



## Nuclear Energy Statistics

Standard Note: SN/SG/3631

Last updated: 9 September 2013

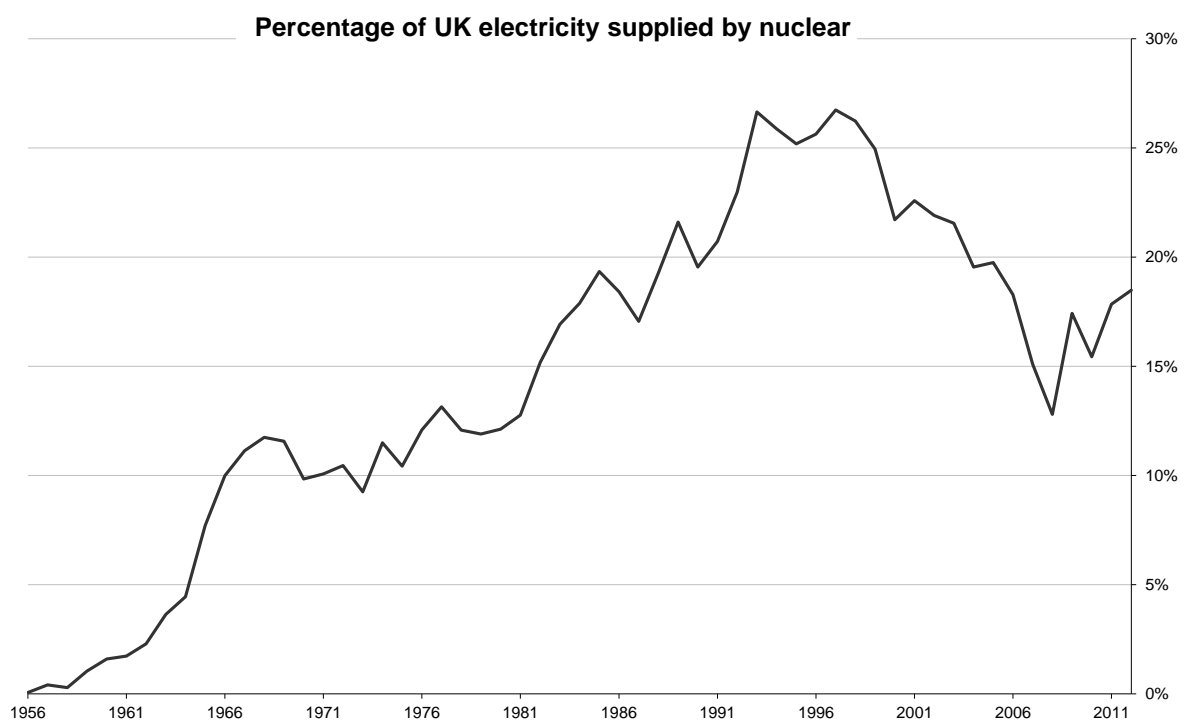
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Social & General Statistics

The UK had the first civilian nuclear power station in the world and increased its nuclear output for most of the latter half of the twentieth century. The last nuclear power station to be built in the UK started operating in 1995. Since then output has fallen as some older power stations have been decommissioned. One consequence of being a pioneer of civil nuclear power is large ongoing financial liability for decommissioning old power stations and managing nuclear waste. The UK now has among the lowest share of generation from nuclear of all countries with nuclear power. Some aging nuclear power stations have had their operating life extended, but the majority are due to close over the next decade. No new nuclear capacity is due to come online until the end of this decade at the earliest. Developers have announced plans to build new nuclear power stations with a combined capacity of 16 GW or around half as much again as current capacity.

This note looks at trends in nuclear generation in the UK, compares this to other fuels and other countries. It also presents some data on past levels of public expenditure on nuclear power and estimates of the future costs of decommissioning and managing waste.

The Department of Energy & Climate Change's [energy statistics](#) pages give the latest information on generation of nuclear power. The Energy and Climate Change Select Committee published *Building New Nuclear: the challenges ahead* in February 2013. It includes a great deal of background on and discussion around the issue.



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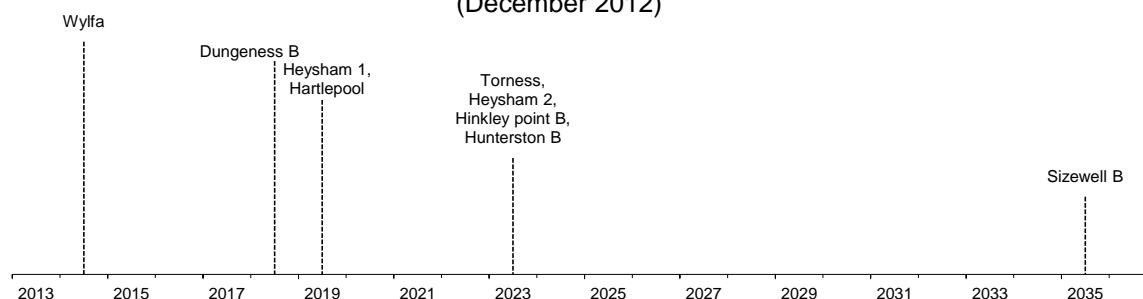
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## A. Trends in UK nuclear power generation

