reference price is above the Strike Price.

(v) For the duration of the investment contract, all electricity generated by Hinkley Point C, up to the contracted capacity, will be subject to the difference payment mechanism (including the obligation to make payments back to the counterparty where the reference price is above the Strike Price). NNBG will not be able to sell that electricity outside of the terms of the Investment Contract.

(116) The UK authorities add that, without the Investment Contract, NNBG would be free to sell electricity into the market and retain any profits in case electricity prices are above the Strike Price. In other words, the service would not be provided in the same manner by the market, and "[w]ithout the Investment Contract NNBG would be free to sell electricity into the market and retain any profits in case electricity prices are above the Strike Price ([26])." However no demonstration is provided to the effect that these results would not otherwise be provided by the market.

(117) The Commission doubts, however, that these conditions can be viewed as public service obligations or as demonstrating that NNBG would be entrusted with a SGEI.

(118) First, the UK explained that the nuclear plant would be constructed under market conditions at a later stage, while the UK wishes to incentivise its construction at an earlier stage. It would appear to be only sensible, if this is the logic behind of the UK measure, to shorten the period of payments. Indeed, the closer the date of effective construction of the nuclear plant to the date when it would have been constructed anyway, the more limited the incentive effect and the necessity of the aid.

(119) Moreover, making the realisation of the project subject to a certain end date is rather typical for the granting of investment aid or structural funds.

(120) Second, the aid will be disbursed only insofar as NNBG supplies electricity. This again shows that while the CfD aims at incentivising the deployment of nuclear within a certain time frame, payments under the CfD are not conceived as a form of compensation for the timely construction of the nuclear plant. The timely construction is a necessary but not sufficient condition for the granting of aid.

(121) Third, requiring NNBG to pay back the difference between the Strike Price and the reference price is the system devised by the UK to ensure that the aid is limited to a certain amount. It does not amount to an SGEI obligation. The same can be said of the limit to a maximum contracted capacity. Again, this condition ensures that the amount of the aid is limited. It does not prevent NNBG from selling electricity on the market at market price.

(122) Finally, the Commission notes that NNBG is not obliged to enter into the Investment Contract and can actually withdraw from it without particular penalties. NNBG is actually not obliged to build the nuclear plant, nor is it obliged to build it by a certain date. The UK authorities cannot enforce any obligation in this respect, they can only terminate the contract.

(123) The UK authorities have referred in this respect to case T-17/02 of 2005 ([27]) (Fred Olsen), submitting that it is not required that the act assigning the tasks be a law or regulation, the only determining factor being the desire of the UK authorities to entrust a task to NNBG.

(124) However, while in that case the SGEI might have been entrusted upon Fred Olsen at his instigation, this does not alter the fact that the company had certain service obligations to discharge. Those obligations were enforceable and the State might have enforced them. In this case, to the contrary and as explained above, NNBG does not have any such obligation.

(125) On the basis of the information provided, the Commission considers at this stage that the Investment Contract does not represent a sufficiently specified entrustment act, given that many of the most important terms have not yet been agreed between NNBG and the UK government – including on timing and on the obligations to which NNBG commits.

6.4. **Assessment of the second 'Altmark' criterion: Parameters used to set the compensation level**

(126) The UK believes that the second criterion is met, since the parameters based on which the compensation for the SGEI provision is paid are established in advance and in an objective and transparent manner.

(127) The Commission notes that some of the terms being offered to NNBG are still unclear and the parameters have not all been set. This is in particular true about the nature of the CfD mechanism, and especially the terms based on which the difference will be calculated, notably a reference for the market price.

(128) The UK claims that a 'reference price' will be used to calculate differences. At this juncture it is still unclear what the reference price will be, with the UK authorities pointing out that "[t]he manner in which the Reference Price against which difference payments are to be calculated is to be determined remains to be agreed according to the principles outlined in the Heads of Terms". Also, potential adjustments to the Strike Price, which are still being negotiated, have not yet been finalised.

(129) Provided that these parameters are ultimately established in the final Investment Contract and before such contract enters into force, the condition that those parameters are set in advance could be fulfilled. However, as those elements have not been established yet and will be subject to further negotiation, the Commission is not yet in a position to verify that the negotiated parameters will be established in an objective and transparent manner so as to avoid conferring an economic advantage which may favour the recipient undertaking over competing undertakings.

(130) The UK authorities have also indicated that the Strike Price will determine a reasonable profit. It is not known, however, whether the Entrustment Act will

([26]) UK notification document, paragraph 456, page 142.

([27]) Case T-17/02 Fred Olsen [2005] ECR II-2031.

establish the criteria for calculating that profit. In particular, as will be argued more extensively in Section 8, the profitability of the project is subject to uncertainty.

6.5. **Assessment of the third 'Altmark' criterion: No overcompensation**

(131) The compensation cannot exceed what is necessary to cover all or part of the costs incurred in the discharge of public service obligations, taking into account the relevant receipts and a reasonable profit for discharging those obligations.

(132) The UK states that the CfD mechanism does not allow for overcompensation, since NNBG will receive no more and no less than the Strike Price, and the Strike Price is set at a level which ensures only the recovery of costs plus a reasonable profit.

(133) As indicated above, it is doubtful that NNBG has been entrusted with any particular PSO. Even if there were any PSO involved, the specific obligation would have to be the obligation to construct the nuclear plant at HPC by a certain date, i.e. in advance of what the market would deliver.

(134) In order to prevent that compensation exceeds what is necessary to cover all or part of the costs incurred in the discharge of PSOs, it should be limited to the costs resulting from building and operating the HPC plant, or from supplying a set amount of electricity.

(135) However, the UK authorities have not indicated what the costs resulting from the alleged PSO would be. Nor have the UK authorities demonstrated that the total compensation resulting from the differences between Strike Price and reference prices over the period of the Investment Contract would not go beyond these costs.

(136) In addition, as to the reasonable level of profit that the UK authorities took into account, the Commission notes that the level of profit was negotiated with NNBG and it doubts that the profit was established by reference to the rate of return on capital that would be required by a typical undertaking considering whether or not to provide the alleged SGEI.

(137) In addition, nothing in the Investment Contract seems to ensure that the compensation would be limited to that level of profit over the lifetime of the project. Depending on the evolution of wholesale electricity prices in the post-CfD period, NNBG's profits might be substantially higher than those resulting from the negotiated rate of return.

(138) The Commission notes in this respect that while the Investment Contract will last for 35 years and should in principle cap NNBG's revenues to a certain level, this leaves 25 years of operational life where NNBG will be receiving revenues corresponding to the price which it is able to earn from the market, without any correction. It is impossible to forecast what levels of revenues, and hence of profits, NNBG will be able to make based on the HPC project as a whole, including the CfD and post-CfD period. As a result, the CfD, should it be considered as a SGEI compensation mechanism, does not ensure that the compensation will not exceed a reasonable rate of return.

(139) The CfD scheme allows NNBG to finance and build a nuclear plant, since most of the costs which can be quantified and are relevant for the initial part of the operating life of the plant will be covered. Also, potential creditors are likely to look essentially at the first period of the life of the plant when deciding whether to provide funds or not, thereby allowing NNBG to overcome the large initial difficulties of constructing the plant and commence operations using a technology, nuclear energy, which is characterised by very high fixed and upfront costs.

(140) However NNBG will also then be able to reap any benefits from the continuous operation of the plant in the post-CfD period. Such benefits might be very large, or indeed might not exist at all, depending on the market conditions in the post-CfD period. Precisely because of this uncertainty, it would appear to be impossible to determine at this stage whether NNBG will be overcompensated or not. The terms of the Investment Contract communicated to the Commission do not contain a correction mechanism that would take account of the effect of developments after the end of the CfD in order to ensure that no overcompensation has taken place overall.

(141) While the Commission acknowledges that the assessment of overcompensation needs to be carried out in particular taking into account the duration of the scheme, ([28]) it also must note that, due to the technological characteristics of nuclear energy generation and of the costs involved, in this case limiting the assessment to the duration of the CfD would seem inappropriate. In fact, if it were accepted that NNBG has been entrusted with a SGEI task consisting of constructing a nuclear plant at HPC in advance of market delivery, it must then be considered that the entrustment ends with the timely construction of the nuclear plant but the payment of the compensation is made in instalments over a 35-year period.

(142) The Investment Contract allows the plant to be built, however the profitability of the project is based on the entire operational life of the plant. Given the low level of the variable costs, the possibility exists that once the plant has been built and is operational, NNBG might be allowed to realise a super-normal rate of return when considering the entire life of the project – something which would be allowed through State aid.

(143) The second uncertainty is related to the discounting of fixed costs. The nature of nuclear production, which requires very high levels of capital for the investment in the construction and hence before revenues can be generated, while also being characterised by a relatively low level of operating costs once the plant has been built, has few, if any, equivalents in commercial activities. As will be discussed in Section 8.1.2 below, this feature of nuclear technology might in itself represent a form of market failure.

([28]) See the SGEI Compensation Communication, paragraph 61.

(144) However this also means that any assessment of the costs and revenues, and hence of the profitability, of the project crucially depends on the view that it is taken on the discount rate used to put a value to future cash flows.

(145) The UK claims that the discount rate used in NNBG's Financial Model, of [9.75 to 10.25] per cent in post-tax and nominal terms, which is their estimate of the weighted average cost of capital ('WACC') of the plant, is a reasonable value to assess the project. For the reasons set out in Section 8.1.6 below, the Commission doubts whether such a value can be deemed to be the most appropriate one. While a range of values are likely to be deemed to be reasonable when assessing a project such as HPC, the Commission notes that even a small variation in the rate used bring about very large changes in the project results. As the Investment Contract does not contain any correction mechanism, it does not account for that uncertainty and does not ensure that the even for the duration of the Investment Contract, the project will not yield more than a reasonable rate of return on capital.

(146) Finally, the Commission notes that NNBG will also obtain a State credit guarantee. Such guarantee is bound to lower the costs of financing the plant, hence the discount rate, which links back to the uncertainty highlighted above. It is however unclear, at this juncture, what the impact of the guarantee will be, since the financing structure of NNBG is not complete and the amount of debt, the amount of the guarantee and the rate paid are not yet known.

(147) The UK claims that NNBG will pay a commercial rate for the guarantee, however this cannot be verified at the moment, because no data are available on the guarantee, and because it is not clear that a definite benchmark exists for the type of financing needs which the plant will need.

6.6. **Assessment of the fourth 'Altmark' criterion**

(148) Where the undertaking which is to discharge PSOs, in a specific case, is not chosen pursuant to a public procurement procedure which would allow for the selection of the tenderer capable of providing those services at the least cost to the community, the level of compensation needed must be determined on the basis of an analysis of the costs which a typical undertaking, well run and adequately provided with the necessary means, would have incurred in discharging those obligations, taking into account the relevant receipts and a reasonable profit for discharging the obligations.

(149) The UK authorities do not contest that NNBG was not chosen pursuant to a public procurement procedure. They consider, however, that the level of compensation was determined on the basis of an analysis of the costs which a typical undertaking, according to the Altmark criterion, would have incurred. In particular, the UK claims that NNBG is well-run and that the rate of return used in the Investment Contract is reasonable. Also, they stress that the Strike Price was calculated on the basis of NNBG's costs of construction and operation, including a reasonable profit and that all costs were substantiated and verified.

(150) Where a generally accepted market remuneration exists for a given service, it provides the best benchmark for the compensation in the absence of a tender. The Strike Price, however, will – according to projections – in general be higher than the estimated average market price, i.e. the reference price.

(151) The reference price however, will, according to the UK authorities, be too low, at least in the coming years and would not have attracted the investment within the timeline targeted by the UK.

(152) It could therefore be appropriate to determine the amount of compensation by reference to an analysis of the costs that a typical undertaking would have incurred in discharging those obligations.

(153) The reference to the costs of a 'typical' undertaking in the sector under consideration implies that there are a sufficient number of undertakings whose costs may be taken into account. Those undertakings may be located in the same Member State or in other Member States – for example, in the present case the Flamanville an Olikiluoto plants might be used as references. ([29]) However, the Commission takes the view that reference cannot be made to the costs of an undertaking that enjoys a monopoly position or receives public service compensation granted on conditions that do not comply with Union law, as in both cases the cost level may be higher than normal. The costs to be taken into consideration are all the costs relating to the SGEI, that is to say, the direct costs necessary to discharge the SGEI and an appropriate contribution to the indirect costs common to both the SGEI and other activities.

(154) If the Member State can show that the cost structure of the undertaking entrusted with the operation of the SGEI corresponds to the average cost structure of efficient and comparable undertakings in the sector under consideration, the amount of compensation that will allow the undertaking to cover its costs, including a reasonable profit, is deemed to comply with the fourth 'Altmark' criterion.

(155) The Commission notes that in this case, the Strike Price has been determined so as to enable NNBG to recover the project investment costs and deliver NNBG's target rate of return for the HPC project.

(156) The UK authorities have commissioned experts to verify NNBG's cost estimates for the construction, operation and decommissioning of the HPC plant.

(157) While the studies reveal that NNBG's cost estimates might be reasonable and within the range of benchmark data and while the benchmark data seems to have taken into account costs from other nuclear plants of EDF and others, the study also concludes that NNBG's development cost estimates are towards the upper end of the cost range. ([30]) As to the operating costs, it is only concluded that they are broadly consistent with those of equivalent benchmark plants and thus reasonable.

([29]) Communication from the Commission on the European Union framework for State aid in the form of public service compensation, 2012/C 8/03, OJ C 8/15 of 11 January 2012, paragraph 74.

([30]) See, Notification, annex C – Cost verification process, p. 206.

(158) It thus appears that while the verification undertaken by the UK authorities might ensure that NNBG cost estimates are reasonable, they do not ensure that the Strike Price does not exceed the average cost structure of efficient and comparable undertakings in the sector under consideration and do not ensure that the service is provided at the least cost for the community.

(159) In the study on reasonableness of cost estimates, it is observed that NNBG costs are towards the upper end of the benchmark cost range because the HPC plant is the first project of a kind in the UK. Indeed, NNBG has chosen a technology for HPC that is not yet operational anywhere in the world. However, as it does not appear that this technology was chosen at the request of the UK authorities to discharge the alleged SGEI, it is questionable whether the higher costs linked to that technology can be taken into account to justify – under the Fourth Altmark criteria – a compensation that is higher than what would be necessary.

(160) Finally, as already indicated above, the Commission doubts that the level of profit used to set the Strike Price corresponds to the rate of return of a typical company considering whether or not to provide the SGEI for the whole duration of the period of entrustment, taking into account the level of risk.

