



# **Forestry Commission Scotland**

## **Climate Change Action Plan 2008-2010**

**Report on the responses to the public consultation  
(11 March – 6 June, 2008)**

**July 2008**

<b><u>Contents</u></b>	<b>Page</b>
Summary	3
Introduction	4
Level of response and respondent profile	4
Methodology	5
1.General comments	6
2. Detailed comments by section:	9
2.1 Overview	9
2.2 Protecting and managing existing forests	10
2.3 Woodland creation	12
2.4 Adapting to climate change	15
2.5 Sustainably produced wood for energy and construction	20
2.6 Reducing the forestry sector's carbon footprint	23
2.7 Awareness raising	24
2.8 Measuring progress	25
Annex 1 (List of respondents)	26

## Summary

A public consultation on Forestry Commission Scotland's draft Climate Change Action Plan was launched on 11 March 2008 and it finished on 6 June 2008. Comments were invited on the general and detailed aspects of the Plan.

43 responses were received, of which 14 were from individuals and 29 from organisations and groups.

In general the need for a Forestry Commission Scotland Climate Change Action Plan was acknowledged. The draft Plan also received broad support in terms of its structure.

The report sets out general and detailed comments, the latter organised by Climate Change Action Plan (CCAP) sections and sub sections. It is not intended to be exhaustive and some individual comments may not appear. They will, nevertheless, be considered in the re-drafting of the Action Plan.

Key messages were:

- Climate change assumptions will need to be reviewed once UK CIP 08<sup>1</sup> is published.
- The proposed actions need to have time-scales and measurable outcomes. There should be a greater sense of urgency.
- More recognition is required of the non-FCS forestry sector as this now owns/manages two-thirds of Scotland's forest resource.
- Greater cross-linkage is required with other land uses to ensure an integrated approach to tackling climate change.
- The Plan needs to review the balance it conveys between: new woodland and existing woodland; mitigation and adaptation; and wood for energy and wood for other uses.
- Many of the proposed actions will require a regional perspective. The Plan should articulate how this will happen.
- Robust methods of carbon accounting, coupled with life cycle analysis, are required.
- Appropriate funding packages will be required if the forestry sector is to play its full part in helping to tackle climate change. The effectiveness of Rural Development Contracts must be kept under review.
- The national forest estate, managed by Forest Enterprise Scotland, should be a catalyst for action.
- There is a need for clear advice based on sound science rather than perception.
- Further thought is required on how progress will be monitored and reported.
- The format and accessibility of the Plan should be improved.

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<sup>1</sup> [UK Climate Impacts Programme](#)

## Introduction

The Scottish Forestry Strategy (2006) highlights climate change as a major theme and contains a priority action to “Prepare a forestry sector climate change action plan”. Subsequently this became an action point in the Strategy’s Implementation Plan 2008-2011.

During 2007 Forestry Commission Scotland (FCS) developed a draft Climate Change Action Plan setting out, at a strategic level, what it intends to do to increase the contribution and response of Scottish Forestry to the challenges of climate change.

A public consultation on the draft Action Plan was launched by Environment Minister, Michael Russell, at the Scottish Forestry Forum’s annual public meeting in Edinburgh on 11 March 2008. Feedback on the draft was received at that event and can be seen at: [www.forestry.gov.uk/forestry/infd-7fbj3f](http://www.forestry.gov.uk/forestry/infd-7fbj3f).

1667 invitations to comment were sent out (1,356 of which were to Community Councils) and an advertisement placed in The Herald. The consultation was also placed on the FCS website at: [www.forestry.gov.uk/ccapscotland](http://www.forestry.gov.uk/ccapscotland).

The deadline for receipt of comments was 6 June 2008.

## Level of response and respondent profile

43 responses were received. Of these 14 were from individuals and 29 from organisations and groups. The latter comprise non-government bodies, public bodies, the business sector, community councils and academia/research. The percentage in each category is shown at Table 1.

*Table 1.*

<b>Respondent category</b>		<b>No. of responses</b>	<b>%</b>
Individuals		14	33
Organisations and groups	Non-government bodies	9	21
	Public bodies	9	21
	Community councils	7	16
	Business sector	3	7
	Academia/research	1	2
<b>Total</b>		<b>43</b>	<b>100</b>

In addition to the above, the Confederation of Forest Industries (UK) asked FCS to consider its report “Climate Change: opportunities and challenges for the forestry and wood-using industry”.

A full list of respondents can be seen at Annex 1.

## Methodology

The request for people's opinions was posed in the form: "We would like to know what you think about the draft Climate Change Action Plan." Respondents were asked to structure their comments under two headings:

- a. General comments
- b. Detailed comments (relating to specific pages)

Because of the relatively small number of respondents the synthesis of comments was undertaken qualitatively rather than quantitatively. No 'weighting' of opinion has been attempted as this would have been highly subjective.

Each response was examined in detail and summarised on an Excel spreadsheet. For clarity the report has condensed the details received in the 43 responses. Therefore, individual, detailed opinions may not appear but will, nevertheless, be considered in the re-drafting of the Action Plan.

Individual responses will be made available to the public (where respondents have given permission for us to do so) at Forestry Commission Scotland, 231 Corstorphine Road. Arrangements to view them can be made by contacting **0131 314 6156**. Responses can also be copied and sent to enquirers (a charge may need to be made for this service).

The synthesis of consultation responses was undertaken by Julie Snodgrass (Forestry Commission Scotland).

# 1. General Comments

40 respondents submitted general comments, some of which also related to specific sections in the Climate Change Action Plan.

## 1.1 Climate change

- There is a national, corporate and personal responsibility to cut dependency on fossil fuels as the first priority in tackling climate change.
- The CCAP does not position Scotland's contribution and remedies globally.
- FCS should delay the CCAP until the Hadley Centre has confirmed whether global temperatures have increased since 1989/1999.
- The science behind assumptions on 'global warming' and hence the priority given to it in the CCAP needs to be questioned.
- Shorter-term climatic extremes such as those caused by El Niño/Niña need to be considered.
- The CCAP must recognise that predictions are currently based on averages rather than extremes. Climate change assumptions will also need to be reviewed once UK CIP 08 (see Footnote 1 on page 3) is published.
- Climate change models are not yet robust enough to focus biodiversity conservation action (this also has implications for grant support).

