

Royal Commission on Environmental Pollution

Adapting the UK to climate change: invitation to submit formal evidence

Response of the Landscape Institute, October 2008

Introduction

The Landscape Institute is the Chartered Institute in the UK for Landscape Architects, incorporating designers, managers and scientists, concerned with enhancing and conserving the environment. The Landscape Institute promotes the highest standards in the practice of landscape planning, design, management and research, representing members in private practice, at all levels of government and government agencies and in academic institutions and commercial organisations.

The Landscape Institute welcomes the opportunity to submit its views as part of the Royal Commission's investigation into how the UK can adapt to climate change. We would also like to draw the Royal Commission's attention to the recent publication of our position statement on climate change (enclosed), which outlines our recognition of the need to adapt to a changing climate, why adaptation is relevant to the profession and also demonstrates via case studies just some of the work that our members have been involved in which deal with the subject.

ADAPTATION

Range of climate change

1. *There are several important factors when discussing climate change, which the RCEP needs to understand for this study:*

(a) Over what time period should climate change be considered for the RCEP study – 2020, 2050, 2100 or some other time period?

The Landscape Institute would suggest that the period of climate change to be considered for the RCEP study to range from the present to 2099, as will be the period covered in the forthcoming launch (Spring 2009) of UKCIP08 by the United Kingdom Climate Impacts Programme (UKCIP).

(b) What are the magnitude, rate and kinds of climate change impacts in the UK that the RCEP study should be considering?

In consideration of the response given in 1a (above), the magnitude, rate and kinds of climate impacts that would be best considered in the RCEP study should include the projections and scenarios generated by UKCIP08. The new UKCIP08 scenarios will identify the probability of specific climatic changes but it will still not be straightforward to project how these changes will impact on the natural environment. There is therefore a need to conduct a specific assessment of climatic changes on the natural environment.

Awareness of adaptation to climate change

2. *The RCEP is interested in understanding the general level of awareness about adapting to climate change. How would you describe:*

(a) The level of awareness that either you or your organisation has about the need to adapt to climate change?

The Landscape Institute is acutely aware of the need to adapt to climate change. The Institute understands that sustainable landscape planning, design and management are essential if we are to adapt our environments to a changing climate and also to mitigate future change.

In August 2007, the Landscape Institute conducted a survey of its members relating to climate change adaptation and mitigation measures in their day-to-day work. 73% of members were able to say that they have successfully influenced clients to consider climate change issues, including adaptation practices, and more than half think that clients will consider funding extra costs if required.

Specifically:

- (i) 74% were actively working on projects incorporating sustainable drainage projects incorporating sustainable drainage;
- (ii) 64% of members were working on the design of ecological corridors to support biodiversity;
- (iii) 57% of members were giving greater consideration of microclimate and design issues.

The Institute has recently published a Climate Change Position Statement (see <http://www.landscapeinstitute.org/uploadedpolicies/LI%20CCPS%20AW%20Final.pdf>) which outlines the role of the profession with regards to climate change adaptation. We have also worked with a number of national stakeholders, particularly Natural England, to help inform policies and events to fully consider the important role of holistic landscape architecture approaches to climate change adaptation and mitigation.

Furthermore, current work of the Institute specifically focuses on the importance of green infrastructure as a key delivery mechanism for ensuring range of benefits, including enabling the natural environment to adapt to climate change.

(b) Your awareness of what could or should be done to enable the natural environment to adapt to climate change?

A landscape scale approach to development, particularly a green infrastructure approach, has the potential to deliver a range of benefits. This can include enabling the natural environment to adapt to climate change. Green infrastructure is perhaps best defined as the network of green spaces and natural elements that intersperse and connect our cities, towns and villages. It is a holistic approach to viewing the natural environment and the multiple benefits and vital functions it provides for the economy, biodiversity, people and communities. These functions also have the potential to improve local climate and air quality, floodplain management and coastal sea defences.

For example, green spaces which are interconnected via a network of additional natural elements, such as footpaths, tree canopies and wildlife corridors, have the potential to allow for the migration of species in the face of a changing climate. At the same time these green infrastructure assets provide for a range of additional functions such a recreational opportunities and sustainable methods of transport. To enable such benefits to be realised, however, there needs to be adequate investment into the planning, design and ongoing management of such assets. Furthermore, the green infrastructure approach to spatial planning needs to be recognised as a key infrastructural component along with such services as water and energy provision, telecommunications and transport.