(161) On the basis of those elements, the Commission concludes that the information provided by the UK authorities is not sufficient to demonstrate that the fourth Altmark criteria is complied with.

6.7. **Conclusion of the assessment under Art 107(1) TFEU based on the 'Altmark' criteria**

(162) On the basis of the arguments set out in Sections 6.2, 6.3, 6.4, 6.5 and 6.6above, and of the information provided to the Commission, the 'Altmark' criteria do not seem to be fulfilled for the notified measure. Therefore the Commission cannot exclude that the Investment Contract will provide NNBG with a selective advantage.

6.8. **Investment Contract, State resources and imputability to the State**

(163) As the whole Investment Contract and the establishment of the Strike Price is due to the State, the advantage under the Investment Contract is imputable to the State. In addition, the Investment Contract will initially be entered into by the Secretary of State.

(164) For advantages to be capable of being categorised as aid within the meaning of Article 107 TFEU, they must be granted directly or indirectly through State resources. This means that both advantages which are granted directly by the State and those granted by a public or private body designated or established by the State are included in the concept of State resources within the meaning of Article 107(1) TFEU. ([31]) In this sense, Article 107(1) TFEU covers all the financial means by which the public authorities may actually support undertakings, irrespective of whether or not those means are permanent assets of the public sector. ([32])

(165) The UK authorities do not contest that the Investment Contract is financed from resources under the control of the State.

(166) The Commission considers, based on the elements explained below, that the advantage granted under the Investment Contract will be financed directly by the State during an initial period and then by a public or private body designated by the State.

(167) Indeed, the Investment Contract will initially be entered into between the Secretary of State and NNBG. The Secretary of State will make the payments under the Investment Contract. It will be funded through a levy on suppliers and /or through normal UK Government funding mechanisms. Under such circumstances it must be concluded that any advantages paid under the Investment Contract are imputable to the State and are also financed from State resources.

(168) Also after the transfer of the Investment Contract, the Commission considers that the advantage under the Investment Contract will be financed from resources under the control of the State for the following reasons.

(169) First, the Strike price and the levy will be established by the State.

(170) Second, the counterparty will in principle be a government-owned private company and will in any event be designated by the State. The counterparty's articles cannot be amended without the Secretary of State's consent.

(171) Third, the counterparty designated by the State will administer the payment scheme, which includes the collection of the levy from suppliers and the collection of payments from generators when the market price is higher than the Strike price. It will also include payments to generators and payments to suppliers in certain cases. Part of the counterparty's tasks will probably be delegated to a subsidiary of Elexon (i.e. collecting the supplier obligation and making and receiving CfD payments from generators on behalf of the counterparty).

(172) Fourth, the counterparty will be provided with revenue-raising power in the Energy Bill to enable it to collect from suppliers the funds required to make payments to CfD generators and a certain number of mechanisms will be put in place by the State to ensure certainty of payments to CfD generators in the event of a supplier not paying. These mechanisms will include the obligation for suppliers to provide collaterals, an insolvency reserve fund and the designation of a Supplier of Last Resort. The insolvency reserve fund would provide the counterparty with funding to cover a defaulting supplier's levy payments for the period from its collateral being exhausted until a replacement supplier is appointed under the Supplier of Last Resort mechanism governed by Ofgem.

([31]) Case 76/78 *Steinike & Weinlig v Germany* [1977] ECR 595, paragraph 21; Case C-379/98 *PreussenElektra* [2001] ECR I-2099, paragraph 58.

([32]) Case C-677/11 *Doux Elevage*, not yet published, paragraph 34, Case T-139/09 *France v Commission*, not yet published, paragraph 36.

(173) Fifth, the Counterparty will report to the State on the implementation. In this connection, it is intended that the counterparty will be governed by a framework document, setting out amongst other things the relationship between the counterparty and the State, the operating principles of the counterparty, matters reserved for the shareholder, the counterparty's roles and responsibilities, management and financial responsibilities, and reporting and monitoring requirements. It will also set out the parameters within which the counterparty is to fulfil its functions in relation to CfDs.

(174) Finally, in the unlikely event that the counterparty does not exist at the time payments are required to be made to NNBG (or suppliers), the Secretary of State has powers to either set up an Investment Contract counterparty to administer and make payments under the contract, collect payments from suppliers in order to pay generators under the Investment Contract or to pay generators directly.

(175) Also, while normally the financial means to cover payments under the Investment Contracts will in principle be raise through the supplier obligation, it will remain possible that the UK Government make direct payments to the Counterparty.

(176) On the basis of those elements, it can be concluded that after the transfer of the Investment Contract, the advantage provided under the Investment Contract will be financed through contributions imposed by the State and managed and apportioned in accordance with the provisions of the legislation by an entity designated by the State and controlled by the State.

(177) It is to be noted that Elexon and the Counterparty will also obtain payments to cover the costs resulting from their tasks of collecting the supplier obligation and paying the generators. Also, Ofgem will be compensated for its tasks under the ERM.

(178) In this respect, the UK claims that these entities will not be offering goods or services on the market in performing their duties under the Investment Contract and CfDs and accordingly their ability to recover their costs in respect of those functions (or indeed to be paid by the UK government for those functions) does not confer an advantage in favour of any undertaking and therefore falls outside Article 107. The Commission agrees with this analysis.

6.9. **The credit guarantee: Existence of an advantage funded through State resources and imputable to the State**

(179) The UK claims that the credit guarantee which the UK government agreed to provide to NNBG does not constitute State aid. ([33]) In particular, the UK authorities claim that the credit guarantee will be provided on commercial terms. The UK authorities also state that the guarantee will comply with the Commission Notice on the application of Articles 87 and 88 of the EC Treaty to State aid in the form of guarantees ('Guarantee Notice'), ([34]) in particular in relation to its pricing terms.

(180) The Commission notes, however, that the guarantee will be provided by the UK government, and State resources can be involved to the extent that the State foregoes part of the remuneration to which it would be entitled if the guarantee price were not based on market premiums. The question of whether the State indeed foregoes revenues can only be ascertained at the moment when the guarantee is given.

(181) The guarantee has not yet been granted and there are at this juncture very little details on the structure, the level and the price of such guarantee. Hence the Commission is not in a position to exclude that State resources are involved. ([35])

(182) In addition, while the UK has indicated that it intends to provide the guarantee on commercial terms, the Commission is not convinced that the methodology proposed to determine the price of the guarantee ensures that such price would be consistent with the price which a market investor would offer.

(183) Without taking a final view on whether the formula proposed by the UK authorities to price the guarantee fee appropriately reflects the approach which a market investor would be expected to take in a similar situation, the Commission notes that market investors are not likely to derive optimal pricing levels from first order equivalences, as the UK is proposing to do. A market operator providing credit guarantees would be likely to be able to use standard benchmarks to set the price of the guarantee. Indeed, what the UK approach seems to indicate is that it would be unlikely that a market operator could be in a position to adequately price the guarantee, given the uniqueness of the investment and the lack of appropriate benchmarks.

(184) In particular, the approach taken by the UK authorities is an 'expected loss approach,' i.e. an approach which attempts to set the price of the guarantee by taking into account the probability of a loss occurring. Given the high uncertainty around expected loss and the potential for relatively high unexpected losses, it seems that the approach should at least provide some discussion about the causes and nature of unexpected losses and the potential of these occurring as well as the impact on debt guarantee fees. In this respect, the current approach seems lenient and incomplete.

(185) Also, the approach proposes that an 'appropriate' return on equity for the credit guarantor would be given by multiplying a 4 per cent risk premium with an 8 per cent notional reserve. However this proposal lacks justification, or indeed evidence that a market operator would behave in a similar way.

([33]) UK notification, paragraph 508.

([34]) Commission Notice on the application of Articles 87 and 88 of the EC Treaty to State aid in the form of guarantees (2008/C), OJ C 155/10 of 20 June 2008.

([35]) Guarantee Notice, Section 2.1.

(186) Moreover, the debt guarantee referred to in the Notification seems to differ from ordinary debt guarantees in that it would be drawn before equity, apart from equity already spent, ([36]) and except when the plant completes outside the 'long-stop date' and in case of cost overruns. ([37]) However market-provided guarantees are usually drawn only after equity has been wiped out in all scenarios. It would therefore appear that the credit guarantee provided by the UK might diminish the risks borne by equity holders, except in the circumstances specified above.

(187) For the reasons set out above, the Commission cannot at this stage rule out that the provision of a credit guarantee by the UK on NNBG's debt involves State aid.

6.10. **Distortion of competition and effect on trade**

(188) Both the Investment Contract and the credit guarantee have the potential to distort competition and affect trade between Member States. The Commission notes in this respect that the generation and supply of electrical power is liberalised. As in this case the notified measures will enable the development of a large level of capacity which might otherwise have been the object of private investment by other market operators using alternative technologies, from either the UK or from other Member States, the notified measures can affect trade between Member States and distort competition.

6.11. **Investment Contract and Credit Guarantee: General conclusion on the existence of aid**

(189) The Commission therefore concludes, at this stage, that the Investment Contract and the credit guarantee involve State aid within the meaning of Art 107(1) TFEU.

6.12. **Existence of aid within the meaning of Article 107(1) of the TFEU: Compensation in case of political shutdown (Secretary of State agreement)**

(190) The UK intends to grant compensation to NNBG in case the HPC plant were to be shut down for reasons not directly imputable to its operations, and in particular due to changes in government policy.

(191) The UK does not seem to consider this indemnification as aid.

(192) According to the jurisprudence of the European Court of Justice damages paid by national authorities to compensate for a damage caused public authorities to individuals do not constitute State aid within the meaning of Article107 (1) TFEU ([38]).

(193) This principle is also set out in the decision making practice of the Commission. In the decision1999/268/EG on the acquisition of land under the German Indemnification and Compensation Act, the Commission stated that compensation in kind or monetary compensation to the operator who had suffered losses as a result of expropriation or the like did not constitute an advantage in the meaning of Article 107(1) TFEU as the compensation merely reflected the legal principles common to all Member States regarding the protection of property rights. ([39])

(194) Equally the Commission has in the Akzo Nobel Decision provided that compensation for the withdrawal of the approval to produce chlorine and monochloroacetic acid does not constitute aid: "Indemnifications normally do not entail a selective advantage to the company in so far as they merely compensated for damage resulting from an official act, where the indemnification is the direct result of this official act on the basis of a general system for indemnifications that derives directly from constitutional rights of property as recognised by the judicial system. ([40])"

(195) In the light of this case law and case practice, the compensation in case of early shut down could possibly not qualify as State aid. However, before a conclusion can be reached, it is necessary that the UK authorities provide more information on whether this compensation results from a general principle and would also be available to other market operators placed in a similar situation.

6.13. **Legality of the aid**

(196) The UK authorities confirmed to the Commission that the granting of the aid is subject to the approval by the European Commission. By notifying the measure before its implementation, the UK authorities have fulfilled their obligation according to Article 108(3) TFEU.

7. **ASSESSMENT OF THE MEASURE AID UNDER ARTICLE 106(2) TFEU**

(197) The Commission notes that the notified measure cannot be assessed under Commission decision 2012/21/EU, ([41]) given that it does not fall under any of the categories included in Art 2 of that decision.

(198) The Commission has explained how it would interpret Art 106(2) TFEU, when assessing a notified measure which involves State aid and the provision of a SGEI, in its Communication on the European Union framework for State aid in the form of public service compensation ('the SGEI Framework'). ([42])

(199) In particular, the SGEI Framework points out that the following conditions need to be taken into account in order for a measure involving the provision of State and being assessed under Art 106(2) to be deemed, on balance, not to unduly affect competition and trade:

([36]) UK notification, paragraph 276.
([37]) UK notification, Annex H, pages 241 and 244.
([38]) Joined cases 106 and 120/87 Asteris and others v Hellenic Republic [1988] ECR5515, Para. 21 —23.
([39]) Commission Decision 1999/268/EG of 20 January on the acquisition of land under the German Compensation Act, OJ 1999 L 107, p. 21, 'the decision of 20 January 1999'.
([40]) Commission Decision N304/2003 of 16.6.2004 on aid in favour of Akzo Nobel in order to stop chlorine transport
([41]) Commission decision 2012/21/EU of 20 December 2011 on the application of Article 106(2) of the Treaty on the Functioning of the European Union to State aid in the form of public service compensation granted to certain undertakings entrusted with the operation of services of general economic interest, OJ L 7/3 of 11 January 2012.
([42]) Communication from the Commission on the European Union framework for State aid in the form of public service compensation, 2012/C 8/03, OJ C 8/15 of 11 January 2012.

(i) The measure should entail the provision of a genuine SGEI;

(ii) There should be an entrustment act setting out PSOs and compensation levels;

(iii) The duration should be justified;

(iv) The measure should be compliant with Directive 2006/111/EC ([43]) on the transparency of financial relations;

(v) The measure should be compliant with Union public procurement rules;

(vi) The measure should not discriminate;

(vii) Compensation should cover costs and a reasonable profit; and

(viii) The measure should not affect trade between Member States.

7.1. **The measure should entail the provision of a genuine SGEI**

(200) The UK claims that the notified measure is a genuine SGEI for the same reasons as those put forward in their claim that the measure is not aid based on the application of the first 'Altmark' criterion. However, and for the arguments set out in Section 6.2 above, it is unclear whether the measure can indeed be qualified as a genuine SGEI.

(201) In particular, the SGEI Framework specifies that "Member States cannot attach specific public service obligations to services that are already provided or can be provided satisfactorily and under conditions, such as price, objective quality characteristics, continuity and access to the service, consistent with the public interest, as defined by the State, by undertakings operating under normal market conditions ([44])."

(202) It is unclear that the market would not provide the service asked of NNBG under the potential SGEI – and in fact exactly the same product, i.e. baseload electricity at technical standards consistent with the TSO specifications, is normally provided by the market. If the SGEI encompasses both the product and the terms of the Investment Contract, the Commission would note that the market is expected to provide nuclear energy without Investment Contracts, as argued above, and that the link between the public objectives specified by the UK, i.e. security of supply, decarbonisation, diversification and affordability, would be better achieved under the terms of the notified measure than otherwise. Indeed, it would appear that the proposed SGEI would contribute to higher prices, as noted above.

(203) For the reasons set out above, the Commission doubts whether the notified measure qualifies as a genuine SGEI.

([43]) Commission Directive 2006/111/EC of 16 November 2006 on the transparency of financial relations between Member States and public undertakings as well as on financial transparency within certain undertakings, OJ L 318/17 of 17 November 2006.