### 1. Electricity generation

Commercial generation of nuclear power started in the UK in 1956 when Calder Hall power station opened. The UK currently has 15 nuclear reactors in eight operational nuclear power stations. Wylfa is the oldest station dating back to 1971; Sizewell B the most recent (1995).<sup>1</sup> Oldbury, which was previously the oldest station, was shut down in February 2012. The timeline below shows the latest schedule of closure for these power stations. Since 2005 there have been extensions to the operational lives of Hinkley Point B, Hunterston B (first five years then in December 2012 a further seven years), Dungeness B (10 years), Heysham 1 and Hartlepool (5 years) Wylfa (4 years) and Oldbury (2 years to its closure in February 2012). Wylfa is the last of the older Magnox-type stations. The remaining eight were all owned by EDF after it was acquired British Energy in 2009. These stations have scheduled closure dates of 2016-2035, giving them operational lifetimes of around 30-47 years. When EDF announced the most recent life extensions to Hinkley Point B and Hunterston B it said that it expects 'average of seven-year life extensions across all its Advanced Gas-cooled Reactor stations and a 20-year extension for Sizewell B.'<sup>2</sup> This would take Sizewell B's operational lifetime to 60 years.

**Timeline of scheduled closure of current UK nuclear power stations**  
(December 2012)

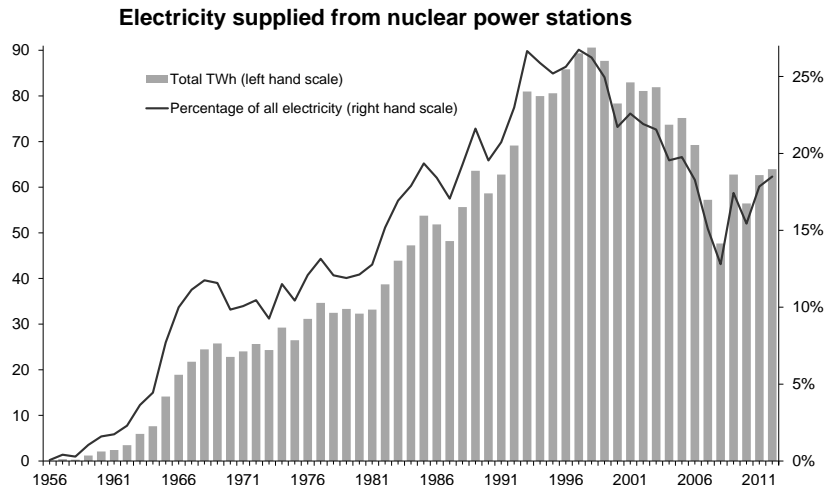


Sources: Table of past and present nuclear reactors, DECC  
<http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/nuclear/2027-past-and-present-uk-nuclear-reactors.pdf>  
EDF press notice 4 December 2012, EDF Energy announces seven year life extension to Hinkley Point B and Hunterston B nuclear power stations

<sup>1</sup> [Table of past and present UK nuclear reactors, DECC](#)

<sup>2</sup> [EDF Energy announces seven year life extension to Hinkley Point B and Hunterston B nuclear power stations](#)

The appended Table 1 and the chart opposite show trends in the electricity supplied by nuclear power since 1956. This excludes the electricity used by the stations themselves. The amount of electricity generated from nuclear power increased rapidly in the late 1960s, from less than 8 terawatt hours<sup>3</sup> (TWh) in 1964 to almost 26 TWh in 1969. Expansion was much slower in the following decade but picked up again in the early 1980s. Output increased from 33 TWh in 1981 to 81 TWh in 1993; an increase of 144% in 12 years.

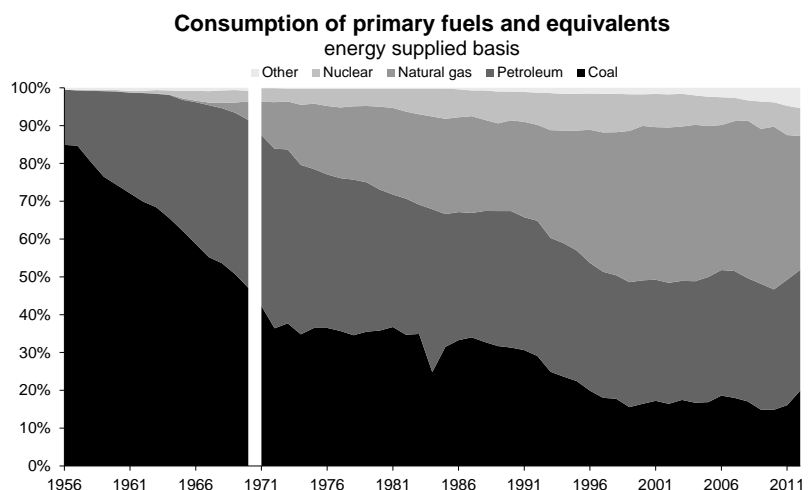


Output increased more slowly to a peak of over 90 TWh in 1998. The following years have seen the first sustained period of decline in nuclear power. Output in 2008 at 47.7 TWh was the lowest level since 1984. This decline was due in part to the closure of some stations, but also to ongoing high levels of unplanned outages (station shutdowns). Recent variations in output are mainly due to variations in the number and duration of these outages.

