



Impact Assessment of the Planning Policy Statement: Planning and Climate Change



Impact Assessment of the Planning Policy Statement: Planning and Climate Change

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Summary: Intervention & Options

Department /Agency: Communities and Local Government	Title: Impact Assessment of the Planning Policy Statement: Planning and Climate Change.	
Stage: Publication of PPS	Version:	Date: 17/12/2007
Related Publications: RIA: Building a Greener Future; UK Climate Change Programme; Energy White Paper; Costs Review of the Code for Sustainable Homes (Cyrill Sweett, 2007)		

Available to view or download at:

<http://www.communities.gov.uk>

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

Climate change is the greatest long-term challenge facing the world today. Used positively, planning has a significant contribution to make both to meeting the UK's emissions targets and to ensuring sustainable communities appropriate for the climate change now accepted as inevitable. Planning is one of the elements required in a successful response to climate change because of its ability to influence the location, scale, mix and character of development.

What are the policy objectives and the intended effects?

The PPS on climate change sets out how spatial planning should make a full contribution to delivering the Government's Climate Change Programme and energy policies; and, in doing so, contribute to global sustainability. This includes producing and delivering planning strategies that help (i) secure the highest viable standards of resource and energy efficiency and reduction in carbon dioxide emissions for new development; and (ii) shape places that provide resilience to climate change, in ways which are consistent with social cohesion and inclusion.

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

1. "Do nothing" option; and
2. Implementation of PPS: preparing specific planning policies on climate change with implementation through the regulatory framework provided by the Town and Country Planning Act 1990.

Option 2 is the preferred option because the likely benefits will outweigh the associated costs, particularly having regard to the recommendations of the Stern Review and its emphasis on the potentially significant costs to society arising from inaction on climate change.

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

Approximately 12-18 months after publication, the take up of the policies in the PPS will be assessed so as to ensure appropriate and consistent delivery. Some 18 months after this, an evaluation of how well the PPS is ensuring its intended outcomes will commence.

Ministerial Sign-off For final proposal/implementation stage Impact Assessments:

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) the benefits justify the costs.

Signed by the responsible Minister:



Date: December 2007

Summary: Analysis & Evidence

Policy Option: 2

Description: Description: Implementation of climate change PPS

ANNUAL COSTS		COSTS	Description and scale of key monetised costs by 'main affected groups'
One-off (Transition)	Yrs		
£			Total to Local Planning Authorities (LPAs) per year: £6,800,000
			Total to Regional Planning Bodies (RPBs) per year: £675,000
			Total to developer representations per year: £1,700,000
			Costs to LPAs and RPBs to fall over period. Costs to representations to fall after assessment period. Figures are averages. All costs are estimates by consultants (see section 4.4).
Average Annual Cost (excluding one-off)			
£ 9,175,000	10	Total Cost (PV)	£ 77,072,000
Other key non-monetised costs by 'main affected groups'. Additional project preparation and planning costs for developers, and changes to construction, operation and maintenance costs for developers (Building a Greener Future RIA provides further details).			
ANNUAL BENEFITS		BENEFITS	Description and scale of key monetised benefits by 'main affected groups'
One-off	Yrs		
£			The Key Benefit of the planning policy statement is to support the delivery of other climate change and energy policies. They have not been monetised because to do so would rely on artificial assumptions to isolate planning's contribution from other policies. The benefits are described qualitatively and will include less energy-intensive developments, greater uptake of renewable and low-carbon technologies, and the avoidance of inappropriately designed and located development less likely to be resilient to climate change.
			Due to the potential cost of climate change the non monetised benefits are likely to exceed the monetised costs.
Average Annual Benefit (excluding one-off)			
£		Total Benefit (PV)	£
Other key non-monetised benefits by 'main affected groups'			

Key Assumptions/Sensitivities/Risks Planning authorities and applicants will already be incurring costs arising from action to mitigate and adapt to climate change. These will include action required by extant planning policy and guidance (such as PPS 25 on flood risk) and discretionary activity. It is not possible to accurately quantify the level and costs of this existing activity and therefore, the additional costs and benefits of this PPS are best estimates.				
Price Base Year 2007	Time Period Years 10	Net Benefit Range (NPV) £	NET BENEFIT (NPV Best estimate) £-77,072,000	
What is the geographic coverage of the policy/option?			England	
On what date will the policy be implemented?			December 2007	
Which organisation(s) will enforce the policy?				
What is the total annual cost of enforcement for these organisations?			£	
Does enforcement comply with Hampton principles?			Yes/No	
Will implementation go beyond minimum EU requirements?			Yes/No	
What is the value of the proposed offsetting measure per year?			£	
What is the value of changes in greenhouse gas emissions?			£	
Will the proposal have a significant impact on competition?			Yes/No	
Annual cost (£-£) per organisation (excluding one-off)	Micro	Small	Medium	Large
Are any of these organisations exempt?	N/A	N/A	N/A	N/A
Impact on Admin Burdens Baseline (2005 Prices) (Increase – Decrease)				
Increase of £1,700,000		Decrease of £		Net Impact £ 1,700,000
Key:	Annual costs and benefits: Constant Prices			(Net) Present Value

Evidence Base (for summary sheets)

1. Background

- 1.1** This Impact Assessment has been prepared to assess the Planning Policy Statement: *Planning and Climate Change* (“the climate change PPS”).
- 1.2** The climate change PPS sets out how planning, in providing for the new homes, jobs and infrastructure needed by communities, should help shape places with lower carbon emissions and resilient to the climate change now accepted as inevitable. It is intended to focus, reinforce and clarify the role of the spatial planning system in meeting the objectives of UK Government’s Climate Change Programme and energy policies (see Annex A for more detail). The PPS has three main aims. Firstly to ensure that developments brought forward reduce their carbon impact through appropriate choices of their location, their physical form and layout and the use of renewable and low-carbon energy. Secondly to ensure the planning process provides effective and positive support to proposals for renewable and low-carbon energy supplies. Thirdly, to shape sustainable communities resilient to the impacts of the climate change now accepted as inevitable, including more extreme weather events such as hotter and drier summers, periods of intense rainfall, flooding and rising sea levels.
- 1.3** The purpose of the Impact Assessment is to inform stakeholders about the likely impacts of the PPS. This Impact Assessment has been prepared in light of comments received during public consultation on the draft PPS and the Partial Regulatory Impact Assessment.
- 1.4** The preparation of any Impact Assessment is subject to a number of constraints (see Annex C for further detail on constraints). A key constraint for this Impact Assessment arises from the fact that the PPS complements a wide range of other Government initiatives to address the challenges of climate change, including other initiatives within the planning system. Therefore, while the potential impacts of the PPS can be identified, it is not possible to separate out conclusively the additional impacts of this PPS from the effects of other planning policies or Government measures intended to address climate change. The possible quantitative and qualitative impacts identified in this Impact Assessment must therefore be viewed as indicative.

- 1.5** It should be noted that the climate change PPS does not place limits on development. Therefore, there is no need to assess the costs of forgone development within this Impact Assessment as the PPS will not reduce the amount of development.

2. Options analysis

2.1 Options to address the threat of climate change

2.1.1 A wide range of potential options exists to address the threat of climate change. The UK Government has already implemented a variety of actions as outlined in the UK Climate Change Programme. This PPS is, therefore, part of an integrated suite of Government responses to climate change and needs to be seen in this context. Specifically, the PPS is designed to address a particular aspect of the Government's climate change objectives and is not intended to be an all-encompassing response (see Annex D for an assessment of other potential options for addressing the challenge of climate change and some other major policy responses to climate change implemented by the Government).

2.1.2 Many of these measures have been undertaken in partnership with the European Union, whilst others are UK-focused initiatives. In addition, the Government has implemented a variety of planning policies, as well as building regulations, that address climate change issues (see Annex E for a summary). Of particular relevance in terms of improving the carbon performance of new development, is Government's recent confirmation of a timetable for getting to zero carbon new homes by 2016¹ and the commitment to parallel activity for non-residential buildings.

2.1.3 This PPS complements these other policies, and is intended to focus, reinforce and clarify some of the actions already explicit or implicit in existing planning policy and guidance, as well as introduce further support for measures such as renewable and low-carbon energy, etc (see Section 4 for a more detailed discussion of the costs and benefits associated with this PPS).

2.1.4 This Impact Assessment therefore focuses on the options for implementing the Climate Change PPS, acknowledging that it is one of many UK Government measures to address climate change.

2.2 Options for implementing the climate change PPS

2.2.1 As illustrated in the preceding section, the Government has adopted a very wide range of measures to address climate change. Indeed, all main categories of regulatory instrument (command and control, voluntary, fiscal and market based) are being used by Government.