The holistic approach that green infrastructure adopts means that sustainable drainage systems (SUDs) can be employed leading to a range of benefits for the natural and built environment. SUDs can minimise the risk of flooding in the face of increasingly extreme weather events and also reduce the risk of pollution to the natural environment via attenuation and storage. They can provide habitats for biodiversity and recreational opportunities for local communities, thereby reinforcing the value of multifunctional land use.

(c) Your awareness of any actions (by government or others) already planned or underway, to adapt the natural environment to climate change?

The Landscape Institute has been keeping an eye on the development of the Climate Change Bill and is encouraged by amendments which have led to the establishment of Part 4 of the Bill, a section which is entirely dedicated to adaptation. When first published there was only one clause relating to adaptation in the draft Bill. However, the Landscape Institute still has some concerns which surround the current content of Part 4. These concerns primarily centre around how the provisions within the Bill will actually lead to real adaptation practices being delivered, above simply assessing the risk and planning to make changes. The Landscape Institute welcomes the proposals to establish an Adaptation Sub-Committee.

The Landscape Institute welcomes the establishment of the new Department of Energy and Climate Change (DECC) and the redefined Ministerial post within DEFRA relating to sustainable development, climate change adaptation and air quality. We recognise though, that there is a risk of mitigation and adaptation policy becoming increasingly disjointed under separate departmental responsibilities, when this is already a significant issue for the climate change agenda within Government.

The Landscape Institute urges the RCEP to give due consideration to this risk and to advise DECC, Defra and the Climate Change Committee on appropriate governance solutions to deliver integrated policy outcomes across mitigation and adaptation.

The Landscape Institute has recently been involved with Defra, who had previous responsibility for climate change, to raise awareness of the role of the landscape architecture in adapting the natural and built environment to climate change. In so doing, a case study has been featured on Defra's adaptation website which outlines one such approach, (Sheffield's Manor Fields). Promotion of such work is crucial to ensure greater uptake of similar measures in the future and the Landscape Institute looks forward to engaging with the newly formed DECC as well as Defra to further this initial progress. <http://www.defra.gov.uk/environment/climatechange/adapt/action/studies.htm>.

Furthermore, the Landscape Institute contributed to the development of Natural England's Climate Change Policy which looked specifically at the need to adapt natural environments to climate change. This work will be continued further with additional input being sought from the Landscape Institute in relation to Climate Change and Biodiversity.

There are also examples of climate change strategies, which incorporate adaptation, at a regional level. For example, the draft London Climate Change Adaptation Strategy of August 2008, has a number of objectives, including the facilitation of the natural environment to adapt to climate change. The North West region has also produced its own Climate Change Action Plan.

In Wales, the Landscape Institute is a member of the Research, Methodologies and Economics and Adaptation Sub Groups of the Welsh Assembly Government Climate Change Commission. We are therefore part of an integrated cross-sectoral approach to create an adaptation and action plan.

The Landscape Institute would also like to draw the Royal Commission's attention to work completed by UKCIP and the EPSRC entitled 'Adaptation Strategies for Climate Change in the Urban Environment' (ASCCUE). This work includes a sound risk management framework which could be used in both urban and rural contexts.

The relationship between adaptation and mitigation

3. The UK is committed to significant actions to mitigate climate change:

(a) What should be the relationship between adaptation and mitigation actions for climate change?

There has in the past been a general tendency for policy to focus on mitigation measures with lesser attention paid to adaptation. This is demonstrated in the initial draft of the Climate Change Bill only including one clause relating to adaptation though, as previously stated in response to 2c, we are encouraged that adaptation now has a dedicated section in its current format. The Landscape Institute considers it is crucial that adaptation is considered equally and must be driven by the overarching principles of sustainable development. Adaptation principles must become mainstream in all policies and measures relating to the management of the natural environment to ensure resilience in the face of a changing climate.

In many instances, landscape responses incorporate a range of both adaptation and mitigation principles, with many of these being both interlinked and mutually reinforcing as well as providing a range of other environmental and socio-economic benefits. For example, provision of green space will mitigate through carbon storage as well as reducing surface run-off and enhancing opportunities for biodiversity migration.

Wherever possible, adaptation actions should also seek to mitigate further human-induced climate change. A multifunctional, landscape led approach to the planning, design and management of both our natural and built environments can help achieve this.

