

**IMPACT ASSESSMENT OF THE  
GOVERNMENT'S WHITE PAPER  
ON NUCLEAR POWER**

JANUARY 2008

## Summary: Intervention & Options

Department /Agency:

Business Enterprise and  
Regulatory Reform (BERR)

Title:

Impact Assessment of The Government's White Paper  
on Nuclear Power

Stage: Final

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Date: January 2008

**Related Publications:** Meeting the Energy Challenge: A White Paper on Nuclear Power (January 2008), The Future of Nuclear Power Consultation Document (May 2007), "The Energy Challenge" - UK Government Energy Review (July 2006), DTI Nuclear Power Generation Cost Benefit Analysis (April 2007)

Available to view or download at:

<http://www.berr.gov.uk/files/file43205.pdf>

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### What is the problem under consideration? Why is government intervention necessary?

Climate change is a result of the externality associated with greenhouse-gas emissions – it entails costs that are not paid for by those who create the emissions.

Security of supply is a key energy policy objective for the UK as we are now a net importer of gas. Gas supplies can be subject to disruption and are open to price spikes at times of restricted supply.

Nuclear power can address both these issues as it does not emit greenhouse gases and it reduces our reliance on imported gas.

Government intervention is necessary to create a more certain environment for potential investors in nuclear power.

### What are the policy objectives and the intended effects?

The policy objectives are:

- To provide clarity to the market on whether energy companies should be allowed the option of investing in new nuclear power stations alongside other low carbon generating technologies; and
- To set out a programme of actions to reduce the regulatory and planning risks associated with investing in new nuclear power stations.

The intended effect is to allow potential investors the option to put forward proposals for new nuclear power stations which could help to reduce the UK's CO<sub>2</sub> emissions, and maintain the reliability of energy supplies – two of the UK's Energy White Paper objectives.

### What policy options have been considered? Please justify any preferred option.

Three options have been considered:

1 (a) Conclude that energy companies should be allowed the option of investing in new nuclear power stations, but not take action to reduce the regulatory and planning risks associated with investing in new nuclear power stations. This is the baseline option

1 (b) Conclude that nuclear energy companies should be allowed the option of investing in new nuclear power stations and take action to reduce the regulatory and planning risks associated with investing in new nuclear power stations. *This is the preferred option as through our analysis it is felt that this option will allow the UK to meet its energy policy objectives at lower cost and lower risk*

2 Decide not to conclude that energy companies should be allowed the option of investing in new nuclear power stations

### When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

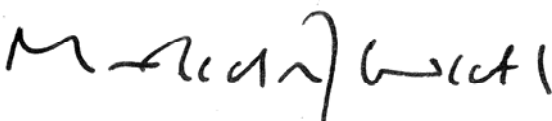
BERR will monitor the efficiency of the new policy framework as it is implemented.

### Ministerial Sign-off For Impact Assessments:

*I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.*

Signed by the responsible Minister:

Date: 09/01/2008



## Summary: Analysis & Evidence

**Policy Option: 1b**

**Description: Conclude that nuclear should play a role in the future UK generating mix and take action to reduce the regulatory barriers**

<b>COSTS</b>	<b>ANNUAL COSTS</b>		Description and scale of <b>key monetised costs</b> by 'main affected groups' The cost in this section reflects estimated costs to Government and regulators of the facilitative actions undertaken in option 1b. This cost is over a period of 4 years (2008-2011) and will largely be recovered from the industry in line with past practice. This figure is an indicative assumption for the purposes of this Impact Assessment and excludes the impact of legislation, which will be subject to full impact assessment during its development.
	<b>One-off (Transition)</b>	<b>Yrs</b>	
	£ n/a		
	<b>Average Annual Cost (excluding one-off)</b>		
	£ n/a		<b>Total Cost (PV)</b>
			<b>£ 50 million (estimate)</b>
Other <b>key non-monetised costs</b> by 'main affected groups'			

<b>BENEFITS</b>	<b>ANNUAL BENEFITS</b>		Description and scale of <b>key monetised benefits</b> by 'main affected groups' The benefits in this section reflect the impact of the proposed facilitative actions described in paragraphs 17 and 25 of the Impact Assessment on the levelised cost of nuclear generation. It is estimated that this could amount to an NPV of £155m per GW of nuclear capacity over the lifetime of a nuclear plant. These benefits will not be achieved until each nuclear plant starts to operate. For the purposes of our analysis we have assumed that the first plant will come on line in 2021. Because of the uncertainty over timing and scale of any new nuclear build we have not provided an overall total figure.
	<b>One-off</b>	<b>Yrs</b>	
	£ n/a		
	<b>Average Annual Benefit (excluding one-off)</b>		
	£ n/a		<b>Total Benefit (PV)</b>
			<b>£ Not calculated due to uncertainties in scale and timing of any nuclear programme</b>
Other <b>key non-monetised benefits</b> by 'main affected groups' These benefits do not represent total benefits and costs since we do not know the extent of the new build programme and therefore the benefits are not directly comparable with the annual costs of facilitative actions mentioned above. The benefits would include the value of the savings in CO <sub>2</sub> emissions.			