## 1.2 Actions and time-scales

- The actions need a time-scale and measurable outcomes.
- Various reports and findings (e.g. IPCC 4<sup>th</sup> Assessment<sup>2</sup>) point to the need for emissions to peak in the next 10 years and thereafter decline markedly. The CCAP could better reflect this urgency and the role forestry can play in the immediate future (e.g. concentrate on maintaining/enhancing existing carbon stocks in trees or soil, as sequestering new carbon in woodland takes decades). This would help maintain multi-benefit forestry and avoid single-benefit forestry that could have undesirable consequences.
- This is an urgent situation and therefore action should be taken based on the best available information and should not wait for absolute clarity before acting. Research should be flexible and well funded, able to pick up new issues and give timely advice to inform decisions.
- Because the science is relatively new and already contradictory it is important not to rush into changes in forest policy and practice. Forestry is long term and all the evidence will need to be considered before changing silvicultural practices. 'Knee-jerk' reactions must be avoided.
- There is a need to look beyond 2050. A 100-year time-scale (at least) is required.
- 'Recommended' or 'good practice' would be a preferable term to 'best practice'.

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<sup>2</sup> [Intergovernmental Panel on Climate Change – 4th Assessment Report synthesis](#)

### **1.3 The non-FCS forestry sector**

- The 'private sector' does not get enough consideration in the CCAP. Given that it comprises some two-thirds of the forest area there should be more recognition of this sector when developing forest policy.
- To achieve the aims of the CCAP FCS will need to work in partnership with the private sector. A clearer framework is needed to do this. Public and private sector resources are different and a case study approach should be used covering private sector constraints. Working with the private sector throughout all the identified actions would be welcomed.
- There is a perceived view that excessive regulation is hindering the potential progress of a more efficient forest industry.
- There is a significant area of unmanaged woodland in Scotland and the reasons for this need to be better understood.
- Information and guidance notes should be distributed to all owners and managers.

### **1.4 Land use**

- Many of the risks identified need geographic (regional) responses and good co-operation between landowners and managers at an appropriate geographic scale. The importance of public/private sector groups covering geographical areas, such as deer and wildfire groups, should be recognised.
- There is a need to target 'win-win' solutions and resolve competing objectives within forestry and other land use sectors. The CCAP should explore the impacts different industries have on each other's operations and the potentially robust solutions that could be achieved by working together. It needs to indicate how other stakeholders and partners will be engaged effectively e.g. through Regional Forestry Forums or 'Structure Plans'.
- Climate change is a major public policy issue that should cut across other sectors with a multi-purpose, integrated approach. The implications for land use will require integration to meet multiple objectives.
- It will be important to translate CCAP guidelines into sustainable rural development and sustainable forest management requirements.
- There is no indication if there is expected to be a role for urban woodlands in meeting the current forestry target of 0.6 MtC savings annually by 2010 or in being considered as carbon sinks. This needs to be clarified in relevant sections of the Plan.
- The water environment is perhaps the most susceptible to climate change. The continuing support of the forest sector is required to in deliver the Water Framework Directive's ambitions.

### **1.5 Carbon**

- A balance sheet approach is needed to identify the current total stock of carbon in forests (as a benchmark), the total annual increase/decrease in carbon stocks, and the main assets/stocks in forests e.g. forest soils/timber. A forest management revenue stream, including economic incentives, from carbon stock increase/maintenance would ensure more carbon is stored and help encourage retention of crops beyond maximum annual increment.
- Robust methods of carbon accounting and life cycle analysis are required.

- While continuing to promote wood fuel it must be ensured that wood fibre is not diverted from existing (and valuable) markets such as the production of sawn wood, wood-based panels and paper/board products. A greater effort is needed to capture genuine waste wood materials that are being disposed of to landfill.
- The importance of soil carbon stocks must be recognised.

## **1.6 Resources**

- Appropriate funding packages are needed to ensure the industry is progressive and profitable and contributes fully towards mitigating climate change. The proposed monitoring and review of uptake against Rural Development Contracts is welcomed.
- ‘Red tape’ should not be increased.
- ‘A forest that pays is a forest that stays’.
- Measures which alleviate climate change but at too high a cost for people or the environment should be avoided.
- FCS will need to develop strategic partnerships within Scotland, the UK and internationally if the CCAP is to be delivered fully. FCS could take an international lead in the field of climate change policy initiatives.
- The potential impact of Common Agricultural Policy reforms should be recognised.
- There is concern that grant support may reduce for woodland biodiversity work in areas identified as potentially unsuitable under UKCIP scenarios.

## **1.7 Format**

- The writing and layout is not very exciting or reader-friendly. Sections should be numbered for ease of reference. Graphs and pictures would also help.
- There needs to be better linkage between sections e.g. lower Impact silvicultural systems (LISS) appears in several sections but stands alone in each context heading.
- A clearer link between themes and specific actions and how they address climate change would be welcomed. This would help prioritise actions and help the reader understand the role forestry can play in mitigation and adaptation.

## **1.8 Other**

- The document confuses the roles of FCS as a policy-setter for the forest industry and its role as a land manager.
- The forthcoming FES Framework Strategic Plan should be revisited to ensure the national forest estate is used as a catalyst for the CCAP.
- The role of public education is crucial if support is to be harnessed.
- Greater recognition is required of the potential for forestry and forest products to play a very significant role in helping to mitigate climate change.
- In all other EU-15 countries energy is the main application of woody biomass from forests.
- The risk and impact of climate change on wildlife within forests is not addressed as thoroughly as plants and plant diseases.
- More emphasis is required on the role of native woodland and quality broadleaves.
- ‘Low regret’ principles should be applied.
- FCS should promote greater use of the UK Woodland Assurance Standard.