([44]) See SGEI Framework, paragraph 13.

7.2. **There should be an entrustment act setting out PSOs and compensation levels**

(204) The UK claims that the entrustment act complies with condition 2.3 under the SGEI Framework for the same reasons as those put forward in their claim that the measure is not aid based on the application of the first 'Altmark' criterion.

(205) While not necessarily disputing the UK's claim on the characteristics of the alleged entrustment act, the Commission must however reiterate that several of the key features of such act are not yet final. It is therefore difficult to conclude that condition 2.3 of the SGEI Framework is met, for the reasons set out in Section 6.3 above.

(206) The Commission also notes that it is unlikely that the notified measure can be deemed to include any arrangement to avoid overcompensation, as specified in point 16(e) of the SGEI Framework. In particular, the measure not only appears to be structured in a way which excludes the possibility of overcompensation, as argued in Section 6.5 above, but also does not include any mechanism which might ensure that, if overcompensation does materialise, it can be recovered in future periods.

(207) For the reasons set out above, the Commission doubts whether the notified measure satisfies condition 2.3 of the SGEI Framework, in particular since a mechanism to prevent or avoid overcompensation is not included.

7.3. **The duration should be justified**

(208) The UK claims that the duration of the Investment Contract is justified because it ensures that investment is secured while minimising the cost to consumers, thereby complying with condition 2.4 of the SGEI Framework. The UK government argues in particular that the chosen duration is less than the depreciation period, which is claimed to be 60 years, and reconciles the need to secure the investment, by providing a 'package' of Strike Price, duration and rate of return which is acceptable to NNBG, with the objective of leaving some degree of market risk, in particular in the post-CfD period.

(209) As results from Section 6.3 above, the Commission doubts that the 35-year period can be considered as an entrustment period at all given that NNBG does not seem to have been entrusted with any obligation. The 35-year period simply seems to correspond to the period during which the aid will be paid out.

(210) In addition, even if an entrustment existed and the 35-year period were considered as the entrustment period, the Commission notes that this period does not seem to have been determined on the basis of objective criteria as required by condition 2.4 of the SGEI Framework. Based on the UK's own statements, the duration has been negotiated and is based on a range of considerations and ultimately on the contract counterparties to conclude an agreement. ([45])

([45]) Paragraphs 351 and onwards, and paragraph 491 of the UK notification.

(211) For the reasons set out above, the Commission concludes at this stage that the notified measure does not seem to comply with condition 2.4 of the SGEI Framework.

7.4. **The measure should be compliant with Directive 2006/111/EC on the transparency of financial relations**

(212) The Commission has at this stage no reason to believe that condition 2.5 of the SGEI Framework might not be met.

7.5. **The measure should be compliant with Union public procurement rules**

(213) The UK government claims that Union public procurement rules, in particular those enshrined under Directives 2004/17/EC ([46]) and 2004/18/EC, ([47]) do not apply to the notified measure, as such measure does not involve the procurement of supply, works or services for its benefit.

(214) On the basis of the available information, the Commission preliminarily believes that it is not possible to conclude that the Investment Contract concerns the acquisition of any works, services or supplies and thus qualify as public contracts or concessions.

(215) First, it is not clear whether the Investment Contract establishes any specific requirements on the supply, to the contracting authority or to third parties, of any type of services, goods or works. Those contracts seem to involve only a general commitment, by the nuclear power companies, to invest and operate new plants.

(216) Secondly, the contracts do not seem to cater for mutually binding obligations which could be enforceable before a Court. To the contrary, the contracts appear to contain just certain conditions such as several 'hold points' relating to the construction/commissioning phase of the nuclear reactors at each of which the contractor runs the risk of seeing the contract terminated if certain requirements are not met.

(217) Thirdly, there is no selectivity on the number of possible economic operators that can enter into an Investment Contract other than those resulting from the limited number of sites available for the construction of nuclear power stations. As UK authorities have highlighted, the system remains open to all potential interested parties.

(218) The Commission therefore considers that indeed, Directives 2004/17/EC and 2004/18/EC, and in fact public procurement rules do not apply. Those rules apply only when the State is proposing to enter into a public contract. A contract will constitute a public contract within the meaning of procurement rules, when the States is purchasing works or services under a mutually enforceable contract before a court.

(219) However NNBG is not under the obligation to contract the nuclear plant or provide a specific service in the sense that the State cannot enforce any obligation to construct the nuclear plant or provide a certain service in Court. For that reason, the Commission has preliminarily concluded above that NNBG has not been entrusted with any tasks and obligation of general economic interest. For the same reason, it seems appropriate to conclude that public procurement rules do not apply.

(220) By contrast, if it were to be concluded that NNBG is entrusted with the realisation of works or a service the realisation/supply of which would be enforceable before a court, public procurement rules would be applicable and should have been complied with by the UK, which on the basis of the information available at this juncture does not seem to be the case. The UK government admits that no public tender has been used to select the beneficiary. In addition, the terms of the agreement with the beneficiary have been reached through private negotiation.

(221) For the reasons set out above, if NNBG were to be considered as entrusted with SGEI obligations, the Commission would have strong doubts that the notified measure satisfies condition 2.6 of the SGEI Framework.

7.6. **The measure should not discriminate**

(222) The UK seems to imply that other operators could be entrusted with SGEIs under CfDs. As the Commission could so far not identify any clearly defined SGEI, it is also not possible at this stage to determine whether or not the alleged SGEI is discriminatory. However, the Commission notes that the Investment Contract seems to be tailor made for NNBG. The UK has acknowledged that it will contain specificities that other CFDs will not necessarily contain. Also, the terms of the Investment Contract are being negotiated with NNBG. On this basis, if NNBG were to be considered as entrusted with SGEI obligations, the Commission is at this juncture not convinced that the SGEI would not be discriminatory.

7.7. **Compensation should cover costs and a reasonable profit**

(223) The UK claims that the measure does not result in a level of compensation which exceeds what is necessary, taking into account the costs, revenues and a reasonable profit.

(224) The SGEI Framework states that the calculation of compensation levels should, where possible, be calculated by taking account of the 'net avoided cost methodology.' According to such methodology, the "net cost necessary, or expected to be necessary, to discharge the public service obligations is calculated as the difference between the net cost for the provider of operating with the public service obligation and the net cost or profit for the same provider of operating without that obligation ([48])."

([46]) Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in water, energy, transport and postal services sectors, OJ L 134/1 of 30 April 2004.

([47]) Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts, OJ L 134/114 of 30 April 2004.

([48]) SGEI Framework, paragraph 25.

(225) The Commission believes that it is difficult to ascertain whether this methodology, which in principle would be applicable in this case, is indeed used for the notified measure. In particular, the measure does not appear to be aimed at compensating a provider for the obligation to incur higher costs than it would otherwise incur. To the contrary, the measure appears to be aimed at providing incentives for the provider to invest in the project and, ultimately, offer the product, i.e. electricity, on the market.

(226) It would therefore seem that the condition cannot be fulfilled by the notified measure. Moreover, as argued in Section 6.5 above, the level of compensation cannot be defined clearly, given the long duration of the measure, the costs involved in the project, and the uncertainties over electricity prices, based on which the differences will be calculated. Consequently, it cannot be determined whether overcompensation might take place, and whether the rate of return can be deemed to be reasonable.

(227) In particular, since the Commission believes that overcompensation constitutes incompatible State aid, ([49]) and that the notified measure cannot exclude the possibility of overcompensation, condition 2.8 of the SGEI Framework cannot be deemed to be fulfilled by the notified measure.

(228) Also, for the reasons set out in Section 8.1 below, the Commission cannot exclude that the project might earn a level of return on capital which exceeds the relevant swap rate plus 100 basis points, as envisaged in the SGEI Framework. ([50])

(229) For the reasons set out above, the Commission doubts that the notified measure entails a level of compensation limited to the net costs of the service, including a reasonable profit.

7.8. **The measure should not affect trade between Member States to an extent that is contrary to the interest of the Union**

(230) The UK believes that the notified measure does not distort trade or competition between Member States, since it has considered, and is open to, investment in additional interconnection infrastructure, and that nuclear plants would not be non-replicable infrastructure.

(231) Based on the available information, if NNBG were to be considered as being entrusted with a SGEI, the Commission would have to conclude that NNBG would be tasked with providing a SGEI in competition with similar services, in the absence of a competitive selection procedure, and in a situation where the same type of technology, i.e. nuclear production, is expected to take place in the absence of the SGEI, at least in the future.

(232) In addition, the Commission believes that the notified measure might have substantial repercussion on trade and competition (as also outlined in Section 8.1.7). In particular, NNBG will be providing a service which is difficult to distinguish from that provided by other generators of baseload electricity. The Commission refers to Section 8.1.7 for the examination of the impact of the aid on competition and trade.

(233) If NNBG were to be considered as being entrusted with a SGEI, it could therefore not be approved without a detailed assessment of the distortions as provided for in section 2.9 of the SGEI Framework and an examination of possible mitigating measures. The assessment under point 59The Commission refers to Section 8.1.7 for the examination of the impact of the Framework will include compliance with the Electricty Directive 2009/72/EU, in particular Artciles 3(2) and 8 thereof.

7.9. **Conclusions on the assessment of the measure under Art 106(2) TFEU**

(234) Based on the arguments set out in Sections 7.1, 7.2, 7.3, 7.5, 7.6, 7.7 and 7.8 above, the Commission doubts that the aid measure qualifies as a SGEI within the meaning of Art 106(2) TFEU and the SGEI Framework. In addition, even if NNBG were to be viewed as entrusted with a SGEI, the Commission doubts that the aid for the provision of a SGEI would comply with the SGEI Framework.

8. **ASSESSMENT OF THE MEASURE AID UNDER ARTICLE 107(3)(C) TFEU**

(235) The UK claims that, in the event the Commission found that the notified measure does constitute aid according to Art 107(1) TFEU based on the 'Altmark' criteria, and that it were not compatible aid under Art 106(2) TFEU, the measure would consist of compatible aid under Art 107(3)(c) TFEU.

(236) It is established Commission practice ([51]) that measures may be declared compatible directly under Article 107(3)(c) TFEU if they are necessary and proportionate and if the positive effects for the common objective outbalance the negative effects on competition and trade. In this regard, the Commission considers it appropriate to assess the following questions:

(i) Is the aid measure aimed at a well-defined objective of common interest? ([52])

(ii) Is the aid well designed to deliver the objective of common interest? In particular:

a. Is the aid measure an appropriate and necessary instrument, i.e. are there other, better-placed instruments? ([53])

([49]) SGEI Framework, paragraph 48.
([50]) SGEI Framework, paragraph 36.
([51]) Community framework for state aid for research and development and innovation OJ C 323, 30.12.2006, p. 1, point 1.3; Community guidelines on State aid for environmental protection, OJ C 82, 1.4.2008, p. 1, point 1.3.
([52]) Judgement of the court of 14 January 2009, Kronoply v. Commission (T-162/06, Rec. p. II-1; especially points 65, 66, 74, 75)
([53]) Judgement of the Court of 7 June 2001, Agrana Zucker und Stärke / Commission (T-187/99, Rec._p._II-1587) (cf. point 74); Judgement of the Court of 14 May 2002, Graphischer Maschinenbau / Commission (T-126/99, Rec._p._II-2427) (cf. points 41-43); Judgement of the Court of 15 April 2008, Nuova Agricast (C-390/06, Rec._p._I-2577) (cf. points 68-69).

b. Is there an incentive effect, i.e. does the aid change the behaviour of firms?

c. Is the aid measure proportional, i.e. could the same change in behaviour be obtained with less aid?

(iii) Are the distortions of competition and the effect on trade limited, so that the overall balance is positive?

8.1. **Compatibility of the aid**

The Commission preliminarily notes that the UK intends to provide operating aid to NNBG, in particular in the form of a price support mechanism to guarantee profitability. Merely based on this approach, the Commission considers at this stage that if indeed aid exists, it would in principle be incompatible under EU State aid rules. ([54])

8.1.1. *Common objective*

(237) The aid measure must aim at a well-defined objective of common interest. When an objective has been recognised by the Union as being in the common interest of EU Member States, it follows that it is an objective of common interest.

(238) The UK claims that the notified measure is aimed at three common EU objectives, namely decarbonisation, security of supply and diversity of generation, and at addressing the related market failures.

8.1.1.1. Decarbonisation

(239) The UK argues that decarbonisation is a common objective based on the Environmental Aid Guidelines, Art 191 TFEU and Directive 2003/87. ([55])

(240) The Commission notes that while Art 191 TFEU establishes that the preservation, improvement and protection of the environment must be regarded as objectives of EU policy, it is unclear whether such objective can be immediately applicable to low-carbon generation as defined by the UK. In particular, while certain generation technologies emit less carbon emissions, their impact on the environment might nonetheless be considered substantial. This seems to be particularly true of nuclear generation, due to the need to manage and store radioactive waste for very long periods of time, and the potential for accidents.

(241) In this case, it is difficult to assess the trade-off between two potential common EU objectives, namely preserving the environment through the pursuit of low-carbon electricity generation while potentially increasing risks to the environment through the use of nuclear technology.

(242) In addition to that, the Commission would question the extent to which the notified measure really contributes to the decarbonisation of the UK electricity sector, and of its economy as a whole.

(243) It is in particular unclear, based on the information provided, whether the more rapid fall in carbon emissions due to the CfD for nuclear energy can be construed as being aimed at decarbonisation in a context where the 'business as usual' scenario would lead to a similar carbon emission trajectory path, i.e. a reduction in carbon emissions to about 220 g of CO_2 per kWh in 2030 against the level of about 500 g of CO2 per kWh in 2013. ([56])

(244) Firstly, the UK argues that the emission level of 220g of CO_2 per kWh in 2030 is not in line with their objectives in terms of decarbonisation of the electricity system. However, such an objective has not yet been set. ([57]) Secondly, it might be concluded that the CfD for nuclear does not so much aim at achieving decarbonisation, but at achieving decarbonisation at a faster pace than would otherwise be the case. However, in its modelling work the UK also seems to have considered equivalent targets of decarbonisation, achieved through different instruments and the consequent trajectories.

(245) The Commission notes in this regard that a support mechanism which is specific to nuclear energy generation might crowd out alternative investments in technologies or combinations of technologies, including renewable energy sources, which may have occurred in the absence of trhe notified measure.

(246) The Commission therefore is not clear at this stage on whether the notified measure can be argued to be aimed at a common EU objective in terms of environmental protection in general, and decarbonisation in particular.