Nuclear power's share of electricity supplied has generally followed a similar trend to its own output. It passed the landmarks of 10% in 1967, 20% in 1989 and 25% in 1993. It fell back below 25% in 1999, below 20% from 2004 to a recent low of 12.8% in 2008. The 2012 rate of 18.5% was the highest since 2005

## 2. All energy use

The appended Table 2 and the chart opposite show the contribution of different types of fuel to all forms of energy use, not just electricity. This shows the importance of coal up to the 1960s and the increasing dominance of petroleum products and gas since then. Nuclear power produced an increasing proportion of the UK's energy needs up to a peak of just over 10% in 1997 and 1998. It has subsequently fallen to 5.3% in 2008; the lowest level since the early 1980s. These figures exclude all use within the fuel industries and conversion,



<sup>3</sup> Trillion or 10<sup>12</sup> watt hours

transmission and distribution losses. There was a break in the series in 1970; however this had only a very minor impact. The 2012 rate for nuclear was 7.4%.

### 3. Evolution of nuclear power projections since 2000

The DTI published detailed energy projections in 2000.<sup>4</sup> These stated that:<sup>5</sup>

Given present economic assumptions, modelling suggests that no new nuclear plants will be built over the projections period. Generation from nuclear plants decline post 2000 as plants gradually retire from the system.

The report gave detailed projections electricity from each source. According to these nuclear power was projected to decline to 66 TWh by 2010 (17-18% of the total) and to 27 TWh by 2020 (around 7% of the total). The report did admit that there was great uncertainty about the length of time that existing plant can operate.

The Prime Minister's Performance and Innovation Unit (PIU) published a report into energy in 2002 which looked at the policy choices the UK would have to face in the period to 2020 and beyond. This stressed the need to keep open the option of nuclear power because of its contribution to reducing carbon emissions and ensuring the diversity and security of energy supply. The report stated that costs of nuclear power are above those for fossil fuel generation. New technology could reduce these costs by 2020, but even then the range of costs would still be above those for electricity from natural gas, wind power or Combined Heat and Power plants.<sup>6</sup> Issues of cost are crucially important as in a liberalised electricity market decisions about new nuclear power stations are made on commercial grounds. Given the Government's targets to reduce carbon emissions the role of nuclear in electricity generation could be 'significant' if the costs of renewables do not fall as much as anticipated and/or concerns about waste and risks can be resolved. The report also noted that no new nuclear stations have ever been financed within a liberalised market anywhere in the world.<sup>7</sup>

The Energy White Paper (published in 2003) built on the work of the PIU report and citing many of the same reasons said that:<sup>8</sup>

This white paper does not contain proposals for building new nuclear power stations. However, we do not rule out the possibility that at some point in the future new nuclear build might be necessary if we are to meet our carbon targets

The *Updated Energy Projections to 2020*<sup>9</sup> (from 2006) did not change the earlier projection assumption about new nuclear plants in the projection periods. There were only minor changes to nuclear projections from changes to productivity and the extension of operation at Dungeness B from 2010 to 2018.

The 2006 Energy Review estimated that up to 25 GW of new generating capacity would be needed over the next two decades to fill the gap left by closures of coal and nuclear stations

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<sup>4</sup> *Energy Paper 68: Energy projections for the UK*, DTI

<sup>5</sup> *ibid.* p.43

<sup>6</sup> *The Energy Review*, Performance and Innovation Unit 2002, Annex 6

<sup>7</sup> *ibid.* Chapters 5-7.

<sup>8</sup> *Energy White Paper, Our energy future – creating a low carbon economy*, DTI

<sup>9</sup> *UK energy and CO<sub>2</sub> emissions projections – updated projections to 2020*, DTI 2006

and to meet increasing demand. Analysis for the report showed that nuclear power could be economic given continued high gas prices and a positive carbon price under the EU Emission Trading Scheme. The proposals outlined in the Energy Review included:<sup>10</sup>

- The Government believes that nuclear has a role to play in the future UK generating mix alongside other low carbon generation options.
- Any new nuclear power station would be proposed, developed, constructed and operated by the private sector who would also meet decommissioning and their full share of long-term waste management costs.
- Government will engage with industry and other experts to develop arrangements for managing the costs of decommissioning and long term waste management based on the principles set out in this text.