- Aspects of the CCAP relating to environmental incidents and/or natural hazards need to be strengthened if resilience is to be improved (references include: an EC DG Environment report on disaster prevention, 'Member States' Approaches towards Prevention Policy – a Critical Analysis' {2008}; and 'Preparing Scotland – Scottish Guidance on Preparing for Emergencies' {2006}). Wildfires can be part of natural processes and can often be beneficial in non man-made landscapes. There is a need to engage further with strategic Wildfire Forums.

## **2. Detailed Comments**

The detailed comments received have been set out by Climate Change Action Plan (CCAP) sections and sub sections. This is not intended to be an exhaustive list and some individual comments may not appear. They will, nevertheless, be considered in the re-drafting of the Action Plan.

### **2.1 Overview**

#### **2.1.1 Introduction**

6 respondents commented on this sub-section.

- Because the understanding of the subject is continually changing a 2-year review is appropriate, even though many of the actions will have a longer focus.
- Targets should be flexible enough to accommodate rapidly changing knowledge.

#### **2.1.2 Climate change predictions for Scotland**

6 respondents commented on this sub-section.

- The figures and assumptions used in predicting climate change in Scotland are useful but are based on models that will be updated over time. For example, UKCIP08 (see Footnote 1 on page 3) will be based on the IPCC Fourth Assessment report (see Footnote 2 on page 6) with a more sophisticated approach to risk management based on probabilistic scenarios.
- Climate change models are based on averages rather than extremes.
- Mention should be made of increased spring droughts in the east of Scotland and its potential implications for wildfires.

#### **2.1.3 The role of forestry**

6 respondents commented on this sub-section.

- Forestry's role in emission reductions through sequestration is likely to be modest. However, it is still valid as forestry-based policy measures may delay the rate of climate change allowing time for adaptation, learning and technological innovation.
- The use of different timber species, especially hardwoods, is welcomed.
- No mention is made of the role of forestry in attenuating extremes in river flows, nor its role in agriculture (e.g. wood pasture).

- The forestry sector must be made aware of the impacts forestry can have on water systems (both negative and positive) especially if more woodland is created.
- Forestry's role is supported but land is also required for other forms of renewable energy and food.

## **2.2 Protecting and managing existing forests**

### **2.2.1 Sustainable forest management**

16 respondents commented on this sub-section.

- Forests should not be managed purely for carbon sequestration. Sustainable, multi-purpose forestry, including carbon sequestration, will be a more attractive proposition to the public.
- Sustainable forest management has higher costs associated with meeting the additional regulations. FCS should investigate the level of reduction in forest management as a result of this.
- In relation to the revision of the UK Forestry Standard:
  - take account of other national policies and strategies not just those associated with the forestry sector;
  - climate change requires the introduction of more adaptable species and tree mixtures;
  - acknowledge the contribution that high altitude scrub can play;
  - the revised Standard will require more than the current guidelines to accommodate biodiversity and facilitate ecological robustness in the face of climate change;
  - promote the revised Standard as a condition of grant funding and provide support for forests to be certified; and
  - the revision should be followed by a revision of the UK Woodland Assurance Standard.

### **2.2.2. Minimising deforestation**

23 respondents commented on this sub-section.

- The history of deforestation in Scotland is more complex than that indicated in the CCAP. There has been no net deforestation in Scotland over the last 50 years.
- The restoration of priority open ground habitats in Scotland must not be confused with deforestation of rainforests or Scotland's native woodland.
- Wind farms should not require forests to be clearfelled and do not justify crop removal.
- Wind farms are being singled out unfairly as an example of developments requiring large-scale tree removal. They make a significant contribution to the Scottish Government's climate change targets.
- The development of a recording system for woodland losses, and the use of the development control and consent system, is welcomed.
- Woodland losses need to be compared with woodland creation to give a 'net' figure. Woodland loss through forest re-design should be defined separately.
- Deforestation can benefit biodiversity, such as peat restoration. Removing trees on peat soils may benefit and protect carbon sinks.

- FCS’s deforestation policy should not have the force of planning policy and should not be promoted through the National Planning Framework as this might prejudice renewable energy interests.
- Uneconomic, remote conifer plantations should be transformed into low intervention native woodlands.
- The third bullet point under ‘Principles emerging...’ is too vague. There should be firm restocking conditions.
- Will local authorities be required to record information relating to deforestation where planning consent has been given?
- Specific comments on deforestation:
  - the text ignores that there has been a clear presumption against conversion of woodland to other uses for the last 10 years;
  - disagreement that there is a world level presumption against deforestation;
  - strong disagreement with the action to promote a ‘putative’ deforestation policy;
  - areas/volumes falling below the felling licence threshold are not monitored.
- Compensatory planting:
  - should not be required when trees have been removed for priority habitat restoration or for protection of priority species;
  - may not be within the ability of the landholder removing the trees. Land in Scotland is relatively scarce and changes in land use should be managed at a national level;
  - should not be embedded in the National Planning Framework as this could result in Local Authority planners automatically demanding compensatory planting, even for high quality biodiversity work.

### **2.2.3 Conserving forest carbon stocks**

20 respondents commented on this sub-section.

#### **2.2.3.1. *Promoting the use of silvicultural systems and practices that safeguard carbon stocks***

- No targets or time-scales have been indicated.
- Strengthen this section by referring to better assessment of site types.
- FCS should increase woodland cover through promoting natural regeneration as this would sequester more carbon as well as having other environmental benefits.
- There may be some carbon benefits related to woodland management, but these must be part of sustainable, multiple benefit forestry.
- There is support for lower impact silvicultural systems (LISS) but qualified in that LISS only reduces carbon emissions compared to clearfelling regimes and that by intervening regularly (perhaps to reduce windthrow risk) carbon emissions from machinery might increase.
- The costs associated with LISS can reduce the competitiveness of the timber crop. Good design principles are required in the deployment of LISS, particularly shelterwood systems.
- Guidance on when to adopt LISS for carbon storage would be welcomed.