8.1.1.2. Security of supply

(247) The UK also considers that the notified measure pursue the objectives of security of supply and diversity of supply.

(248) Pursuant to Article 194 TFEU, in the context of the establishment and functioning of the internal market, the Union policy on energy shall aim *inter alia* to ensure security of energy supply in the Union. The Court has also confirmed that the objective of guaranteeing adequate investment in the electricity and gas distribution systems is designed to ensure, inter alia, security of energy supply, an objective which the Court has also recognised as being an overriding reason in the public interest. ([58])

([54]) See, among others, Case C-278/95 P Siemens v Commission [1997] ECR 1-2507, paragraph 18; Case T-459/93 Siemens v Commission [1995] ECR 11-1675 paragraph 48; Case C-288/96, Germany v Commission, [2000] ECR 1-8237.

([55]) Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, OJ L 275/32 of 25 October 2003, available at the following address: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:275:0032:0032:EN:PDF

([56]) See DECC, *Electricity Market Reform – Ensuring electricity security of supply and promoting investment in low-carbon generation*, Update: May 2013, Annex C, page 68. Under the UK estimates, most of the decarbonisation under the 'business as usual' scenario takes place due to the Carbon Price Floor.

([57]) The UK government states that it intends to set a decarbonisation objective for the electricity sector in 2016, based on advice from the Committee on Climate Change.

([58]) Judgment of the Court of 22 October 2013 in Joined Cases C-105/12 to C-107/12, Staat der Nederlanden v Essent and Others, paragraph 59 and case-law cited.

(249) Diversity of supply can be seen as one of the facets of security of supply, as it contributes to the ability on the part of a Member States to withstand external shocks, and essentially to the resilience of its energy system. According to this logic, in the absence of a public intervention, the market may over-rely on a single primary fuel exposing the Member State to a strategic/systemic risk.

(250) The UK has provided extensive information on their plans to ensure generation adequacy in the future.

(251) In particular, the UK is including in its forecasts on generation adequacy complementary policy routes including additional generation, energy efficiency and interconnection. From this perspective, the UK consixers that most renewables are generally only able to generate intermittently (e.g. when the wind blows or the sun shines) and new technologies such as CCS and wave and tidal stream technologies are not sufficiently proven. While such technologies have a major role to play in a diverse low carbon energy mix, they cannot be directly substituted to baseload electricity generation such as the one provided through nuclear generation.

(252) The Commission notes that the UK has pointed to internal DECC analyses showing that if HPC's contribution to reliable generation was replaced through single technology solutions, taking into account their availability in times of system stress, then either 14 GW of onshore wind farms with around 7,000 turbines covering an area up to approximately two times the size of Greater Manchester would be required, or around 11 GW of offshore wind farms, with around 2,000 turbines covering about 440,000 to 600,000 acres.

(253) The Commission also notes that the UK is pursuing a range of energy efficiency measures, which is already taking into account in its forecasts..

(254) In particular the UK is pursuing the Green Deal and the Energy Company Obligation (ECO) as successors to the Carbon Emissions Reduction Target (CERT) and Community Energy Saving Programme (CESP) and is planning to roll out Smart Meters by 2020 in the domestic sector. In non-domestic properties, the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme aims to support energy efficiency measures in organisations that consume more than 6,000 MWh per year of qualifying electricity through settled half-hourly meters. However the UK considers that gains from demand-side response which go beyond those achieved through existing policies cannot be considered certain, in particular since the demand-side response market might take time before becoming effective.

(255) The UK has also examined how the internal market, and interconnection in particular, can support its objective of security of supply.

(256) Great Britain has currently around 4 GW of interconnection, equivalent to a total of 5 per cent of installed generation capacity. The UK is considering several project which might result in over 10 GW of additional interconnection by around 2020, equivalent to around 12 per cent of installed generation capacity.

(257) The UK believes that interconnection presents both risks and opportunities, in particular given that the flows will depend on market conditions at any point in time and cannot be predicted with certainty. It also argues that interconnection capacity cannot be reserved in advance, hence it might not represent a perfect substitute for baseload generation, in particular considering the issue of having different jurisdictions.

(258) The UK also posits that interconnection to mainland Europe is expensive, as it requires high-voltage direct current undersea cables with converter stations at each end. The UK argues that even if new generating capacity could be constructed in other Member States more cheaply than in the UK, taking into account the additional costs of interconnection it would be unlikely that delivering such capacity would be overall less costly, with the possible exception of offshore wind outside UK territorial waters but where project costs already include the cost of taking electricity to the coast.

(259) The Commission notes that the UK has not taken into account future interconnection capacity in its modelling work, based on the fact that it believes that the flows will be difficult to predict. The Commission questions this approach and invites comments from third parties on the degree to which interconnection can play a role, and how its contribution to the objectives being sought by the UK can be quantified over the time scale being considered for the HPC project.

(260) The Commission also notes that the UK is considering opening its CfD schemes to generators in other Member States.

(261) However the information provided by the UK do not appear to substantially support the argument that the notified measure is aimed at improving or maintaining security of supply, either in the form of generation adequacy or in that of diversity of supply.

(262) First, the UK points out that a generation adequacy problem is forecast to take place by Ofgem before 2020, referring to the fact that capacity margins fall under a 'business as usual' scenario based on Ofgem's Electricity Capacity Assessment Report. ([59]) It is therefore unclear how a measure which is expected to support generation becoming operational only after 2020 can remedy, or address, a generation adequacy problem taking place before.

(263) Also, in terms of diversity of supply, the Commission notes that such diversity would seem to be, again, ensured also in a 'business as usual' scenario and without the introduction of CfDs for nuclear energy. The question would therefore seem to become one of how quickly such diversity should be achieved, rather than whether it is achieved at all.

8.1.1.3. Promotion of nuclear energy

(264) The Investment Contract, and at a later stage the CfD for nuclear, appear actually to be addressed specifically at

([59]) See footnote 2.

supporting nuclear technology as such, with a view to ensuring that the UK will have the energy mix that it wishes to achieve through the EMR.

(265) In this regard the Commission notes that the Euratom Treaty establishes in Art 2(c) that the Community shall "facilitate investment and ensure, particularly by encouraging ventures on the part of undertakings, the establishment of the basic installations necessary for the development of nuclear energy in the Community." Art 40 of the same Treaty envisages the Community publishing of illustrative programs "to stimulate investment, indicating production targets."

(266) Aid measures aimed at promoting nuclear energy could therefore be viewed as pursuing an objective of common interest and, at the same time, can deliver a contribution to the objectives of decarbonisation and security of supply.

(267) Article 107 TFEU obliges the Commission to investigate aid granted by Member States that distorts competition or threatens to do so. Especially in the context of liberalised and increasingly competitive markets, the role of State aid control is increasingly important in EU electricity markets. The commitment of the European Union to promote investment into nuclear must be carried out in ways which do not distort competition. The question therefore needs to be asked, whether there is a market failure in electricity in respect to the planned measure.

8.1.2. *Market failures in nuclear energy*

(268) From a conceptual point of view, the question of whether market failures exist in relation to nuclear energy is relevant at two levels: first, at the broader level of electricity generation, and second, at the level of nuclear generation specifically.

(269) The existence of certain market failures in electricity generation is not sufficient to justify state intervention to support nuclear generation. In principle, State aid should only be directed at any residual market failure, i.e. the market failure that remains unaddressed by any other policies and measures, both at EU and at national level. In particular, the ETS aims at ensuring that carbon emissions decrease by putting a price on them, thereby addressing any market failure in relation to externalities arising from the fact that those who emit carbon do not bear the full cost of the emissions they generate.

(270) Furthermore, other policies and measures are already in place in the UK and new measures are being planned precisely to address some of the market failures related to electricity generation.

(271) In this context, it is unclear how the intended measure can remedy potential failures such as carbon emission externalities, beyond sectoral regulation, mandatory pollution standards, pricing mechanisms such as the ETS and the carbon price floor. It is also unclear how the intended measure interacts with other policies and measures in place that aim at remedying the same market failure. The notification does not provide information on alternative, potentially less distortive, technology combinations which would allow the UK to achieve its objectives. ([60])

(272) It is not clear at this stage that the lack of generation adequacy and/or of diversity of supply constitute market failures. Unless other types of structural problems were to be identified, which made it difficult or impossible for private investment in generation to address demand needs, it would appear that the issues being raised by the UK are temporary. In addition to that, even if structural problems were to be identified, they might point to the need for a regulatory response rather than the provision of State aid.

(273) On the other hand, there might be market failures which are specific to nuclear energy. Such a market failure could then be effectively targeted by designing a specific response aimed at removing solely the specific market failure, in order to achieve the aims of decarbonisation and/or security of supply if they have been identified as aims of the measure, thereby leaving the operator exposed to market risk for all other aspects of its activity, and resulting in a lower level of distortion of competition.

(274) Correctly identifying the market failure might allow to separate the decision by the UK to provide State aid from the decision by the beneficiary to make the investment. While the first should rest with the State, the second should be left, as much as possible, to the market, once any market failure has been identified and removed. The current design of the Investment Contract does not seem to allow for this distinction: by providing the aid, effectively the UK is making sure that investment takes place and that NNBG will build and operate the plant, subject to the terms of the Investment Contract.

(275) However the UK has not argued that a market failure exists specifically in relation to nuclear energy.

(276) Nuclear energy is characterised by extremely high fixed, sunk costs, and by very long time periods during which such costs need to be amortised. This implies that investors considering entry into nuclear energy generation will find themselves exposed to considerable levels of financing risks. Indeed, funding for the type of investment size and duration that characterise nuclear power plants might well be considered unparalleled.

(277) This argument is credible to the extent that nuclear power plants needs funding over a longer time horizon than alternative energy sources, as seems to be generally the case. However the argument could be weakened if it were observed that similar projects are being realised using primarily private funds. At the moment this is unclear.

(278) Other factors such as extreme tail risk (e.g. low-probability, high-magnitude events, which have a small probability of occurring but also have an enormous impact in

([60]) Paragraph 66 of the notification refers to DECC's internal analysis on replacing HPC by other technology solutions. However, these alternatives are single technologies (onshore and offshore wind, and CCGT) and are not presented in sufficient detail for the Commission to assess their viability.

term of cost, welfare and/or environment if they happen), in combination with so-called catastrophic risk, are similarly unparalleled and specific to nuclear energy investments.

(279) While it is not clear whether extreme tail risk or catastrophic risks could qualify as market failures, the Commission observes that at this stage the exact cause of potential financing issues is not yet clear.

(280) However, to the extent that any such market failure arises, the Commission would in principle consider that the provision of a credit guarantee could address it, and in fact might remove altogether any existing market failure in investments in nuclear energy, in particular in the post-construction period and when the plant becomes operational.

(281) There are finally certain features of nuclear energy which distinguish it from any other electricity generating technology, or, for that reason, from any other technology. This is particularly the case with the production of radioactive material as a side-product of the energy generation process, and of the potential for nuclear accidents which might entail the leak of radioactive material.

(282) Both these issues can result in costs which can be substantial in certain cases, such as the possibility of serious nuclear accidents. However, both issues are also characterised by a high level of uncertainty, which translates into an uncertainty of the underlying costs. The current legislative framework does not appear to have fully addressed how such uncertainty should be dealt with, and how commercial activity in nuclear generation can take place in a context where some of the costs involved can be very difficult to quantify.

(283) There are three costs which are particularly uncertain, and are caused by the production of radioactive material and the possibility of nuclear accidents: costs related to the decommissioning of the nuclear plant, costs related to the management and disposal of spent fuel and nuclear waste, and costs related to liability insurance.

(284) The production of radioactive material implies the need to decommission the nuclear plant, i.e. to 'close it down' permanently, by decontaminating the site and ensure that the area can remain viable in the future. It also implies the need to manage, and dispose of, spent fuel and nuclear waste, which is a byproduct of the production process.

(285) Commission Recommendation 2006/851/Euratom of 24 October 2006 on the management of financial resources for the decommissioning of nuclear installations, spent fuel and radioactive waste states ([61]) that "[t]he polluter pays principle should be fully applied throughout the decommissioning of nuclear installations. In this regard, the primary concern of nuclear operators should be to ensure the availability of adequate financial resources for safe decommissioning by the time the respective nuclear installation is permanently shut down." ([62])

(286) The 'polluter pays principle' is therefore clearly envisaged for the decommissioning of nuclear power plants. The costs involved can be quantified to a large degree. They might however be subject to some uncertainty, in particular in relation to new technologies, such as the one which will be used in the HPC plant.

(287) Costs related to the management and disposal of spent fuel and nuclear waste are subject to a substantially larger degree of uncertainty. Storage of waste is typically temporary and on site (i.e. where the nuclear plant operates) for a certain length of time, but it then needs to be carried out on a larger scale and in specific sites which are devoted to this objective. The costs of this activity depend on choices which might be taken far ahead in the future compared to when the plant operates. Spent fuel and nuclear waste stay radioactive for thousands of years, and no country in the world has yet built permanent facilities to store them. There is therefore a disconnect between the costs which need to be borne by the operator, and the actual costs of the activity.

(288) Council Directive 2011/70/Euratom ([63]) requires Member States to establish and maintain national policies on spent fuel and radioactive waste. It also clarifies that "the costs for the management of spent fuel and radioactive waste shall be borne by those who generated those materials." ([64])

(289) The Directive establishes that Member States have ultimate responsibility for the management and disposal of spent fuel and nuclear waste, and that radioactive waste should in principle be disposed of in the Member State it is generated. The Directive however also requires Member States to ensure that adequate financial resources are available, when needed, for the implementation of national programmes, taking into due account of the responsibility of generators. ([65])

(290) The Commission has already recognised the importance of ensuring the safe and secure management and disposal

([61]) Section 3(3) of the Recommendation, OJ L 330 of 28 November 2006.

([62]) Derogations might need to be investigated if the period of operation from the start-up of a power plant until the date of its closure is too short to accumulate the needed full amount for decommissioning, nuclear waste management and disposal costs. The Commission in the past found that aid provided to cover the shortfall in funds due to the fact that the activity had ceased operation (see case SA.31860 (N 506/2010) – Partial decommissioning of two already shut down nuclear plants (A1 and V1) - Slovakia).

([63]) Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, OJ L 199/48 of 2 August 2011.

([64]) Council Directive 2011/70/Euratom, Art 4(3)(e). Derogations to this principle are explicitly allowed for specific cases, such as installations in Lithuania, Slovakia and Bulgaria, where nuclear plants with Russian technology were closed in connection with the accession of these countries to the EU.

