Summary: Intervention & Options

Department /Agency:	Title:	
BERR	Impact Assessment of proposals for a UK Renewable Energy Strategy - Renewable Heat URN 08/1053	
Stage: Consultation	**Version:** 5	**Date: 1 June 2008**
Related Publications: UK Renewable Energy Strategy Consultation Document; [Analysis publications, to be added]		

Available to view or download at:

http://www.berr.gov.uk/energy

Contact for enquiries: Emily Bourne **Telephone:** 020 7215 3002

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

This IA analyses options to increase the proportion of renewable heat in order to meet the UK's share of the EU 2020 renewable energy target. The target is still under negotiation, so a range of options is analysed. Government intervention is necessary because many renewable energy technologies are less developed or deployed at a lower scale and higher cost than traditional energy technologies. Without Government support, the private sector will not invest sufficiently in innovation and deployment to meet our longer term goals.

What are the policy objectives and the intended effects?

To achieve a substantial increase in renewable heat in the UK, reaching a level of the order of 11-14% of total heat demand or more by 2020, compared with 0.6% today. The contribution that we will look to renewable heat to make towards achieving the 2020 RES target will depend on how the marginal costs for this sector compare to those in the electricity and transport sectors.

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

This condoc considers target levels of 11% and 14% for renewable heat, to be achieved through a combination of measures to overcome non-financial constraints to uptake and a financial instrument. Options for a financial instrument are a Renewable Heat Incentive (akin to a feed-in tariff in electricity) and a Renewable Heat Obligation. The packages have been chosen based on: cost-effectiveness; ability to deliver the required share of renewable energy by 2020; and compatibility with broader energy policy.

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

Once the results of the consultation have been analysed, the Government will produce a Renewable Energy Strategy in Spring 2009, which will set out considered measures and costings.

Ministerial Sign-off For consultation stage 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:

Summary: Analysis & Evidence

Policy Option: Financial support for renewable heat	Description: Measures to achieve 14% renewable heat

COSTS

ANNUAL COSTS	
One-off (Transition) **Yrs**	Description and scale of **key monetised costs** by 'main affected groups'
£ tbd	Resource costs (net of cost of carbon in the traded sector, valued at the forecast carbon price) from £2 to £2.5bn pa in 2020, £23 to £28bn lifetime to 2030. Estimated cost to consumer ranges from £3.4 to £4.1bn in 2020.
Average Annual Cost (excluding one-off)	
£ 1.25bn	**Total Cost** (PV) **£ 28 bn**

Other **key non-monetised costs** by 'main affected groups' Resource cost estimates include the costs of overcoming supply side barriers to take-up of renewable heat. Work to estimate the magnitude of demand side barriers is ongoing and will ultimately increase these policy costs. There will also be potentially substantial economic impacts resulting from fuel price increases.

BENEFITS

ANNUAL BENEFITS	
One-off **Yrs**	Description and scale of **key monetised benefits** by 'main affected groups'
£	Much of the renewable heat uptake will be outside the ETS and so will represent additional carbon savings, valued here at the shadow price of carbon.
Average Annual Benefit (excluding one-off)	
£ 240mill	**Total Benefit** (PV) **£ 4.8bn**

Other **key non-monetised benefits** by 'main affected groups'

There may be some benefit resulting from a greater diversification of the fuel mix. A large number of installations will be made in domestic and local premises, which may have benefits in terms of users becoming more conscious of their energy consumption.

Key Assumptions/Sensitivities/Risks

Results are sensitive to assumptions on fuel prices: reductions in fossil fuel prices will increase the cost of renewables and vice versa.