- The use of long term retentions as carbon stores is welcomed. Incentives will be required to encourage this silvicultural option.
- There are concerns about the complexity of carbon sequestration:
  - practices which sequester the most carbon may not have the greatest impact on reducing net CO<sub>2</sub> emissions to the atmosphere; and
  - how will management of age classes be balanced to ensure that the sequestration capacity of forests is maintained over time?
- There are concerns about windthrow, especially since there may be an increased risk of catastrophic wind damage. This might hamper LISS and add to atmospheric carbon. The use of native species could help to anchor crops, and shallow rooted species should be avoided.
- Using wood from thinnings for biofuel should be encouraged but more research is needed on the impact of removing brush and stumps from sites.
- The development of best practice restocking incentives would be welcomed.
- A greater understanding of carbon-saving silvicultural practices will better inform future afforestation and restocking decisions. It could include guidance on conserving carbon stored in peat, and peat depths suitable for planting, as well as managing natural hazards such as fire. It could be matched with incentives.
- The use and benefits of appropriate fire management strategies should not be overlooked.
- The development of a carbon assurance scheme, with associated standards, is welcomed. It needs to cover the whole carbon cycle and be based on robust science.

### **2.2.3.2 Minimising civil engineering related carbon losses**

- Greater clarity is requested about the need for this action.
- The development of guidance is welcomed. However, the CCAP should have more detail on how to plan and implement civil engineering projects.
- This section should be strengthened and the advantages of minimising the use of public roads should be mentioned.

## **2.3 Woodland Creation**

### **2.3.1 Carbon sequestration through woodland creation**

25 respondents commented on this sub-section.

- More guidance on new planting and carbon sequestration is required. It should include minimising ground preparation where appropriate and species/origin/provenance choice to maximise carbon sequestration.
- Incentives could be linked to soil types.
- There is a need for guidance (e.g. peat depths) on when land is or is not suitable for afforestation.
- Trees should not be planted just for the sake of it. The objective should be to ensure ‘the right tree, in the right place, at the right time’.

- There is a need to improve the communication and accessibility of scientific data. The economics of carbon sequestration in forestry needs further attention. Assessment of cost per tonne of carbon would enable comparisons with other forms of net emissions reductions.
- There will be opportunities for creating new forests using native broadleaves to produce high quality timber.
- The statement “High quality semi-natural habitats are important in their own right and woodland creation will not be appropriate within some designated areas” is ambiguous. Are only designated areas classed as being of high quality habitat? Is it not more likely that woodland creation will not be appropriate in many, or even most, designated areas?
- Comments on the 25% forest cover ambition include:
  - there is no justification for the figure;
  - the figure should be higher than 25%;
  - how will the ambition be achieved?;
  - given the Scottish Forestry Strategy’s aspiration for 25% woodland cover will achievement of it represent real additionality in terms of carbon savings?;
  - care is required to avoid double counting carbon savings;
  - simplifying the EIA process would help;
  - the availability of suitable land is a major constraint - land is scarce with food production being one of the competing uses;
  - the use of best quality agricultural land for forestry is not appropriate;
  - other bodies, such as Scottish Water have significant land holdings that might be suitable for appropriate woodland creation; and
  - new woodlands should have multi-purpose benefits and not just deliver carbon sequestration objectives.
- Promotion of the new generation of Indicative Forestry Strategies (IFS) is welcomed but, given that they may take time to develop, this section of the CCAP should be expanded. The new IFSs must take account of climate change and should be constructive rather than negative, allowing larger scale productive woodlands in suitable locations. IFSs should:
  - recognise and support integrated habitat networks;
  - be targeted to increase resilience to climate change;
  - recognise the role of urban and City Region forestry in providing local woodland alternatives, thus limiting the need for private transport to rural areas to access woodlands for health and enjoyment;
  - balance carbon sequestration objectives with multi-purpose benefits; and
  - recognise the catchment based approach to River Basin Management Planning.
- Rural Development Contracts are a major driver of appropriate land use outcomes and should be kept under review.
- Comments on peat:
  - disturbance of peat will release carbon;
  - clarification is required on the depths of peat suitable for planting;
  - what are the effects of natural regeneration on peat?;
  - a programme of restoration of sensitive organic soils is required; and
  - there is a need to be aware of carbon flux from muirburning.

- The establishment of a robust carbon sequestration monitoring and reporting framework is welcomed. It will be important to avoid double counting carbon savings from 'Land use, land use change and forestry'.
- Significant areas of continuous surface fuels, e.g. heather/grass, can build up in forest habitat networks. A range of actions, including firebreaks, will be required to combat the fire risk.

### 2.3.2 Establishment of energy crops

24 respondents commented on this sub-section.

- There is general support for establishing energy crops.
- FCS must define an agenda for bio-energy forest policy.
- The emphasis should be on combined heat and power (CHP) and heat-alone schemes.
- Short rotation forestry (SRF) is supported although qualified by concern about its potential impact on important upland habitats. SRF, rather than Short Rotation Coppice (SRC), should get greater emphasis in this section of the CCAP.
- SRC has some support although others disagree strongly, suggesting that SRC is a 'dead loss' due to the energy inputs required.
- The setting up of SRC and SRF trials is welcomed.
- Wood energy feedstock generated as a co-product from tree harvesting operations will be more cost effective than SRC.
- Medium-rotation coppicing of broadleaves would be relevant to farm forestry.
- Energy crops are a repeatable carbon saving, avoiding carbon release through replacing wood for fossil fuels.
- The CCAP should address biodiversity issues relating to biomass crops. Links to UKWAS are required. Biodiversity, multi purpose benefits, impacts on water quality, and links to Forest Habitat Networks should not be forgotten. These issues should be covered in the proposed FCS field trials (which should also extend to other land ownerships).
- FCS should promote the use of sustainable forest management certification and chain-of-custody for wood-based energy crops and produce.
- End users should be identified to help define the most suitable materials to produce and their required condition.
- Support mechanisms are a positive step. Specific suggestions included Renewable Obligation Certificates (ROCs) for heat schemes as well as electricity generation (which another pointed out has inherent energy inefficiencies). Farmers, in particular, would need a financial incentive to take up energy crop opportunities. Improved grant aid to bridge the establishment period would help improve the competitiveness of SRC and a review of Scottish Rural Development Programme support for SRC is required.
- Biofuel production is now a very political issue. It will remain a small market because it has to compete with land for food etc.