¹ Building a Greener Future: final policy statement (CLG, July 2007)
see www.communities.gov.uk/publications/planningandbuilding/building-a-greener

2.2.2 The commitment to pursue the option of developing a PPS on climate change was made clear in both the Government's Climate Change Programme and Energy Review, and confirmed in the Planning White Paper². The Planning and Compulsory Purchase Act 2004 provides the parameters of the reformed planning system and the starting point for the further reforms set out in the Planning White Paper, to be implemented through new planning legislation. These include a commitment to legislate on the role of local planning authorities in tackling climate change. Government has published new Planning Policy Statements that set out the overarching principles of planning for sustainable development (PPS1: Delivering Sustainable Development), and its expectations for plan making regionally and locally (PPS11: Regional Spatial Strategies and PPS12: Local Development Frameworks). In light of these considerations and given that this PPS is one of a suite of Government activities already in place to address climate change, two options are assessed in this Impact Assessment:

1. *"Do-nothing" option*: The Government does not implement a PPS on planning and climate change, but relies solely on those measures already in place.
2. *Implementation of PPS*: This PPS on climate change is implemented using the accepted approach for spatial planning policy.

Other implementation options are not considered appropriate in this context.

² Planning for a Sustainable Future: White Paper (CLG, May 2007)
see www.communities.gov.uk/publications/planningandbuilding/planningsustainablefuture

3. Identification of stakeholders and potential impacts

3.1 Affected stakeholders

3.1.1 Given the nature of the spatial planning system, the PPS will impact a wide variety of stakeholders. Some groups will be affected directly, through impacts on costs as a result of the planning guidance, while other groups will be affected indirectly, through benefits from reduction in climate change impacts.

3.1.2 Stakeholders that will be directly impacted by the PPS include:

- regional planning bodies (RPB) and local planning authorities (LPA);
- relevant government departments and agencies;
- building and infrastructure developers (housing and other developments, transport, water/waste etc);
- service providers (transport, water companies, waste management companies/contractors);
- technology providers and developers, such as suppliers of renewable, low carbon and decentralised energy systems, CHP, etc;
- home and land owners;
- financial providers, such as insurance and mortgage providers and development finance providers;
- special interest groups (e.g. NGOs); and, ultimately
- the general public and wider business, both through purchase and use of property and through the successful mitigation of climate change and provision of resilience to its unavoidable impacts.

3.2 Vulnerable groups

3.2.1 There are a number of vulnerable groups within society who are often disproportionately affected by either Government regulation or the absence of Government intervention. In the context of climate change, all of society is likely to experience the negative consequences of warmer temperatures and more frequent severe weather incidents. However, some groups are likely to be more vulnerable to the effects of climate change:

- **Low income households.** Those on lower incomes will be, in general, less able themselves to adapt to the consequences of climate change³. For example, they are more likely to live in high density social housing

³ See for example "London's Warming" published by the London Climate Change Partnership in October of 2002. See: http://www.london.gov.uk/gla/publications/environment/londons_warming02.pdf

where ventilation can less easily be adapted to cope with warming trends, and in urban areas where the urban heat island effect is likely to be most pronounced⁴. Lower income households are also less able to pay for common measures to ameliorate impacts, such as air conditioning.

- **Elderly people.** Elderly people typically live on fixed incomes, and hence are less able to pay for adaptation measures (as with those on lower incomes).
- **Individuals with poor health.** Rising temperatures can lead to greater heat stress on those in poor health. Increased mortality related to unusually high summer temperatures has been observed in a number of European countries in recent years. Rising temperatures are also often associated with increased levels of air pollution.
- **Residents of housing in areas liable to flooding.** An increased likelihood of severe storms and sea level rise will both mean that the vulnerability of properties to flooding is likely to increase.

3.2.2 Clearly, many individuals fall into more than one of these categories, and hence experience multiple vulnerabilities. Also, it should be noted that minority groups are often over represented among lower income households and in urban areas.

3.3 Impacts of the climate change PPS on stakeholders

3.3.1 As described in the previous section, the climate change PPS is one of a wide range of planning policy statements and guidance that the government has implemented and which address climate change. The PPS is intended to bring greater focus to, and provide clarity on, appropriate planning responses to climate change, thus reinforcing the role of the planning system in addressing climate change.

3.3.2 The purpose of this Impact Assessment is to assess the impacts of the PPS that are additional to the impacts of other existing regulations and policies. The extent to which impacts or topics covered by this PPS are covered (to varying degrees) within existing planning policy statements and guidance is summarised in Table 3.1.

⁴The urban heat island effect is a result of the built environment both emitting and also storing heat, leading to localised increases in temperatures. The phenomenon is well observed in large conurbations such as London. In central London, the urban heat island effect adds up to a further 5 to 6°C to summer night temperatures (source: London's Warming, as above).

Table 3.1: Overview of Predicted Impacts of the PPS

Predicted Impact of the PPS	Other Planning Policy/Guidance that Addresses this Impact or Topic
Reduced demand for travel; greater proportion of journeys by walking, cycling or public transport	PPS1, PPS3, PPG 4, PPS6, PPG13
Flood risk management	PPG20, PPS25
Higher density and other changes to housing land allocation	PPS3, PPS25
Development of carbon emission targets and yardsticks	No explicit reference in current guidance but Sustainability Appraisal/ Strategic Environmental Assessment requires planning authorities to consider climate change in predicting the effects of the plan
Renewable, low carbon and decentralised energy supply	PPS1, PPS22
Localised water provision/ recycling	No explicit reference in current guidance
Sustainable waste management	PPS10
Provision of open and green space to promote urban cooling	No explicit reference in current guidance
Regional vulnerability assessment	No explicit reference in current guidance
See Annex E for the titles of the PPSs/ PPGs	

3.3.3 These impacts will affect each stakeholder differently. Table 3.2 outlines the potential impacts identified by stakeholder.

Table 3.2: Assessment of Stakeholder Impacts			
Stakeholder	Type of Impact	Positive Impacts	Negative Impacts
RPBs and LPAs	Direct	<ul style="list-style-type: none"> • Better spatial planning outcomes • Greater clarity on provision and support for renewable and low carbon energy supplies 	<ul style="list-style-type: none"> • Additional costs associated with implementing and monitoring PPS
Developers	Direct	<ul style="list-style-type: none"> • Increased scope for sustainable development and renewable, low carbon and decentralised energy projects • Increase in value of developments • Greater clarity regarding expectations for addressing climate change 	<ul style="list-style-type: none"> • Slightly increased reporting requirements as part of the planning process • Increased cost of implementing renewable and low-carbon energy technologies
Product and service providers	Direct	<ul style="list-style-type: none"> • Increased demand from local water/energy/waste schemes 	<ul style="list-style-type: none"> • Small decrease in demand for grid based centralised electricity supplies • Possibly, increased grid costs in catering for decentralised energy systems
Landowners	Direct	<ul style="list-style-type: none"> • Increases in land values in some locations 	<ul style="list-style-type: none"> • Cost to developers likely to be passed on to landowners effecting land values
Financial providers	Indirect	<ul style="list-style-type: none"> • Decreases in losses from extreme events 	

Table 3.2: Assessment of Stakeholder Impacts

Stakeholder	Type of Impact	Positive Impacts	Negative Impacts
General public/wider business	Direct and indirect	<ul style="list-style-type: none"> • Decreased effects of climate change • Increased provision of urban green space • Potential for decreased energy bills • Lower adaptation costs in future 	<ul style="list-style-type: none"> • Any negative impacts from greater use of renewable and low-carbon energy sources (eg visual impact, noise impacts) • Increased localised emissions as decentralised power generation becomes more common

3.4 Equity and fairness analysis

3.4.1 At this stage it does not appear that the PPS will have material adverse effects on specific groups in society or the economy such as people on low incomes, those living in rural areas, those living on fixed incomes (such as pensioners) or on small businesses (see 4.6 below for more detailed analysis). On the contrary, in helping secure progress against the UK's emission targets and shaping sustainable communities that are resilient to the climate change now accepted as inevitable, the PPS is likely to have indirect benefits for vulnerable groups in society for whom climate change is expected to have a disproportionate adverse impact.

3.4.2 The analysis undertaken to date indicates that the immediate cost of the PPS will fall upon:

- RPBs and LPAs;
- property developers and owners of development sites; and
- suppliers of renewable, low-carbon technologies to developments.

3.4.3 These groups are considered to be capable of adapting to the additional requirements imposed by the PPS. Indeed, many of these stakeholders will also be beneficiaries of the PPS. Suppliers of renewable and low-carbon technologies should benefit from increased markets, whilst planners and developers should benefit from increased clarity and focus concerning the role of spatial planning in addressing climate change.