([65]) Council Directive 2011/70/Euratom, Art 9.

of spent fuel and nuclear waste, among others in its Decision on the State Aid which the United Kingdom is planning to implement for the establishment of the Nuclear Decommissioning Authority of 4 April 2006. ([66])

(291) In the same Decision, the Commission also acknowledged that costs linked to the treatment and disposal of spent fuel and nuclear waste are difficult to estimate, since they tend to relate to activities that will take place a long time in the future, and of which there is still little experience. ([67])

(292) Finally, costs related to liability insurance are yet more uncertain, since they relate to low-probability, high-magnitude events, which are extremely difficult to forecast and therefore quantify in terms of their cost impact.

(293) Liabilities arising from the operation of nuclear power plants are currently governed by the interaction of existing international agreements and national laws. In particular for third party liability, regimes are governed by national laws but their main principles are set forth in international conventions ratified by the vast majority of Member States. These conventions provide a common basis for rules on matters such as the liable party, minimum amount of liability, compulsory insurance and the role of the State.

(294) The legal regimes of Member States are governed by national laws. In the vast majority of Member States, their main principles have however been set forth in two international conventions, namely the 1960 Paris Convention on Nuclear Third Party Liability and the 1963 Vienna Convention on Civil Liability for Nuclear Damage. In the Member States which are not party to either of these Conventions, national common tort law rules apply to nuclear incidents.

(295) These conventions set out rules such as the strict and exclusive liability of the nuclear operator, the minimum amount of their liability and of the compulsory insurance they have to establish, and the exclusive jurisdiction of the courts of the Accident State. ([68])

(296) Article 98 of the Euratom Treaty establishes that "Member States shall take all measures necessary to facilitate the conclusion of insurance contracts covering nuclear risks." A harmonised framework is still lacking, and there are large variations in national laws for the amounts of insurance or financial security that nuclear operators have to secure.

([66]) Commission Decision 2006/643/EC, OJ L 268&37 of 27 September 2006.

([67]) Commission Decision 2006/643/EC, OJ L 268&37 of 27 September 2006, paragraph 129.

([68]) In particular, under the Vienna Convention liability costs for the operator may be limited to not less than USD 5 million, but no upper threshold is set. The Paris Convention sets a maximum liability of SDR 15 million, provided that the State may provide for a greater or lesser amount but not below SDR 5 million, taking into account the availability of insurance coverage. The Brussels Supplementary Convention establishes additional funding beyond the amount available under the Paris Convention up to a total of SDR 300 million, consisting of contributions by the installation State and contracting parties.

(297) It is not clear that the current legal framework, or the characteristics of nuclear energy, result in a market failure. For the above reasons the Commission has doubts on whether the aid addresses a market failure releated to electricity generation or to a specific market failure related to nuclear energy.

8.1.3. *Need for State aid*

(298) The existence of a common objective, or a market failure, does not in itself prove that there is need for State aid. The UK is pursuing a number of other policies which are meant to address the same problems and achieve the same objectives as those which are described for the notified measure. Some of those policies may also entail State aid. The question therefore arises of whether the notified measure necessitates State intervention.

(299) In particular, the UK is introducing a separate mechanism, the Carbon price floor, which has the potential to achieve the same objectives as the CfD, depending on the level of price of carbon which is set – a decision which ultimately rests with the UK government itself, unlike the ETS price. It is not clear to the Commission that there is any residual market failure in relation to investment in nuclear generation which is not addressed by a combination of the ETS, the Carbon price floor and possibly of the provision of a credit guarantee, for the reasons discussed in Section 8.1.2.

(300) The UK authorities point out that the Redpoint model and the DECC model are the two instruments which have been used to inform their assessment and decision in relation to the need to support nuclear technology through a CfD. ([69]) These models have been used to produce both counterfactual 'business as usual' scenarios as well as scenarios considering the introduction of the CfD. The introduction of a credit guarantee does not appear to have been modelled in any way. The results of the Redpoint modelling exercise were published in 2010, while those of the DECC dynamic dispatch model were published in the July 2013 update of the EMR Impact Assessment.

(301) While the DECC and the Redpoint model can be useful tools, one could question the appropriateness of this modelling work to gauge the changes which the notified measure would result in compared to the 'business as usual' scenario. The main reason for this is that the modelling work carried out by DECC and Redpoint does not provide separate results for support to nuclear generators as a separate form of intervention, but always considered the full extent of the EMR measures, and in particular of CfDs for several technologies and of the capacity mechanism.

(302) In particular, the DECC modelling assesses the overall effect of the EMR package with all of its instruments to all supported technologies, including CfDs for several technologies and the capacity mechanism, ([70]) and not just measures in support of nuclear generation. Also,

([69]) UK notification, paragraph 52. See footnote 3 for a brief introduction to the two models.

([70]) See DECC, Electricity Market Reform Impact Assessment (July 2013), section 2.2.1 on page 22.

the outcomes under the full EMR package are compared to two 'base case' scenarios, which aim at approximating the 'business as usual'. However, both of these 'business as usual' scenarios assume that the Government reaches the "same profile in nuclear" or new nuclear as under the EMR. The published results of the DECC model therefore provide little relevant information on what changes in outcomes can be attributed to the CfDs and/or other support measures for nuclear energy, which are the subject of this notification.

(303) The Redpoint model also carries little relevance for assessing the impact of the intended support to nuclear generation. Various policy options are assessed separately as well as some combinations of them, but all policies that are foreseen to be implemented in the EMR are not analysed in one bundle. For example, the CfD is assessed separately, as well as jointly with capacity payments, but not together with the carbon price floor and the Emissions Performance Standard. However the current EMR proposal includes both these instruments in combination with CfDs, ([71]) which are estimated to have a very strong impact on the generation mix in 2030. ([72]) The Redpoint model therefore leaves the question, of what the value added is of CfDs to nuclear once other elements of the EMR are in place, unanswered. Furthermore, the assumptions of the Redpoint model are rather different from the actual parameters of the EMR as intended to be implemented by the UK.

(304) In particular, the DECC Dynamic Dispatch model assesses the overall effect of the EMR package with all of its instruments, and the outcomes under the full EMR package are compared to two 'base case' scenarios, which are two variants of the 'business as usual' scenario. However, both of these variants are based on the premise that the same level of new nuclear investment is achieved without CfDs as that achieved under the EMR – essentially by setting a high enough carbon price floor which attracts investment in nuclear energy.

(305) The DECC model therefore does not show what would happen in the absence of the CfDs for nuclear only. It merely assesses the relative cost of reaching the same objective through two different means, based on modelling techniques which by their very nature rely on assumptions reaching out far into the future. In particular, the DECC modelling work does not attempt to forecast what energy sources would replace nuclear in the absence of a CfD for nuclear, nor do they provide information on the associated welfare effects.

([71]) See DECC, *Electricity Market Reform – Policy Overview*, November 2012, pages 29-36. See also paragraph 98 of the Notification. The report is available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65634/7090-electricity-market-reform-policy-overview-.pdf

([72]) In particular, in their assessment as individual instruments and separate from other policy instruments, the carbon price floor and the Emission Performance Standard lead to a substantially large increase in the share of new nuclear in 2030 and to a particularly low share of coal in the capacity mix. See Redpoint, *Electricity Market Reform – Analysis of policy options*, December 2010, Figure 21 on page 55 and Figure 22 on page 56.

(306) The Redpoint model, on the other hand, assumes that existing policies in 2010 continue forward for the purposes of its 'baseline' scenario, as well as a fixed proportion of electricity generation from renewable energy sources, i.e. 35 per cent of overall capacity. The Redpoint model assesses the introduction of CfDs separately from other EMR instruments, however it does so including CfDs to all technologies.

(307) Again, therefore, the model provides limited insight into the question of how the electricity generation market would develop in the absence of CfDs for nuclear specifically. Also, the Redpoint model appears to use assumptions for the design of the CfDs, for example including a decreasing Strike Price in real terms, which are quite distinct from the current design, where the Strike Price is indexed to the consumer price index. In the Redpoint model the Strike Price for nuclear decreases from around GBP 90 per MWh in 2014 to about GBP 60 GBP per MWh in 2030.

(308) Even assuming that the models used by the UK can adequately represent market conditions and forecast investment decisions, one of the key results from both of them is that investment in nuclear generation would take place also in the absence of CfD. As mentioned in Section 7 above, such investment would merely take place at a later point in time – 2027 for the Redpoint model and 2030 for the DECC model.

(309) It is therefore unclear why State aid would be necessary in the current context. Both the DECC and Redpoint models indicate under several scenarios that the main result of the support is to allow the investment in nuclear to take place earlier than would otherwise be the case. The UK mentions that an earlier investment in nuclear would translate, in their view, in a higher likelihood of more investment in the future and in the renaissance of the UK nuclear industry. However, these considerations appear related only to the timing of the investment and not directly linked to the objectives the UK states it is pursuing through the notified measure.

(310) It is also unclear to what extent the UK has considered developments which will take place and might impact the situation in respect of security of supply, in particular the increase of interconnection, improvement of functioning of balancing markets and demand response deployment.

(311) Also, while not disputing the potential benefits of measures aimed at ensuring generation adequacy, and while reiterating that the notified measure cannot address the potential short-term capacity shortages which the UK intended to remedy, the Commission has doubts on the extent to which a capacity problem would translate into losses of load of a magnitude comparable to the aid involved in the measure at hand.

(312) In particular, the Ofgem Electricity Capacity Assessment Report uses the Loss of Load Expectation (LOLE) to quantify generation adequacy. This is expressed as the hours per year with expected supply being less than expected demand under normal operation of the system. ([73]) The Value of Lost Load (VoLL) resulting

([73]) Ofgem, *Electricity Capacity Assessment Report*, Page 8.

from the worst case scenarios of Ofgem, for example an outage of a size equalling the total installed capacity of HPC, remains significantly below the aid amount estimated in the notification.

(313) DECC assumes a VoLL of GBP 17,000 per MWh for the UK system as a whole. By using this figure and for comparison, it is possible to calculate the VoLL which would arise if an outage of 3.2 GW, i.e. the total capacity to be provided by the HPC plant, were to take place each year for 10 years. ([74]) Such a VoLL would be GBP 2.72bn. ([75])

(314) This is a pessimistic estimate, since in reality the costs would be likely to be lower – Ofgem estimates that under its 'worst case' scenario, the annual average LOLE is around 5 hours. And yet, the VoLL calculated above is just a fraction of the post-tax nominal difference payments that would arise from the aid amount as notified by the UK, i.e. of between GBP 3.5bn GBP 9.0bn. ([76])

(315) While such estimates are by their very nature subject to a degree of uncertainty, and while the UK has an entirely legitimate interest in attempting to prevent outages of electricity, the nature of the business of providing electricity is such that such outages can only be prevented in terms of lowering their probability.

(316) It would therefore appear that the UK is considering providing State aid to lower the probability of outages at a time when it is not clear that supply levels will be constrained as they are forecast to be before 2020, and that the amount of State aid being provided through the measure is in fact substantially in excess of the economic value of an outage of unlikely high proportions which were to take place for 10 years consecutively.

(317) Finally, and more broadly, it is not clear to the Commission that nuclear technology is immature enough to warrant State aid, or that it is characterised by specific market failures or other features which make State aid in the form of revenue support, or revenue certainty, necessary. As discussed above, nuclear technology might involve such high levels of capital investments that it might face issues in raising financing. Apart from that, however, it is not clear that the technology itself warrants the provision of State aid in the form which the UK has chosen.

(318) Nuclear technology might also be argued to necessitate forms of risk hedging which are not available to it, as the UK explains in its notification. In particular, gas and coal are hedged naturally by wholesale prices, given that they normally operate as marginal plants, or typically have the ability to do so. Nuclear energy would not allow that, as it requires relatively constant and stable levels of operation, and would therefore be exposed to the volatility of wholesale prices.

([74]) In particular, the VoLL in a single year is given by the outage size (in MW) multiplied by the LOLE (in hours) multiplied by the VoLL for a single MW.

([75]) The value is provided in nominal terms and for an annual outage duration of 5 hours.

([76]) These values are provided in real terms.

(319) However this limit might be overcome through different instruments, in particular through the provision of credit guarantees, as discussed in Section 8.1.2 above and as anyway envisaged by the UK, or through the provision of hedging instruments. It is unclear to the Commission that a form of complete revenue stabilisation is necessary to make investment in nuclear possible.

(320) For the reasons set out above, the Commission questions whether the aid is necessary to achieve the objectives which the UK is pursuing, and seeks comments by third parties on this point.

8.1.4. *Use of an appropriate instrument*

(321) The UK intends to use the CfD, a feed-in tariff with a fixed Strike Price, to support nuclear energy, in addition to the provision of a credit guarantee, as discussed above. The UK claims to have considered alternative instruments before choosing the CfD as its aid vehicle of preference, but that after public consultation it decided to settle for the CfD. The notification does not provide information on alternative, potentially less distortive, technology combinations which would allow the UK to achieve its objectives. ([77])

(322) The CfD, according to the UK, would minimise costs and provide the right incentives to generators, and in particular to NNBG. However it is not clear that this is the case.

(323) First, the CfD might be able to minimise costs if it were provided over the lifetime of the project. However the UK has chosen to limit the duration of the scheme to 35 years, which is already a very long period of time. Under such circumstances, as discussed more in detail below, it is unclear that the CfD is a preferable instrument compared to alternatives.

(324) In particular, the CfD seems to provide the utmost certainty of a stable revenue stream, under rather lenient conditions – i.e. that the beneficiary carries out its normal activities as a producer of electricity and sells this electricity into the market. In other words, the CfD is conceived to entirely eliminate market risks from the commercial activity of electricity generation, for a period of time, the initial 35 years of operations of the plant. Such a period of time, moreover, would most likely be regarded as the most relevant one to a private investor when considering investment in a plant, and to providers of financing when assessing how risky the activity is, given that what happens in the post-CfD period is significantly less risky and far enough away in time not to be likely to be of particular concern. ([78])

(325) As such, the CfD is an instrument which can be regarded as effective in ensuring that investment takes place. It *de facto* eliminates any price risk that the beneficiary might face, at least during its provision.

([77]) Paragraph 66 on page 29 of the notification refers to DECC's internal analysis on replacing Hinkley Point C by other technology solutions. However, these alternatives are single technologies (onshore and offshore wind and CCGT) and are not presented in sufficient detail for the Commission to assess their viability.