Price Base Year 2008	Time Period Years 20	**Net Benefit Range** (NPV) **£ -£17.9 to- £23.1 bn**	**NET BENEFIT** (NPV Best estimate) **£ -20.5bn**

What is the geographic coverage of the policy/option?			UK	
On what date will the policy be implemented?			2010	
Which organisation(s) will enforce the policy?			new authority?	
What is the total annual cost of enforcement for these organisations?			£ unknown	
Does enforcement comply with Hampton principles?			Yes	
Will implementation go beyond minimum EU requirements?			No	
What is the value of the proposed offsetting measure per year?			£ unknown	
What is the value of changes in greenhouse gas emissions?			£ 4.8bn ((carbon)	
Will the proposal have a significant impact on competition?			Yes	
Annual cost (£-£) per organisation (excluding one-off)	Micro	Small	Medium	Large
Are any of these organisations exempt?	Yes/No	Yes/No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)

Increase of £ tbd Decrease of £ **Net Impact £**

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

Summary: Analysis & Evidence

Policy Option: Financial support for renewable heat	Description Measures to achieve 11% renewable heat

COSTS

ANNUAL COSTS

One-off (Transition) **Yrs**

£ tbd

Average Annual Cost (excluding one-off)

£ 480 million

Description and scale of **key monetised costs** by 'main affected groups'

Resource costs (net of cost of carbon in the traded sector, valued at the forecast carbon price) from £0.7 to £0.9bn pa in 2020, £8.4 to £10.8bn lifetime to 2030. Estimated cost to consumer ranges from £1.5 to £1.9 bn in 2020.

Total Cost (PV) **£ 10.8 bn**

Other **key non-monetised costs** by 'main affected groups' Resource cost estimates include the costs of overcoming supply side barriers to take-up of renewable heat. Work to estimate the magnitude of demand side barriers is ongoing and will ultimately increase these policy costs. There will also be potentially substantial economic impacts resulting from fuel price increases.

BENEFITS

ANNUAL BENEFITS

One-off **Yrs**

£

Average Annual Benefit (excluding one-off)

£ 170 million

Description and scale of **key monetised benefits** by 'main affected groups'

Much of the renewable heat uptake will be outside the ETS and so will represent additional carbon savings, valued here at the shadow price of carbon.

Total Benefit (PV) **£ 3.3bn**

Other **key non-monetised benefits** by 'main affected groups' There may be some benefit resulting from a greater diversification of the fuel mix. A large number of installations will be made in domestic and local premises, which may have benefits in terms of users becoming more conscious of their energy consumption.

Key Assumptions/Sensitivities/Risks

Results are sensitive to assumptions on fuel prices: reductions in fossil fuel prices will increase the cost of renewables and vice versa.

Price Base Year 2008	Time Period Years 20	**Net Benefit Range** (NPV) **£ -£5.1bn to -£7.5bn**	**NET BENEFIT** (NPV Best estimate) **£ -£6.3bn**

What is the geographic coverage of the policy/option?			UK	
On what date will the policy be implemented?			2010	
Which organisation(s) will enforce the policy?			New authority?	
What is the total annual cost of enforcement for these organisations?			£ unknown	
Does enforcement comply with Hampton principles?			Yes	
Will implementation go beyond minimum EU requirements?			No	
What is the value of the proposed offsetting measure per year?			£ unknown	
What is the value of changes in greenhouse gas emissions?			£ 3.3bn (carbon)	
Will the proposal have a significant impact on competition?			Yes	
Annual cost (£-£) per organisation (excluding one-off)	Micro	Small	Medium	Large
Are any of these organisations exempt?	Yes/No	Yes/No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)

Increase of £ tbd Decrease of £ **Net Impact** **£**

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

Evidence Base (for summary sheets)

[Use this space (with a recommended maximum of 30 pages) to set out the evidence, analysis and detailed narrative from which you have generated your policy options or proposal. Ensure that the information is organised in such a way as to explain clearly the summary information on the preceding pages of this form.]

Strategic Overview

1. This Impact Assessment focuses on potential measures to increase renewable heat as part of the consultation on how to meet the UK's share of the EU 2020 renewable energy target. It will focus on policy measures to tackle a) financial barriers; and b) non-financial constraints/barriers, including how to minimise the impact of heat from biomass on air quality. The costs, benefits and wider impacts of the overall package across all three sectors are set out in the general IA.

