

Our forests are changing due to climate change and we need to plan ahead to help them adapt

10 Adaptation: helping our forests adapt to climate change

Adaptation to climate change means changing the way that we do things to take account of the inevitable and unavoidable changes that have started and will continue to happen during the coming decades.

In terms of forestry this means designing and managing forests and woodlands so that they are able to cope with, and help society to cope with, climate change. We must ensure that our commercial woodlands are economically viable by helping them to adapt. In doing this we must make sure that our semi-natural woodlands are not compromised, and that our actions do not introduce threats for the future. Woodlands can also contribute to flood prevention, help to cool our cities and create wildlife corridors.

Due to the large size and long life span of trees, forest ecosystems are likely to be slow to react to changing climatic conditions, and for this reason we must think ahead in planning how to adapt our forests to climate change.

How can we help our woodlands adapt to climate change?

1. Species and provenance choice

Forest managers have to consider whether their woodlands will survive in a future climate. A number of species trials are currently being carried out across the country to look at which species or provenances might be better suited to the climate of the future.

The difficulty lies in ensuring that decisions made now are appropriate to both the current and future climate, and cover the considerable uncertainty over what the future climate will be.

Ensuring that a forest is diverse, in terms of age structure, species and origin, will help to provide it with the resilience to cope with changing conditions.

What does provenance mean?

This is the site or locality from where the planting material was sourced. For example oak of French provenance might be better suited to a warmer climate than oak of local provenance in southern England.

2. Ecological Site Classification

Ecological Site Classification (ESC) is a PC-based decision support system to help forest managers and planners identify how species being considered for woodland creation or restocking are suited to current and future climates.

A range of decision support systems, including ESC, to help managers and planners are available online at: <http://www.eforestry.gov.uk/forestdss>

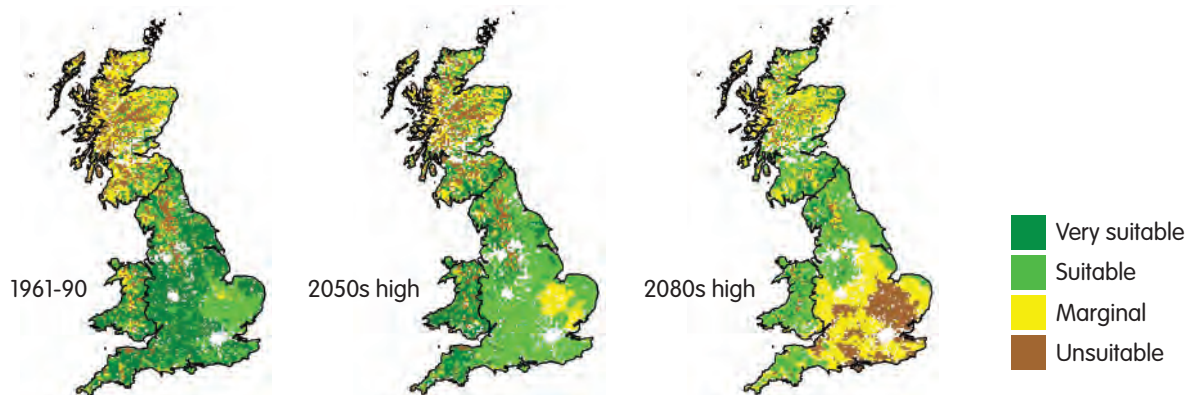
Focus on... beech

Currently beech (*Fagus sylvatica* L.) is very common in its native southern range, but as these ESC maps show, the abundance and vitality of the species is likely to decline over time, particularly in southeast England. Shallow-rooted species like beech are

vulnerable to an increase in extreme weather events, and lower moisture levels due to drier, warmer summers. This can cause die-back and species that are more drought-tolerant may be able to invade. This means that in areas of southern England, beech may

no longer be suitable as a timber crop.

This does not mean that beech will disappear from the landscape, but planting a wider range of species on sites where beech is predicted to suffer would be prudent.



Potential decline in suitability of different areas of the UK for beech with projected climate changes. High refers to high emissions scenarios.

Plant and animal communities have evolved in response to climatic conditions since the last ice age. Within the range of climatic fluctuation species have moved to occupy suitable environments. However, greater extremes and fast-changing climatic regimes will mean that species are subject to greater variation.

3. New natives?

It has generally been regarded as good forestry practice to choose locally-native species that have evolved with the local ecology and to suit local conditions when planting new native woodlands. However, climate change now requires that thought be given to extending the genetic base by incorporating a small proportion of species or origins from beyond the locality that might be better suited to the future climate. Where non-native species are planted, those from slightly warmer areas of continental

Europe are likely to be the most suitable and compatible with UK ecosystems.

4. Management of existing woodland

Increased productivity because of higher temperatures and carbon dioxide levels mean that rotation length (the length of time it takes for a tree to be ready for felling to produce timber products) and the timing of thinning may need adjustment. Management may also need to take into account changes in storm frequency, the effects of winter waterlogging on access for management, or the timing of the planting window.

5. Pests and diseases

It is essential to remain vigilant in reporting new pests and diseases and altered patterns of damage. It is also necessary to think about changes in species choice in relation to potential pest and disease problems, as is shown by the current moratorium on planting of Corsican pine in forests and

woodlands managed by the Forestry Commission.

6. Reducing other pressures

By removing or reducing other pressures on woodlands, such as invasive species and pollution, we can help to increase the resilience of our woodlands.

7. Landscape design

Making our existing semi-natural woodlands larger provides a buffer to environmental change – increasing their resilience. New woodlands can help to create habitat networks and linkages so that species are able to move more easily across the landscape in response to climate change.

8. Monitoring and evaluation

There is a great deal of uncertainty involved in predicting the exact effects of climate change. It is essential that we closely monitor the results of the actions that we take to help identify adaptation strategies for the future.

Summary

- Forest ecosystems are likely to be slow to react to climate change and we must plan ahead to help them adapt.
- The Forestry Commission is carrying out research into which species might be best adapted to our future climate.
- It may be necessary to consider whether non-native species have a role to play in our woodlands of the future.
- Another solution could be to plant more southerly provenances of our native species.
- Good conventional management practice will make our woodlands more resilient to climate change.