**Key Assumptions/Sensitivities/Risks** The benefit figures for nuclear would include generation costs benefits, carbon emissions benefits and security of supply benefits. The impact of facilitative actions is estimated through a reduction in planning time and pre-development costs. Key monetised costs will be incurred irrespective of the size of the nuclear new build programme.

Price Base Year 2008	Time Period Years N/A	<b>Net Benefit Range (NPV)</b> £ N/A	<b>NET BENEFIT (NPV Best estimate)</b> £ Not calculated due to uncertainties in scale and timing of any nuclear programme
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What is the geographic coverage of the policy/option?		Refer to White Paper		
On what date will the policy be implemented?		January 2008		
Which organisation(s) will enforce the policy?		BERR		
What is the total annual cost of enforcement for these organisations?		£ 0		
Does enforcement comply with Hampton principles?		Yes		
Will implementation go beyond minimum EU requirements?		N/A		
What is the value of the proposed offsetting measure per year?		£ 0		
What is the value of changes in greenhouse gas emissions?		The proposal has the potential to lead to a reduction in CO <sub>2</sub> emissions as outlined in the White Paper.		
Will the proposal have a significant impact on competition?		No		
Annual cost (£-£) per organisation (excluding one-off)	Micro N/A	Small N/A	Medium N/A	Large N/A
Are any of these organisations exempt?	No	No	No	No

<b>Impact on Admin Burdens Baseline</b> (2005 Prices)		(Increase - Decrease)		
Increase of	£ Nil	Decrease of	£ Nil	<b>Net Impact</b> £ Nil

Key: Annual costs and benefits: Constant Prices (Net) Present Value

## Evidence Base (for summary sheets)

### Strategic Overview

1. This Impact Assessment completes the partial Regulatory Impact Assessment that was published as part of the Future of Nuclear Power Consultation Document<sup>1</sup> in May 2007. The strategy the Government has adopted for meeting the twin challenges of tackling climate change and ensuring energy security focuses on:

- Saving energy;
- Developing cleaner energy supplies; and
- Securing reliable energy supplies at prices set in competitive markets.

Our strategy is set out in more detail in the Energy White Paper<sup>2</sup>, published in May 2007.

2. Competitive energy markets, with independent regulation, are the most cost-effective and efficient way of generating, distributing and supplying energy. In those markets, investment decisions are best made by the private sector and independent regulation is essential to ensure that the markets function properly. However, energy markets on their own will not deliver our wider social and environmental objectives, particularly tackling climate change.

3. Nuclear power currently provides around 19% of our country's electricity supplies. However, a significant amount of generation plant will close over the next two decades. By 2023 all but one of the UK's current nuclear power stations are due to have closed, based on their published lives.

4. The UK needs a clear and stable regulatory framework to reduce uncertainty for business to ensure sufficient and timely investment in technologies that contribute to our energy goals.

### The Issue

5. The Stern review published in October 2006 concluded that climate change could have very serious consequences for the world economy leading to potential losses to GDP of 5% in the long-term and up to 20% if a series of worst case events were to occur. In contrast, action to reduce greenhouse gas emissions could cost around 1% of world GDP. Taking action to reduce emissions is therefore seen to be the pro-growth strategy.

6. Climate change results from greenhouse-gas emissions associated with economic activities including energy, industry, transport and land use. In common with many other environmental problems, human-induced climate change is at its most basic level an externality. Those who produce greenhouse-gas emissions are bringing about climate change, thereby imposing costs on the world and on future generations, but they do not face directly, via markets nor in other ways, the full consequences of the costs of their actions.

7. Much economic activity involves the emission of greenhouse gases (GHGs), of which carbon dioxide (CO<sub>2</sub>) is one. As GHGs accumulate in the atmosphere, temperatures increase, and the climatic changes that result impose costs (and some benefits) on society. However, the full costs of GHG emissions, in terms of climate change, are not immediately borne by the emitter, so they face little or no economic incentive to reduce emissions. Similarly, emitters do not have to compensate those who lose out because of climate change. In this sense, human-

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<sup>1</sup> The Future of Nuclear Power, *The Role of Nuclear Power in a Low Carbon UK Economy, Consultation Document*, URN 07/970, May 2007

<sup>2</sup> Energy White Paper, *Meeting the Energy Challenge*, URN 07/1006, May 2007

induced climate change is an externality, one that is not 'corrected' through any institution or market, unless policy intervenes.

8. The climate is a public good: markets do not automatically provide the right type and quantity of public goods, because in the absence of public policy there are limited or no returns to private investors for doing so: in this case, markets for relevant goods and services (energy, land use, innovation, etc) do not reflect the consequences of different consumption and investment choices for the climate. Thus, climate change is an example of market failure involving externalities and public goods. Given the magnitude and nature of the effects, it has profound implications for economic growth and development. All in all, it must be regarded as market failure on the greatest scale the world has seen.