The Energy Review also included a possible range of new nuclear generation in 2020 as part of estimates of potential carbon saving proposals. The range was 0-1.6 GW. However this was given for illustrative purposes only as “The scale of new nuclear capacity and the timing of its commissioning will depend on commercial investment decisions.”<sup>11</sup> To put this in context total UK nuclear capacity was 11.0 GW at the end of December 2006.<sup>12</sup>

The projections that were published alongside the 2007 Energy White Paper made no real changes to earlier ones. Because the issue was subject to consultation 1GW of new nuclear capacity was included in the 2020 high fossil fuel price scenario only.<sup>13</sup> The White Paper itself stated the Government’s preliminary view:<sup>14</sup>

...that it is in the public interest to give the private sector the option of investing in new nuclear power stations as part of our strategy to tackle the challenges of climate change and security of energy supply.

The January 2008 White Paper on Nuclear Power<sup>15</sup> that gave the go ahead for new nuclear power stations accepted that ‘...new nuclear generation can make only a limited contribution before 2020.’<sup>16</sup> However, it also included an indicative timetable which showed the fastest practical route to the building of new nuclear power stations.<sup>17</sup> This showed power output from new plants starting in 2018.

The July 2009 the projections that were published alongside the UK Low Carbon Transition Plan included the assumption of a single new station of around 1.6 GW operational from 2020 and up to one new station per year thereafter.<sup>18</sup>

The June 2010 projections make only minor changes –the first new nuclear station is expected to come online in 2021 under the central forecast, or up to three years earlier if fossil prices are at their highest. Even under this scenario (the most favourable to nuclear) its total output

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<sup>10</sup> *The energy challenge. Energy review report 2006*, DTI. Chapter 5

<sup>11</sup> *ibid.* Table 8.1

<sup>12</sup> *Digest of UK energy statistics 2007*, DTI. Table 5.7

<sup>13</sup> *Updated energy and carbon dioxide emissions, the Energy White Paper*, DTI May 2007

<sup>14</sup> *Energy white paper: meeting the energy challenge*, DTI. Chapter 5

<sup>15</sup> *Meeting the Energy Challenge. A White Paper on Nuclear Power*, BERR (Cm 7296)

<sup>16</sup> *ibid.* para. 15

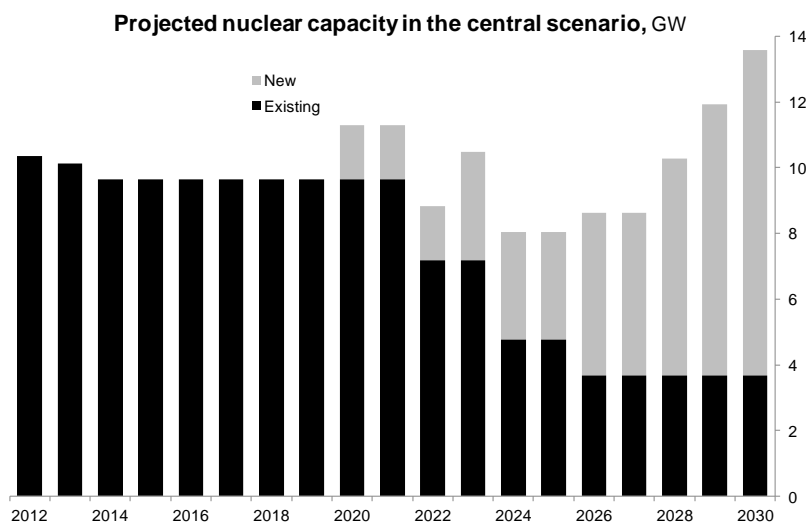
<sup>17</sup> *ibid.* Chart 1

<sup>18</sup> *UK Low Carbon Transition Plan Emission Projections*, DECC (July 2009)

in 2025 would only be around current levels and make up around 20% of total generation. The central price scenario has output at around half this level.<sup>19</sup>

The October 2011 projections put back the assumed date for first new operational nuclear station to 2022. Under the central scenario new capacity increases to 12 GW in 2030 and generation from nuclear drops to less 20% in 2020 before increasing to more than 20% by the end of that decade.<sup>20</sup> At the same time DECC published an ‘[Indicative timeline](#)’ for new nuclear build which shows a pathway for the first new nuclear stations to be operational in 2018.

The 2012 projections make some minor changes. The first new nuclear capacity is shown as coming on line in 2020 and the total new capacity reaches 10 GW in 2030. This is illustrated in the chart opposite. New capacity during the first half of the 2020s only really replaces the output of older stations that are due to close down and the first sustained increase in output is projected to be from 2026. In 2030 the central scenario has 103 TWh of nuclear generation; one quarter of the total.<sup>21</sup>



## B. Nuclear energy around the world

There are currently 434 operational nuclear power plants in 30 different countries across the world. A further 69 are under construction. Their total output in 2012 was just over 2,300 TWh. Output in 2011 was 10.6% of global electricity generation.<sup>22</sup>