Objectives

2. The objective of the potential measures in the heat sector is to achieve a substantial increase in renewable heat in the UK in a cost-effective way, so that by 2020 it reaches a level of at least 11% of total heat demand compared with 0.6% today. In our analysis we consider two specific scenarios for delivery of renewable heat: 11% and 14% of total heat demand. Based on the emerging evidence on the costs and potentials for deployment of renewables in the electricity and transport sectors it is likely that the 14% sceanrio will be a more realistic representation of the level of effort required within the heat sector, but the 11% scenario is also examined for illustrative purposes. This increase in renewable heat will be done in a way that is most compatible with our other policy objectives, and in a way that makes most sense for 2050 and beyond.

Potential measures to address non-financial constraints and barriers

3. As well as requiring financial support to incentivise their deployment, renewable heat technologies face an array of non-financial barriers and constraints. A greater number of barrier-busting steps will be required the higher the share of renewable heat desired. Each of the financial measures considered in this IA assumes the same level of effort to remove constraints, for a given scenario for percentage of renewable heat delivered. Overcoming these barriers is a necessary but not sufficient condition for the increased uptake of renewable heat technologies – financial support will still be required. Conversely, if these issues are **not** tackled a financial instrument is unlikely to be effective in bringing forward increased take-up of renewable heat.

4. In order to increase renewable heat to 11-14%, we are considering measures to address constraints in the following areas:

   - Minimising the impact of biomass on air quality – particularly in air quality management areas ('AQMA')
   - Increasing awareness and knowledge of renewable heat solutions (particularly for biogas and microgen heat technologies) amongst Local Authorities, suppliers and potential users of renewable heat
   - Planning and building regulations

   Measures to increase biomass fuel supply, including ensuring fuel-quality standards, and the use of biogas are covered in the General Impact Assessment.

5. Consultancy work[1] also identified some of the costs associated with market expansion on the scale required to achieve 11-14% renewable heat. There will need to be substantial investment in plant such as additional biomass handling stations and upgrading biogas plants, as well as in increasing the number of trained installers and designers of renewable heat systems. These costs are a potential constraint to deployment, but should be overcome by the market once increased demand for these technologies makes investment worthwhile. However, other constraints will require direct intervention by government to help overcome barriers and market failures, and to ease constraints where appropriate. The potential measures considered in this consultation to address non-financial constraints and barriers to renewable heat are:

Table 1: Description of potential measures to address non-financial constraints

To minimise the impact of biomass on air quality:
a. Emission standards for new biomass plant to limit the impact of individual plant on air quality and public health, structured as: (i) a single standard for all plant, (ii) standards differentiated by area, with stricter standards where air quality is or may be compromised, or (iii) staged standards, with a stricter set coming into force in the mid-future;
b. Enabling local authorities to require the installation of only the highest quality units in areas where air quality is or may be compromised
c. advice for local authority planners and others about where different types and sizes of boiler are most appropriately applied (as part of the Renewables Advisory Service mentioned below).
To increase awareness of renewable heat:
d. Training for local authority/RDA planners, decision-makers, architects, developers and investors to raise awareness of renewable heat potential, options and solutions;
e. a national Renewables Advisory Service available to both the local planning community and developers to provide advice on technology and the planning process, and provide details of local consultants and specialists (covered in the electricity IA)
f. Developing options to work with RDAs to fill the regional information gap and promote sustainable biomass sourcing and use. This could involve giving RDAs (or Local Authorities) responsibility for; - identifying suitable heat loads, proactively contacting heat customers to determine whether they are familiar with renewable heat options - identifying biomass fuel resource in their locality to help develop local biomass supply chains (and could include wet waste)
Planning and building regulations:
g. Ensuring that renewable heat technologies are dealt with clearly and efficiently in building regulations by e.g. Parts L and J that cover the installation of biomass
h. Fast-tracking some categories of smaller local projects, for example up to a permitted installed capacity of e.g. 1-10MW, through the use of a Local Development Order (covered in the electricity IA)