- 3.4.4** Developers will seek to pass on any additional cost to the owners of development land.
- 3.4.5** The impacts of costs associated with delivering low carbon and zero carbon housing and buildings are not assessed in this Impact Assessment, for two reasons:
- (i) any mandatory requirement to reduce carbon emissions will formally be implemented through the Building Regulations. The Government confirmed its commitment to achieve zero carbon new homes by 2016 in the final Building a Greener Future policy statement published in July 2007. The Regulatory Impact Assessment supporting this policy statement estimates the costs and benefits of the zero carbon homes policy for different development scenarios. This assessment is relevant to the climate change PPS but is not replicated in this Impact Assessment. Both the final Building a Greener Future policy statement, and the supporting Regulatory Impact Assessment, are available on the Department's website at www.communities.gov.uk/publications/planningandbuilding/building-a-greener; and
 - (ii) the approach taken in this Impact Assessment is to assess costs of specific low and zero-carbon technologies and benefits on a comparative basis in terms of carbon emission abatement (i.e. £per tonne of carbon saved).
- 3.4.6** As already noted, the PPS falls within a broad framework of Government responses to the challenge of climate change. This framework consists of general measures (such as fuel duties) as well as more specific, sector based approaches to managing carbon emissions. Therefore, a very wide range of stakeholders are affected by the Government's climate change agenda, and the stakeholders affected by this PPS are therefore not in any way being 'singled out'.
- 3.4.7** Under these circumstances, there are considered to be no inequitable or unfair impacts arising from the implementation of the climate change PPS.

4. Identification of costs and benefits

4.1 The costs of climate change and the role of planning

4.1.1 The Stern Review discussed how the costs of severe climate change are likely to be larger than the costs of mitigation. See Annex B for further discussion of the cost of climate change.

4.1.2 The Stern Review also detailed the potential role of planning in mitigating and adapting to climate change:

- although the review advocates tax changes, emissions trading and use of technology as the main tools to combat climate change, the report also discusses other policies such as planning reform (Chapter 17).
- the review recognises that planning policy tries to encompass local and national economic social and environmental concerns. He recommends that national environmental concerns are properly balanced against local ones.
- the review points out that obtaining planning permission for renewable energy plants and micro-generation developments are a significant transaction cost and urges consideration of this when reforming the system.
- the review also points out that planning can have an important role in ensuring mitigating climate change (Chapter 19). These involve weighing the uncertain future benefits of adaptation work to the present costs.

4.2 Assumptions and uncertainties

4.2.1 The preparation of this Impact Assessment is subject to a number of uncertainties. It is not possible to predict the quantity, type and scope of projects that will occur as a result of this PPS, and hence it is not possible to accurately quantify the costs and benefits that will accrue. As has already been emphasised, the climate change PPS is intended to clarify and focus the role of the planning system in tackling climate change. It has been developed on the assumption that there is already a combination of required and discretionary activity underway to tackle climate change, although it is not possible to accurately quantify the level of this existing activity.

4.2.2 Although there is an increasing body of scientific and economic research on the impacts of global warming, the costs of climate change remain uncertain. It is also difficult to determine the benefits of reducing carbon emissions with any precision. However, it is possible to estimate the benefits of abated carbon emissions using existing Government practice on carbon abatement costs, the traded value of carbon, and the shadow price of carbon.

Difficulties with quantifying impacts of the PPS

4.2.3 Planning policy is not prescriptive like other regulations and its delivery will depend on how regional and local planning authorities deliver it in light of their local circumstances and development opportunities. It is therefore difficult to quantify the impact of planning policy. This difficulty is particularly pronounced for the Climate Change PPS because, as described above it is one of a wide range of planning policy statements and guidance that the government has implemented and which address climate change. The PPS is intended to bring greater focus to, and provide clarity on, appropriate planning responses to climate change, thus reinforcing the role of the planning system in addressing climate change as has been suggested in the Stern Review and the Energy White Paper.

4.3 Qualitative assessment of costs

4.3.1 The PPS will result in a number of additional costs being imposed on authorities and other stakeholders, although in practice some of these costs may already be incurred as a result of existing planning policy and guidance, and discretionary activity, addressing climate change at regional and local levels. These costs can be broadly summarised as follows:

- costs to authorities of implementing the PPS;
- additional project preparation and planning costs for developers; and
- changes to construction, operation and maintenance costs for developers.

4.3.2 It is anticipated that the majority of the costs will be incurred by RPBs and LPAs, specifically:

- assessing, testing and monitoring the performance of planning strategies on mitigating climate change and adapting to the impacts of likely changes to the climate;
- undertaking regional vulnerability assessments;
- gaining an evidence-based understanding of the feasibility and potential for decentralised and renewable or low-carbon technologies;

- conducting scoping reports for opportunities for linking development sites in terms of energy, and utilising waste heat;
- additional time spent assessing planning applications for climate change impacts; and
- setting up and maintaining the data collection necessary to support effective monitoring and review.

4.3.3 Although some of these tasks are already required under the Strategic Environmental Assessment regulations, in general the level of effort required to comply with the requirements of the climate change PPS will be greater.

4.3.4 The costs to other stakeholders depend very much on the types of projects that are submitted and accepted as a result of the PPS, which clearly cannot be determined as a part of this ex-ante analysis. However, it is anticipated that these costs will be minimal in the context of new developments. In addition, the PPS is drafted so as to ensure that non-deliverable technical solutions are not required. In this context, deliverable covers both technical feasibility and financial viability.

4.4 Quantitative assessment of costs

Planning Authorities – Administrative Costs

4.4.1 RPBs and LPAs will incur additional administrative costs as a result of meeting the requirements of the PPS and in responding to applicants who are addressing the new requirements imposed by LPAs. In preparing this assessment, the following explicit assumptions have been made:

- the targets for the progressive strengthening of mandatory carbon reduction targets for new homes up to zero carbon in 2016 through Building Regulations confirmed in the *Building a Greener Future* policy statement;
- the Government's intention to set in place a clear timetable to deliver substantial reductions in carbon emissions from commercial buildings within the next 10 years;
- planning authorities and applicants will already be incurring costs arising from action to mitigate and adapt to climate change. These will include action required by extant planning policy and guidance (such as PPS 25 on flood risk⁵) and discretionary activity. As noted in the section on assumptions and uncertainties above, it is not possible to accurately quantify the level and costs of this existing activity nor, therefore, the additional costs of this PPS.

⁵The full regulatory impact assessment on Planning Policy Statement 25: Development and Flood Risk, is available at <http://www.communities.gov.uk/publications/planningandbuilding/pps25ria>

4.4.2 In the absence of reliable survey data, two factors have been applied to the assessed gross costs of implementing the PPS by local authorities:

- the ‘policy’ costs have been reduced to 50% of the cost in 2008 by 2013 after which they remain constant, to take account of accumulated information and studies informing future policy development; and
- the ‘application handling’ costs in 2008 are reduced to 25% of that value in 2018, to take account in particular of the implementation of more stringent Building Regulations, accumulated expertise, adoption of ‘standardised’ solutions by applicants and real increases in planning application fees of RPI plus 3%.

4.4.3 An allowance has been made in the estimates for expenditure already being incurred by planning authorities implementing renewable energy and related policies.

Table 4.1: Estimated Net Costs to Planning Authorities in England					
Activity	No of Authorities	Cost per Authority (£)		Total Cost (£)	
		2008	2018	2008	2018
Policy, including Monitoring and Review	9 RPBs	100,000	50,000	900,000	450,000
	340 DCs and UAs	10,000	5,000	3,400,000	1,700,000
Development Control	340 District Councils and Unitary Authorities [Costs of application handling in 2008 based on 20,000 applications across all authorities of which: 10,000 are small at £100 (£1million) 9,000 are medium at £250 (£2.25 million) 1,000 are large at £1,000 (£1million)]	12,500	3,125	4,250,000	1,062,500
Total		112,500	58,125	11,762,500	3,212,500
Total Average Cost per year over 10 years: £7,475,000					
Source: Consultant’s estimates					
Note: Number of applications based on CLG Development Control Statistics estimate of 20,000 ‘major’ applications per annum.					

Developers – Administrative Costs

- 4.4.4** Landowners and developers incur costs in making representations on planning policies. This assessment does not include any impacts of the PPS on construction costs.
- 4.4.5** The policy will also impact upon development control costs to business. The majority of any additional costs to development control are being incurred already as a result of existing activity and any increases primarily arise from building regulations and the programme for zero carbon homes (see Section 3.3.1). These costs will be more than offset by savings from focusing and clarifying the role of the planning system in addressing climate change. In addition the PPS confirms that applicants for renewable energy development should not be required to demonstrate either the overall need for renewable energy and its distribution, or the energy justification for why a proposal for such a development must be sited in a particular location, saving further resources. In practice, the PPS will have the effect of reducing the administrative and land holding costs currently incurred by developers. It has not been possible to quantify these savings.