([78]) In terms of the NPV of cash flows, the post-CfD period accounts for about 7.5 per cent of the overall NPV of the project based on NNBG's financial model, which was provided with the notification and which will be further discussed below.

(326) The Commission believes that such an instrument is capable of severely distorting market dynamics, precisely because it shields the beneficiary from risks which other market operators need to face. If the CfD is provided together with a credit guarantee, in addition to a compensation for political risk and the indexation of the cash flows to the consumer price index, as the UK intends to do, it can be safely concluded that the activity undertaken by the beneficiary, NNBG, is not far from being risk-free at the level of operations. NNBG is left with some of the construction risk, but as noted above it appears to have a […]-year window to complete construction, hence the risk can be considered, if not limited, at least relatively mitigated by this time window, even if the second […]-year period might entail a shortening of the CfD duration according to the terms of the preliminary agreement.

(327) In particular, the Commission questions the need to provide a credit guarantee together with an instrument providing revenue assurance. There are grounds to believe that, once any potential market failure in financing the project is removed through the provision of a credit guarantee, the need for revenue assurance is indeed limited.

(328) Alternative support mechanisms would be likely to leave a higher degree of risk to the beneficiary, hence making the instrument more market-friendly and less distortive of competition. For example, a feed-in premium, where the premium were to be fixed and paid on top of the wholesale price of electricity, would leave the beneficiary exposed to demand and supply levels and to the price risk this entails.

(329) Also, and as discussed above, alternative instruments which aim at providing the possibility of mitigating risks might be considered and might be preferable to the full revenue stabilisation which the CfD entails.

(330) From this perspective, the Commission notes that tendering for low-carbon generation sources in a technologically neutral does not appear to have been considered as a realistic alternative. While it is likely that some technologies have higher costs, such as for example offshore wind, alternatives such as large scale biomass could conceivably have competed against nuclear in a tender rather than relying on a government-led negotiation. The lack of a tender could also lead to violation of Article 8 of the Electricity Directive 2009/72/EC. The Commission would require further clarification in this respect.

(331) Finally, the Commission questions the reasons which lead the UK to deploy various instruments aimed at the same objectives. The introduction of a carbon price floor would seem to have the same effects as a direct support for a specific low-carbon technology or beneficiary, and that a credit guarantee can also be conceived as a form of support which is relatively market-friendly, taking into account the characteristics of nuclear energy generation.

(332) It is unclear to the Commission that the CfD is an appropriate instrument, especially when compared to these other instruments – which are not, as it were, alternative, but that have been deployed at the same time. It is however unclear at this stage that the balance struck by the UK in using multiple instruments is the right one, and that an alternative mix of the same instruments, or the consideration of only some of them, might be able to achieve the same objectives with less aid or distortions to competition.

(333) For these reasons, the Commission has doubts on whether the instruments chosen are appropriate, in particular when they are used together.

8.1.5. *Incentive effect*

(334) The UK states that it has entered into negotiations with NNBG on the belief that the company would not carry out the project without support. The Commission understands that this refers to the provision of both the credit guarantee and the CfD.

(335) The UK argues that EDF has a number of credible alternative investment opportunities, that the risk profile of the HPC project would be higher in the absence of support, and that in order to attract investment it was considered necessary providing long-term revenue certainty.

(336) At this stage, the Commission believes that the incentive effect of the notified measure seems plausible, at least in relation to the objective of building the plant within the time frame envisaged by the UK.

(337) However at the same time the Commission understands that the EPR technology power plants in Flamanville and Olkiluoto have been undertaken without any support. The Commission cannot at this stage explain why the HPC project should be fundamentally different from the two EPR plants currently being constructed.

(338) Also, the issues identified in relation to the DECC and Redpoint modelling of the electricity market and the potential impact of various government policies on this market, make it complex to verify whether, and to what extent, the construction of the HPC project would not have been pursued even in the absence of State aid. Furthermore, while the HPC is subject to a high degree of uncertainty, as it will be argued in the Section on proportionality below, it would appear to be difficult for the UK to provide a greater degree of certainty than the one which is object of this decision. The rate of return of [9.75 to 10.25] per cent in post-tax, nominal terms, need to be read against the background of a fixed, certain level of revenues over 35 years and the additional certainty of a credit guarantee through which to seek funds on the market.

(339) For the reasons set out above, the Commission invites interested parties to comment on the existence of an incentive effect produced by the notified measure.

8.1.6. *Proportionality of the aid*

(340) The UK states that the Strike Price agreed with NNBG involves two different levels: GBP 89.50 per MWh and GBP 92.50 per MWh, with the latter being applied in case NNBG were not to construct and operate a second nuclear plant, under similar terms. Given that at the time

of writing such a commitment has not yet been made, for the purposes of this decision a Strike Price of GBP 92.50 per MWh will be considered. However, the arguments would equally hold under the assumption of a strike price of 89.5 GBP per MWh.

(341) The assessment of the proportionality of the aid needs to relate to both the credit guarantee and the terms of the CfD. While the two instruments necessarily interact, in particular by ensuring that NNBG can attain a higher level of rate of return, the Commission will first look at the proportionality of each instrument and then consider likely combined effect of the two instruments taken together.

8.1.6.1. Credit guarantee

(342) The UK Government announced that Hinkley Point C had been pre-qualified for a UK government guarantee on debt, which would be drawn before equity. The debt guarantee would make it easier to attract the necessary funding by reducing the risks debt holders face by lending to NNBG.

(343) As mentioned in the notification, the full details of any potential guarantee of debt will not be available for some time. Given that these details are indispensable in correctly pricing debt guarantee, the Commission cannot, based on the information provided in the notification, judge whether the guarantee fees are appropriate.

(344) In particular, the Commission observes that the UK debt guarantee differs from ordinary debt guarantees in that it would be drawn before equity, apart from equity already spent. The UK mentions that equity could be exhausted in case the plant completes outside the 'long-stop date,' i.e. the end of the second time window within which NNBG can complete the second reactor, which takes place on the fourth anniversary of the target commissioning window of the second reactor, or 8 years from the commissioning date. ([79]) The UK also states that cost overruns should be covered by contingent equity. However it would appear that in most other cases, the UK Government guarantee will be drawn before equity.

(345) A debt guarantee drawn before equity will not only reduce the risk of debt holders, but also that borne by equity holders, as it will (partly) replace equity as a buffer or first-loss piece and thereby significantly both reduce the risks and distort the incentives of equity holders.

(346) The submission proposes to derive the guarantee fees by focussing on expected loss, through a formula which is derived from first principles, i.e. a series of mathematical equivalences which in part make use of the probability of different events. The approach however ignores the existence of unexpected losses, and does not include any unexpected loss as a proportion of potential overall losses, which would increase its volatility and its uncertainty.

(347) By doing so, the formula underestimates potential overall losses. This seems particularly problematic given that the debt guarantee would be drawn before equity, except for the equity already spent. The UK Guarantee could be seen as a first loss piece which will be hit first in case NNBG is unable or unwilling to repay its debt in a timely manner, with the exception of the cases referred to above.

(348) Based on the information above, the Commission cannot exclude that the credit guarantee will involve the provision of aid, and that such aid might not be proportionate to the objectives being sought. In particular, the Commission has doubts on some of the anticipated features of the credit guarantee, and specifically the fact that the guarantee can be drawn before equity. Such feature, if confirmed, would be likely to result in lower risks and higher certainty for the beneficiary, hence it might lead to overcompensation.

8.1.6.2. Investment Contract and CfD

(349) The UK authorities submitted a financial model as part of the notification. As described above, the financial model provides a relatively detailed business plan for the HPC project and is used to derive the Strike Price based on a number of assumptions and objectives.

(350) The most notable feature of the notified measure is the fact that it is subject to a very large degree of uncertainty. Such uncertainty derives not so much, or not only, from the unknown variables and parameters, such as the future trajectory of wholesale electricity prices, but especially from the fact that the results are highly dependent on the assumptions, and on some of the assumptions more than on others. In particular, changes in the discount rate have a substantial impact on the results, as it can be expected from a project which involves such long time spans and high levels of capital.

(351) This uncertainty translates directly into a relatively low degree of confidence of the results of the model. This conclusion has direct repercussions for the assessment of the proportionality of the measure. In order to understand the robustness of the financial model, the Commission considered the NNBG 'baseline' scenario as the starting point and performed multiple sensitivity analyses on the financial model, including changes in the assumptions on four of the main variables:

(i) The discount rate, in particular by considering (post-tax, nominal) discount rates of 7.3 per cent, 8.5 per cent, 9 per cent and 10 per cent;

(ii) The evolution in the (wholesale) electricity market price to approximate the reference price;

(iii) The Strike Price, in particular by using the two values provided by the UK (GBP 89.50 per MWh and GBP 92.50 per MWh); and

(iv) The duration of the CfD contract.

(352) The aim of the sensitivity analysis is in the first place to see how much the model outputs change under different input assumptions.

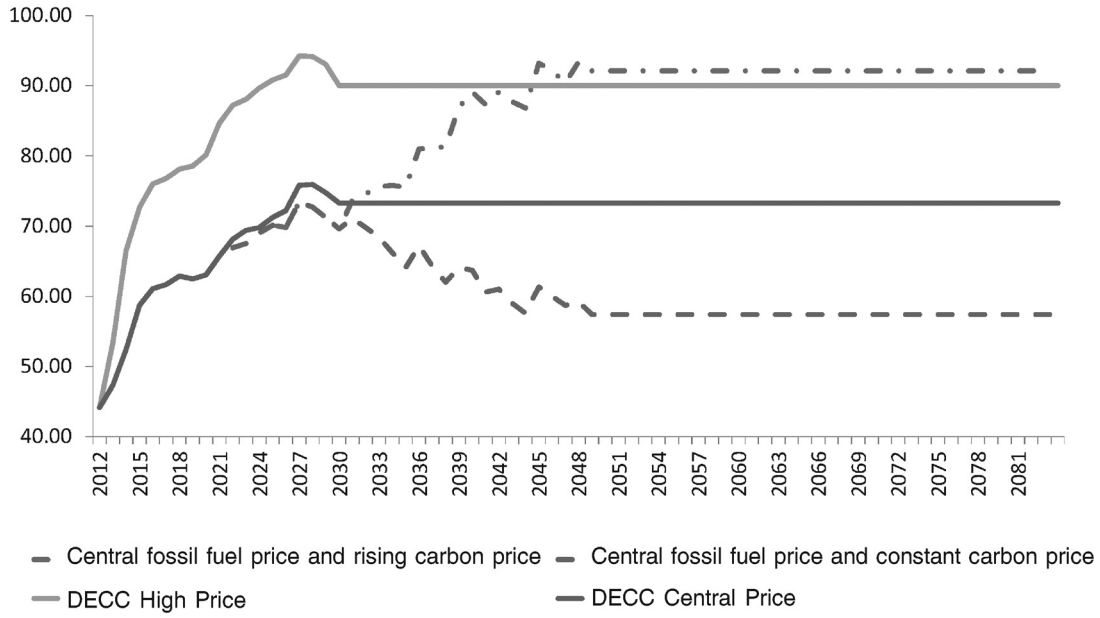
([79]) Annex H to the UK notification.

(353) NNBG's baseline scenario assumes that the reference and post-CfD market prices are equal to the agreed Strike Price. This however implies that having in place a CfD contract or not having it makes no difference for the lifetime operational results of the company, and appears to be an unrealistic assumption.

(354) In order to allow the financial model to capture difference payments, the Commission used four different series of wholesale market price forecasts in conjunction with the financial model, based on data provided as part of the notification as well as DECC publications. ([80]) These prices are shown in Figure 2.

Figure 2

Wholesale electricity prices in real terms used in the sensitivity analyses of NNBG's financial model



Source: UK authorities and DECC.

(355) The sensitivity analyses are carried out for the period 2012 to 2083, as per the UK notification, and leave all other assumptions, including the timing and financial structure of the project unchanged from NNBG's baseline scenario.

(356) The output which the Commission obtained from the sensitivity analysis exercise are the following ones:

(i) The NPV of all difference payments, by applying a discount rate of […] per cent, notified by the UK; ([81])

(ii) The NPV of cash-flows in post-tax and nominal terms;

(iii) The internal rate of return ('IRR') in post-tax and nominal terms;

(iv) The levelised cost of electricity ('LCOE') in nominal terms, both excluding as well as including corporate taxes;

(v) The CfD contract duration necessary to obtain a nil NPV at the end of the planning period; and

(vi) The break-even year, i.e. the year when the NPV of cumulated cash flows becomes nil.

([81]) Annex B to the UK notification.

(357) Annex 2 presents the results of the different scenarios. The Commission draws the following conclusions from the exercise.

(358) First, as expected, the parameters of the CfD are highly sensitive to assumptions regarding the discount rate and the market price scenarios. In particular, there are market price scenarios with discount rates slightly below the post-tax nominal rate of […] per cent used in NNBG's baseline scenario which would make the project profitable without a CfD, or with a CfD of a shorter duration. In other words, in these scenarios the CfD as currently designed would appear to provide additional profitability to the project, which might not be necessary to make the project viable. The assessment of proportionality is therefore crucially dependent on the discount rate used and the assumption of electricity market price development.

([80]) In particular, the Commission used the series labelled "Central fossil fuel price and rising carbon price," from the UK notification, Annex B, p.179; the " Central fossil fuel price and constant carbon price" series, from the UK notification, Annex B, p.180; and the "DECC high price" and "DECC central price" series, which are available until 2030, and for which we assumed constant prices in real terms after that date. The latter two series are available at the following address: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65722/7019-annex-f-price-growth-assumptions.xls)

(359) Second, the CfD duration needed to allow EDF to break even is highly sensitive to the assumption on both the market price – and the expected volatility thereof – and the reference price. Everything else being equal and as in EDF's baseline scenario, a CfD with duration below 35 years appears to be sufficient to ensure profitability under the "Central fossil fuel price and constant carbon price" scenario. Similarly, and a CfD with a duration of less than 35 years appears to be possible also under the "DECC Central" scenario. At this stage it is therefore unclear to what extent and under which price scenarios the current strike price and contract length combination, and hence the revenues guaranteed to EDF, can be regarded as proportionate.

(360) Third, and linked to the previous point, the wholesale market price remains below the strike price throughout the period under most scenarios which can be considered realistic, as can be seen from Figure 2 above. Hence, and on average, the financial model largely works on the assumption that payments would flow from suppliers to generators, and not vice-versa.