[1] Enviros (2008) Barriers to Renewable Heat Part 1: Supply Side

Costs and benefits of potential measures to address non-financial barriers

6. Measures a.-b. may increase the cost of individual biomass heat units, although evidence from emission controls elsewhere shows that innovation may reduce such costs over time. There may be further additional costs to potential operators in urban areas, and options a (i), (ii), and (iii) will all imply different costs, although their relative and absolute size will depend on the emission levels that are set. There will also be an administrative burden, although this is likely to be small, and research costs will be incurred by Government. However, **the benefits of such controls in terms of monetised health impacts are highly likely to outweigh the costs by a substantial margin**. An additional benefit will be increased public and regulator confidence in biomass as a system of heating, through ensuring biomass installations of an appropriate size, in an appropriate location.

7. Option b. would be linked to options a and c, and would not apply to domestic units (i.e. below 45kW), which would still be covered under the Clean Air Act 1993. It would involve extending local authorities' current powers and duties under the local air quality management regime (LAQM), either through new legislation or regulations made under the Environment Act 1995; it would also require the updating of current guidance to local authorities on LAQM. There is likely to be an additional cost to potential operators in urban areas, and a small associated administrative burden. However, the benefits of such controls in terms of monetised health impacts are highly likely to outweigh the costs by a substantial margin.[2] An additional benefit will be increased public and regulator confidence in biomass as a system of heating.

8. Measures c.-f. target information provision. The measures require varying levels of financial input, but the predicted benefits of improved awareness, in terms of increased uptake/carbon savings and avoidance of inappropriate installations, are likely to outweigh the investment. Measure c. focuses on key target audiences and is a relatively low-cost, high priority approach which will be delivered largely through existing communication channels and resources. The approach proposed within measure d. will have initial establishment costs of the order of £200,000 plus running costs of around £200,000/a for the first three years, expected to rise to around £1 million operating costs by year four or five. It is not anticipated that RDAs would contribute all of the latter funding, but overall it would come from wider public funds.

9. Renewable heat technologies are likely to be most cost-effective off the gas grid, where they compete with more expensive forms of heating such as oil and electrical heating. This may increase carbon savings/minimise air quality impacts as many heat customers off the gas grid currently use heating oil or coal, and are located in rural areas that therefore are less likely to have existing air quality issues. While it is not being proposed that any policy measures should apply exclusively off the gas grid, the consultation asks whether Government should focus policies off the gas grid to target these customers as a priority.

Potential measures to address the financial barriers:

[2] The methodology for calculating the monetised health impacts of air quality is given in the Interdepartmental Group on Costs and Benefits report *An Economic Analysis to Inform the Air Quality Strategy* (2007) (http://www.defra.gov.uk/environment/airquality/publications/stratreview-analysis/index.htm). The outcomes of this analysis are summarised in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 (http://www.defra.gov.uk/environment/airquality/strategy/index.htm), and includes analysis of specific measures to reduce air quality impacts.

Financial instruments

10. Assuming the successful implementation of the measures to remove non-financial barriers, this assessment also considers the impact of mechanisms to deliver financial support to renewable heat. These measures are intended to increase renewable heat from 0.6% of total heat demand at present to a level of the order of 11-14%.

11. The two options under consideration are:

    - A Renewable Heat Incentive (RHI): a set level of financial support paid to all generators of renewable heat at a given £/MWh;
    - A 'Renewable Heat Obligation' (RHO) requiring that a pre-determined share of heat used in the UK is generated from renewable sources;

12. The key criteria to consider in the design of an incentive mechanism to promote renewable heat are:

    - Feasibility of implementation of the policy
    - Effectiveness of the policy in generating take-up of renewable heat opportunities
    - Cost-effectiveness of the policy in delivering renewable heat
    - Carbon savings associated with the policy
    - Distributional consequences of the policy

13. NERA (2008) considered the various options for a financial instrument to incentivise renewable heat uptake. The project considered options including the use of grant programmes and steps to increase the relative costs of non-renewable heating to increase the attractiveness of renewable options. On the basis of the criteria set out above, the study concluded that the preferred policy options for delivering a substantial increase in the penetration of renewable heat were an RHO and an RHI.