Table 4.2 sets out the estimated additional representation costs to developers from the existence of the PPS. This amounts to around £1.7 million in 2008.

Table 4.2: Estimated Net Costs to Applicants in England		
Activity	No of Authorities	Total Cost (£ million)
Representations on Development Plan documents	17,000 per year, of which 10% relate to PPS issues (1,700). Estimated cost of £1,000 per representation.	1.7
Source: Consultant's estimates		

Developers – Additional Costs Associated with Development

- 4.4.6** The primary additional impacts of the PPS are anticipated to be an increase in the:
- uptake of on-site and off-site renewable and low carbon energy projects;
 - creation of decentralised energy systems;
 - more effective and positive support for renewable and low-carbon energy supplies; and
 - changes to the type, form and density of development.

4.4.7 The quantity, type and scope of any projects that may occur as a result of this PPS, and that would not otherwise occur, are unknown and would be extremely hard to forecast with any degree of accuracy. It is therefore not possible to create a detailed assessment of the additional cost that will be incurred as a result of the PPS facilitating approval of these types of projects. Further, other mitigation measures such as waste management options, as well as other adaptation measures are also anticipated to take place, though these are less likely to occur to the same magnitude.

4.4.8 There is however, a growing body of research and work on these areas. Whilst this has not been replicated in this Impact Assessment, it is relevant to it and to understanding the costs and benefits associated with the types of technologies expected to be promoted by the PPS, and the link between these costs and benefits and the type, form and density of development. The following publications/areas of work are particularly relevant but are not intended to constitute an exhaustive list:

- *Regulatory Impact Assessment: Building a Greener Future* (CLG, July 2007)
- *Cost Review of the Code for Sustainable Homes* (Cyrill Sweett, 2007)
- *The role of microgeneration in delivering zero carbon homes: a study* (Element Energy, 2007)
- *Evidence Base: Climate Change in the Further Alterations to the London Plan* (Arup, April 2007)

4.4.9 In addition to this growing body of research in this field, there are approaches that can be used to obtain an understanding of the net costs and benefits of the above impacts of the PPS:

- identify the carbon abatement costs (£ per tonne of carbon dioxide or equivalent) for the technologies that are likely to become more common as a result of the PPS;
- identify the costs to society of carbon emissions using the Shadow Price of Carbon; and
- compare the figures – where the abatement cost per tonne is lower than the estimated costs to society of carbon emissions there will be a net benefit from the measure (and vice versa).

4.4.10 The cost of carbon abatement is estimated by calculating the additional cost of generation using these technologies to the extent that a tonne of carbon would be prevented from being emitted from conventional sources/technologies (ie if one megawatt hour of conventional generation emitted a tonne of carbon, what would be the incremental cost of generating a megawatt hour using renewable and/or low carbon energy technologies).

Decentralised Renewable and Low Carbon Energy Projects

4.4.11 At present, the majority of renewable and low carbon energy technologies whose adoption would be stimulated by the PPS produce electricity at a higher cost than conventional, grid based sources. Estimates of the range of carbon abatement costs vary, but the Government's Energy Review gave the following broad ranges per tonne of carbon (£t/C). For the purposes of this Impact Assessment the figures used in the Energy Review have been converted in to the cost per tonne of carbon dioxide (£t/CO₂):

- Renewables: £9 to £35.
- Gas with Carbon Capture and Storage (CCS): £7 to £13.
- Coal with CCS: £-3 to £13.

4.4.12 More detailed figures have been presented in the recently published UK Government Energy White Paper (May 2007). Table 4.3 lists the estimated cost of carbon abatement for a sample of renewable and low carbon energy technologies, as measured against combined cycle gas turbines (CCGT) as the alternative source of generation. Again, for the purposes of this Impact Assessment, the abatement costs have been calculated for carbon dioxide rather than carbon. It should be noted that these figures are not absolute – the cost of abatement will have a range for each technology depending on the size, location, type of equipment used, and whether the technology is used as part of a refurbishment or a new build. Further, as renewable and low carbon technologies gain greater market share, their costs are predicted to decrease significantly. The Energy White Paper only provides cost data estimated to 2020, but these numbers should decrease in the longer term, making renewable and low carbon technologies increasingly cost efficient.

Table 4.3: Estimated Carbon Abatement Costs for a Selection of Renewable and Low Carbon Energy Technologies, 2020

Technology	Carbon Abatement Cost (£/tCO ₂)
Industrial combined heat and power (CHP)	4
Pulverised fuel coal with CCS	23
Electricity from gas with CCS	34
Medium scale community CHP	40
Onshore wind	50
Heat generating microgen	142
Micro CHP	198
Micro wind	265
Solar water heating	288
Solar PV	446
Source: Energy White Paper, 2007 ⁶	

Localised Water Schemes

4.4.13 Pumping of water and wastewater accounts for a significant proportion of energy consumption. One potential solution to reduce energy use in the sector is to rely on more localised water networks, to reduce the amount of pumping needed and hence energy consumption.

4.4.14 Relatively little research has been conducted on the cost abatement potential of local water networks, and hence it is not possible to quantify this benefit here. The Carbon Trust has been undertaking research with the UK water companies to identify carbon saving measures for the industry, and this research may provide more clarity, when it becomes available.

⁶ Figures for micro CHP, micro wind, solar water heating and solar PV are derived from a "Memo on Potential Carbon Savings from Energy Efficiency Appliances Installed in the Period 2007-2020" which is used by the White Paper to derive aggregate figures for micro technologies. Note that the figure given for 'Medium scale community CHP' is not quoted in the Energy White Paper; the figure is based on research undertaken by the Building Research Establishment (BRE) using economic assumptions and calculation methodology consistent with the Energy White Paper cost figures. All figures have been converted from £/tC to £/tCO₂ for the purposes of consistency in this IA.

4.5 Benefits

4.5.1 The primary benefit of the PPS will be to enable the planning system to support the implementation of the Government's other climate change policies. Without a supportive planning system the costs of the Government's climate change policies would be higher. This is because other climate change policies have already assumed that the planning system will be supportive. The table below outlines the key climate change policies which assume a more supporting planning system.

Table 4.4: How the Climate Change Policy Statement Supports other Key Policies

Policy	Role of planning system assumed in Policy	Impact Assessment
<p>Climate Change Bill (2007)– Enforces 60% drop in greenhouse gas emissions by 2050 from 1990 levels</p>	<p>The climate change bill enforces statutory lower emissions on the assumption these will be delivered through many mechanisms including planning.</p>	<p>The impact assessment has a Net Benefit range from -£92 billion to £52 billion over the 43 years until 2050 in present value terms. A more supportive planning system is identified as one of the variables that will have a positive impact.</p>
<p>Building a Greener Future (2007)– set timetable for moving towards zero carbon homes by 2016</p>	<p>Building a Greener Future relies on a supportive planning system to assist the move to zero carbon homes.</p>	<p>The regulatory impact assessment has a Net Benefit range from -£28.4 billion to £13.5 billion⁷ over the 9 years until 2050 in present value terms. The assumptions include the presence of the climate change PPS.</p>
<p>Energy White Paper (2007)</p>	<p>The white paper describes how the climate change PPS will play a key role in ensuring certainty for renewable energy supply.</p>	<p>The impacts chapter discusses the importance of reforms to the planning system in delivering energy policies. Analysis by Redpoint on the difference between a well functioning energy market and an imperfect market estimates that emissions will be 45mt CO₂ under the imperfect market scenario. Planning for climate change is one of the factors that will make a difference between the scenarios.</p>

⁷ This RIA used the social price of carbon rather than the shadow price of carbon.

4.5.2 It is not possible to quantify the extent to which the PPS will affect the impacts of the above policies. For example it is not possible to determine what proportion of the increase in renewable energy uptake is due to increased certainty provided by this policy as opposed to the fiscal incentive of the climate change levy or more general guidance.

4.5.3 Many of the potential benefits that arise from planning for climate change will arise from the greater clarity and focus on low carbon development, which in turn will arise from reinforcing measures that are already driven by existing planning policy and guidance. The primary benefits of the policy are expected to be decreased carbon emissions through increased uptake of renewable and low-carbon technologies and appropriately located and designed development. The additional benefits brought about by the proposed PPS are predicted to be:

- greater clarity for all users of the planning system;
- energy savings through decentralised energy schemes;
- expanded markets and demand for renewable and low carbon technologies;
- broader environmental benefits, through reductions in the impacts of climate change⁸;
- reduction in the demand for conventionally generated electricity, leading to the reduction of non-carbon atmospheric emissions from fossil fuel fired power stations (for example particulate matter and oxides of sulphur and nitrogen);
- benefits in terms of increased security of supply to the national and regional energy systems, arising from reduced energy demand (and therefore reduced fossil fuel imports);
- potential reduction of energy costs with associated benefits for fuel poverty and business competitiveness;
- improvements to health and productivity through occupying buildings with better temperature control and more natural light;
- improvement to local air quality by reducing the need to travel, especially by car, and health benefits associated with walking and cycling; and
- improved resilience of communities to the climate change now accepted as inevitable, and clearer expectations on protection from flooding.⁹

⁸ See **Halsnaes** (2006) 'Climate change and planning' *Planning Theory and Practice* 7 (2) for a discussion of the broad need for a specific climate change planning policy statement.