9. In the 2007 Energy White Paper<sup>3</sup> the Government therefore made commitments:

- to put ourselves on a path to cutting CO<sub>2</sub> emissions by some 60% by about 2050, with real progress by 2020;
- to maintain the reliability of energy supplies;
- to promote competitive markets in the UK and beyond;
- to ensure that every home is adequately and affordably heated.

10. Alongside the Energy White Paper we published a consultation document<sup>4</sup> setting out the information and evidence that we had considered in reaching the preliminary view that it is in the public interest to give energy companies 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.

11. Historically, the UK has met most of its energy needs from domestic sources. Coal, and since the 1970s, oil and gas from the North Sea have provided the energy to drive our economy. Since the 1950s, nuclear power, fuelled by imported uranium, has generated a significant proportion of our electricity, reaching a peak of nearly 30% of electricity output in the 1990s. Over the past decade nuclear power has met about one-fifth of our electricity needs. In the UK, about one third of our emissions of CO<sub>2</sub> come from electricity generation, the vast majority of which come from coal and gas-fired power plants.

12. In the future, the UK will increasingly depend on imported oil and gas at a time of rising global demand and prices, and when energy supplies are becoming more politicised. At the same time, we know that over the next two decades or so almost one third of our coal and oil fired power stations are likely to close because of environmental legislation. While nuclear operators may achieve life extensions at their existing UK plants, all but one of our nuclear power stations are due to have closed by 2023, based on their published lives. This will create new risks that need to be managed by our energy strategy.

13. Of the capacity that is likely to close over the two decades, around two-thirds is from carbon intensive fossil fuel generation and the rest is nuclear and therefore low carbon. So companies' decisions on the type of power stations they invest in to replace this capacity will have significant implications for the level of CO<sub>2</sub> emissions. As an illustration, if our existing nuclear power stations were all replaced with fossil fuel fired power stations, our emissions would be 29-59 MtCO<sub>2</sub> a year higher as a result (depending on the mix of gas and coal-fired power stations which would replace them). Our gas demand could also be higher, at a time when we are becoming more dependent on imported sources of fossil fuels. All types of new investment in power generation capacity are long-term (around 30-40 years). There is therefore

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<sup>3</sup> Energy White Paper, *Meeting the Energy Challenge*, URN 07/1006, May 2007

<sup>4</sup> The Future of Nuclear Power, *The Role of Nuclear Power in a Low Carbon UK Economy, Consultation Document*, URN 07/970, May 2007.

the danger of a “lock in” to high carbon forms of generation which will make it more difficult and costly to meet our long-term emission targets.

14. New nuclear power stations have long lead times. This time is necessary to secure the relevant regulatory and development consents which must be obtained before construction can begin, and there is also a long construction period compared to other generating technologies. New nuclear power stations are therefore unlikely to make a significant contribution to the need for new capacity before 2020.

15. Even with our expectations that the share of renewables will grow, it is likely that fossil fuel generation will meet some of this need. Given the likely increase in fossil fuel generation before this date, it is important that much of this nuclear capacity is replaced with low carbon technologies. New nuclear power stations could make an important contribution to meeting our needs for low carbon electricity generation and energy security in this period and beyond to 2050.

## **Objectives**

16. There are two objectives to our proposal:

- To provide clarity on government policy on whether energy companies should be allowed the option of investing in new nuclear power stations alongside other low carbon generating technologies; and
- To set out a programme of facilitative steps to reduce the regulatory and planning risks associated with investing in new nuclear power stations. The measures are designed to reduce the uncertainties in the pre-construction period for new nuclear power stations through improvements to the regulatory and planning processes. The new measures will not reduce regulatory scrutiny nor reduce the opportunity for public participation in the process.

17. These facilitative steps are as follows and are set out in more detail at paragraph 25:

- Improving the planning system for major electricity generating stations
- Running a Strategic Siting Assessment process to develop criteria for determining the suitability of sites for new nuclear power stations
- Taking further our consideration of the high level environmental impacts in accordance with the EU Strategic Environmental Assessment Directive
- Running a process of Justification (in accordance with the Justification of Practices Involving Ionising Radiation Regulations 2004) to test whether the economic, social or other benefits of specific new nuclear power technologies outweigh any health detriments
- Assisting the nuclear regulators to pursue a process of Generic Design Assessment of industry preferred designs of nuclear power stations, to complement the existing site-specific licensing process.
- Pushing for a strengthening of the EU Emissions Trading Scheme so that investors have confidence in a continuing carbon price signal when making a decision

18. Securing planning permission and other necessary regulatory consents is a significant regulatory risk for nuclear power stations. In the past, planning inquiries have considered a large number of complex and controversial issues that need to be considered. Many of these had a strategic national aspect or were the subject of consideration and monitoring by a number of independent regulators. In particular, in the past, issues that had already been considered were reopened at each individual planning inquiry, for example at the Hinkley Point C inquiry into a proposed power station of the same design as that constructed at Sizewell B. The inquiry covered almost the same grounds and evidence, including generic issues such as the safety of the design. The proposed actions to reduce regulatory and planning risks would make the

process for building new nuclear power stations more certain and efficient without reducing any of the regulatory scrutiny. The programme of actions set out in more detail at paragraph 25 would allow for these issues to be addressed in a more efficient way than has been the case previously. This would mean that generic nuclear policy issues will be considered once before an application goes through the planning and regulatory consent processes. Those processes would then focus on more specific and local issues.