### **2.3.3 Regularising the woodland carbon offset sector**

13 respondents commented on this sub-section.

- Offsetting avoids the real issue of reducing emissions. It does not make for carbon neutrality and it would be better to use direct methods to solve climate change. There are also doubts that 'additionality' can be demonstrated in Scotland
- Carbon offsetting is an important area as it deals with human responses to climate change.
- Regulation, not just regularisation, of the woodland carbon offset sector is required.
- The proposed code of practice should be based on robust science. It should promote good silvicultural practice with multi-purpose benefits. All forests must conform to the UK Forestry Standard and its associated guidelines, and preferably to the voluntary UK Woodland Assurance Standard.

## **2.4 Adapting to climate change**

### **2.4.1 Facilitating ecological adaptation**

23 respondents commented on this sub-section.

#### **2.4.1.1 *Countering woodland fragmentation***

- This section could be more positively phrased as promoting effective habitat connectivity.
- To deliver the aims of this sub-section will require co-operation between landowners and linkages across boundaries (it may tie-in with River Basin Management Plans) particularly within and between riparian woodlands.
- Robust ecological networks will be those that have the scope to respond to change.
- Countering woodland fragmentation will facilitate species and habitat adaptation to climate change.
- Available habitat for key species must be increased. It is not just about improving connectivity.
- The introduction of support mechanisms is key to developing Forest Habitat Networks. The support measure should encourage joint applications operating at a habitat network scale.
- Support will also be needed for improving the condition of core areas rather than just expanding networks. Core areas are often still not in good condition and need to be made as robust to change as possible.
- Comments on countering woodland fragmentation:
  - it should not be to the detriment of open ground habitats;
  - the impacts on priority species and habitats must be considered;
  - it could impact on the behaviour of water infiltration and runoff;
  - it should take account of non woodland habitat networks;
  - the impacts of the transport network, particularly roads, on wildlife and wildlife dispersal requires greater mitigation effort ;and
  - increasing the resilience of Forest Habitat Networks from environmental incidents and/or natural hazards is required.

- Comments on BEETLE:
  - the focal species approach should not be used out of context. It may not be appropriate for certain priority species;
  - buffering should be built in to ensure that the capacity for change and adaptation is not too restricted;
  - it is only as accurate as the data it is based on – policy should be evidence, not model, based;
  - it should not just be a desk exercise but should move from theory to delivery on the ground; and
  - guidance on the use of modelling tools should be produced by the Scottish Government. This could be incorporated in revised guidance for the development of new Indicative Forestry Strategies.

#### **2.4.1.2 Promoting low impact woodland management in core networks**

- There is qualified support for 'lower impact silvicultural systems' (LISS).
- The drivers behind LISS should be clarified in the context of climate change adaptation. How will weightings be made to facilitate decisions?
- The LISS concept could help with River Basin Management Plans, sustainable approaches to flooding, and biodiversity targets.
- There is concern that the higher costs associated with LISS could seriously impact on the profitability of operations and that the additional work (extraction etc) could increase the carbon footprint of forestry.
- Boreal forest ecosystems, such as pine & birch, thrive on disturbance. Minimal disturbance is, therefore, an incorrect assumption. What is required is the management of change within acceptable limits.

#### **2.4.1.3 Focus on the most vulnerable woodland types**

- Extreme climate change will render some existing species extinct in the UK.
- While allowance should be made for vulnerable woodland types the species that best sequester carbon and mitigate climate change through timber production may not be native.
- It is questionable that pinewoods will move higher and include a greater component of broadleaves.
- There will be an increase in the incidence of fire. Pine thrives on such ecological disturbance but fires would impact on adjacent non-pine plantations.
- A policy view is required about beech and sycamore in ancient semi-natural woodlands.
- Further information is sought on the role of wet woodland in protecting water quality.
- More mention of high elevation woodland is required.

#### **2.4.1.4 Increase the contribution of plantation-origin woodlands**

- This priority is generally supported as are the proposed actions.
- The incentives must not be too prescriptive.

- It is doubtful whether long-term forest plans will serve their expected purpose as they do not cover the ongoing management of existing crops. Many plantations are under-managed.
- Management practices that enhance structural and species diversity will increase their usefulness as part of forest habitat networks.
- There should be a particular focus on Long Established Plantation Origin woodlands as these are most likely to deliver the benefits sought.
- There is a lack of consistency in the way the term 'old growth' is used in the CCAP. Its definition is also questioned as some consider it to be the same as ancient woodland. It is suggested that it could be better described as long term retention.
- Expanding native woodland in a reasonable time-scale might require significant planting rather than relying on natural regeneration.

#### **2.4.1.5 Develop and use a better understanding of key species responses**

- Climatic release of potentially invasive species is a major threat and could have major resource implications e.g. for Councils' maintenance of open space.
- Is there any accepted research about asynchronisation of conditions for reproductive success?
- FCS should lead by example. Further research is needed on species to improve their quality in changing climatic conditions and to cope with the increased threat from wind.
- A risk management approach would enable a quick response to climate change while putting in place appropriate monitoring and research.

#### **2.4.1.6 Better understand the implications of climate change for genetic conservation**

- Research should not just be restricted to genetic conservation.
- Managers will benefit from a better understanding of species/climate change interactions.
- Species requiring extended periods of cold may become restricted in range.

### **2.4.2 Pests, diseases and weather threats**

9 respondents commented on this sub-section.