⁹ See **Willson** (2006) 'Adapting to Climate Change at the Local Level: The spatial planning Response' *Local environment* 11 (6) for a discussion of the need for broader policy and guidance on adaptation.

4.5.4 The primary additional benefit of the PPS will be the decreased carbon emissions and associated broader environmental benefits that will accrue from reduced climate change impacts, through the location and design of development and increased use of renewable and low carbon energy sources.

Greater Clarity for Users of the Planning System

4.5.5 The climate change PPS provides significant clarification on the role of the land use planning system in helping to tackle climate change. This clarification should help both planning authorities and applicants to have greater clarity around key issues such as the:

- remit of the planning system, for example with respect to how it complements Buildings Regulations;
- expectations of developers with respect to the carbon performance of new developments as they bring schemes forward; and
- the grounds on which the planning system may be used to influence the carbon performance of new development.

4.5.6 Greater clarity should lead to less wasted effort and quicker decisions within the planning system. The types of costs that this should save include:

- removing ambiguity on the need for and type of policies that are appropriate with respect to the carbon performance of new development and standardising process but not outcomes;
- fewer contested planning applications, potentially saving considerable amounts of time and money with respect to planning and legal advisors; and
- more timely approval of planning applications. The PPS and the local policies that will be adopted will provide greater certainty for developers and reduce application processing times. These savings could outweigh the administrative costs of implementation to planning authorities and developers.

4.5.7 Therefore, while it is not possible to quantify the benefits associated with the greater clarity that will be provided by this Climate Change PPS, it is likely that the savings will, over time, be equal to or outweigh the administrative costs of implementation.

Quantitative Assessment of Benefits

- 4.5.8** As with the costs, it is not possible to predict the quantity, type and scope of projects that will occur as a result of this PPS, and hence it is not possible to accurately quantify the benefits that will accrue. However, it is possible to estimate the benefits of abated carbon emissions using the shadow price of carbon (SPC).
- 4.5.9** The SPC has recently been developed by the Department for the Environment, Food and Rural Affairs (Defra), and endorsed as interim Government-wide guidance, to replace all existing guidance on using the social cost of carbon. The SPC is used to value the increase or decrease in greenhouse gas emissions resulting from a proposed policy. Put simply, the SPC captures the damage costs of climate change caused by each additional tonne of greenhouse gas emitted (converted into carbon dioxide equivalent – CO₂e – for ease of comparison). The SPC depends on the year the carbon dioxide or equivalent is abated/emitted and rises over time to account for observed (and assumed) inflation and to reflect rising damage costs over time from higher greenhouse gas concentrations. For a policy starting in 2007, like the climate change PPS, the SPC is £25/tCO₂, rising at 2% per annum (so £26/tCO₂ in 2008 rising to £33/tCO₂ in 2020 and £49/tCO₂ by 2040).¹⁰ For the purposes of this Impact Assessment the Government's SPC figure for 2007 has been used.

4.6 Options Assessment

Do nothing" Baseline Scenario"

- 4.6.1** In the "do nothing" scenario, the PPS is not implemented. Under this scenario, the costs and benefits of the PPS outlined above would not accrue. However, the UK would incur the cost of climate change impacts.
- 4.6.2** While the "do nothing" scenario is not viable if the UK is to meet its commitments on climate change, and respond to the environmental and economic costs of climate change as outlined in the Stern Review, it presents a baseline scenario against which to compare the impacts of implementation of the climate change PPS.

Implement the Climate Change PPS

- 4.6.3** Using the costs and benefits of abatement described above, we can estimate whether the types of projects that the policy might facilitate are likely to have a net cost or a net benefit.

¹⁰ see <http://www.defra.gov.uk/environment/climatechange/research/carboncost/index.htm>

4.6.4 Column D of Table 4.5 summarises the net benefits of carbon abatement using the given technologies using the SPC.

4.6.5 It is important to note that the abatement cost figures shown are very much 'point' estimates for broad types of technology – in reality there is likely to be significant variation around these. Further, the costs may fall in the future as such technologies are more widely deployed. It is also important to note that there may be other non-carbon benefits associated with these technologies which aren't included in table 4.5, such as effects on air quality and improved security of supply.

Table 4.5: Net Benefits of Renewable and Low Carbon Energy Technologies using the Shadow Price of Carbon

A. Technology	B. Abatement Cost (per tCO ₂) <i>Will fall over time as abatement technology advances.</i>	C. Shadow Price of Carbon (per tCO ₂) <i>SPC will rise over time as the cost of greenhouse gasses to society rises.</i>	D. Net Benefit/Cost (per tCO ₂) <i>Net benefit will rise over time as abatement costs fall and SPC rises.</i>
Industrial combined heat and power (CHP)	£4	£25	£21
Pulverised fuel coal with CCS	£23	£25	£2
Electricity from gas with CCS	£34	£25	£-9
Medium scale community CHP	£40	£25	£-15
Onshore wind	£50	£25	£-25
Heat generating microgen	£142	£25	£-117
Micro CHP	£198	£25	£-173
Micro wind	£265	£25	£-240
Solar water heating	£288	£25	£-263
Solar PV	£446	£25	£-421

Source: Consultant's analysis of a range of abatement costs

- 4.6.6** As can be seen from column D of the table, a comparison with the SPC for 2007 suggests that all of the renewable and low carbon energy technologies that may be encouraged by the PPS would have a net economic cost, other than pulverised fuel coal with CCS and industrial CHP which would only be used in larger scale developments (micro CHP, by contrast, shows a high net cost). Where the traded cost of carbon is used, the results show higher overall net economic costs with only industrial CHP showing a net benefit.
- 4.6.7** These findings suggest that uptake of decentralised and renewable or low-carbon energy technologies is likely to yield net economic costs, although the overall net cost will be determined by the mix of technologies deployed and, crucially, their total abatement potential. A study commissioned by the the Renewables Advisory Board on the role of renewables in delivering zero carbon homes (referred to in 4.4.8 above) does consider the appropriateness of different renewable and low-carbon technologies for different development scenarios, and the associated costs and benefits in terms of contributing to the Government's ambition of zero carbon new homes by 2016.¹¹ The analysis in this report is therefore relevant to this Impact Assessment but is not replicated here.
- 4.6.8** In considering the findings set out above, there are three important considerations. Firstly, it should be noted that the marginal abatement cost figures do not include energy efficiency measures. Many energy demand reduction options can reduce carbon at a net positive benefit (ie a negative cost of abatement) depending upon the investment cost and pay-back period of each option. The total net cost arising from introduction of the PPS would therefore be reduced if these measures were to be included as a part of a more concerted effort to develop carbon efficient buildings. It is also emphasised that the costs included in the analysis are averages, and in fact costs can vary significantly depending on the specific project context. Hence there will be scenarios in which costs will be above average, and others where they will be below average. A more detailed account of this variation can be seen in the work commissioned from Element Energy by the Renewables Advisory Board to assess the implications of the Government's target for all new homes to be zero carbon by 2016. This has included consideration of the correlation between development type, scale and location, and associated suitability and costs of different types of renewable and low-carbon technology.

¹¹see <http://www.renewables-advisory-board.org.uk>

- 4.6.9** Secondly, over time it is very likely that the costs of the energy technologies that are likely to be promoted by the climate change PPS will fall as technologies advance and as markets mature (for example as a result of greater competition and economies of scale in production and better training and expertise amongst installers). In this regard the PPS will play a role in stimulating market demand within the UK, and hence there should be beneficial second order effects that will lead to cheaper renewable, low carbon and decentralised energy technologies. This in turn will help to stimulate their uptake in the UK and abroad. At the same time, the Shadow Price of Carbon increases for each year beyond 2007 which in turn will result in a reduction in the net costs of these decentralised technologies over time. Moreover, this also means that the cost-effectiveness of other actions to tackle climate change will improve over time.
- 4.6.10** Estimates based on experience of low and zero carbon technologies, indicate that costs could be reduced significantly for each doubling of installed capacity¹². For example, industry analysts have predicted that if there were 12 million installed Micro-Combined Heat and Power units the additional cost (i.e. marginal cost based on a current typical market price for conventional equipment) might fall from around £2,000 to £400.
- 4.6.11** While it is not possible to forecast future prices for the renewable and low carbon energy technologies whose adoption will be stimulated by the PPS, it can be assumed that the estimates presented in Table 4.5 represent something approximating to a worst case scenario.
- 4.6.12** Finally, as discussed above, the PPS has an important role in helping to secure the delivery of the Government's ambitions for increasingly sustainable buildings. By setting out the role of the planning system in helping to secure local sources of energy supply, the PPS will help to unlock the range of solutions necessary to deliver buildings with increasingly low carbon emissions.
- 4.6.13** For example, the Element Energy work referred to above recommends that "local offsite generation is encouraged" and advise that it is important that "larger scale CHP and district heating is culturally and commercially attractive in the UK since it offers a relative cheap route to compliance [with the zero carbon policy]". A similar message is emerging from the UK Green Building Council's¹³ work on the sustainability of new non-domestic buildings. This highlights the pivotal role of the spatial

¹² Based on research conducted by M. Hinnells, the International Energy Agency and the Government Performance and Innovation Unit, and Code for Sustainable Homes cost review, EP/Housing Corp.

