

# Climate Change Scenarios

## Protecting historic assets

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**The historic environment sector should make full use of current research on climate change in developing its longer-term adaptation strategies.**

The extremities of the English summer of 2003 generated further interest in the effects of global warming. At least 300 mature trees in the historic Royal Parks of London died. According to a Royal Parks report, tree and landscape repairs for Hyde Park alone were expected to cost more than £250,000. Concerns about the future of the fruit industry were raised, and, at the start of 2004, a claim was widely covered by the media that climate change could extinguish a million of the world's species by 2050.

### Possible scenarios

Climate refers to the average weather experienced in a region over a long period, typically 30 years. This average includes temperature as well as wind and rainfall patterns. Since the early 1900s, increasing climate change has been recorded. To add to our understanding of these changes, the Department for the Environment, Food and Rural Affairs (Defra) commissioned a £12 million research project to study climate change and stratospheric ozone depletion, and to produce new scenarios of possible changes in the UK climate during the 21st century. As more information becomes available, these scenarios are updated. In December 2003, Defra reported that the scenarios suggest a future of hotter, drier summers and warmer, wetter winters and indicate that:

- annual temperature averaged across the UK may rise by between 2 and 3.5°C and some areas could warmer by as much as 5°C by the 2080s
- heavy winter rainfall events that occur every two years are expected to increase in intensity by between 5 and 20 per cent
- relative sea-level around the UK could rise perhaps as much as 86 cm in southern England by the 2080s, with extreme sea-levels being experienced more frequently.<sup>1</sup>

Even with these scenarios, there is much uncertainty about the reliability of middle- to longer-term climate change predictions.

### Sector studies

More tools are being developed to help organisations assess how they may be affected by climate change and how they could prepare for the longer term. The UK Climate Impacts Programme (UKCIP), set up by Defra in 1997, aims to coordinate assessments of possible impacts of climate change for individual sectors and UK regions. UKCIP also acts as a bridge for research and decision-making in government and business. Its sector studies so far include gardens, water demand, health, biodiversity, the marine environment and the built environment. Findings have been published for nearly every region now.

It is difficult to map the longer-term implications for the historic environment as a whole, but projects are underway to develop policies for specific conservation issues. For example, English Heritage has been working with others on coastal erosion, river flooding, de-watering of wetlands, soil erosion, flooding and rain damage, and fire damage.

One of the first reports on aspects of the historic environment is UKCIP's report<sup>2</sup> on gardens. Commissioned by a partnership of organisations – the Royal Horticultural Society, the National Trust, English Heritage, Anglian Water, Defra, the Forestry Commission, Nottcutts, Royal Botanic Gardens Kew – the study was carried out by Reading University in 2002. It enabled this broad partnership to review climate change issues and establish research and conservation requirements.

From this initial work, a useful forum has grown for joint research and networking with other sectors. Examples include a joint project by the Woodland Trust and the Centre

for Ecology and Hydrology on 'Nature's Calendar' ([www.phenology.org.uk](http://www.phenology.org.uk)), which enlists volunteers to record spring and autumn events to help understand the effect of climate change on our woods and wildlife. In the first two years, nearly 10,000 people each year have helped to gather records. This data provides useful phenological information (the patterns of recurring natural phenomena in relation to climate change) that can be used to conserve historic landscapes.

Other research is being carried out by this climate change forum who are planning a conference in 2005 on trees in a changing climate. Also, the National Trust will use its parks and gardens to study aspects of climate change – sea-level rise, waterlogging, drought, stormy conditions – and their implications for horticultural and garden management.

University College London's Centre for Sustainable Heritage has been commissioned by English Heritage to determine how the historic environment sector should measure the impacts of climate change. This was one of the challenges identified in *State of the Historic Environment Report* (English Heritage, 2002) and *Heritage Counts: State of the Historic Environment Report* (English Heritage, 2003). The new English Heritage *Practical Conservation* guidelines will offer advice on the impact of climate change.

### Conclusion

Although climate change is uncertain, conservation management must maintain and indeed improve the stability of heritage assets and their resilience to climate change. Managers will need to understand the risk of climate change as well as the risk of taking insufficient or excessive action. Monitoring, management and maintenance are essential for longer-term adaptation strategies. □

Westbury Court,  
Gloucestershire, flooded  
by the Severn in 2001.



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*'Climate change is the most severe problem we are facing today.'*

Sir David King, the Government's Chief Science Adviser. *Science* (2004) 303, 176-7

*'Doing nothing is not an option. You may doubt some of the [climate change] predictions and their likely impacts, but I suggest that a sensible analysis of the risks does not allow us to sit back and wait.'*

Peter Ewins, Chief Executive, The Met Office, January 1999

In the South East, English Heritage is funding local recording and excavation, and a series of Rapid Coastal Zone Assessments where rising sea level, crustal subsidence and changing coastal defence regimes are resulting in damage and losses of archaeology.

The EU-funded Network for Integration of Coastal Wetlands Heritage and Environmental Management will address the impact of climate change on coastal wetlands by exchanging information and developing new approaches for use by historic environment and nature conservation managers.

### Useful web sites:

- [www.defra.gov.uk/environment/climatechange](http://www.defra.gov.uk/environment/climatechange) for Defra's climate change information.
- [www.ukcip.org.uk](http://www.ukcip.org.uk) for UK Climate Impacts Programme's climate change scenarios, sector and region studies.
- [www.heritagecounts.org.uk](http://www.heritagecounts.org.uk) for *The State of England's Historic Environment Report*, and a report on risks to the historic environment.

- 1 Defra 2003 *Global Atmosphere Research Programme: Annual Report 2002–2003* available at [www.defra.gov.uk/environment/climatechange/](http://www.defra.gov.uk/environment/climatechange/)
- 2 Bisley, R and Hadley, P 2002 *Gardening in the Global Greenhouse: The impacts of climate change on gardens in the UK*. Oxford: UKCIP