

25 November 2015

## WOODLAND RESILIENCE

### Purpose

1. (a) To update the Committee on the position of Forestry Commission England (Forest Enterprise and Forest Services) regarding woodland resilience and on proposed actions to increase the resilience of England's woodlands and forestry.
2. (b) To seek support for the drafting of a policy position paper clarifying the approach to resilience/climate change adaptation for forestry in England.

### Background

3. The impacts of climate change are beginning to be felt by woodland ecosystems in England, while the unprecedented number of pest and disease impacts also represents a real and current threat. The likely impacts of climate change on British forestry are detailed in the Read Report (2009) and the UK's first Climate Change Risk Assessment (2012), with actions to address those risks set out in the Climate Change Action Plan for the Public Forest Estate (2011), FC England's Adaptation Reporting Power Report (2012) and the UK's first National Adaptation Programme (2013). Climate change adaptation is an increasingly important part of international climate change negotiations under the auspices of the United Nations' Framework Convention on Climate Change.
4. FCE is currently reviewing its Adaptation Reporting Power Report and the Climate Change Action Plan for the Public Forest Estate with the UK's second Climate Change Risk Assessment to be published next year.
5. The Tree Health and Biosecurity Action plan (2012) sets out actions to improve biosecurity and reduce the risk from both introduced and endemic forest pests and diseases following the recent outbreaks of ash dieback, *Phytophthora ramorum*, Asian Longhorn beetle, Sudden oak death and *Dothistroma* needle blight. Basic biosecurity measures (personal, vehicle and equipment) are set out in FC's biosecurity pocket guide.
6. The Tree Health Management Plan (2014) sets out the overall approach to tree health in England in terms of management approaches to tackle Chalara, *Phytophthora ramorum* and Oak Processionary Moth (OPM), and defines a framework for managing future threats to tree health in England. This plan is due to be replaced by a Tree Health Resilience Plan early in 2016 that aims to secure a resilient treescape. Integral to this will be the additions to the Plant Health Risk Register, Pest Risk Analyses and future initiatives against pests and diseases.
7. A more strategic approach is required to increase the resilience of England's woodlands to climate change and biosecurity threats. Many of the changes now regarded as necessary challenge the direction of forestry in England in recent decades, in particular, the dominance of a very narrow range of species for production forestry and a focus on site native species of local provenance for restocking and creating native woodland.

## Key Facts

8. 89% of England's productive conifer forests are comprised of only 6 species, the majority of which are challenged by current pest and disease outbreaks.
9. 77% of England's native woodlands are comprised of five species.
10. There are only 35 to 48 tree species native to the UK (depending on your outlook on taxonomy and nativeness). These are the pioneer species that advanced from the interglacial refugia in south and east Europe following the last ice-age.
11. We think we can expect:
  - Hotter and drier summers;
  - Milder and wetter winters;
  - Hot and dry conditions that favour insects, many of which may be forest pests;
  - Mild and wet conditions that favour fungi, some of which may well be pathogenic blights and necroses that could be future threats to forestry.
12. Modelling analysis indicates that if climate change progresses in line with a 'High emissions' scenario, 67% of the current Public Forest Estate in England would not meet current expectations of productivity for commercial timber production **in the absence of adaptation measures being implemented.**
13. Five 'adaptation (or resilience) factors' are set out in the UKFS's Forest and Climate Change Guidelines:
  - Forest planning:* Forest design, structure and composition needs to be resilient to the effects of a changing climate and extreme weather events.
  - Adaptive management:* Approaches to management that are flexible, reactive and anticipatory will help forests and woodlands adapt to the changing climate.
  - Tree and shrub species selection:* introducing diversity in tree species and origins will ensure some thrive should others decline.
  - Landscape Ecology:* Woodland and trees can be used to develop ecological connectivity between habitats to enhance the ability of woodland ecological communities to adapt to climate change.
  - Environmental protection:* Woodland and trees that are appropriately located can help to alleviate the impacts of climate change on society and the environment.

## Discussion

14. Our semi-natural native woodlands have proven resilience over the past ten millennia and have inherent genetic variability, genetic plasticity and complex soil biota that confer a high level of adaptability and resilience.
15. More recently planted native woodlands together with new woodland creation provides an opportunity for enhanced resilience through choice of species and genetic material (i.e. provenance/origin).
16. There is a strong argument that the productive timber resource (largely of exotic species) **must** be adapted (in terms of management, structure, species and genetics) to ensure that its natural capital is maintained and it continues to provide goods and services for future generations. This should be a focus of

activity because of the limited species diversity and genetic base of commercial plantations, their young soils and general lack of structural diversity.

17. Fundamentally, embracing resilience means moving away from plantation forests to more naturalistic approaches to management. Such approaches include forest stands composed of more than one species, with species chosen or encouraged for compatible ecological performance across a range of ecosystem services; climate change and forest resilience also requires a major rethink of what is native, what is natural and what might be wise.
18. Genetic variation represents a largely untapped resource to extend the climatic range (and hence longevity under climate change) for native and exotic species alike. However, there is uncertainty across the sector as to how and where to utilise the resource.
19. In terms of species choice, we can learn much from the past when forests were repeatedly scraped from the face of Europe and repeatedly reassembled themselves:
  - Tree species only survived in refugia in dry continental conditions in the south of Europe, and forests in the Caucasus.
  - Tertiary species were completely lost from Europe, surviving as relicts only in southern states in the USA, the western seaboard of the USA and parts of Southern China.
  - Native trees are the resilient “weed species” that raced back, but in the UK are only a subset of the suite of northwest European temperate forest species.
  - Tree species native to the UK have all survived in warm and dry or cold and dry refugia; in strong contrast tree species surviving in northwest America survived in oceanic, cool and wet conditions typical of conditions in north and west Britain.
20. There are two species assemblages that were present in northwestern Europe that have been lost, are likely to be suited to the changing climate, and could represent a model for future production forestry in the UK:
  - A lowland temperate western European forest model.
  - A northwest American model for production forests.
21. At present there is no formal ‘resilience’ policy or strategy in England, particularly on species, provenance choice and approaches to management in different situations. As a result FCE’s approach to adaptation is not clear to NGOs, academics, forestry bodies and other stakeholders and some have miss-read or miss-interpreted the principles set out in the Ancient and Native Woodland Practice Guide; the UKFS’s Forests and Climate Change guidelines; the Climate Change Action Plan for the Public Forest Estate; and in Forest Services’ sector engagement on climate change adaptation.
22. Although FS has engaged positively with the forestry and woodlands sector on resilience over the past three years, it is clear that there is only a low level of implementation of adaptation measures, as evidenced by the 2015 British Woodlands Resilience Survey.

## **Resource implications**

No resource implications, as achievable within the current Work programme.

## **Risk Assessment**

23. The lack of a formal policy on resilience represents a risk to its protection function, through uncertainty acting as a barrier to the implementation of resilience/adaptation measures by the private sector. Clarity will also promote resilience on the Public Forest Estate.

## **Communications**

24. A communications plan will be developed following the drafting of the Policy Position paper.

## **Recommendations**

25. The Committee are invited to discuss the content of this paper and confirm that they support the drafting of a Resilience Policy Position Paper, to clarify the approach being adopted by both FS and FE.

**Mark Broadmeadow, Principal Adviser Climate Change, FS**  
**Jonathan Spencer, Head of Planning and Environment, FE**  
**Andy Hall, Head of Plant Health Team, FS**

**19 November 2015**