19. In the past, issues that had already been considered were reopened at each individual planning inquiry, for example at the Hinkley Point C inquiry into a proposed power station of the same design as that constructed at Sizewell B. The inquiry covered almost the same grounds and evidence, including generic issues such as the safety of the design. The new regulatory framework would make the process for building new nuclear power stations more certain and efficient without reducing any of the regulatory scrutiny.

## Options Identification

20. In identifying its preferred solution the Government considered several options. The analysis was based on the Department's cost-benefit analysis model<sup>5</sup> undertaken for the Energy White Paper<sup>6</sup>. The options identified were:

Option Number	Proposal
1 (a)	Conclude that energy companies should be allowed the option of investing in new nuclear power stations, but not take action to reduce the regulatory and planning risks associated with investing in new nuclear power stations. This is the baseline option.
1 (b)	Conclude that nuclear energy companies should be allowed the option of investing in new nuclear power stations and take action to reduce the regulatory and planning risks associated with investing in new nuclear power stations. This is the preferred option as through our analysis it is felt that this option will allow the UK to meet its energy policy objectives at lower cost and lower risk.
2	Decide not to conclude that energy companies should be allowed the option of investing in new nuclear power stations.

## Analysis of the Options

### Option 1(a)

21. This option is to take no action other than to confirm that nuclear power should be allowed to play a role in the future UK generating mix alongside other low carbon technologies and should be one of the options for investment by energy companies. There would be no effort to tackle the potential delays and uncertainty for nuclear. It would mean allowing issues to be explored at every planning inquiry as has happened in the past, regardless of whether they had previously been addressed. It would also involve not taking any action to address the other regulatory and planning risks associated with investing in new nuclear power stations. For the purpose of this Impact assessment we take Option 1(a) as the baseline and calculate the costs and benefits against this option. This Impact Assessment focuses on the costs and benefits of the facilitative actions set out in paragraphs 17 and 25. It does not specifically address the impacts of allowing energy companies the option of investing in new nuclear power stations as this is considered in the White Paper.

22. The Government produced an Energy White Paper in 2003 which did not contain any specific proposals for building new nuclear power stations. That White Paper stated that the Government was not ruling out *"the possibility that at some point in the future new nuclear build might be necessary if we are to meet our carbon targets."* However it made clear that *"before any decision to proceed with the building of new nuclear power stations, there will need to be the fullest public consultation and the publication of a further white paper setting out our proposals"*. We consider that we have now discharged that requirement.

23. Industry has reported that without action to reduce the planning and regulatory risks associated with investment in new nuclear power stations, they would not bring forward any proposals for new nuclear power stations. Respondents to the Government's 2006 Energy Review Consultation<sup>7</sup>, the Nuclear Policy Framework<sup>8</sup> consultation in July 2006, and our latest

<sup>5</sup> Nuclear Power Generation Cost Benefit Analysis 2007 <http://www.berr.gov.uk/files/file39525.pdf>

<sup>6</sup> Energy White Paper, *Meeting the Energy Challenge*, URN 07/1006, May 2007

<sup>7</sup> The Energy Challenge, *Energy Review*, July 2006.

<sup>8</sup> BERR: Policy Framework for New Nuclear Build, 2006.

consultation on the Future of Nuclear Power<sup>9</sup> in 2007 commented that they would not invest in nuclear power stations unless there was action to reduce the regulatory risks or create certainty in certain areas. Under this option it is unlikely therefore that any new nuclear power stations would be proposed in the UK and therefore the UK would not benefit from the reduced CO<sub>2</sub> emissions and increased diversity of supplies that they would bring.

### **Option 1(b) – conclude that UK should play a role in the future UK generating mix and take action to reduce the regulatory barriers**

24. The first step of this option is, as above, to confirm that we believe that energy companies should be allowed the option of investing in new nuclear power stations and to set out a programme of facilitative actions to reduce the regulatory and planning risks associated with investing in nuclear power stations. The Government has set a clear policy context within which the issues relating to new-build can be addressed, through the processes outlined in the White Paper<sup>10</sup>.