Summary of costs and benefits of package to promote uptake of renewable heat

Measures to overcome constraints: summary of costs and benefits

14. The Enviros analysis commissioned for this project considered the costs – beyond simple technology costs of using renewable heat alternatives to conventional heating systems – which will need to be overcome if deployment of renewable heat technologies is to increase to the 11%-14% required. These 'constraint' costs relate only to supply-side issues such as the need for biogas plant upgrades and supply chain expansion. In addition there are constraints acting on the demand side which will increase costs of deployment – for example consumers need support to overcome the hassle factor associated with installing an unknown technology. Demand side issues and costs to overcome these are currently being considered by Enviros and will increase the costs associated with increasing renewable heat deployment beyond the estimates included here. The conclusions of this work will be available in July.

Table 2: Estimated costs of overcoming supply-side constraints on renewable heat deployment in 2020[3]

£m in 2020	11% from renewable heat	14% from renewable heat
total biomass	7.5	7.1
total solar thermal	368.4	1099.1
total heat pumps	14.9	91.8
total biogas	149.6	565.2
TOTAL ALL FUELS	540.3	1763.3

15. The data indicates the extent to which the costs of overcoming barriers increase as the total effort required from the heat sector increases, with the costs of achieving higher deployment of solar thermal and biogas dominating. These include costs of retrofitting solar to properties and the costs of upgrading electricity-only biogas plant to CHP. Costs and benefits of some of the individual measures to overcome barriers to deployment have been considered in detail above. However it is not possible to evaluate the benefits arising from steps to overcome these costs - these are facilitating actions which must be taken if the financial instrument to increase renewable heat deployment is to be successful. It is therefore more appropriate to consider the total costs and benefits of the package together, including both the technology costs of switching to renewable heat alternatives and the costs associated with overcoming constraints.

Financial measures: summary of costs and benefits

16. NERA has undertaken analysis (forthcoming) to consider the potential costs of alternative measures to promote renewable heat. The schemes introduce financial support for renewable heat from 2010 onwards. It is assumed that no new renewable heat installations receive financial support from the incentive mechanism after 2020, but that all installations made between 2010 and 2020 continue to receive financial support until the end of the technology lifetime.

17. The analysis has considered the possible costs of bringing forward renewable heat to achieve 11-14% deployment using each of the two financial incentives. Analysis of the renewable heat financial instrument is at an early stage and the details which will be crucial in determining how either scheme would work, and the strength of the incentives that the schemes would offer to the renewable heat market, are yet to be determined. As a result it is not possible to distinguish at this time between the costs of using an RHI incentive-based mechanism as opposed to the obligation-based RHO. Costs data are therefore only indicative and give a guide to the costs of achieving 11-14% renewable heat deployment using either of these financial instruments.

18. Table 3 sets out the initial estimates of resource cost, offsetting carbon benefits and overall net present value (NPV) of policy measures to achieve each of the scenario output levels, both in the year 2020 and cumulative to 2030. (The resource costs of the policy include the barriers costs identified above.) Carbon benefits outside the traded EU ETS sector are valued at the shadow price of carbon and netted against the resource costs of the measures to indicate the NPV. The value of carbon savings within the traded sector has been captured within the resource cost. Work to estimate the impact of demand side factors on

[3] Enviros (2008) and BERR analysis. Approximate costs in 2020, discounted to 2008 and reported in 2008 prices. In contrast to total resource cost estimates these costs are not annuitised.

uptake of renewable heat is ongoing. Once the costs of overcoming demand side barriers are fully factored into the analysis overall policy costs will rise.