Climate change in the broader context

4. *Climate change is not the only major change that will take place over the coming years, or the only issue of importance for the environment, and yet it is being used as a justification for many decisions and actions:*

(a) In broad terms, what are the important non-climate changes (e.g. social, economic, demographic, technological and cultural) that will interact with climate change to facilitate or inhibit adaptation?

The Landscape Institute has no response to this question.

(b) When considering wider environmental priorities, what environmental goals may suffer if a stronger climate change adaptation agenda is introduced? How can the priority of adapting to climate change be increased as part of the sustainable development agenda without detracting from other important issues?

The Landscape Institute has no response to this question.

THE NATURAL ENVIRONMENT

Resilience of the natural environment

5. *When planning what adaptive actions should be taken in order to increase the resilience of the natural environment in the UK, the RCEP is interested to know:*

A higher priority afforded to green infrastructure is a critical adaptive action which should be taken in order to increase the resilience of the natural environment in the UK. To this end, proper implementation and ongoing management of green infrastructure strategies will encourage resilience through connectivity between sites, facilitated through management of micro-climate and habitats and will allow species to move in response to climate change.

(b) How resilient to climate change does the UK want the natural environment to be? How resilient does it need to be to continue providing the services upon which society depends?

The natural environment is economically important because of water resources, agriculture and tourism. Although the resilience of the natural environment to climate change remains uncertain, it is generally accepted that a precautionary approach is adopted to protect important habitats and species. If we wish our economy to be strong there will be a continuing need for key infrastructure for society to function properly. The 2007 floods illustrated the vulnerability of our power supply, transport infrastructure, water provision,

sewage treatment and the capacity of our drainage systems. The greater the certainty about what and where climate change impacts will be, the easier it will be to persuade relevant bodies to invest in adaptation.

ASCCUE, as referred to in question 2c, sought to quantify the climate change impacts upon the urban environment and establish an appropriate response. Central to this response is the potential adaptation role that provided through the implementation of green infrastructure. For example, findings that suggest that green space and green roofs can ameliorate the urban heat island effect.

Further information on the ASCCUE research can be found at:

<http://www.sed.manchester.ac.uk/research/cure/research/asccue/publications.htm>

(c) To what extent is it possible to build in levels of resilience sufficient to deal with potentially catastrophic events induced by climate change?

The Landscape Institute has no response to this question.

Natural responses and thresholds

6. *The natural environment will respond to climate change in the absence of any human interventions:*

(a) When considering the adaptation of the natural environment, when might a 'do nothing' option be appropriate, whereby natural systems are left to respond without intervention?

The Landscape Institute has no response to this question.

In the natural world, there will be thresholds of response to climate change, which are defined by the IPCC as 'the point where stress on an exposed system or activity, if exceeded, results in a non-linear response in that system or activity'.

(b) Should thresholds of response to climate change be identified for the natural environment and, if so, how should this be done and by whom?

The Landscape Institute has no response to this question.

(c) What would be an 'unacceptable' level of change to the natural environment? What are the key criteria which should underpin judgments of acceptability in this context?

The Landscape Institute has no response to this question.

Institutional arrangements for environmental conservation

7. *How will adaptation of the natural environment interact with (either negatively or positively) adaptation responses in the major land uses (such as agriculture, water resource management, energy production, forestry, urban development, infrastructure)?*

Adaptation of the natural environment will need to take into account the demands on land through agriculture, biomass and food production for food and fuel security. The farming industry will need to consider the supply of water to livestock and crops and adaptation of breeding and management patterns due to climate change. Measures need to be put in place for potential threats from exotic diseases and pests on our farmland, woodlands, water course and the natural environment.

However, concerns surrounding the natural environment need not be seen as an obstacle to achieving other policy objectives. Indeed, the natural environment can often provide the solution to many other demands confronting us. Multifunctional use of land, which incorporates and works with the natural environment can

help deliver a wide variety of additional benefits, such as, for example, food provision, sustainable communities, community cohesion and energy production. An example of such an approach, where adapting the natural environment to climate change has subsequently afforded a range of benefits where there was the potential for conflict, is outlined in the Landscape Institute's Climate Change Position Statement. The Alkborough Flats scheme. This coastal managed realignment project has been designed to address the issue of increasing flood risk in the Humber Estuary by breaching the existing flood. Whilst this has led to a loss of 440 hectares of agricultural land, new opportunities for landowners have arisen, such as tourism and recreational pursuits, whilst the scheme has also created new wildlife habitats.