25. The facilitative action we propose to take is designed to reduce the regulatory uncertainty and risk associated with investing in new nuclear power stations by:

- Improving the planning system for major electricity generating stations in England and Wales, including nuclear power stations, by ensuring it sets a framework for development consents that gives full weight to policy and regulatory issues that have already been subject to debate and consultation at a national level, and does not reopen these issues in relation to individual applications. We would propose to do this in part by producing a National Policy Statement addressing nuclear power
- Running a Strategic Siting Assessment (SSA) process to develop criteria for determining the suitability of sites for new nuclear power stations. Subject to some European legislative requirements, this would enable the planning process to focus on the proposals rather than debate whether there are other more suitable sites for development
- In conjunction with the SSA, taking further our consideration of the high-level environmental impacts in accordance with the Strategic Environmental Assessment (SEA) Directive<sup>11</sup> This would limit the need to consider such high-level environmental impacts of nuclear power stations during the planning process
- Running a process of Justification (in accordance with the Justification of Practices Involving Ionising Radiation Regulations 2004) to test whether the economic, social or other benefits of specific new nuclear power technologies outweigh any health detriments
- Assisting the nuclear regulators to pursue a process of Generic Design Assessment<sup>12</sup> of industry preferred designs of nuclear power stations, to complement the existing site-specific licensing process. This would involve assessing the safety, security and environmental impact of nuclear power reactor designs, including waste arisings and radioactive discharges to the environment. This would limit the need to discuss these issues in depth during the site-specific licensing process

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<sup>9</sup> The Future of Nuclear Power, *The Role of Nuclear Power in a Low Carbon UK Economy, Consultation Document*, URN 07/970, May 2007

<sup>10</sup> Nuclear White Paper, *The Future of Nuclear Power*, URN 08/525, January 2008.

<sup>11</sup> Directive 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (O.J. L197, 21.7.2001, p30).

<sup>12</sup> This is sometimes referred to generically as “pre-licensing”.

- Pushing for a strengthening of the EU Emissions Trading Scheme so that investors have confidence in a continuing carbon price signal when making a decision

26. In addition, through the Energy Bill, we are introducing legislative arrangements to ensure that operators of new nuclear power stations securely accumulate the funds needed to meet the full costs of decommissioning new nuclear power stations that they build and that they also meet their full share of waste management costs.

### Economic

27. The 'base case' (i.e. option 1a) assumes a pre-development and planning period of eight years with an associated cost of £250 million to be borne by investors. However, with the package of measures described above a planning period of 5.5 years could be realistic under the new regulatory framework. This could reduce the levelised cost of generation to £36.4/MWh from £37.7/MWh which would lead to an increase in the NPV/GW of capacity of £155 million for a 1GW programme. .

### Benefits

28. Although the specific benefits of any individual application would continue to be explored as part of the planning system, this option offers significant benefits compared to the base case (option 1a):

- Enabling the UK to meet its energy policy goals at lower cost and with lower risk by allowing energy companies to invest in nuclear power stations;
- Providing for a more efficient framework, thereby reducing the costs of participation in the relevant planning and regulatory processes; and
- Environmental benefits as a result of reduced UK CO<sub>2</sub> emissions from future electricity generation.

### ***To Government.***

29. There will be some expenditure required by Government to undertake the necessary steps to set up the programme of measures described at paragraphs 17 and 25 above. Combined with the costs of regulator time (see paragraph 31), it is estimated that the present value cost of setting up these measures could be up to £50 million – this is an indicative assumption for the purposes of this Impact Assessment and it is expected that in line with current practice, most of these costs will largely be recovered from industry in line with past practice. It is expected that, in time, as applications are processed through the system that other burdens on the Government will be reduced through shorter planning inquiries and more efficient and timely regulatory consents. Shorter, more efficient inquiries, with more predictable timescales will enable the Government to better manage its resources in the part of the BERR that is responsible for processing applications in relation to England and Wales under the Electricity Act. Once the Infrastructure Planning Commission has been established, these benefits will pass to them and when National Policy Statements have been drawn up, it is envisaged that the inquiry phase of any application will be subsumed into the decision-making phase, rather than a separate inquiry being held. National Policy Statements will help to ensure that the inquiry phase can focus on the local impacts of any proposal rather than re-running arguments about national strategic and regulatory issues. Inspectors should also be freed up more quickly to move on to other inquiries.

30. Arrangements to protect the taxpayer by ensuring that operators of nuclear power stations securely accumulate the funds needed to meet the full costs of decommissioning and full share of waste management costs have been introduced through the Energy Bill. A full assessment of the impact of these arrangements has been undertaken as part of the

preparation for the Bill. The clauses in the Bill are subject to Parliamentary scrutiny and debate and could therefore change during their passage through Parliament. As a result costs for these arrangements are not incorporated into the summary costs for this option. Government will hold further consultations in 2008 on regulations/guidance that flow if powers are taken in the Act.

***To regulators:***

31. It is expected that the regulators will incur fewer costs in exercising their duties. In the past, where regulatory issues such as the safety of a nuclear power station, have been discussed in both the planning and licensing procedures concurrently, it has imposed a significant burden on the regulator. For example, at Sizewell B, the safety regulator had to make time for appearances at inquiries, and their protracted discussions as the design for the power station was modified. Addressing regulatory issues before planning inquiries will reduce the costs for the regulator during the planning and licensing phases. In addition there will be some expenditure incurred by the regulators with respect to the facilitative measures (see paragraphs 17 and 25).