Table 3: Cost/Benefit analysis of Measures to increase Renewable heat[4]

Table 3a Resource costs, carbon benefits and NPV Net welfare in 2020

£billion	Resource costs		Carbon benefit	NPV	
	Low	High		Low	High
11% renewable heat, central fuel prices	- 0.7	- 0.9	0.3	-0.7	-0.5
14% renewable heat, central fuel prices	- 2.0	- 2.5	0.4	-2.1	-1.7
11% renewable heat, low fuel prices	- 0.9	- 1.2	0.3	-0.9	-0.7
14% renewable heat, low fuel prices	- 2.4	- 2.9	0.4	-2.5	-2.0
11% renewable heat, high fuel prices	- 0.5	- 0.7	0.3	-0.5	-0.2
14% renewable heat, high fuel prices	- 1.7	- 2.1	0.4	-1.7	-1.3
11% renewable heat, high high fuel prices	- 0.3	- 0.5	0.3	-0.3	-0.1
14% renewable heat, high high fuel prices	- 1.5	- 1.9	0.4	-1.5	-1.1

Table 3b Resource costs, carbon benefits and NPV Net welfare cumulative 2010 - 2030

£billion	Resource costs		Carbon benefit	NPV	
	Low	High		Low	High
11% renewable heat, central fuel prices	- 8.4	- 10.8	3.4	-7.5	-5.0
14% renewable heat, central fuel prices	- 22.6	- 27.8	4.8	-23.1	-17.9
11% renewable heat, low fuel prices	- 10.8	- 13.7	3.3	-10.4	-7.6
14% renewable heat, low fuel prices	- 27.1	- 32.3	4.8	-27.6	-22.3
11% renewable heat, high fuel prices	- 5.8	- 8.3	3.4	-4.9	-2.4
14% renewable heat, high fuel prices	- 18.4	- 23.8	4.8	-19.0	-13.7
11% renewable heat, high high fuel prices	- 3.4	- 5.8	3.4	-2.4	0
14% renewable heat, high high fuel prices	- 16.0	- 21.1	4.8	-16.3	-11.2

[4] NERA (forthcoming) and BERR analysis. All figures are discounted to 2008 and reported in 2008 prices. A negative number indicates a cost. Figures may not sum due to rounding.

19. Under the central assumptions the NPV of measures to achieve 11% renewable heat is -£0.7bn to -£0.5bn in the year 2020, with a cumulative NPV to 2030 of -£7.5bn to -£5bn. For 14% renewable heat the NPV is -£2.1bn to -£1.7bn in 2020, and –£23.1bn to -£17.9bn cumulative to 2030. These costs are heavily dependent upon a range of factors including fossil fuel and biomass prices and the price of carbon within the EU ETS.

20. The sensitivity of costs of achieving an 11-14% penetration of renewable heat has been examined using the BERR alternative fossil fuel price assumptions, corresponding to an oil price of $45 (low), $70 (central), $95 (high) and $150 (high high) per barrel of oil in 2020 (evaluated at 2007 prices). Resource costs of measures to achieve 14% renewable heat reduce by around 25% in 2020 under the 'high high' ($150) scenario relative to the central case, and in response the NPV of the policy increases by around a third. The impacts of biomass price sensitivities modelled were much less significant.

Impacts

21. Aside from the desired increased deployment of renewable heat, the biggest impact of this policy will be on consumer bills. On the assumption that the initial costs of providing support will be met by the suppliers of fossil fuels for heating, and that these costs are passed on to their own fuel customers through prices, there would be an impact on fossil fuel heating bills (much as is the case for the Renewables Obligation for electricity).

22. Consumer costs of the policy, and so price impacts, are based on a simple 'banding' scheme to reward different technologies with different levels of financial support to reduce 'rents' accruing to the lower cost technologies. The ultimate consumer costs will depend upon the extent to which banding can successfully reflect differential resource costs.