8. *As the climate changes, so the land, aquatic and coastal environments will change, including those areas protected for biodiversity and conservation. The RCEP is interested to understand what this means for conservation policies and whether the current arrangements enable or inhibit adaptation of the natural environment.*

(a) If the nature of existing protected areas changes as the climate changes, what does this mean for current conservation policy?

The Landscape Institute feels that current conservation policies and objectives will need to be flexible in the face of a changing climate. All should be assessed for climate change risks and managed as a coherent whole to offer a joined up approach to managing our natural environment. For example, climate change and its implications put high pressure on marine resources. Policy must therefore allow climate change to be an underpinning consideration at all stages of marine spatial planning, implementation and monitoring. Current policy must support the need to recreate areas of coastal habitat or to develop compensatory sites where management retreat is the most sustainable and cost effective solution.

Flexibility will need to take account of the range of forecast scenarios predicted via, perhaps UKCIP08, so as to ensure the resilience of the natural environment in a range of different circumstances and magnitudes of climatic changes. This is set out in Natural England's publication 'Climate change and nature: adapting for the future'. This document emphasises that one of the key challenges in terms of nature conservation is the ability to manage climate change uncertainties, as opposed to dealing with specific projected impacts. The work refers to the need to adopt dynamic conservation policies for protected areas and biodiversity in a way which monitors results of management practices and adapts actions to be taken as appropriate. This approach should aim to enhance biodiversity through increased understanding of the impacts of climate change upon population ranges, diversities and densities.

For more information on this, please see:

<http://naturalengland.communisis.com/naturalenglandshop/docs/CC3.pdf>

(b) With regards to site-specific conservation policies, what should be protected now and in the future, especially if the present site is bound to change? How can a range of resilient habitats be provided to conserve biodiversity?

The Landscape Institute has no response to this question.

(c) How should current arrangements (such as protected areas or wildlife law) for the protection of species and habitats be adapted to ensure that the natural environment can adapt to climate change?

The Landscape Institute has no response to this question.

Values relating to the natural environment

9. *How society perceives and interacts with the environment is different in each country, and within the different regions and sectors of that country. The values and attitudes of society will ultimately underpin its response to climate change:*

(a) How will climate change affect how society perceives and values the natural environment?

The Landscape Institute has no response to this question.

(b) As the climate changes, it is likely that non-native species will migrate into the UK. When and how do previously non-native species come to be regarded as part of the UK's native biodiversity, and what will this mean for the UK?

The Landscape Institute has no response to this question.

(c) Is the legal framework for species and habitat protection adequate for dealing with invasive non-native species under climate change?

In January 2008 the Landscape Institute responded to a Defra review of Schedule 9 of the Wildlife and Countryside Act 1981. In this response the Institute was concerned that there appeared to be no apparent consideration given in the consultation document towards the effects of climate change on existing vegetation. This omission is significant given that there may well be very good arguments in the immediate future for diversification rather than restriction of species under Schedule 9. At present the Defra site contains no update or summary of responses on this review.

Opportunities presented by the changing natural environment

- 10. Whilst much of the debate is focussed on how humans can help protect the natural environment as it responds to climate change, how can the changes to the natural environment be used to help UK society adapt to climate change?*

The Landscape Institute has no response to this question.

INSTITUTIONAL ARRANGEMENTS AND CAPACITIES

Institutional adaptive capacity

- 11. To what extent do UK institutions and organisations recognise and understand their dependence on the natural environment, and how does this affect their capacity and capability to adapt? Are there examples of organisations in the UK that have quantified their level of dependence?*

The Landscape Institute has no response to this question.

- 12. Does the UK have the right capacities and institutional arrangements to be able to identify the changes to which it should be adapting?*

The UK has some very good institutional arrangements to be able to identify the scale and nature of climate changes. Particularly of note here is the United Kingdom Climate Impacts Programme (UKCIP) and the Tyndall Centre for Climate Change Research.

The information generated by such institutions are extremely helpful starting points in this critical issue however there is perhaps scope for a more coordinated and systematic response in terms of the adaptation measures required as a result of key research findings. For example, the Landscape Institute has been involved in a number of areas of work with other organisations on climate change adaptation, notably CABI Space and Natural England.