***To applicants:***

32. It is anticipated that costs to the applicant will be reduced, as discussed above. However, as mentioned in paragraph 30 above, it is our intention that the operators of new nuclear power stations will meet the full costs of decommissioning and their full share of waste disposal costs. It will be for the energy companies to make comprehensive assessments of the economics of any nuclear power station projects, in deciding whether to make a proposal for construction. Developers would only put forward proposals if they believed that they were economic under the market and regulatory framework set by Government.

***To other participants in the planning and regulatory system:***

33. By avoiding a long and drawn out planning inquiry, and improving the scope for appropriate public engagement throughout all stages of the planning process (i.e. on a strategic national framework, for example through justification and on local, project specific issues at the inquiry), it will reduce the cost of participation for key interested parties including local planning authorities. By focusing on the specific areas relevant to the planning inquiry there will be a better use of participants' time.

**Cost/Benefits**

34. This option would allow energy companies to come forward and build new nuclear power stations faster, thereby leading to lower levelised cost of generation, than if no facilitative measures were taken. It will also reduce costs for other participants in the planning system. There will be certain additional costs to Government and regulators as outlined in paragraph 29, some of which will be charged back to the companies concerned.

35. We have not calculated a net benefit figure for this option. This would have entailed making assumptions about the timing and scale of new nuclear build. The preferred option of taking facilitative actions is designed to reduce the pre-development and planning period for potential investors in nuclear leading to lower levelised costs for nuclear generation than if such actions had not been taken.

**Risks**

36. The main risk of this option is if, despite this facilitative work by Government and the regulators, no energy companies come forward to build new nuclear power stations. However,

a number of energy companies have recently expressed a strong interest in investing in new nuclear power stations globally and in this country.

## **Option 2 – conclude that nuclear should not play a role in the future UK generating mix**

37. This option would be to decide not to conclude that energy companies should be allowed the option of investing in new nuclear power stations. When the new planning reforms are implemented, we would not produce a National Policy Statement on nuclear power. We would not take any other action to reduce the regulatory and planning risks associated with investing in new nuclear power stations.

### Economic

38. The Department's cost-benefit analysis<sup>13</sup> of new nuclear generation for the Energy White Paper concluded that the levelised cost of nuclear generation was estimated to lie within a range of £31-44/MWh with a central figure of £37.7/MWh. Separate analysis for the Energy White Paper<sup>14</sup> also indicated that for onshore wind the central figure for the levelised cost of generation was £56/MWh in the high cost wind case. For offshore wind the range was £84/MWh. Other renewable generation technologies such as biomass, wave and tidal had higher estimated levelised costs. Analysis was also carried out for a range of technological options for generation from fossil fuels with carbon capture and storage. The estimated cost of new coal-fired generation with carbon capture and storage was £43-55/MWh. A decision to exclude new nuclear therefore means that we would have to invest in more expensive forms of low carbon generation.

### Risks

39. As the economic analysis above shows, by excluding new nuclear power from the UK generating mix, the ability of the UK to meet its medium to long-term carbon emissions targets becomes more difficult. There will be an increased reliance on alternative low carbon electricity generation technologies, coupled with energy conservation measures and energy efficiency measures. The costs to the economy of taking this route are likely to be much higher. There is also increased risk in that some technologies (for example carbon capture and storage) might for example prove to be commercially, technically or legally non-viable.

40. Excluding low carbon options from the generation mix therefore reduces diversity and risks increasing reliance on more expensive technologies.

### Cost/Benefit

41. By preventing the energy companies from investing in new nuclear power stations, we believe efforts to meet our long-term climate change and security of supply goals would carry a greater risk of failure and, if we were to be successful in meeting our goals, we would do so at higher cost.

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<sup>13</sup> BERR: Nuclear Power Generation Cost Benefit Analysis 2007 <http://www.berr.gov.uk/files/file39525.pdf>

<sup>14</sup> Energy White Paper, *Meeting the Energy Challenge*, URN 07/1006, May 2007

## Summary Table of Disadvantages and Advantages (un-quantified) for the Options

42 Government concludes that energy companies should be allowed the option of investing in new nuclear power stations and will take actions to reduce the regulatory risks associated with investing in new nuclear power stations. This table sets out the qualitative disadvantages and advantages of the three options which were examined in this Impact Assessment.