- The risk management approach is appropriate but there is a need for more precise hazard and risk assessments.
- Many of the identified risks need geographic responses across land ownerships and will need partnerships if they are to be delivered.
- Insect and pathogen strategies should be developed for practical implementation.
- FCS should be prepared to take decisions based on 'best available information'.
- Increased damage from windthrow is already being seen. Diversifying the age structure of forests should help but is not yet evident.
- It is questionable that soil types are changing fast enough to yet warrant changes in tree species.
- Other mammals such as voles and rabbits could be included, as should Dutch elm disease.
- A great deal of information was provided about fires:

- to help prevent fires there is a need to address the cultural aspects of people's behaviour in woodlands;
  - there is a need for better data collection, such as the Department for Communities and Local Government's Incident Reporting System or the UK Vegetation Fire Statistics;
  - the response to fires should be to 'treat' not 'tolerate'; and
  - FCS should work with the Scottish Wildfire Forum and partners.
- More input is needed about management processes and frameworks to cope with environmental incidents and large-scale emergencies (detailed information was provided on this, such as the use of an Incident Command System, reference to the Civil Contingencies Act 2004, the Contingency Planning {Scotland} Regulations 2005, and The Fire {Scotland} Act 2005). FC Operational Guidance Booklet 17 is internal to FC and wider national policies, developed by consultation, are needed.
  - Longer seasons and milder winters could increase midge and tick numbers, this impacting on visitors and those who work in the countryside.

### **2.4.3 Silviculture and forest operations**

14 respondents commented on this sub-section.

#### ***2.4.3.1 Identify where change of species or increase in species or provenance diversity is advisable***

- There is a need to be more decisive with research/monitoring and well distributed field trials over all major habitats to determine growth characteristics and disease susceptibility.
- Delivery of 'robust' forestry should be ensured through the UK Forestry Standard and delivery plans.
- There is an 'all the eggs in one basket' syndrome, particularly with Sitka spruce. Mixtures are advocated but not discussed in relation to spruce. The CCAP should look at developing more mixtures in 2<sup>nd</sup> and 3<sup>rd</sup> rotation sites, especially in spruce plantations.
- The establishment of a viable quality hardwood resource is welcomed although the promotion of southern beech is questioned.
- The use of Corsican pine should be considered.
- Eucalyptus should be considered rather than walnut.
- There are concerns about the impact new species might have on water catchments and water quality.
- Diversifying tree species is supported but the impact on timber processors needs to be considered.

#### ***2.4.3.2 Identify situations where climate change may affect choice of silvicultural system or practice***

- The suggestion that an even canopy cover might lead to increased windfirmness contradicts the results of the Anderson plots used at Glentress.
- Increased windthrow risk may require the bringing of commercial forestry further down the hill or a reduced rotation length.

- Timber prices may encourage thinning and hence windfirmness could be improved.
- The CCAP statements about extreme wind events are not supported by current evidence although more accurate predictions will become available with UKCIP08 (see footnote 1 on page 3).
- The desire to reduce carbon emissions should be considered in relation to root plate disturbance (natural or mechanical), and when considering clearfelling if winter rainfall increases.
- Any changes in practice should consider the impacts, positive and negative, on other strategies and policies e.g. River Basin Management Plans.
- FCS should define where carbon conservation is not a high priority.
- An action should be to promote research into developing more resilience to environmental incidents/natural hazards.

#### ***2.4.3.3 Identify appropriate modifications to civil engineering specifications and advice***

- The impacts on other stakeholders and the impact on water resources must be considered, there being a need for fully integrated approaches to these issues.
- Appropriate input for civil engineers could be built into the relevant courses in universities/colleges/institutes.

#### **2.4.4 Environmental Protection**

15 respondents commented on this sub-section.

##### ***2.4.4.1 Tackle slope instability issues in sensitive locations***

- An assessment of communities vulnerable to landslips is required.
- The positive role of woodland creation for slope stability should be given more prominence.
- Plantation forestry has sometimes been detrimental to slope stability and can also cause water sedimentation. Such risks need to be considered.
- Natural regeneration can also stabilise slopes - intensive management is not the only solution.
- Landslides should also be monitored where forests have previously been located.
- The proposed approach should be encouraged especially along road corridors and adjacent to communities. It should also be communicated to planners.

##### ***2.4.4.2 Increase the contribution of woodland in mitigating riverbank erosion***

- This priority is supported and will assist River Basin Management Plans. More information is required about erosion management strategies.
- Maintaining a vigorous ground flora sward is also important for the stability and health of riverbanks.

#### **2.4.4.3 Establish the practical potential for forestry in flood risk management**

- The positive role of forestry needs to be emphasised.
- The text has been tackled negatively. The positive role of forestry, for example in slowing erosion and increasing dappled shade, could be highlighted.
- There is a need for FCS advice on sustainable flood management.
- Clarification is requested on the statement “forestry is unlikely to have a major influence in flood avoidance”. Contradictory statements in this section are apparent.
- No mention is made of ground preparation and its potential influence on flooding (this also cross-links to carbon conservation). Drainage on planting sites has sometimes exacerbated flooding (although the application of current best practice means that forests could reduce or delay peak flows).
- Flood risk management should be carried out in partnership. The dynamics of catchments and river flows should be looked at as part of this as it may impact on other water resources.
- The effectiveness of wet woodlands on floodplains to help alleviate flooding should be investigated.
- There may be a role for forestry-related sustainable urban drainage systems (SUDS).

Under the sub-section on Environmental Protection an additional, new priority on wildfire was suggested – with the priority being “Monitoring, data collection and risk analysis of wildfire occurrence in partnership with wildfire groups and the Scottish Wildfire Forum.”

## **2.5 Sustainably produced wood for energy and construction**

### **2.5.1 Increase wood use for renewable energy**

21 respondents commented on this sub-section.

#### **2.5.1.1 Supporting the use of wood for energy**

- The headline priorities should mention renewable heat.
- The use of wood fuel should be seen as part of a shift to more sustainable heating systems, with passive solar heating being the least demanding.
- The use of wood fuel for energy will not reduce carbon emissions as it still emits carbon.
- No mention is made of fuel poverty.
- This sub-section should also address the use of forestry co-products.
- New bio-energy technologies should not be overlooked.
- Careful accounting and monitoring of carbon is required to assist in decision-making and to avoid over-estimating sequestration in growing crops.
- More woodland for biomass production could impact on other sectors such as water.
- There are reservations about the use of stumps for biomass.
- The emphasis should be on heat alone or combined heat and power (CHP) schemes.
- Developments such as Balcas and Stevenscroft have already met the Scottish Climate Change Programme targets for wood fuel. The focus should now be on local, small to medium scale operations as this supports rural development and reduces transport emissions and costs.