- 13. What are the relative roles of government, communities, individuals, civil society, and/or companies with regards adapting to climate change for the three example issues (see introduction)?*

The Landscape Institute has no response to this question.

14. *As society adapts to climate change, decisions will need to be made as to what is an appropriate range of adaptation objectives and responses:*

(a) What should be the key objectives of climate change adaptation strategies for the three example issues?

The Landscape Institute has no comment on this section of the Review.

(b) What should be the criteria for determining appropriate adaptation objectives and the responses that would meet these objectives and responses?

UKCIP08 outputs need to be considered in the development of all guidance relating to land and sea management decisions. Local authorities should also consider the impacts of climate change using UKCIP08 outputs and incorporate adaptation at the local level through their Local Development Frameworks and other strategic planning mechanisms.

(c) How should different adaptation objectives and responses be prioritised for the three examples?

The Landscape Institute has no comment on this section of the Review.

(d) Some adaptation responses could disadvantage some individuals or groups (e.g. coastal realignment could lead to displacement). How should 'fairness' of different adaptation responses be considered?

The Landscape Institute has no comment on this section of the Review.

European, national and regional approaches

15. *What is the appropriate level (e.g. European, UK, regional, local) at which decision should be made for climate change adaptation)?*

The EU should have an overarching role to set targets and advise government on how to implement targets for climate change adaptation.

National organisations should be given the responsibility of developing approaches to national or regional issues such as housing, relocation of industry and infrastructure, and training for resource management.

Regional authorities and local authorities should be empowered to review, monitor and police the change in government and EU policy as well as helping to educate local populations in how to implement changes in lifestyle that enable future generations to adapt to climate change.

16. *The regions of the UK will experience different levels of climate change impacts and will correspondingly need to adapt in different ways. What variations in institutional capacity do we find in the different regions? What do these differences imply?*

The Landscape Institute has no comment on this section of the Review.

17. *Which existing EU mechanisms (e.g. CAP, Water Framework Directive) could play a role in delivering adaptation to climate change in the UK? What are the aspects of such mechanisms that enable or hinder adaptation?*

The European Landscape Convention (ELC), also known as the Florence Convention, came into force in the UK on 1st March 2007. The main aim of the ELC is to promote landscape planning, management and

protection across Europe. The ELC is not confined to the cultural or man-made components of landscape alone, indeed in the context of the ELC, the term 'landscape' is defined as:

“An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”.

Implementation of the ELC is largely to be achieved via Articles 5 and 6, which cover four main components:

- (i) Landscape Protection;
- (ii) Landscape Management;
- (iii) Landscape Planning;
- (iv) European Co-operation.

A common aspect of all of these is awareness raising of landscape issues amongst a wider public audience.

The importance of the ELC lies in the high level recognition that landscape needs to be afforded a higher priority, from government level right down to the general public. Article 5 of the ELC commits all signatories to:

- (i) Recognise landscape in law;
- (ii) Establish and implement policies aimed at landscape protection, management and planning;
- (iii) Establish procedures for the participation of the public and local and regional authorities;
- (iv) Integrate landscape into regional and town planning policies and into cultural, environmental, agricultural, social and economic policies.

Whilst the UK Government considers that it is already compliant with the requirements of the ELC, the Landscape Institute argues that landscape considerations need to be integrated further, indeed need to be at the heart of, the decision making process. The holistic approach traditionally taken by the landscape architect, whereby consideration is given to the many components which shape all landscapes, can ensure that landscapes at all scales are multifunctional. These means they have the ability to provide food, energy, water storage, flood mitigation as well as providing valuable resources for biodiversity and the promotion of health and well-being. Such multifunctional landscapes can provide benefits which include climate change adaptation and mitigation, with many landscape approaches providing both and recognising the linkages between the two.

As a result, the ELC provides a useful mechanism for enabling the delivery of landscape-scale approaches to planning, design and management of our resources.

18. *As other countries in Europe experience climate change, they also will experience changes in the natural environment. What indirect impacts might this have on the natural environment of the UK?*

The Landscape Institute has no response to this question.

The Landscape Institute would like to thank the RCEP for being given the opportunity to contribute to add its comments into the investigation. For any queries relating to this response, or for future consultations, please contact:

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