¹³ UK Green Building Council (2007) Carbon Reductions in Non-Domestic Buildings

planning system in delivering renewable sources of energy to supply new development, in particular near-site sources, by understanding “community renewable potential in order to assign the best near-site solutions in terms of carbon reductions and maximising the use of resources.”

4.7 Other impact considerations in implementing the Climate Change PPS

General

4.7.1 The climate change PPS has not been developed to correct an inequality but, as noted in Section 3.2, while all sections of society will be impacted by the negative consequences of climate change, certain groups are more likely to be negatively affected than others, namely:

- low income households;
- the elderly;
- persons in poor health; and
- residents of areas vulnerable to flooding.

4.7.2 The effects of the PPS will be to:

- reduce the impacts of climate change; and
- improve the adaptability of new development to the effects of climate change.

4.7.3 Both of these effects will be of benefit to the most vulnerable groups mentioned above.

Competition Assessment

4.7.4 The questions to be asked in a competition filter test are presented in Table 4.6.

Table 4.6: Competition Assessment Filter

Q1: In the market(s) affected by the new regulations, does any firm have more than 10 percent market share?
Q2: In the market(s) affected by the new regulation, does any firm have more than 20 percent market share?
Q3: In the market(s) affected by the new regulation, do the largest three firms together have at least 50 percent market share?
Q4: Would the costs of the regulation affect some firms substantially more than others?
Q5: Is the regulation likely to affect the market structure, changing the number or size of firms?
Q6: Would the regulation lead to higher set-up costs for new or potential firms that existing firms do not have to meet?
Q7: Would the regulation lead to higher ongoing costs for new or potential firms that existing firms do not have to meet?
Q8: Is the sector characterised by rapid technological change?
Q9: Would the regulation restrict the ability of firms to choose the price, quality, range or location of their products?

4.7.5 A competition assessment is used to ensure that a proposed regulation does not have a negative or positive impact on some firms and not others. The questions above are typically used to assess whether any firms will be disproportionately affected. Where this is the case, the regulation may require modification to ensure that regulations imposed on business do not unfairly impact small firms, or drive the market to a less competitive state.

4.7.6 The climate change PPS will not have a major impact on the business sectors affected (namely developers and suppliers of renewable and low carbon energy generation products). There will therefore be no change to the structure of the supply chain or demand, and hence no competition impacts.

Small Business

4.7.7 Small businesses often find it more difficult to comply with new regulations than larger firms, which have greater resources for implementation. The climate change PPS is not expected to have any negative impacts on small businesses, as the greater focus and clarity on carbon issues should enable small developers to identify requirements more clearly. The discussion presented in paragraph 4.4.5 above, concerning the benefits of improved clarity within the planning system applies in particular to small developers.

- 4.7.8** By helping to develop markets for renewable, low carbon and decentralised energy technologies the PPS will also benefit the many small businesses active in this sector.

Legal Aid

- 4.7.9** There will be no legal aid impact.

Sustainable Development, Carbon assessment, Other Environmental

- 4.7.10** The PPS will have positive impacts in all of these areas. As has been set out in the analysis above the PPS is intended to ensure that spatial planning makes a full contribution to delivering the Government's Climate Change Programme and energy policies, and in doing so contributes to global sustainability. It is also expected to shape places that are resilient to climate change and which conserve and enhance biodiversity, with a new emphasis on green spaces and the importance of community infrastructure in adaptation.

Health Impacts

- 4.7.11** As noted in Section 3.2, rising summer temperatures are likely to have adverse health effects, particularly on those who are already in poor health. The climate change PPS is likely to help alleviate summer heat stress through reductions in carbon emissions, lessening of the urban heat island effect and improved ability of developments to cope with a warming climate. Although these beneficial effects are likely to be modest, they will nevertheless have positive health consequences. There may also be positive health, and in particular safety, benefits from reduced incidences of and improved resilience to, impacts of severe weather.
- 4.7.12** In the longer term climate change may increase the incidence of diseases that, for climatic reasons, are not common in the United Kingdom. This may include water borne and insect or wildlife borne diseases. Conversely, warmer winters may make a modest contribution to reducing cold weather and winter seasonal diseases.
- 4.7.13** By making clear expectations on protection from flooding, the PPS will also contribute to a reduction in the public health effects associated with flooding.
- 4.7.14** By ensuring full consideration is given to creating and securing opportunities for sustainable transport, the PPS may lead to a greater number of people choosing to walk and cycle on a regular basis, with associated health benefits due to exercise and any reduction in congestion.

4.7.15 Overall, it can be concluded that the PPS is likely to have positive health effects, and the likelihood of negative health effects is very limited.

Race, Disability, Gender and Other Equality

4.7.16 The PPS will impact equally across members of the community although, with its emphasis on shaping places in ways that provide resilience to climate change and which are consistent with social cohesion and inclusion, the PPS is likely to have a positive impact in terms of equality. For example, as noted in Section 3.2.1, racial minorities (and indeed other minority groups) tend to have lower incomes (although there are notable exceptions to this), and are more likely to be residents of urban areas.

4.7.17 Therefore, benefits are likely to accrue to racial minorities to a slightly greater extent than they will accrue to the population at large.

4.7.18 However, the degree of difference is likely to be minor and unlikely to be detectable by individuals, and for the purposes of this Impact Assessment the key finding is that there will not be any significant impact of any of the equality strands.

Human Rights

4.7.19 There will be no human rights impact.

Rural Impacts

4.7.20 The climate change PPS is not expected to have any impact on the amount of development that is brought forward. The PPS will reinforce and clarify the need for new developments to be located in areas that encourage transport options other than private car use (for example public transport, walking and cycling). However, the PPS contains no requirement that the total amount of development that occurs in rural areas should be reduced. Moreover, the PPS makes clear that when considering the need to secure sustainable rural development, including employment and affordable housing opportunities to meet the needs of local people, planning authorities should recognise that a site may be acceptable even though it may not be readily accessible by means of travel other than the private car.

4.7.21 With respect to existing rural residents, they are expected to experience the costs and benefits of the PPS in much the same way as urban residents. Therefore, no negative impacts are anticipated as a result of the PPS.

5 Enforcement, sanctions, monitoring and review

Enforcement and sanctions

- 5.1** As with all planning policy statements, RPBs, LPAs and developers will be required to take account of the new PPS and ensure that the ambition and policies in it are fully reflected by regional planning bodies in the preparation of regional spatial strategies, by the Mayor of London in relation to the spatial development strategy in London and by planning authorities in the preparation of local development documents.
- 5.2** Similarly, the PPS makes clear that applicants for planning permission should consider how well their proposals for development contribute to the Government's ambition of a zero-carbon culture. Applicants and planning authorities are expected to bear in mind that the policies in the PPS will be material to decisions on planning applications. The PPS also expects that applicants for planning permission who develop a proposal that will contribute to the delivery of the Key Planning Objectives set out in the PPS, and that is consistent with the development plan, should expect expeditious and sympathetic handling of the planning application.
- 5.3** The PPS also makes clear that ensuring full compliance with the planning permission granted, including conditions designed to secure implementation in line with the policies in this PPS, is important. It underlines that local planning authorities, in considering their approach to compliance and, when necessary, whether it is expedient to take enforcement action, should have particular regard to the highest priority placed by Government on mitigating climate change and successfully adapting to the unavoidable consequences.
- 5.4** Government is not anxious to implement further sanctions to enforce the policy. However, Government has set out clear expectations for the performance and delivery of the spatial planning system, and already has the necessary means for addressing poor performance.