(361) Fourth, the NPV of difference payments, which is the most direct measure of the overall amount of aid disbursed, is highly sensitive to wholesale electricity prices and discount rate assumptions. In particular, with a price of GBP 89.50 per MWh and everything else being equal to NNBG's baseline scenario, the (post-tax, nominal) NPV of difference payments is GBP 4.78 billion when using the medium prices of the UK notification forecasts and assuming rising carbon prices ("Central fossil fuel price and rising carbon price"), GBP 11.17 billion when using the medium prices of DECC's forecasts ("DECC central"), and GBP 17.62 billion when using the medium prices of the UK notification forecasts and assuming constant carbon prices ("Central fossil fuel price and constant carbon price"). In other words, the overall amount of aid can vary by as much as GBP 13 billion depending on the assumptions taken.

(362) The sensitivity analyses carried out by the Commission point out that there is a large degree of variability of outcomes in the notified measure, which depend on the assumptions chosen. It appears very difficult to assess the proportionality of the proposed measure based on the information available. While a large variability of results can be expected from projects of this size and nature, the Commission cannot at this stage conclude that the CfD is a proportionate measure.

8.1.6.3. Combined effect of credit guarantee and CfD

(363) As the credit guarantee would reduce the risk exposure of EDF significantly, the combined effect of both the credit guarantee and the CfD would result in a significant reduction of the cost of capital for EDF. The degree to which the cost of capital would need to be reduced is, in this case, impossible to derive given that the full details of the capital structure and the credit guarantee are not available to the Commission at the time of writing.

(364) The risk and hence the fees associated with the credit guarantee are strongly linked to the capital structure and the conditions under which the guarantee would be drawn upon. From the notification the Commission understands that the guarantee would be drawn before equity, except when there is cost overrun or when the plant completes outside the long-stop date. In addition to debt, the credit guarantee seems to protect equity holders to a significant degree. This would result in a further reduction of the risk of the investment for NNBG and hence the discount rate.

(365) The notification does not seem to discuss tail risk events and so-called catastrophic events which might potentially trigger payments under the credit guarantee. The Commission would like to point out that more information on tail-risk events and so-called catastrophic events and the impact on the credit guarantee is crucial in order to evaluate and draw conclusions on the risks and fees associated with the credit guarantee. The CfD and the guarantee combined seem to reduce risk exposure (including revenue risk, financing risk, inflation risk, political risk, etc) of a company in the position of NNBG to a very large degree.

(366) The activity NNBG will carry out should not be described as being risk-free, as clearly some risks remain with the company – in particular construction risks and operational risks linked to the functioning of the plant. However in most other respects, it would seem that, for the foreseeable future and for a length of time which is as long as any private investor would be probably willing to consider in its assessment of investment risk, NNBG would not seem to face substantial risks in operating the HPC plant.

(367) It seems very likely that discount rates lower than those proposed by the UK authorities are realistic. Such changes would influence the profitability of the project significantly.

(368) The Commission simulated scenarios based on a (post-tax, nominal) discount rate of 7.3 per cent, which is the maximum estimated WACC for EDF in the reports mentioned in the notified documents. With such a discount rate, the HPC project would be profitable under all price scenarios considered and in the absence of a CfD. While a 7.3 per cent discount rate should not necessarily be seen as the appropriate discount rate for the HPC project, it shows the potential impact of a further reduction in the discount rate on the profitability.

(369) Table 2 provides an overview of the extent to which different cost elements, and the cost of producing electricity with the HPC plant as a whole, would change as discount rates change.

(370) Based on the information set out above, the Commission considers that NNBG might face a lower cost of capital than the one proposed by the UK, as a result of the combined effect of the credit guarantee and the CfD.

Table 2

Levelised costs changes under different discount rate assumptions based on NNBG's financial model

[…]

Source: Commission calculations based on NNBG's financial model provided by the UK authorities

8.1.6.4. Conclusions on proportionality

(371) Nuclear energy generators are exposed to a range of risk factors, most of which are being mitigated or eliminated by a combination of aid measures in the case under assessment: the CfD, the debt guarantee, inflation indexation, and/or a compensation for plant shutdown in case of a political decision.

(372) The CfD is aimed at considerably reducing the wholesale price level and volatility risk and electricity demand risk. In addition, it covers a normal level of operational cost and risk. The guarantee eliminates the financing and refinancing risk, and the liquidity risk. The inflation risk is reduced by indexation of the strike price to the consumer price index, which appears to be novel compared to previous assessments, as those embodied in Redpoint's work, which were assuming the Strike Price would decrease in real terms.

(373) The main exposure for NNBG remains the construction risk and in particular the timing of the construction. However, as argued above, once the plant becomes operational, the generator is exposed to relatively few risks but could potentially benefit from high profits.

(374) Having analysed NNBG's financial model, the Commission concludes that the profitability indicators of the project are highly sensitive to assumptions surrounding the discount rate, the reference and wholesale market price, and other parameters of the model.

(375) It is also unclear to the Commission that a scheme lasting for the entire lifetime of the plant, as opposed to the proposed scheme which lasts for 35 years, might not better limit the scope for reaping windfall profits in the post-CfD period, when NNBG will have an operational plant which will have been largely depreciated.

(376) Based on the assessment conducted, the Commission doubts whether the combination of aid measures, and in particular of a CfD with inflation indexation and a credit guarantee, is proportional to the potential benefits of the aid. It would seem that aid measures which focus on the pre-construction or construction period, or aid measures which include automatic adjustments or some profit sharing mechanism, might result in a higher degree of proportionality.

(377) The issue of the cost of capital becomes particularly important when considering the combined effect of the measures, as argued in the previous Section. It is not clear if and to what extent the return which NNBG is allowed to make through the provision of aid is adjusted for the credit guarantee.

(378) To compare, a 2011 report by economic consultancy Oxera ([82]) (the 'Oxera 2011 report') estimates that the applicable (pre-tax, real) discount rates for new-build nuclear energy plants are in the range of 9 to 13 per cent. ([83]) These rates include a risk-free rate and a risk premium. ([84]) In the same report, the following main sources of risk are listed in connection with nuclear: Wholesale electricity price level and volatility; Carbon price and volatility; Load-factor risk; Balancing risk; and Policy and regulatory risk. ([85]) The report clearly states that the discount rate for technologies that are supported could be significantly lower.

(379) The UK's proposed measure contains provisions to mitigate many of these risks. Given the sensitivity of the financials of nuclear investment projects to the assumed discount factor, the key question arises of the extent to which the reduction of these risks boil down in a lower discount rate in the project concerned. ([86])

(380) The assessment of the required rate of return for NNBG, based on work undertaken by consultancy KPMG and commissioned by DECC estimates that the "allowable rate of return" falls within the range of 6 to 14.5 per cent. The sensitivity analyses performed by the Commission and discussed above show that the proportionality of the notified measure depends crucially on which range of this interval the discount rate falls into.

(381) The Commission's preliminary view is that the upper bound of the reported rates of returns used by KPMG may be overestimated. This applies in particular to the highest estimated hurdle rate of 14.5 per cent derived in the "Project Hurdle Rate Analysis" section of the KPMG study. To arrive at this number the KPMG report quotes broker/analyst reports arguing that "EDF has a WACC in the range of approximately 5.5 % to approximately 7.0 %." ([87]) KPMG then quotes studies claiming that "companies tended to use hurdle rates that were 5.28 % - 7.45 % higher than their own cost of capital, ([88]) though only part of this premium was attributed to compensation for unsystematic project risk." ([89]) The Commission questions whether adding 7.5 per cent based on a single study on top of the highest WACC reported by EDF could be considered reasonable.

(382) Given that the UK argues that the cost of capital of NNBG for the HPC project is reasonable based on these data, and given that it would appear not to be unrealistic that the upper bound of the WACC estimate presented might have to be lower, the conclusion is that the cost of capital which can be considered adequate for the HPC project might be lower than the one used by the UK.

([82]) Oxera, *Discount rates for low-carbon and renewable generation technologies*, April 2011, available at the following address: http://www.oxera.com/Oxera/media/Oxera/downloads/reports/Oxera-report-on-low-carbon-discount-rates.pdf?ext=.pdf

([83]) Oxera 2011 report, Table 4.1, p.21.

([84]) Oxera 2011 report, Table 4.1, p. 20.

([85]) Oxera 2011 report, Table 3.2, p.14.

([86]) See Notification, Section 2.7.4 on pages 83 to 85, for an overview of claimed risk allocation in the project.

([87]) Page 55 of KPMG, *Final Investment Decision Enabling Program*.

([88]) KPMG in particular quotes Meier and Tarhan, *Corporate investment decision practices and the hurdle rate puzzle*, 2007.

([89]) KPMG seems to rely on a single academic source for the highest value cited in the report.

(383) Given the likelihood that such lower cost of capital might lead to a higher profitability of the HPC project, the Commission cannot at this stage confirm that the notified measure is proportionate, and has doubts on the robustness of the cost of capital, the discount rate, and ultimately on the return which NNBG is allowed to make through the provision of aid.

(384) The Commission is particularly concerned that the combination of different measures, and in particular of the credit guarantee and the CfD, might be compatible with substantially lower levels of return than the one being granted to NNBG, in particular given the level of risk effectively borne by the beneficiary based on the available information, and the level of certainty on the revenues it will be able to generate.

(385) The Commission would therefore welcome views on how the possibility of windfall profits and overcompensation might be limited.

(386) Finally, the Commission notes that some of the components of NNBG's cost base, and of all nuclear plants, are subject to a high degree of uncertainty due to the intrinsic nature of the activity involved. This is particularly true of the costs of decommissioning, the management and disposal of nuclear waste, and of liability insurance, as discussed in Section 8.1.2 above.

(387) Of these costs, those of decommissioning are likely to be the ones which are easiest to estimate, given that they relate to activities which can be predicted more precisely, and the cost of which can be therefore also be quantified more rigorously. Nonetheless, there might be areas of uncertainty in relation to the nature of decommissioning activities, in particular for a nuclear technology which has not been deployed before.

(388) The costs of managing, and disposing of, nuclear waste are substantially more difficult to quantify. The UK plans to build a geological disposal facility, i.e. a facility which will allow the permanent disposal of spent fuel and nuclear waste, something which does not yet exist anywhere in the world. This project is part of the UK's set of initiatives to facilitate investment in nuclear energy, in particular given that the use of the facility will require operators of new nuclear plants to pay a price which will be subject to a maximum value, to be set in advance of construction and based on a cost model which takes into account all available information.

(389) The UK intends to notify the measure described above to the Commission, which will assess whether it involves aid and whether, if it does, such aid can be deemed to be compatible with EU rules.

(390) Finally, the costs of insuring NNBG from the liability stemming from accidents are extremely, and intrinsically, uncertain. The Commission will nonetheless have to assess whether the estimated costs which NNBG will bear to insure itself from liability can be deemed to be proportional. In relation to this cost element, it cannot be excluded *a priori* that a specific additional element of State aid might be involved in the form of implicit assurance that any 'top' risk, i.e. the portion of risk not specifically covered by NNBG or any market provider of insurance services, will be covered by the State.

8.1.7. *Potential distortions of competition and trade*

(391) The UK claims that the measure does not have undue distortive effects on competition and trade. In particular, the UK states that the measure is likely to impact on the market for the construction of nuclear energy plants, the market for electricity generation and wholesale supply, the market for the procurement of nuclear fuel, and the retail market for electricity, potentially segmented into retail and business markets.

(392) The UK claims that the notified measure does not have any major impact on any of these markets, in particular since it would not lead to crowding out of private investment, it would not keep inefficient firms afloat, it would not lead to exclusionary behaviour, and it would not have substantial impact on trade between Member States.

(393) The Commission would first note that one of the questions which are relevant for the assessment of the impact of the notified measure on competition is the question of whether other private investors would be able to operate in the electricity generation market benefiting from a Strike Price of GBP 92.50 per MWh giving rise to stable revenues over 35 years and resulting in a rate of return of [9.75 to 10.25] per cent over the same period. The Commission is preliminarily wary of accepting that competitors to NNBG might enjoy the same level of revenue certainty and the same level of risk mitigation.

(394) Also, aid to NNBG will displace both revenues, hence profits, from existing plants, as well as investment in new plants which would otherwise compete with NNBG. In particular, it may displace substantial investment into new low-carbon technologies, including renewable technologies, that would otherwise also contribute to the objectives pursued through the notified measure.

(395) Aid to NNBG is also likely to displace the exchange of large quantities of electricity between the UK and its neighbours, i.e. through the interconnectors which are in place. Aid to NNBG might also change the incentive framework which might lead to more investment in interconnection in the future.

(396) While the UK considers, in its notification, the future increase in capacity due to the construction of new interconnectors, it is unclear to what extent such plans might already internalise some of the incentives built into the EMR, including support to nuclear energy. It is also unclear to what extent the provision of capacity through interconnection which is beyond the forecast period provided by the UK, and which might take decades after the construction of the HPC plant, might be affected by the existence of the plant itself.

(397) It would therefore appear that aid to NNBG might have the potential to result in foreclosure of new capacity, provided either by new entrants, or by new investments in interconnection, part of which might be crowded out due to HPC's operations.

(398) Aid to NNBG also has the potential to decrease the incentives to invest in demand-side response measures, including storage, energy efficiency and energy saving

measures. Some of these activities, despite the current, relatively embryonic state of the technology used, are the object of investment by private operators and can be profitable. While the primary use of demand-side might be to deal with peak changes rather than baseload provision, it is unclear what impact the plant might have on commercial activities being undertaken on the demand side of the market.

(399) Substantial distortive effects then appear to be linked to the design of the CfD, as argued above. In particular, the CfD has a revenue-stabilising, hence profit-stabilising, effect for the beneficiary. It *de facto* shields the beneficiary from the demand-side of the market and from the risks which being exposed to it normally entails. This lower risk should normally translate in a lower rate of return, and it is not clear that the almost complete elimination of any price-related impact on NNBG has been properly taken into account when considering that the same company will be competing in a liberalised market against operator which cannot benefit from any similar level of protection.

(400) The CfD effectively insulates NNBG from the market. The properties of CfD aid in terms of its impact of competition from this perspective are unclear. What seems to be clear, however, is that the market insulation will take place in the years which are most crucial to improving the financial results of the beneficiary – namely, more than half of the lifetime of the installations, with a level of market insulation which ensures that the investment takes place.

(401) The Commission has asked Professor Richard Green ([90]) and Dr Iain Staffell ([91]) from Imperial College Business School in London to inform its assessment by providing a report (the 'Expert Opinion') on the likely impact of the notified measure on the competitive conditions of the UK electricity markets.