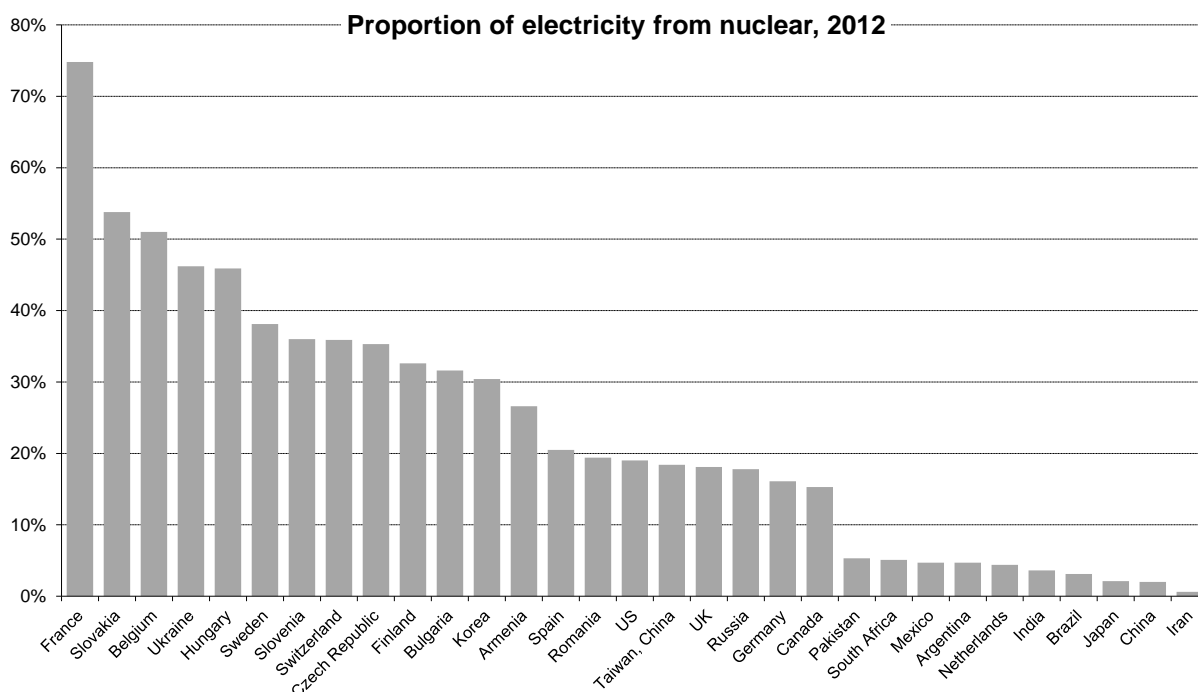
Table 3 at the end of this note and the chart below show the proportion of electricity from nuclear power in each country in 2012. Among those countries with nuclear power, the UK had among the smaller shares at 18.1%. Three countries produced more than half of their electricity from nuclear power, all of which are in Europe. France had the highest level at 75%; it was the second largest producer of nuclear power in absolute terms after the US.

<sup>19</sup> Updated energy and emission projections, DECC (June 2010)

<sup>20</sup> Updated energy and emission projections, DECC (October 2011)

<sup>21</sup> Updated energy and emission projections 2012, DECC (October 2012)

<sup>22</sup> IAEA Power Reactors Information System (PRIS) [www.iaea.org/pris](http://www.iaea.org/pris)



Source: IAEA Power Reactors Information System (PRIS)

All but five of these countries increased their output of electricity from nuclear power between 1990 and 2012. Among larger producers, those with the greatest increase were Korea (186%), the US (34%) and France (37%). Nuclear output in Japan fell by 44% in 2011 in the aftermath of the March 2011 Fukushima-Daiichi accident and by a further 89% in 2012.

The IAEA's latest projections of nuclear capacity give a range of estimates for nuclear's future share of electricity generation. Their expected range in 2030 is 9.9% to 13.5% compared to a range of 10.4% to 13.5% made in 2012 and 12.3% projected in 2011. Nuclear capacity is projected to increase by 17-94% over the same period. This range is lower than in previous publications and has been affected by the Fukushima accident. These projections are based on data provided by individual countries on their own nuclear capacity, plus assumptions about economic growth, development, energy prices and energy mixes.<sup>23</sup>

### C. Public expenditure

Ongoing expenditure by DECC and its predecessor departments relating to nuclear power in the UK primarily consisted of grants to the United Kingdom Atomic Energy Authority (UKAEA) to cover their nuclear liabilities, decommission facilities and fund research into nuclear fusion. This expenditure totalled £8.7 billion (in 2011-12 prices) over the period 1980-2005.<sup>24</sup> These liabilities and ongoing funding have since been transferred to the Nuclear Decommissioning Agency. It received government grant totalling £7.7 billion for its work on decommissioning over the years 2005-11.<sup>25</sup> It is expected to receive funding totalling £8.6 billion from DECC

<sup>23</sup> *Energy, electricity and nuclear power estimates for the period up to 2050*, 2013 edition, IAEA

<sup>24</sup> HC Debs 24 January 2002 c329-330W and 17 March 2004 c328-330W and 27 March 2007 c1466-7W. Prices adjusted using the GDP deflator at 22 December 2011