- Favourable Renewable Obligation Certificate (ROC) banding, while stimulating the use of biomass, could divert biomass sources from local CHP and heat only schemes to large scale electricity generation.
- Biomass production and harvesting must be done sustainably and be managed to support biodiversity. There are concerns about possible pressure on important upland habitats from Short Rotation Forestry.
- Regulation of the quality of wood fuel sold would improve the efficiency of wood burning equipment and hence the confidence of potential and existing customers.
- FCS should adopt a 20% target for the use of biomass across its estate. This will give confidence to Government targets.
- Co-ordination between stakeholders, suppliers and end users is essential to match supply and demand within geographic areas and to keep delivery distances to a minimum.
- Greater support is now needed for the commercial and public sectors to increase the installation of biomass systems (FC Wales's approach is mentioned). The support should be robust and accessible.
- Mention should be made of native woodland Habitat Action Plans and the potential to utilise produce from sustainably managed native woodlands.
- Reference to 'Wood Fuel News' should be made.

#### **2.5.1.2 Facilitating supply chain development for wood fuel**

- The Wood Fuel Task Force recommends a full review of wood fuel market development by 2010. This ties in well with the proposed CCAP review.
- The use of a 'one stop shop' approach to provide support and high quality, reliable advice is recommended.
- There could be a significant demand from new housing (the National Assembly Wales has a policy that all new housing should be carbon neutral by 2011).
- Supply must meet demand and must not be increased without encouraging demand. The FC Wales solution to supporting supply and demand should be considered.
- Wood fuel availability and usage surveys should also monitor the availability of financial incentives to ensure they are suitable and sufficient.
- The FREDS<sup>3</sup> report recommended that wood fuel should come from FSC certified sources.
- The development of renewable energy markets must not compromise the restoration of priority open ground habitats through forestry retention.
- The major role of the private sector must be recognised.
- This will not work as the woodlands are too far from population centres. The viability of large-scale schemes that require large haulage distances is questioned.
- Large scale developments (>50,000 tonnes p.a.) that cannot secure market price must have a presumption for importing material (FSC certified) by sea in order to preserve valuable local resources.
- Indigenous wood must continue not be used for co-firing.
- There is a shortage of heating and installation engineers/plumbers with appropriate biomass systems knowledge.

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<sup>3</sup> [The Forum for Renewable Energy Development in Scotland](#)

## 2.5.2 Encouraging other forms of renewable energy

6 respondents commented on this sub-section.

- Conservation, distribution and landscape concerns should be added to “Planning and environmental safeguards”.
- The massive carbon sinks in deep peats must be protected.
- Closer links should be forged with other organisations working to develop and promote the use of renewable energy, with wood fuel being seen as part of a suite of energy solutions. This should be part of the remit of Wood Fuel Information Officers.
- Further discussion is required on FCS’s deforestation policy.
- There needs to be more co-ordination with the construction and renewables industries.
- The principles in this section should be extended to forest crofts.
- More information is needed about the scale and nature of micro-power.

## 2.5.3 Increase the use of timber

18 respondents commented on this sub-section.

- The key is to promote timber above all other materials. Just replacing imports with home grown timber will not help global climate change (except for transport issues).
- Carbon storage in wood products merits further attention as it adds to the total carbon sink and is a better way of storing carbon than simply storage in living trees.
- Increasing wood utilisation should be an urgent priority.
- There is a need to quantify the comparative advantages of wood over its alternatives via Life Cycle Analysis.
- There should be more co-ordination with the construction and renewable industries, with information being made more available e.g. to architects and timber specifiers.
- The substitution of wood for more energy intensive materials should be encouraged. Iconic buildings help but every-day construction will create the most demand.
- The Scottish Government should address the reasons for home grown timber struggling to compete with imports.
- Local sawmilling and co-operative approaches to using ‘waste wood’ for pellet/chip supplies should be encouraged
- There are unresolved legal issues relating to competition law about proposals for improving private sector forecasts.
- Markets should be developed and encouraged for the innovative use of hardwoods. Attention should also be paid to the more durable softwoods such as larch and Douglas fir. A more versatile approach is required.
- There is support for a strategic ambition to improve the quality of Scottish timber, aspiring to move from low-grade use (e.g. wood fuel), to higher grade use (e.g. insulation materials) and finally, use for construction.
- Techniques are required to identify timber suitable for higher value markets and to assess (and value) variations in timber quality.
- Quality broadleaves should be encouraged – this will reduce road miles and provide international equity by providing alternatives to tropical hardwoods.
- Encouraging improvements to the quality of the hardwood growing stock should be undertaken in partnership with others such as the British and Irish Hardwoods

Improvement Programme (BIHIP), Scottish Native Woodlands and the Borders Forest Trust.

- Identify opportunities for market expansion – particularly those that would add value to small dimension timber.
- Improve the understanding and awareness of the technical properties of timber.
- The range of products from wood also includes ‘green chemistry’ and new composite materials capable of entering various industrial sectors.
- Timber and timber products must be sustainable in terms of sourcing and timber miles. The carbon footprint of home grown timber must be assessed against imported timber.
- The management of small farm woodlands should be encouraged as this will expand the volume and range of timber on the market.
- Timber quality should be improved through better silviculture, particularly timely thinnings.
- Opening access to landlocked forest areas can also increase the potential for forest crofts but conversely this can mean high emissions associated with road construction.

## **2.6 Reducing the forestry sector’s carbon footprint**

### **2.6.1 Timber transport**

19 respondents commented on this sub-section.