Option Number	Disadvantages	Advantages
Option 1(a)	<p><b><u>Economic</u></b></p> <ul style="list-style-type: none"> <li>- Business reluctance to invest in the UK energy market due to regulatory uncertainty and increased cost of building new nuclear power stations;</li> <li>- Potential higher prices for electricity and gas for consumers with associated knock-on effects (e.g. on fuel poverty targets and international competitiveness).</li> </ul> <p><b><u>Environmental/Economic</u></b></p> <ul style="list-style-type: none"> <li>- efforts to meet our long-term climate change and security of supply goals would be achieved at a higher cost carry a greater risk of failure.</li> </ul>	<p><b><u>Economic</u></b></p> <ul style="list-style-type: none"> <li>- Not ruling out new nuclear power from the future UK energy mix;</li> <li>- Administrative savings to Government and regulators by not carrying out facilitative actions; and</li> </ul> <p><b><u>Environmental</u></b></p> <ul style="list-style-type: none"> <li>- Potential for reduced CO<sub>2</sub> emissions in future if it is decided in future that nuclear is a viable option, despite lack of facilitative measures by the Government.</li> </ul>
Option 1(b)	<p><b><u>Economic</u></b></p> <ul style="list-style-type: none"> <li>- Administrative costs to Government and regulators;</li> <li>- Costs to business who decide to build new nuclear power stations.</li> </ul>	<p><b><u>Economic</u></b></p> <ul style="list-style-type: none"> <li>- Enabling the UK to meet its energy policy goals at lower cost and with lower risk;</li> <li>- Greater Regulatory certainty;</li> <li>- Potential lower prices for electricity and gas for consumers; and</li> <li>- providing for a more efficient framework, thereby reducing the costs of participation for business in the relevant planning and regulatory processes;</li> </ul> <p><b><u>Environmental</u></b></p> <ul style="list-style-type: none"> <li>- Environmental benefits as a result of reduced UK CO<sub>2</sub> emissions from future electricity generation.</li> </ul>
Option 2	<p><b><u>Environmental/Economic</u></b></p> <ul style="list-style-type: none"> <li>- efforts to meet our long-term climate change and security of supply goals would be achieved at a higher cost and carry a greater risk of failure;</li> <li>- increasing reliance on more expensive (and unproven) forms of low carbon technologies to meet climate change and security of supply goals.</li> </ul>	<p><b><u>Economic</u></b></p> <ul style="list-style-type: none"> <li>- Regulatory Certainty;</li> <li>- Administrative savings to Government and regulators by not carrying out facilitative actions.</li> </ul>

## **Enforcement**

43. The facilitative actions set out in paragraphs 17 and 25 will be implemented by the Government and by the independent regulators. There are no sanctions for non-compliance, except for the arrangements being taken forward through the Energy Bill for a funding mechanism to ensure that operators of new nuclear power stations meet the full costs of decommissioning new nuclear power stations and their full share of waste management costs. In this instance the responsibility for enforcing, monitoring and, in the event of non-compliance, imposition of sanctions will be the responsibility of BERR.

## **Small Business Impact Test**

44. This proposal is designed to reduce uncertainty and risk for developers of new nuclear power stations. It is our considered view, based on discussions with industry through both the Energy Review consultation and nuclear consultation that such proposals would not be made by small business, because of the scale and cost of nuclear developments. There may be some benefits to small businesses who are involved in the supply chain if new nuclear reactors were built. We have explored this with the Enterprise Directorate (formerly the Small Business Service) to confirm that we have given this sufficient consideration and there is no significant impact on small business from the proposed regulatory framework.

## **Competition Assessment**

45. These changes will affect the electricity generation sector only, and most likely, only the larger players that would be more likely to bring forward a nuclear proposal, because of its scale, as outlined above (although it is feasible that a larger consortium of smaller players might come together with a proposal). It should affect all the players equally, in that the policy relates to setting a strategic context for building new nuclear power stations. It will also reduce the regulatory/planning barrier to developers engaging in building new nuclear power stations, potentially opening the market to more players – there are currently only two nuclear operators in the UK.

## **Environmental**

46. Nuclear power is one way to tackle the problem of climate change – for every 1 GW installed in place of gas-fired generation, the UK's CO<sub>2</sub> emissions would be 2.6 MtCO<sub>2</sub> per annum lower. As highlighted above, by enabling nuclear power proposals to come forward, this allows the low CO<sub>2</sub> benefits of nuclear to be realised. In the context of CO<sub>2</sub> emissions and the environment, nuclear power can be deemed to be more beneficial than generation from fossil fuels. There is a full discussion of the environmental impacts (including the environmental impacts of creating nuclear waste) of nuclear power in the Government's Consultation Document<sup>15</sup> and White Paper<sup>16</sup>.

47. The Nuclear White Paper and Nuclear Consultation Document consider the environmental issues in relation to allowing energy companies the option of investing in new nuclear power stations. The White Paper sets out the Government's conclusions in relation to these issues. As part of the facilitative action, we propose to conduct a Strategic Environmental Assessment as part of the Strategic Siting Assessment Process. We would also expect any proposals for individual new nuclear power stations to be accompanied by a full Environmental Impact Assessment to comply with the necessary European legislative requirements.

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<sup>15</sup> The Future of Nuclear Power, *The Role of Nuclear Power in a Low Carbon UK Economy, Consultation Document*, URN 07/970, May 2007.

<sup>16</sup> Nuclear White Paper, *The Future of Nuclear Power*, URN 08/525, January 2008

48. The facilitative actions set out in paragraphs 17 and 25 should enable the process for considering whether to grant development consent to progress more smoothly and predictably with all parties having a clear understanding of their role, and that of others, in the process. Whilst the facilitative actions are expected to lead to more timely and efficient consent processes, we do not expect our proposals to result in any reduction in the overall level of scrutiny of environmental issues. As mentioned above, we propose to conduct a Strategic Environmental Assessment as part of the Strategic Siting Assessment. We would expect all nuclear power proposals would continue to be accompanied by a full Environmental Impact Assessment to comply with the necessary European legislative requirements.