<sup>25</sup> *Annual Report & Accounts 2008/09*, NDA; *NDA business plan 2010-11*, NDA

over the four years covered by the Comprehensive Spending Review (2011-15).<sup>26</sup> DECC also provided £280 million for British Energy and other nuclear legacy spending in 2011-12.<sup>27</sup>

Although not strictly government subsidies, Nuclear Electric, and latterly British Energy received substantial support from the Fossil Fuel Levy between 1990 and 1996. This support was to ensure that the newly formed Nuclear Electric would be able to meet the costs of its long-term liabilities. From 1990 consumers paid the levy as a percentage of their electricity bills. The regional electricity companies effectively passed this on to the generator. The total cash value of this support was £5.4 billion<sup>28</sup> or £8.5 billion in 2011-12 prices<sup>29</sup>. Measures included in the Energy Bill 2012, particularly 'contracts for difference', are expected to support nuclear operators and encourage new nuclear. Again this is support paid by customers through energy bills rather than direct public funding. The [Library Research Paper](#) on this bill gives much more background.

The nuclear sector also receives ongoing public funding for research into nuclear fission and nuclear fusion. The majority is for fusion research which is currently £25 million a year.<sup>30</sup>

## 1. Costs of the nuclear legacy

The 2002 white paper *Managing the Nuclear Legacy. A strategy for action*<sup>31</sup> estimated the undiscounted civil nuclear liabilities at £48 billion. This was made up of 47% nuclear waste management, 43% decommissioning and 10% ongoing management and maintenance costs. The majority of the total (£40.5 billion) was for liabilities that were managed by British Nuclear Fuels plc<sup>32</sup> (BNFL), principally Sellafield; the rest was managed by UKAEA. The lifetime of these liabilities goes well into the next century.<sup>33</sup> The white paper included estimated profiles of the costs. Annual expenditure was expected to be over £1 billion in the first 10 years with expenditure declining over the first half of this century. There is still uncertainty about the level of these liabilities and the white paper stated that they are likely to increase still further in the short term.<sup>34</sup>

The Energy Act 2004 established a new public body, the Nuclear Decommissioning Authority (NDA) to manage and fund the Government's civil nuclear legacy, which was previously the responsibility of BNFL and UKAEA. The NDA became operational in April 2005 and has taken over all these liabilities and associated assets. In the case of BNFL this included the funds it had set aside to contribute towards its decommissioning costs. The Secretary of State said at the time that the effect of these transactions would be financially neutral.<sup>35</sup> In August 2005 the NDA published its draft strategy for consultation. This gave their latest estimates of the undiscounted costs of operations, decommissioning and clean-up as £56 billion. They also

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<sup>26</sup> *Nuclear Decommissioning Authority. Business Plan. 2011-2014*, NDA

<sup>27</sup> *Indicative 11/12 budget allocation*, DECC

<sup>28</sup> HC Deb 17 March 2004 c328-330w

<sup>29</sup> Adjusted using the GDP deflator at 22 December 2011

<sup>30</sup> HC Deb 7 September 2011 c722-3W

<sup>31</sup> *The Nuclear Legacy. A strategy for action*, DTI 2002. Cm 5552

<sup>32</sup> This excludes liabilities covered by commercial; contracts which covered 12% of BNFL's liabilities.

<sup>33</sup> *ibid.* figures 1-3

<sup>34</sup> Cm 5552 para.1.14

<sup>35</sup> HC Deb 28 November 2001 c990-95



stated that such costs could be ‘considerably’ higher due to the costs of dealing with higher hazard legacy facilities and the possible reclassification of certain nuclear materials as waste.<sup>36</sup>

The strategy based on 2005/06 Life Cycle Baselines, gave the undiscounted total costs of meeting their remit as £62.7 billion<sup>37</sup> (35.4 billion discounted at 2.2%). However, this did not include certain costs outside this baseline (but already identified) which they expect to add a further £7.5 billion to the undiscounted costs.<sup>38</sup> This would take the total costs to £70 billion; £14 billion of which is for operations and £56 billion decommissioning and clean-up.<sup>39</sup>

The 2007/08 annual report updated these cost estimates. The undiscounted cost increased to £74.9 billion. The NDA’s liability was £63.5 billion and was lower because it excludes costs of commercial operations which generate income. The discounted liability (again 2.2% a year) was estimated at £40.7 billion. On top of this is the liability for the Geological Disposal Facility (GDF) for the management of radioactive waste. The NDA’s share of the undiscounted cost of the GDF was estimated at £10.1 billion; or £3.4 billion discounted. This took the NDA’s total liability to £73.4 billion undiscounted and £44.1 billion discounted. Estimated annual expenditure is expected to be in the region of £2.5 billion per year to the middle of the next decade before falling below £1 billion from around 2030 onwards and continuing at some level for more than a century thereafter.<sup>40</sup>