23. Work to estimate the gas price impact of this policy is summarised in Table 4 below. Under the central case, price increases in 2020 will be of the order of 18-37% in the domestic sector under the 14% scenario, and 24-49% in the industrial sector (where the basic price per MWh of energy is lower, so a given increase per MWh has a greater percentage impact).

24. There will also be impacts on prices of non-net bound fossil fuels including heating oil and LPG. Impacts on fuel prices have been estimated using an estimate for the average cost of the policy per MWh of energy supplied for heating. Delivered gas prices per MWh of fuel are lower than those for heating oil, so percentage impacts on heating oil prices will be lower than those for gas. However, the average domestic user of heating oil uses approximately double the quantity of fuel to heat their home as the average domestic user of gas. This means that the impact of renewable heat policy costs on total heating bills will be higher for users of non-net bound fuels such as heating oil.

Table 4: Estimated impact of policy measures to increase renewable heat on gas prices and bills

Table 4a Gas price and bills impact in 2020 under the central scenario

All figures for 2020	11% renewable heat		14% renewable heat	
	% increase prices	Impact on average bill	% increase prices	Impact on average bill
Domestic	6-16%	£35-92	18-37%	£104-209
Industrial	8-21%	£10-26k	24-49%	£29-58k

Table 4b Gas price impacts in 2015, 2020 and 2030 under fossil fuel price sensitivities

	Domestic			Industrial		
11%	2015	2020	2030	2015	2020	2030
Low	2-5%	10-24%	No	2-6%	13-30%	No
Central	1-3%	6-16%	greater	1-4%	8-21%	greater
High	0-2%	3-12%	than	1-3%	5-16%	than
High high	0-1%	1-7%	2020 figure	0-2%	2-10%	2020 figure
14%						
Low	3-8%	28-52%	No	4-10%	35-66%	No
Central	2-6%	18-37%	greater	3-7%	24-49%	greater
High	1-4%	12-27%	than	2-5%	16-36%	than
High high	0-2%	7-18%	2020 figure	1-3%	10-25%	2020 figure

25. There will also be a substantial impact on the market for non-renewable heat technologies, particularly off the gas grid where the roll-out of renewable heat is likely to start. This is discussed in detail below.

26. Concern over the potential impact on air quality of biomass heat has resulted in customer and regulator uncertainty, and the delay or cancellation of projects which might not have had a negative impact on air quality. The measures set out here will reduce that uncertainty and help promote the "right technology, right location" approach.

Impact on the rest of the heat sector, including small firms

27. In contrast to the electricity sector, which is dominated by a few big suppliers, the market for heat technologies and the supply of fuels is fragmented and complex. Customers connected to the gas grid primarily use gas as their heating fuel, so the large gas suppliers are likely to face only a limited threat from renewable heat – although the level of the UK target will require renewable heat deployment both on and off the gas grid. In any case these suppliers have the capacity and resources to manage their responses strategically (e.g. to diversify into more renewable energy). Off the gas grid the heat market is very different: a large number of SMEs supply heating oil, LPG, coal and other fuels, as well as the boilers, storage tanks and other infrastructure that they require. The Renewable Energy Strategy consultation does not propose any policies that would threaten these industries directly, but by encouraging - and financially supporting - renewable heat technologies the suggested

measures will have a substantial impact on the market for these small firms. Equally, all suppliers will have to comply with any requirements of the new financial instrument. This will be relatively more difficult for smaller firms as they will have less capacity to cope with any complexity of the system.

28. As a result of the potential measures proposed renewable heating technologies and fuels should, in the medium to longer term, take a substantial market share in off-grid locations, and also in on-gas grid locations. The need to install, maintain and fuel (in the case of biomass) the renewable heating technologies described will generate jobs, and in many cases the firms best-placed to enter these new market segments will be those previously providing fossil fuel alternatives. For example suppliers of heating oil may be able to switch to supplying biomass to their existing customers as and when these customers switch technologies. However, there will clearly be substantial transitional costs across the whole sector. These would impact most seriously in the areas of the country where non-gas heating is most widespread – including Northern Ireland (where the gas grid is limited to Belfast, and oil heating is the dominant heating type), Scotland, and more rural areas such as South West England – and among the off gas grid heating industries. The oil heating industry may feel itself particularly vulnerable to customers switching to biomass heat as oil heating has similar air quality issues to biomass, and its customers have space to store heating fuel. The small heat from coal sector may also be vulnerable as it has similar characteristics.