Monitoring and Review

- 5.5** As a part of its general oversight of the planning system in England, CLG will monitor the effectiveness of the climate change PPS. This is in line with the approach adopted for other planning policies, guidance and practice. No specific review date is planned, but approximately 12-18 months after publication, the take up of the policies in the PPS will be assessed so as to ensure appropriate and consistent delivery. Some 18 months after this, an evaluation of how well the PPS is ensuring its intended outcomes will commence.

5.6 In addition, RPBs and LPAs are required under the terms of the climate change PPS to undertake a programme of monitoring, and good practice in monitoring and review is underlined as an important part of meeting the overall objectives of the PPS. This will feed into the monitoring activities already undertaken by RPBs and LPAs in discharging their statutory requirement to produce annual monitoring reports.

6 Conclusions and recommendations

- 6.1** The proposed climate change PPS is one of many Government measures that address climate change (including several other PPSs). The role of the PPS is to focus, clarify and reinforce the role of the spatial planning system in meeting the objectives of the Government's Climate Change Programme.
- 6.2** The potential costs to society associated with climate change emphasised in the Stern Review on Climate Change and reflected in the shadow price of carbon, could be significant.
- 6.3** The primary impacts of this PPS are anticipated to be firstly developments brought forward with reduced carbon impact through appropriate choices of their location, their physical form and layout and the use of renewable and low-carbon energy; secondly the provision of effective and positive support to proposals for renewable and low-carbon energy supplies through the planning process; and thirdly, sustainable communities that are resilient to the impacts of the climate change now accepted as inevitable, including more extreme weather events such as hotter and drier summers, periods of intense rainfall, flooding and rising sea levels.
- 6.4** A comparison of the cost of the relevant energy technologies and CCS with the social and market cost of carbon suggests that these technologies are not currently economically or financially viable, though several of the more advanced technologies, such as CHP and wind, are approaching break even. However, this is based on existing prices. By stimulating markets for renewable and low-carbon energy technologies, the implementation of this PPS should, over the medium to long term, stimulate innovation and reduce the costs of these technologies, thus contributing to a desirable knock-on effect.
- 6.5** Although this IA contains significant monetised costs, the proposal is believed to have an overall benefit to society due to the contribution to tackling climate change and adapting to its effects.
- 6.6** A summary of the findings of the Impact Assessment are presented in Table 6.1.

Table 6.1: Initial Summary of the Climate Change PPS Impact Assessment

Option	Costs	Benefits
Do nothing	<ul style="list-style-type: none"> • Increased costs associated with uncertainty within the planning regime, including costs of delayed and/or contested development and costs associated with developing guidance similar to the climate change PPS at the local level. • The contribution of development to climate change will not be minimised. As demonstrated by the Stern Review, this could bring significant additional costs to society. • Lower take up of renewable and low-carbon energy technologies will mean greater consumption of fossil fuels, and hence higher emissions of non-carbon atmospheric pollutants such as oxides of sulphur and nitrogen. • Increasing adverse health effects and defensive expenditures, such as the use of air conditioning. 	<ul style="list-style-type: none"> • There would be no significant benefits associated with the do nothing option.

Table 6.1: Initial Summary of the Climate Change PPS Impact Assessment		
Option	Costs	Benefits
Introduce the climate change PPS	<ul style="list-style-type: none"> • Marginal additional costs for planning authorities to undertake the necessary activities, as stipulated in the PPS • Marginal additional development costs for developers, including additional design and planning costs and the costs of implementing on-site and/or off-site renewable and low carbon energy technologies. 	<ul style="list-style-type: none"> • Greater clarity within the planning regime with respect to carbon and climate change issues. • Reduced costs associated with climate change, both in the UK and internationally, due to the adoption of renewable and low-carbon energy technologies. • Reduced environmental damage costs associated with non-carbon atmospheric emissions due to the reduced consumption of fossil fuels. • Increased ability of developments to cope with higher temperatures without the need for expensive solutions such as air conditioning. • Reduced health impacts associated with rising temperatures. • Stimulation of the markets for renewable and low-carbon energy technologies.

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	Results in Evidence Base?	Results annexed?
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	Yes	No
Sustainable Development	Yes	No
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	Yes	No
Race Equality	Yes	No
Disability Equality	Yes	No
Gender Equality	Yes	No
Human Rights	Yes	No
Rural Proofing	Yes	No

Annexes

Annex A: Background on climate change, energy policy and the scope of planning policy statements

Annex B: The costs of climate change

Annex C: Description of key constraints

Annex D: Options for addressing climate change

Annex E: Planning policy for climate change

Annex A: Background on climate change, energy policy and the scope of planning policy statements

Climate Change is happening and is impacting the UK

The UK Government has taken a leadership stance in acknowledging the scientific consensus that human activity is changing the world's climate. The evidence that climate change is happening, and that man-made emissions are its main cause, is compelling. If climate change deepens and intensifies, as it will in the absence of urgent and major policy responses in the UK and globally, there will increasingly be significant, and possibly irreversible, changes to climate and the biophysical environment. For the UK, this could mean more extreme weather events, including hotter and drier summers, periods of intense rainfall, flooding, and rising sea-levels. There will be permanent changes in the natural environment but also, and increasingly, substantial costs to the national economy. It is quite likely that the impacts of climate change will be felt first, and disproportionately so, by the most vulnerable in society.

The UK Climate Change Programme

The UK Climate Change Programme, published by the Government in March 2006, sets out actions that the Government is taking or proposing to reduce the UK's contribution to climate change, and to adapt to its effects.

The Programme acknowledges that climate change is the greatest long-term challenge facing the world today. Addressing climate change is therefore the Government's principal concern for sustainable development.

The UK has already taken significant steps to meet this challenge. The UK is on track to meet its commitment under the Kyoto Protocol to reduce emissions of greenhouse gases by 12.5 percent below 1990 levels by 2008-2012, and has set a more stringent domestic target to reduce carbon dioxide emissions by 20 percent below 1990 levels by 2010 and, in the long-term, by 60 percent by 2050.

The UK has implemented a wide range of policies and regulations to address its contribution to climate change.

The Energy White Paper 2007

The Energy Review, concluded by the Government in July 2006, announced a far-reaching set of proposals designed to reinforce the UK's long term policy for addressing the challenge of climate change and energy security issues.

The Energy Review contains a series of measures to promote the growth of renewable energy and to bring about more decentralised energy generation. It also made a commitment to aggressive implementation of the Government's Microgeneration Strategy to remove barriers to household renewables.

The Government issued its Energy White Paper (EWP) in May 2007, outlining how it intends to implement the measures outlined in the Energy Review, as well as those measures announced since. The EWP continues to emphasise measures to assist more widespread deployment of renewable energy and distributed electricity and heat generation such as microgeneration and combined heat and power.

The role of spatial planning

The spatial planning system can make an important contribution to reducing carbon emissions and meeting the UK's targets on climate change. Contributions can be made, for example, by directly influencing energy use and emissions through, for example, delivering patterns of urban growth which reduce the need to travel; by shaping sustainable communities that are resilient to the climate change now accepted as inevitable; and through creating an attractive environment for innovation and for the private sector to invest in renewable and low-carbon technologies and supporting infrastructure.

Planning Policy Statements (PPS) set out the Government's national policies on different aspects of land use planning in England. It should be noted that PPSs have a different, but at the same time complementary focus to Building Regulations. Broadly speaking:

- A PPS explains statutory provisions and provides guidance on spatial planning matters, including matters such as the allocation and location of developable land, key issues that developments must address (eg transport, flood defence), and urban design issues including the appearance of the built environment (eg the external appearance of buildings).
- The Building Regulations set baseline mandatory national standards for the health, welfare, safety and convenience of people in and around buildings, for the accessibility of those buildings, and for the reasonable conservation of fuel and power used by those buildings.

It is therefore important to note that the planning system would not normally be the mechanism by which developers were required to, for example, install double glazing or higher minimum standards of thermal insulation in new housing developments – that would be a matter for the Building Regulations. Planning authorities are encouraged to engage constructively and imaginatively with developers to encourage the delivery of sustainable buildings. The planning system's particular contributions to the performance of buildings, including encouraging renewable and low-carbon energy supply, are set out in the PPS.

It is also important to note that the efficiency of energy using appliances (such as gas and electrical appliances) within buildings is, in general, a matter for product standards, and currently falls outside the scope of both the planning and Building Regulations regimes.

Annex B: The costs of climate change

The costs to the national economy from climate change are likely to be considerable. Steps taken at both international and national levels to reduce greenhouse gas emissions will also entail some costs. These will include the costs of developing and using low-emissions and high efficiency technologies and also the costs to consumers of switching expenditure from emissions-intensive to low-emission goods and services.

The costs of mitigating climate change will differ depending upon which technologies and policy choices are used. A range of low-carbon technologies is already available, although many are currently more expensive than fossil-fuel alternatives. Although cleaner and more efficient power, heat and transport technologies are needed to make radical emission cuts in the medium to long-term, their future costs remain uncertain. However, past experience suggests that efficiency is likely to increase and average costs fall with greater rates of deployment (leading to savings from mass production) and ongoing research and development.