The NDA’s estimated liabilities including the GDF have been increased in subsequent annual reports. Changes in this estimate are based on a number of factors including the working undertaken in year, changes to cost estimates and any changes to discount rates. Estimated liabilities stood at £58.9 billion (discounted) in the 2012/13 report.<sup>41</sup> This is what the NDA deems the most likely outcome. It also gives a potential range of these costs from £54.6-£63.8 billion. Total NDA expenditure from Government grant and its own income is expected to be around £3 billion per year to the end of the spending review periods (2014/15). They expect expenditure on the liabilities to fall by around half (in cash terms) over the next two decades or so.<sup>42</sup>

The NDA is not responsible for the liabilities connected with the EDF (formerly British Energy) power stations. These are provided for by the Nuclear Generation Decommissioning Fund. This was set up in 1996 is now the Nuclear Liabilities Fund (NLF). Although this fund/these liabilities are outside the public sector, it has received public funds in the past and could do so in the future. The fund was initially set up by Government as part of the privatisation of British Energy. It received an initial endowment at its inception of £228 million of public funding and regular payments from British Energy afterwards.

The fund and the liabilities it covered were changed when British Energy was restructured in 2005. It was also renamed the NLF. These changes involved the Government taking on British Energy’s historic spent fuel liabilities as part of the restructuring plan. The Government also agreed to underwrite British Energy’s decommissioning fund by making up any difference

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<sup>36</sup> *NDA Draft Strategy*, section 7.1, Nuclear Decommissioning Authority

<sup>37</sup> This falls to £48.4 billion if commercial revenue and other income are netted off

<sup>38</sup> *NDA strategy March 2006*

<sup>39</sup> NDA news release 30 March 2006 *Approved strategy for clean-up of UK’s nuclear sites published*

<sup>40</sup> *Annual Report & Accounts 2007/08*, NDA

<sup>41</sup> *Annual Report & Accounts 2012/13*, NDA

<sup>42</sup> *Ibid.*

between the company's payments into the fund and the fund's requirements.<sup>43</sup> Restructuring also involved a new schedule of payments to the NLF from British Energy. Details of this, the impact of the sale of British Energy to EDF and the current value of the NLF can be found at: <http://www.nlf.uk.net/history.html>

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<sup>43</sup> HC 26 2004/05 pp10-11

## D. Reference tables

Table 1

### Electricity supplied by nuclear power in the UK

	TWh	Percentage of all electricity supplied
1956	0.1	0.1%
1957	0.4	0.4%
1958	0.3	0.3%
1959	1.2	1.0%
1960	2.1	1.6%
1961	2.4	1.7%
1962	3.5	2.3%
1963	5.9	3.6%
1964	7.6	4.4%
1965	14.1	7.7%
1966	18.9	10.0%
1967	21.8	11.1%
1968	24.5	11.8%
1969	25.8	11.6%
1970	22.8	9.8%
1971	24.0	10.1%
1972	25.6	10.5%
1973	24.3	9.3%
1974	29.2	11.5%
1975	26.5	10.4%
1976	31.2	12.1%
1977	34.7	13.1%
1978	32.5	12.1%
1979	33.3	11.9%
1980	32.3	12.1%
1981	33.2	12.8%
1982	38.7	15.2%
1983	43.9	16.9%
1984	47.3	17.9%
1985	53.8	19.3%
1986	51.8	18.4%
1987	48.2	17.1%
1988	55.6	19.3%
1989	63.6	21.6%
1990	58.7	19.5%
1991	62.8	20.7%
1992	69.1	23.0%
1993	81.0	26.7%
1994	80.0	25.9%
1995	80.6	25.2%
1996	85.8	25.6%
1997	89.3	26.7%
1998	90.6	26.2%
1999	87.7	24.9%
2000	78.3	21.7%
2001	83.0	22.6%
2002	81.1	21.9%
2003	81.9	21.6%
2004	73.7	19.5%
2005	75.2	19.8%
2006	69.2	18.3%
2007	57.2	15.1%
2008	47.7	12.8%
2009	62.8	17.4%
2010	56.4	15.4%
2011	62.7	17.8%
2012	63.9	18.5%

Note: Excludes electricity used in works

Sources: *Digest of energy statistics, various years, Ministry of Technology*  
*Digest of UK Energy Statistics, long-term table 5.1.3, www.decc.gov.uk*  
*Energy Trends, DECC, Table ET5.1*