RISKS

29. The biggest risk is that the policy does not deliver the required increase in renewable heat uptake. Moving to a world where renewable heat represents a substantial share of UK heating is a fundamental change and will require people to install as yet unfamiliar technologies and adopt different fuel buying habits. Evidence from energy efficiency analysis demonstrates that people are relatively unresponsive to changes in their fuel bills and there is a risk that, even though individuals may find renewable heating cheaper due to subsidy schemes, they choose not to take up these opportunities. A policy scheme incorporating some form of obligation may be more effective in dealing with these concerns, as by definition a party is tasked with increasing renewable heat penetration. However, the difficulty of implementing an RHO in the fragmented heat sector may outweigh this advantage.

30. There is a risk that biomass heat uptake does not follow the expected pattern of distribution (mainly off gas grid and rural), and that uptake in urban areas is high. This could be triggered by major changes in the relative cost of gas and wood as heating fuel, unintended consequences from incentives and obligations laid out elsewhere, or ineffective use of the powers proposed for Local Authorities. At very large levels of penetration in urban areas, the possible consequence could be a significant impact on air quality in those areas, high (monetised) impacts on public health, and increased risk of infraction due to breaches of EU Air Quality Legislation – hence the measures propose a strict approach to emissions from biomass heat installations.

31. There is also a risk that increasing the use of biomass for heat may have the effect of diverting biomass feedstocks used by eg the chemical industry, woodchip and paper industry, to the production of renewable heat. This introduces the risk that these industries have to use other feedstocks, or the end user must switch to other products, and in a way that gives a net environmental and social disbenefit.

32. Biomass represents a substantial share of renewable heat assumed to come forward under the policy: around 45% of total renewable heat in 2020 under a 14% scenario and around 60% of the lower 11% scenario. As with the electricity and transport sectors, there is a risk that this biomass will not be available, or that increased world demand for biomass will push prices up substantially. As discussed in the general IA, we have taken steps to mitigate this risk in our modelling work by imposing strict limits on the amount of biomass assumed to be available, reflecting possible supply and price impacts of increased world demand for renewables.

Implementation and Monitoring and Evaluation

33. This document sets out potential measures to increase renewable heat to 11-14%, as part of a wider set of measures to meet the UK's share of the EU 2020 renewable energy target. The measures to increase renewable heat will be set out in the Renewable Energy Strategy, which will be published in spring 2009 and will set out which measures we will implement and how we will do so.

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	No	Yes/No
Small Firms Impact Test	Yes	Yes/No
Legal Aid	Yes/No	Yes/No
Sustainable Development	Yes/No	Yes/No
Carbon Assessment	Yes/No	Yes/No
Other Environment	Yes/No	Yes/No
Health Impact Assessment	Yes/No	Yes/No
Race Equality	Yes/No	Yes/No
Disability Equality	Yes/No	Yes/No
Gender Equality	Yes/No	Yes/No
Human Rights	Yes/No	Yes/No
Rural Proofing	Yes/No	Yes/No

Annexes

< Click once and paste, or double click to paste in this style.>

Inequality impacts

There are likely to be some impacts on groups vulnerable to fuel poverty, a group which disproportionately includes various sectors of society affected by other inequalities. For those fuel-poor off the gas grid, a switch to renewable heat may result in a fall of their heating costs whereas those fuel-poor who do not switch away from fossil fuels will experience rising heating bills as result of the policy. There are no estimates of the net effect which is highly dependent on the policy measures implemented.