- The proposed solutions to reducing road miles are weak.
- Transport techniques and the road infrastructure should be modernised.
- Timber transport is a main cost to the industry. More work is needed with governing bodies (e.g. through a transport research programme) to make alternatives such as rail/sea easier to access.
- Concerns about timber miles appear to have been reported rather too easily as an economic rather than environmental concern.
- Those living rurally want to see an increase in sea/rail transport.
- The programmes listed in the third bulleted action may increase rather than reduce timber miles.
- Continued support for and funding of the Timber Transport Scheme is recommended.
- Processing should be undertaken as close as possible to the supplying forests.
- The emphasis on local wood fuel markets is welcomed, as is the development of local niche markets.
- Investments in modern processing facilities have given them an ability to create and maintain market share. If the scale of processing is too small those mills will become uneconomic.
- Scottish timber processors have an inherent timber miles advantage over imports.
- Transport carbon footprints are not automatically reduced by reducing the distance travelled and although home grown timber has a high proportion of road miles it may not have a better footprint than imported timber. The main requirement is to reduce demand.

## 2.6.2 Forestry Commission corporate activity

15 respondents commented on this sub-section.

- This section should clarify whether it relates to FCS in its Authority role or as a state forest manager.
- Given the potential of forestry, FCS should have a more assertive role than simply “Participating in the Greener Government Programme”.
- The ‘Greenerways’ action should be more advanced than establishing a baseline carbon footprint.
- FCS should take account of a wider range of factors when managing the forest estate and more consultation is required. A number of activities have been carried out with a minimum of accountability.
- FCS’s centralisation policy should be reviewed in the light of modern IT/communications. This would encourage staff to be based locally.
- In relation to FCS ‘leading by example’ it is noted that an Executive Board paper in October 2007 indicated that, in 2006, the FC (GB) was “still falling far short of meeting Government targets on sustainable operations in most areas, bar biodiversity and travel”. Has FCS turned things round so that it can now take the lead?
- FCS should look at what is being done in other industries to reduce consumption and carbon emissions.
- The review of the CCAP would sit better in the ‘Measuring Progress’ section.
- FCS has a far larger carbon footprint than the private sector (staff, vehicles etc). It should be abolished and the woodlands returned to local communities/private sector.
- A Climate Change Action Plan is required urgently for agriculture.
- Biodiesel is not sustainable and real alternatives are required as well as less reliance on fuel. Transparency is required in FCS’s corporate reporting to clarify what sustainability criteria are applied to biofuel selection.
- The FCS’s use of biofuel would make a good promotional case study showing how fossil fuel use associated with transport can be reduced by sourcing sustainable local biofuels.
- Rising fuel costs will be a significant problem in the future. Although the red diesel subsidy assists with a significant cost pressure for the sector it conflicts with the government desire to have a coherent climate change strategy.
- FCS should make annual 5% carbon reductions.

## 2.7 Awareness Raising

17 respondents commented on this sub-section.

- The focus should be on good science, not perception, but this can still be presented in a populist format. Promotion through the mainstream media should be encouraged.
- Reference should be made to BRE’s<sup>4</sup> whole Life Cycle Analysis work on different construction systems as that would help combat spurious claims from other industrial materials groups.
- The private sector’s role must not be ignored e.g. ‘wood for good’, Forest Education Initiative.

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<sup>4</sup> Building Research Establishment Ltd, part of BRE Trust Companies

- Simple and straightforward guidance, for example on the choice of tree species in the light of climate change, should be produced for people such as planning officials and gardeners.
- The aims of the CCAP must be reflected and actioned in other plans and strategies (within Forest Enterprise Scotland these would include the Framework Strategic Plan and Forest District Strategic Plans).
- The public sector must work together to ensure there are clear and consistent messages across Scotland to help address climate change.
- The promotion of a reduction in demand and waste is required.
- Support should go to non-governmental organisations (NGOs) to promote and develop household and community practical action and wood fuel production.
- There is a need to co-ordinate more with the construction and renewables industries.
- Working with voluntary organisations will help raise awareness more effectively than FCS working alone, as will linking with eco-schools.
- Awareness raising should extend beyond the forest industry and into educational programmes for schools and communities. Education should also include raising awareness about natural hazards such as wildfires. Additionally, education should include reducing the demand for carbon-based energy.

## 2.8 Measuring progress

7 respondents commented on this sub-section.

- More thought is required on how progress on priorities for action might be monitored and reported more effectively. It is not clear how monitoring can be achieved over the lifetime of the CCAP.
- Monitoring should cover a few agreed, significant and measurable outcomes to avoid being too complicated or costly to maintain.
- What will be the targets and benchmarks against which progress will be measured?
- The use of qualitative and quantitative periodic reassessments of priorities is welcomed.
- Specific actions for fire and incident reporting are suggested, including partnership working with the Justice Department and the Department of Communities and Local Government, and the collection of fire statistics through the Incident Reporting System.
- A working group of stakeholders should help monitor and guide the priorities of the CCAP.
- Reviewing the CCAP in 2010 is welcomed given the fast pace of development in the understanding of climate change issues. The review of the CCAP should be mentioned as an action in this section.

## List of respondents

Professor Jane Bower  
Mr M Bruce  
Mr J Cape  
Mr W Charlton  
Mr A Donaldson  
Mr P Fairweather  
Mrs I Fotheringham  
Mr D Gates  
Mr T Havard  
Mr D McPhillimy  
Mr A Neustein  
Ms S Reid  
Dr A Watson  
Mr D J Williams  
Auchtertool Community Council  
Dailly Community Council  
Dornoch Community Council  
Fairmilehead Community Council  
Kincraig Community Council  
Morningside Community Council  
Shieldhill Community Group  
Community Woodlands Association  
Scottish Rural Property and Business Association  
Scottish Woodlands  
UK Forest Products Association  
Macaulay Institute  
East Ayrshire Council  
Glasgow City Council  
Highland Council  
Scottish Environment Protection Agency  
Scottish Natural Heritage  
Scottish Renewables  
Scottish Water  
Transport Scotland  
Highlands and Islands Fire & Rescue Services  
Highland Forestry Forum  
Friends of the Earth Scotland  
Highland Birchwoods  
Reforestation Scotland  
Royal Society for the Protection of Birds Scotland  
Scottish Council for National Parks  
Scottish Native Woods  
Scottish Wildfire Forum