Table 2

**Inland consumption of primary fuels and equivalents for energy use***Percentage shares -energy supplied basis*

	Coal	Petroleum	Natural gas	Nuclear electricity	Other <sup>(a)</sup>
1956	84.9	14.6	0.0	0.0	0.5
1957	84.7	14.6	0.0	0.1	0.6
1958	80.5	18.7	0.1	0.1	0.6
1959	76.5	22.6	0.1	0.2	0.6
1960	74.3	24.7	0.1	0.3	0.6
1961	72.1	26.6	0.1	0.4	0.8
1962	69.9	28.7	0.1	0.5	0.8
1963	68.4	30.0	0.1	0.9	0.6
1964	65.5	32.6	0.1	1.1	0.7
1965	62.2	34.6	0.4	2.0	0.8
1966	58.7	37.5	0.4	2.6	0.8
1967	55.2	40.2	0.7	3.0	0.9
1968	53.6	41.0	1.4	3.3	0.7
1969	50.7	42.7	2.7	3.3	0.6
1970	47.1	44.4	4.9	2.8	0.8
1971	42.3	45.2	8.8	3.6	0.1
1972	36.4	47.5	12.3	3.7	0.1
1973	37.7	46.0	12.7	3.4	0.2
1974	34.8	44.8	15.9	4.3	0.2
1975	36.5	42.0	17.3	4.0	0.2
1976	36.5	40.6	18.1	4.6	0.2
1977	35.7	40.4	18.7	5.0	0.2
1978	34.6	41.2	19.4	4.7	0.2
1979	35.5	39.5	20.2	4.6	0.2
1980	35.8	37.3	21.9	4.8	0.2
1981	36.7	35.0	22.9	5.1	0.2
1982	34.7	36.0	23.0	6.1	0.2
1983	34.9	34.2	23.9	6.8	0.2
1984	24.8	43.1	24.5	7.4	0.2
1985	31.5	35.1	25.2	8.0	0.2
1986	33.3	33.9	25.1	7.4	0.4
1987	34.0	32.9	25.6	6.8	0.7
1988	32.8	34.7	24.1	7.8	0.7
1989	31.7	35.7	23.2	8.4	1.0
1990	31.3	36.1	24.0	7.6	1.0
1991	30.6	35.1	25.2	7.9	1.1
1992	29.1	35.8	25.4	8.5	1.3
1993	24.9	35.4	28.5	9.8	1.4
1994	23.6	35.3	29.8	9.7	1.6
1995	22.4	34.5	31.7	9.7	1.6
1996	19.9	33.8	35.2	9.6	1.5
1997	18.0	33.3	36.8	10.2	1.6
1998	17.8	32.7	37.8	10.2	1.6
1999	15.6	33.0	40.0	9.7	1.7
2000	16.4	32.7	40.8	8.4	1.7
2001	17.2	32.0	40.3	8.8	1.6
2002	16.4	32.0	41.1	8.8	1.7
2003	17.5	31.5	40.8	8.6	1.6
2004	16.7	32.1	41.4	7.8	2.0
2005	16.9	33.1	39.9	7.8	2.4
2006	18.6	33.2	38.3	7.3	2.5
2007	18.0	33.6	39.6	6.2	2.6
2008	17.1	32.6	41.7	5.3	3.3
2009	14.9	33.3	40.9	7.2	3.6
2010	14.9	31.8	43.0	6.4	3.8
2011	16.1	33.2	38.3	7.7	4.8
2012	19.9	31.9	35.4	7.4	5.4

(a) Includes hydro, renewables and net electricity imports

Notes: These figures exclude energy used in works and conversion, transmission and distribution losses  
There is a break in the series in 1970, data from before and after this time are not directly comparable

Sources: *Digest of energy statistics, various years, Ministry of Technology*  
*Digest of UK Energy statistics, long-term table 1.1.1, www.decc.gov.uk*

Table 3

## Summary of international nuclear power statistics

	Reactors in operation in December 2012	Electricity supplied in 2012		Change in nuclear electricity produced 1990 to 2012
		TWh	% of all electricity produced	
Argentina	2	5.9	4.7%	-11%
Armenia	1	2.1	26.6%	..
Belgium	7	38.5	51.0%	-5%
Brazil	2	15.2	3.1%	+622%
Bulgaria	2	14.9	31.6%	+10%
Canada	20	89.1	15.3%	+29%
China	17	92.7	2.0%	-
Taiwan, China	6	38.7	18.4%	+23%
Czech Republic	6	28.6	35.3%	..
Finland	4	22.1	32.6%	+22%
France	58	407.4	74.8%	+37%
Germany	9	94.1	16.1%	-32%
Hungary	4	14.8	45.9%	+14%
India	20	29.7	3.6%	+482%
Iran	1	1.3	0.6%	..
Japan	50	17.2	2.1%	-91%
Korea	23	143.5	30.4%	+186%
Mexico	2	8.4	4.7%	+190%
Netherlands	1	3.7	4.4%	+12%
Pakistan	3	5.3	5.3%	+1218%
Romania	2	10.6	19.4%	-
Russia	33	166.3	17.8%	..
South Africa	2	12.4	5.1%	+48%
Slovakia	4	14.4	53.8%	..
Slovenia	1	5.2	36.0%	..
Spain	8	58.7	20.5%	+13%
Sweden	10	61.5	38.1%	-6%
Switzerland	5	24.4	35.9%	+10%
UK	18	64.0	18.1%	+9%
Ukraine	15	84.9	46.2%	..
US	104	770.7	19.0%	+34%
<b>Total</b>	<b>440</b>	<b>2,346.2</b>	<b>..</b>	<b>n/a</b>

Notes:

- No nuclear power in 1990

.. Country not in existence or listed separately in 1990

Source: Nuclear power reactors in the world, 2013 and earlier, IAEA

IAEA Power Reactor Information System (PRIS) [pris.iaea.org](http://pris.iaea.org)