A wide-ranging review of the economics of climate change has been undertaken by HM Treasury. The Stern Review, headed by Sir Nicholas Stern, is based upon extensive and wide-ranging consultation using existing and specially commissioned research, and was published on 30 October 2006¹⁴. The terms of reference included a requirement to examine the evidence on the economic consequences of climate change as well as the costs and benefits of actions taken to reduce greenhouse gas emissions.

The central conclusion of the Stern Review is that the benefits of strong and early action far outweigh the economic costs of not acting. The Review estimates that if actions are not taken to combat climate change, the overall costs and risks from climate change impacts will be equivalent to losing at least 5 % of global GDP each year, now and for the foreseeable future. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20 % of GDP or more. In contrast, the costs of the action required to reduce emissions to a level which would avoid the worst impacts of climate change can be limited to around 1 percent of global GDP each year¹⁵.

¹⁴ The Stern Review on the Economics of Climate Change, HM Treasury. Available at: http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

¹⁵ The risks of the worst impacts of climate change can be substantially reduced if greenhouse gas levels in the atmosphere can be stabilised between 450 and 550ppm CO₂ equivalent (CO₂e). The current level is 430ppm CO₂e today, and it is rising at more than 2ppm per year (The Stern Review, 2006).

The Review notes that the costs of taking the necessary action could be even lower than this if there are major gains in efficiency, or if strong co-benefits are measured. Action on climate change will also create significant business opportunities, as new markets are created in low-carbon energy technologies and other low-carbon goods and services. The costs will be higher if innovation in low-carbon technologies is slower than expected, or if cost-effective policy making is not forthcoming. A key message of the Stern Review is that “the costs of stabilising the climate are significant but manageable and that delay would be dangerous and much more costly”.

Annex C: Description of key constraints

The preparation of any Impact Assessment is subject to a number of constraints. In the context of the climate change PPS, the following constraints should be noted:

- Although there is an increasing body of scientific and economic research on the impacts of global warming, the precise costs of climate change remain uncertain. Whilst it is therefore difficult to determine the benefits of reducing carbon emissions with any precision, it is possible to estimate the benefits on the basis of the shadow price of carbon and the trading value of carbon.
- The PPS complements a wide range of other government initiatives to address the challenges of climate change, including other initiatives within the planning system. Therefore, while the potential impacts of the PPS can be identified, it is not readily possible to separate out the additional impacts of this PPS from the effects of other planning policies or Government measures intended to address climate change. The possible quantitative and qualitative impacts identified in this Impact Assessment must therefore be viewed as indicative.
- Several of the markets for technologies that may be deployed by developers in response to the PPS are not mature and have uncertain costs, leading to uncertainties about the costs of carbon abatement. As the markets mature, it is anticipated that costs will fall and greater certainty will be available.
- The general problems normally encountered with forecasting economic activity also apply to this PPS. Therefore, it is not possible to identify, with any degree of accuracy, how the PPS will affect the carbon performance of new development.

Annex D: Options for addressing climate change

There are several potential options for addressing the challenges posed by climate change. These include the full range of potential regulatory and market mechanisms, including:

- do nothing;
- voluntary agreements;
- “command and control” type regulation;
- fiscal measures; and
- market based measures, for example emissions permit trading.

A general assessment of the merits and demerits of these regulatory approaches is presented in Table A.

Table A: Assessment of Options		
Option	Key Advantages	Key Disadvantages
Do Nothing	<ul style="list-style-type: none"> • No compliance costs 	<ul style="list-style-type: none"> • No contribution to meeting policy objectives • Costs of not meeting policy objectives not mitigated
Voluntary Agreements	<ul style="list-style-type: none"> • Can be easy to implement • Flexibility • No need for regulatory oversight • Lower costs for business and government in enforcement and compliance • Allows for innovation 	<ul style="list-style-type: none"> • Verification and enforcement weak or not possible • Enrolment may be limited to most responsible firms • May allow non-participants to gain competitive advantage

Table A: Assessment of Options

Option	Key Advantages	Key Disadvantages
Command and Control Approaches	<ul style="list-style-type: none"> • Relatively certain outcomes • Applies to all affected parties – no free riders • Potential for strong enforcement • May stimulate innovation if tough targets are set 	<ul style="list-style-type: none"> • May not achieve least cost outcome • Requires regulatory oversight • Inflexible • May disadvantage UK firms if similar standards not upheld everywhere
Fiscal Measure	<ul style="list-style-type: none"> • Raise revenues • Can comply with ‘polluter pays’ principle • Send price signals that encourage market responses • On-going stimulus for innovation 	<ul style="list-style-type: none"> • Uncertainty of outcome • May be fiscally regressive (ie affect the poorest most) • Can encourage illegal behaviour • May disadvantage UK firms if similar fiscal measures not implemented elsewhere
Market-based Instruments	<ul style="list-style-type: none"> • Outcome based • Allow fixed limits for pollutants to be set • Existing emissions can be ‘grandfathered’ to ease burdens of implementation • Encourage trading to find least cost means of reaching pollution target • On-going stimulus for innovation 	<ul style="list-style-type: none"> • Monitoring and verification of data are needed to ensure compliance • Can be difficult to estimate appropriate level of emissions rights to ‘grandfather’ • May disadvantage UK firms if similar fiscal measures not implemented elsewhere

Other Government policy responses to climate change

Other major policy responses to climate change implemented by the Government include:

- Incentivising end user energy efficiency through the Climate Change Levy and Climate Change Agreements.
- Measures to reduce carbon emissions from the electricity sector, including the Renewables Obligations.
- Industrial, commercial and domestic energy efficiency initiatives, including the Building Regulations, Enhanced Capital Allowances, the Energy Savings Trust, the Carbon Trust, the Energy Efficiency Commitment and the Warm Front and Decent Homes schemes to deliver energy efficiency measures in low income households.
- Introduction of the EU Emissions Trading Scheme (ETS).
- Transport policy, including the use of fiscal instruments such as the Vehicle Excise Duty, the Air Passenger Duty and fuel taxes, and the promotion of public transport, walking and cycling.
- Eco-labelling and energy efficiency standards for a range of consumer products.

Annex E: Planning policy for climate change

Planning Policy Statement	Policy/Guidance with an Impact on Climate Change
PPS1: Delivering Sustainable Development	<ul style="list-style-type: none"> • Address causes and potential impacts of climate change • Reduce energy use • Reduce emissions • Promote renewable energy use • Location and design of development
PPS3: Housing	<ul style="list-style-type: none"> • Delivery of homes that are well-designed • Making the best use of land • Making use of new building technologies to deliver sustainable development
PPG 4: Industrial, commercial development and small firms (currently under review)	<ul style="list-style-type: none"> • Reduce the need to travel • Location of development
PPS6: Planning for Town Centres	<ul style="list-style-type: none"> • Reduce the need to travel • Encourage use of public/alternative transport • Facilitate multi-purpose journeys
PPS7: Sustainable Development in Rural Areas	<ul style="list-style-type: none"> • Planning applications should recognise the need to protect natural resources • Provide for sensitive exploitation of renewable energy sources
PPS9: Biodiversity and Geological Conservation	<ul style="list-style-type: none"> • Account for climate change on distribution of habitats and species, and geomorphological processes and features
PPS10: Planning for Sustainable Waste Management	<ul style="list-style-type: none"> • Encouraging more sustainable waste management which respects the waste hierarchy (avoid, reuse, recycle, energy recovery, recycling)

Planning Policy Statement	Policy/Guidance with an Impact on Climate Change
PPS11: Regional Spatial Strategies (currently under review)	<ul style="list-style-type: none"> Addressing climate change and energy in Regional Spatial Strategies
PPS12: Local Development Frameworks (currently under review)	<ul style="list-style-type: none"> Act on a precautionary basis to reduce the emissions that cause climate change and to prepare for its impacts
PPG13: Transport	<ul style="list-style-type: none"> Reduce the need for travel, especially by car, by influencing the location of development, fostering development which encourages walking, cycling or public transport etc
PPG20: Coastal Planning	<ul style="list-style-type: none"> Identify areas likely to be at risk from flooding
PPS22: Renewable Energy	<ul style="list-style-type: none"> Increased development of renewable energy resources through Regional Spatial Strategies and local development documents
PPS23: Planning and Pollution Control	<ul style="list-style-type: none"> Planning should reduce greenhouse gas emissions and take account of potential effects of climate change where possible
PPS25: Development and Flood Risk	<ul style="list-style-type: none"> Planning policies should reflect the increased risk of coastal and river flooding as a result of climate change