## **Implementation**

49. An implementation and delivery plan is set out in the White Paper<sup>17</sup>. This specifies the measures to be put in place and the draft timetable for each step if the construction of new nuclear power stations were to go ahead.

## **Consultation**

### **Within Government**

50. This policy proposal has been developed in consultation with representatives of the interested departments including: Department for Business, Enterprise and Regulatory Reform, Department for Communities and Local Government, HM Treasury, Department for Environment, Food and Rural Affairs, Department for Transport and the Cabinet Office. In addition, the independent regulators (Health and Safety Executive and Environment Agency) have been consulted on the proposals in the nuclear consultation document and in the White Paper.

### **Public Consultation**

51. The Government has carried out a series of consultations on the future of nuclear power. This process began prior to the Energy White Paper in 2003, continued with the consultation immediately before the publication of the Energy Review Report in 2006 and the further consultation after it was published, culminating in the consultation in May this year<sup>18</sup> setting out our preliminary view on nuclear power. The Government launched its consultation “the Future of Nuclear Power” in 2007. This latest consultation, prompted by the ruling in the High Court in February 2007, took account of that ruling and the Government’s commitment in 2003 to the fullest public consultation and the publication of a further White Paper setting out our proposals for new nuclear power stations in the event that a decision was taken in favour of nuclear power.

52. The Future of Nuclear Power consultation ran between 23 May to 10 October 2007 and elicited over 2,700 responses in total<sup>19</sup>. During the consultation day-long events were held in nine cities across the country involving around 1,000 people. Meetings across the country were also held to capture the views of groups and organisations. About 600 people attended these with representatives from academia, business, unions and civic groups, faith groups and environmental groups as well as hearing from those people who live near existing nuclear sites.

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<sup>17</sup> Nuclear White Paper, *The Future of Nuclear Power*, URN 08/525, January 2008.

<sup>18</sup> The Future of Nuclear Power, *The Role of Nuclear Power in a Low Carbon UK Economy, Consultation Document*, URN 07/970, May 2007.

<sup>19</sup> Most of the responses submitted to the consultation can be found on line at <http://www.direct.gov.uk/nuclearpower2007>, except where those submitting information have asked for it not to be made publicly available. This website also includes reports on regional stakeholder meetings and the deliberative events held during the consultation.

## **Monitoring and Evaluation**

53. BERR will monitor the efficiency of the new policy framework as it is implemented.

54. A success measure for the new measures would be nuclear operators choosing to go through the process of building new nuclear power stations in the UK. In doing so, the planning process would work more quickly and efficiently.

## Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

**Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.**

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	No	No
Sustainable Development	No	Yes
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	No	Yes
Race Equality	No	Yes
Disability Equality	No	Yes
Gender Equality	No	Yes
Human Rights	No	Yes
Rural Proofing	No	Yes

## **ANNEX A – Specific Impact Tests**

### **Sustainable Development**

The Nuclear White Paper considers the economic and environmental benefits of issues associated with nuclear power including possible detriments associated with nuclear waste.

### **Health**

Section 2 of the Nuclear White Paper shows how, in forming our conclusions, we have taken into account the concerns which have been raised about health impacts in relation to allowing energy companies the option of investing in new nuclear power stations. The White Paper sets out the Government's conclusion that new nuclear power stations would pose very small risks to health and that the UK has an effective regulatory framework that ensures that those risks are minimised and sensibly managed by industry.

We do not expect the facilitative actions set out in paragraphs 17 and 25 of this Impact Assessment to significantly alter the level of overall scrutiny of issues in relation to health. The process of Justification set out in more detail in the Nuclear White Paper will assess whether the economic, social or other benefits of specific new nuclear power technologies outweigh any potential health detriments.

### **Race**

This proposal affects the regulatory and planning processes in relation to investment in new nuclear power stations. They do not differentiate on the basis of race.

### **Disability**

This proposal affects the regulatory and planning processes in relation to investment in new nuclear power stations. They do not differentiate on the basis of disability.

### **Gender**

This proposal affects the regulatory and planning processes in relation to investment in new nuclear power stations. They do not differentiate on the basis of gender.

### **Human rights**

This proposal affects the regulatory and planning processes in relation to investment in new nuclear power stations. We do not expect there to be any significant human rights impacts.

### **Rural**

The White Paper sets out our proposals in relation to the Strategic Siting Assessment (SSA) and Strategic Environmental Assessment (SEA). Under these proposals, we will establish

exclusionary criteria to rule out those areas which might not contain suitable sites and discretionary criteria to assess the suitability of sites which are nominated as part of the SSA process. We will be consulting on the SSA criteria. However, the exclusionary criteria might include a consideration of safety and emergency planning requirements through, for example, population density criteria. Coupled with other considerations, such as socio-economic and environmental factors, the potential impacts of nuclear power stations on local communities would be able to be assessed at a national level through the SSA and SEA. We would also expect through the SSA to engage with local communities which would provide further opportunities to assess such impacts.