(402) While the Commission does not explicitly endorse any of the results produced by Prof Green and Dr Staffell, nor do those results necessarily reflect the Commission views, such results provided some of the elements which informed the Commission overall assessment.

(403) The Expert Opinion makes use of a dynamic investment model of the GB electricity sector. The model in particular simulates the dynamics of the GB wholesale electricity markets by modelling generators' decisions to invest in those power stations that they expect to be profitable over their working lifetimes, at regular intervals up to 2100.

(404) The model includes a dispatch module that calculates electricity wholesale prices, and hence generators' profits, on the basis of the marginal costs of the stations available in each decade, given predicted fuel prices and the level of electricity demand. Generators will add capacity as long as it is profitable to do so, in terms of covering the station's average LCOE and generating a return on investment equal to its WACC, both in the decade in which the investment is made and over the station's entire lifetime.

(405) As all simulation and forecasting models, including the ones used by Redpoint, DECC and NNBG's financial model, the one used in the Expert Opinion is based on a number of assumptions and is subject to a degree of uncertainty. The Expert Opinion uses the same (public) data which is used by DECC, to ensure maximum adherence to the assumptions made by the UK government.

(406) The Expert Opinion provides results for six scenarios:

(i) No Aid, 13 %: The market without government interventions, and a nuclear WACC of 13 %;

(ii) CfD35, 10 %; This is the policy proposed by the UK government. Up to 15 GW of nuclear stations are paid the difference between their Strike Price (£89.50 per MWh) and the annual average wholesale price during their first 35 years of operation. The nuclear WACC with this contract is 10%, equal to that agreed with NNBG;

(iii) FiP35, 10 %: This policy replaces the CfD with a Feed-in Premium. Up to 15 GW of nuclear stations sell power at the market price, and also receive a fixed premium for their first 35 years of operation. This premium is calculated to deliver the same level of support as the CfD, and assumes the same nuclear WACC as with the CfD (10 %);

(iv) CfDall, 10%: This gives every generator built in the 2020s (fossil or nuclear) a CfD for 35 years (or its expected lifetime if lower). The technology-specific strike prices are set at the same level relative to each technology's expected cost, and together deliver the same total volume of support as the CfD for nuclear. Each technology has the same WACC as in scenario 2;

(v) CfD 60, 9 %: This gives up to 15 GW of nuclear stations a 60-year CfD split into two phases. The first is as proposed by the UK government (an £89.50/MWh Strike Price for 35 years); while the second pays a lower Strike Price of £44.75/MWh for the final 25 years of each station's life. This reflects the lower ongoing costs of a station after its capital costs have been paid back to investors, while still providing a sufficient margin to remunerate any capital spending needed. The second phase limits NNBG's profitability and makes the CfD deliver benefits for consumers in later years. With more revenue certainty, the WACC is assumed to fall to 9 %.

([90]) Richard Green is Professor of Sustainable Energy Business at Imperial College Business School in London. More information on Prof Green is available at the following link: http://www.imperial.ac.uk/AP/faces/pages/read/Home.jsp?person=r.green&_adf.ctrl-state=uhbsepx8s_3&_afrRedirect=1961372871198606

([91]) More information on Dr Staffell is available at the following link: http://www.imperial.ac.uk/AP/faces/pages/read/Home.jsp?person=i.staffell&_adf.ctrl-state=uhbsepx8s_107&_afrRedirect=1961433821926606

(vi) Guarantee, 11 %: This scenario models the impact of the government providing only a credit guarantee (drawn after equity as opposed to the measure proposed in the notification) which would reduce the cost of capital for nuclear stations by 2 per cent minimal compared to scenario 1, but does not involve direct intervention in the electricity wholesale market. It should be noted that the effect of the guarantee is not modelled directly but only indirectly through a reduction in the discount rate. This scenario therefore cannot be representative of the impact of a credit guarantee drawn after equity, such as the one notified by the UK. ([92])

(407) The key results from the Expert Opinion are summarised in Table 3.

Table 3

Main results from the Expert Opinion by Prof Richard Green and Dr Iain Staffell

	SCENARIOS:		1: No Aid 13 %	2: CfD35 10 %	3: FiP35 10 %	4: CfDall, 10 %	5: CfD60, 9 %	6: Guarantee 11 %
INVESTMENTS	New nuclear capacity installed by end of decade (GW)	2020s	0	15	9.9	0	15	0
		2030s	0	15	9.9	0	15	0
		2040s	0	15	12.1	0	15	1
	New fossil capacity installed by end of decade (GW)	2020s	4	0	0	15	0	3.9
		2030s	41.1	27.1	32.2	41.9	27.1	41
		2040s	71.1	52	54.9	68.8	52	71
PRICES	Average wholesale price during decade (£/MWh)	2020s	£66.67	£51.33	£56.75	£57.97	£51.33	£66.76
		2030s	£88.15	£76.76	£80.38	£82.58	£76.76	£88.24
		2040s	£96.52	£88.05	£90.00	£92.64	£88.05	£95.22
	Average price including levelised subsidy (£/MWh)	2020s	£66.67	£64.44	£64.04	£68.13	£64.44	£66.76
		2030s	£88.15	£80.49	£86.59	£89.71	£80.49	£88.24
		2040s	£96.52	£88.43	£95.49	£94.37	£88.43	£95.22
PROFITS	Annual profits of existing stations in the 2020s (£bn)	Nuclear	£2.9	£2.0	£2.3	£2.4	£2.0	£2.9
		Fossil	£0.6	–£1.5	–£1.4	–£1.5	–£1.5	£0.6
	Annual profits of supported nuclear stations (£bn)	2020s	–	£0.1	£0.0	–	£0.9	–
		2030s	–	£0.1	£1.6	–	£0.9	–
		2040s	–	£0.1	£2.2	–	£0.9	–
WELFARE	NPV of support over duration (£bn)		£0.0	£3.5	£3.5	£3.5	£2.3	£0.0
	NPV of welfare: 2020s to 2050s (£bn)		£30.0	£28.6	£29.7	£30.1	£30.2	£29.9
	Cumulative carbon emissions: 2020s to 2050s (GT)		2.8	2.1	2.3	2.8	2.1	2.8

Source: Expert Opinion by Prof Green and Dr Staffell.

([92]) In particular, the Commission does not believe, at this stage, that a 2 per cent difference in the discount rate can approximate the value of the guarantee provided by the UK to NNBG. If the government were to guarantee a long-term senior bond equivalent to that of EDF, it would have to pay around 200 – 250 bps. The latter strongly depends on the type of bond, the seniority of the bonds, the maturity, and the priority in case of non-payments. If the guarantee were to be drawn before equity, this would significantly increase the premium that the government would have to pay.

(408) Based on the Expert Opinion, CfD policies are effective at stimulating early nuclear investment, although Feed-in Premiums also show to be relatively effective, if the objective is purely to bring forward investment in nuclear energy and depending on the assumed cost of capital. Feed-in Premiums do not shield nuclear stations from gas price risk, and so may not deliver the same reduction in the cost of capital, but precisely for this reason they would appear to be less distortive of competition.

(409) State aid to nuclear reduces wholesale electricity prices in the 2020s and beyond, although the cost of the support payments means that the impact on consumers' bills is less significant.

(410) In terms of distortions to competition, the CfD for nuclear energy significantly lowers the profitability of existing power plants, hence distorts investment patterns. By this metric, CfDs can be seen again as distortive of unaltered market dynamics.

(411) According to the Expert Opinion, and assuming that the Strike Price has been 'correctly' set and that a 1 per cent reduction in the discount rate can compensate for the benefit of having 25 years of additional revenue certainty, assumptions which might be seen as favourable to NNBG, a 60-year CfD would substantially lower the level of support needed and lead to savings for electricity consumers in terms of lower retail prices relative to the 35-year CfD, albeit mainly in the 2060s and 2070s.

(412) On the other hand, the agreed Strike Price can be considered to be at about the correct level only if all the assumptions made by the UK government are also correct, including on the trajectory of wholesale prices and the cost of capital. In particular, the Investment Contract might result in a substantial transfer of wealth from consumers to NNBG if the actual cost of capital for nuclear energy turned out to be lower than the one the UK authorities have negotiated. Given that it is not unlikely that some of these assumptions might turn out to be unfounded, the measure has the potential to be distortive.

(413) Also, and as argued above, the CfD has the effect of 'homogeneising' electricity prices, and thus also other generators' revenues – thereby resulting in a lower degree of profit dispersion. This is, again, a substantial impact on the competitive process compared to a no aid scenario.

(414) Finally, economic welfare, i.e. the sum of consumer benefits from changes in electricity prices and company profits, appears to increase as the cost of capital for nuclear stations falls. ([93]) Despite this, the proposed 35-year CfD reduces welfare compared to the no aid scenario, where the market is left without government intervention – although it also results in lower cumulative emissions compared to the market scenario. A CfD with a Strike Price which is higher than the expected price of electricity reduces the risk borne by nuclear operators but implies a transfer of wealth from electricity consumers to the nuclear generator.

([93]) However these figures ignore the cost of providing the financial guarantee that reduces the WACC.

(415) The Expert Opinion therefore confirms that the notified measure can have substantial distortive effects on competitive conditions.

(416) In addition to the results discussed above, the Commission has doubts on the structure of the CfD for nuclear which, by its design, duration and scope, has the potential for distorting competitive conditions.

(417) First, the CfD implies that there will likely be an interaction between the Strike Price and the wholesale electricity prices. The UK has provided no evidence on the potential impact which the government-set Strike Price might have on trading conditions, and ultimately on retail prices.

(418) Second, the CfD raises the possibility of strategic behaviour by beneficiaries based on its structure. In particular, the CfD works by calculating difference compared to a reference price. At this juncture it is not yet clear what the reference price will be and how it will be calculated. The UK mentions that it might be the season-ahead, moving to the year-ahead, wholesale price of baseload electricity generation, however the final definition is still the object of negotiations between the UK and NNBG.

(419) Depending on how the reference price will be calculated, the CfD might create an incentive for NNBG, or EDF, to behave strategically to influence the reference price. All other things being equal, NNBG, or more broadly EDF, will be interested in keeping the reference price low, in order to maximise the difference payments. It is unclear how it might react to incentives to direct sales towards reference markets and away from other markets.

(420) For example, if the reference price is calculated based on the daily price averaged over a longer period of time, NNBG would have an incentive not to participate to longer term markets. If it were based on the month-ahead baseload price, then NNBG would have an incentive to participate in month-ahead markets only to the extent that it can lower the average price which is formed in them.

(421) For nuclear energy, in practice this could mean selling more in the season-ahead forward market, and less on the spot market or over the counter, compared to a situation without CfDs. A related question is how EDF, as a vertically integrated operator which is active in both generation and supply, might react to such an incentive framework.

(422) While a systematic recourse to strategic sale in non-reference markets may lead to overcompensation, hence also to a problem of proportionality, the Commission is particularly concerned about the broader implications of such behaviours on competitive conditions.

(423) A third issue is related to the significant volume of baseload electricity that EDF might have access to through NNBG. The Commission is concerned that access to baseload capacity by other suppliers is not unduly impacted by NNBG's operations, which are supported by State aid. It is not clear to the Commission that EDF or NNBG will be committed to making electricity produced by the HPC plant available to suppliers competing against EDF.

(424) The total capacity supplied by HPC might, also, not be available to allow suppliers to design procurement strategies which allow for the type of hedging which they need or seek. It is unclear to the Commission at this stage whether NNBG will be obliged to make capacity available through different types of hedging and prices. However the lack of such obligations would appear to have the capability to distort market conditions.

(425) A fourth issue is the impact on retail customers. In particular, the CfD design relies on the twin premises that electricity suppliers fund difference payments to generators, which they are most likely to pass on to customers, but also that they will pass on to customers any difference payments paid by generators when the reference price is higher than the Strike Price.

(426) It is not clear to the Commission that such an arrangement might not result in larger profitability margins for suppliers. Suppliers might simply decide not to pass on lower generation prices, in the form of difference payments from generators, or they might be only willing to do so partly or with a time lag compared to the payments. In such cases, the aid provided by the UK government would indirectly benefit suppliers in addition to direct beneficiaries.

(427) Any benefit for retail customers would therefore be proportional to the willingness on the part of suppliers to translate the difference payments into lower retail prices. It would appear that the extent to which positive difference payments for suppliers might be passed on to retail customers might be, among other things, a function of the degree of competition between suppliers. The effectiveness of the CfD in this respect seems therefore to be intrinsically linked to the competitive conditions of the markets for the supply of electricity.

(428) For the reasons set out above, the Commission has doubts on the impact that the notified measure will have on electricity market and on trade.

8.2. **Commission doubts and grounds for opening the formal investigation procedure**

(429) The Commission considers at this stage that the notified measure involves State aid within the meaning of Art 107(1) TFEU.

(430) The Commission doubts that the aid might be considered as compatible aid for the provision of a SGEI under the SGEI Framework.

(431) Finally, the Commission has doubts that the notified measure can be declared compatible under Article 107(3)(c) TFEU and in particular that it effectively addresses a market failure and is appropriate. It also questions whether the notified measure can be deemed to have an incentive effect, to be proportionate, and is concerned about its distortive effects on competition.

(432) The Commission does not intend to prejudge whether State aid to nuclear energy might be appropriate. The Commission merely aims to highlight issues of concern which it has identified in the specific measures proposed by the UK, and aims to carry out a more in-depth assessment of such issues in a formal investigation.

9. **DECISION**

In the light of the foregoing considerations, the Commission, acting under the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union, requests the United Kingdom to submit its comments and to provide all such information as may help to assess the measure, within one month of the date of receipt of this letter.

Your authorities are also requested to forward a copy of this letter to the potential recipient of the aid immediately.

The Commission wishes to remind United Kingdom that Article 108(3) of the Treaty on the Functioning of the European Union has suspensory effect, and would draw your attention to Article 14 of Council Regulation (EC) No 659/1999, which provides that all unlawful aid may be recovered from the recipient.

The Commission warns the United Kingdom that it will inform interested parties by publishing this letter and a meaningful summary of it in the *Official Journal of the European Union*. It will also inform interested parties in the EFTA countries which are signatories to the EEA Agreement, by publication of a notice in the EEA Supplement to the Official Journal of the European Union and will inform the EFTA Surveillance Authority by sending a copy of this letter. All such interested parties will be invited to submit their comments within one month of the date of such publication.

ANNEX 1

Summary of the terms of the agreement between the UK government and EDF

[…]

ANNEX 2

Sensitivity Analysis Results using NNBG's Financial Model

[…]"
