

Science and innovation for British forestry

A summary of the 2005 strategy



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A science and innovation strategy for British forestry

The Forestry Commission of England, Scotland and Wales and the Northern Ireland Forest Service have jointly produced this Strategy in response to the requirement by Forestry Ministers that:

'new arrangements should be set up, with an enhanced role for the devolved administrations through the National Offices in England, Scotland and Wales in determining research priorities and specifying programmes.'

This paper provides a summary of the Strategy, the full version of which is available in pdf format on www.forestry.gov.uk/research.

The scope of the Strategy

Government across the UK has a firm commitment to evidence-based policy. As well as contributing to policy development, the Forestry Commission and the Forest Service deliver policy through regulation, support for private woodland owners and managing forests. We not only need science to build into policy, we also share the needs of other land managers for well-founded technical advice and research to guide innovation and support forestry practice.

Woodlands are now a major feature in the British landscape and their management can have a major impact on the overall quality of the biological and physical environments. They deliver many public benefits and the UK economy gains from the value that is added to forestry goods and services. Many of these benefits are external to the forests themselves, yet they depend upon the continued existence of forests through successive generations.

Our Strategy describes the processes by which we will obtain the knowledge and know-how from research to keep our woodland heritage intact and to increase the net value of benefits from it. It also sets out the mechanisms through which we will communicate the results of our research to policy makers, to forestry owners and practitioners, and to users of forestry goods and services.



The basis for the Strategy

Consultation on forestry research with stakeholders in all four countries provided the basis for the Strategy. Although the consultations differed in emphasis, there was a strong consensus on priorities across the four countries. Naturally, the common concerns were set in country-specific contexts and it is vital that our research reflects these and serves the distinctive forestry strategies of the four administrations.

The Executive Board and Commissioners of the Forestry Commission mandated a new Board, the Research Strategy Management Board, to build the country inputs into a cohesive document and to oversee its implementation and revision. The structure of the Board will promote close working between scientists, expert advisers and those responsible for developing or delivering policy in countries. The Commission's central commissioning and advisory Division, Corporate and Forestry Support, will act as secretariat and as the executive arm of the Board. The Commission's Research Agency, Forest Research, will be the principal provider of research and scientific advice. Working together through the Board, these bodies will play pivotal roles in linking science to policy and delivering evidence-based policy in forestry.

Outcomes and objectives

Forestry policies in each country are rooted in the overarching UK policies for sustainable development. The practical framework for delivery of sustainable forestry is the *UK Forestry Standard*. The Strategy will contribute to the realisation of the aims and aspirations in these documents through seeking the following outcomes:

- greater access by all interested parties to the conduct and results of forestry research in the UK;
- a firmer base of scientific evidence for effective policy and practice;
- more confidence that the *UK Forestry Standard* is founded on a good understanding of how sustainable forestry can be achieved;
- innovative woodland management serving rural and urban development and protection of the environment;
- a cadre of forest researchers characterised by excellence and connectivity to the wider scientific community.

To work towards these outcomes our objectives will be to:

- advance scientific knowledge and understanding of sustainable forestry;
- reflect the importance of social, environmental and economic outcomes in research programmes;
- facilitate the transfer of knowledge and technology to the scientific community, practitioners and the public;
- monitor and improve the effectiveness of the *UK Forestry Standard*;
- adopt transparent commissioning procedures for research;
- foster efficiency and understanding through partnership and collaboration in research and research purchasing, with those working in related sectors.

Our priorities will be to maximise the contribution of woodlands to the social and cultural development of communities through research into:

- utilisation of forest products;
- the maintenance of a diverse and healthy environment;
- people's enjoyment of the countryside.

Messages from stakeholders – the strategic priorities

The highest strategic priorities among topics of research came through very clearly from our consultation exercises. They are:

- social and economic research;
- monitoring and evaluation;
- climate change;
- soil and water management;
- forest products;
- changing silviculture;
- biodiversity and habitat restoration;
- plant health.



In addition to telling us about topics of research, stakeholders proved equally interested in the processes of research and knowledge transfer. They highlighted communication and integration of research as two fundamental areas that our Strategy should address.

Good, two-way, communication between researchers and users of research is necessary to achieve the translation of research into innovation. Direct transfer of knowledge and technology to users should be accompanied by feed-back into research to nudge its direction and fuse academic rigour with practicality. Our principal conclusions are that face-to-face communication is the most effective, that greater resource should be devoted to it and that we should involve a wider range of staff in disseminating results. We will increase funding for knowledge transfer in order to develop, among other things, the idea of providing research liaison officers in England, Scotland and Wales. The task of these key individuals will be to strengthen linkages between researchers and end-users. We also intend to involve more people – from inside and outside our organisations – in planning and guiding our research.

We recognise the value of the wider research community as an end-user. Publication in the scientific literature and participation in international scientific debates are vital to maintain the excellence of the research we sponsor, and ultimately its credibility with stakeholders and partners.

Modern forestry has a very wide agenda and strong associations with many other rural and urban agendas. There is strong feeling it should have a landscape-scale approach and integrate our research more effectively with that of other land-based activities to achieve shared objectives. Our stakeholders have expressed a strong wish to see these principles reflected in multi-disciplinary and collaborative research. We will analyse our current level of participation in collaborative research to find out whether we could do better.

Contribution 'in kind' is often a feature of partnerships with industry and with woodland and environmental managers. It is frequently under-recognised but has been, and will continue to be, extremely valuable to forest science.

Partners are a route to new perspectives. Our informal networks and formal advisory bodies will help us look outwards and forwards to ensure that our research can make woodlands a real investment in the future. We have also identified in our Strategy the importance of building scientific advice into 'horizon scanning' – an activity recognised across government as vital to resilience in policy.

Research providers

We will maintain a strategic and high quality research capability in forest science through our Research Agency, Forest Research. The Agency will be our main source of research and scientific advice.

In addition to the major investment in the Agency, we will maintain a strategic capability for purchase from external providers. This will link us to other centres of excellence and enable us to:

- promote interest in and knowledge of sustainable forest management in the wider research community;
- engage in partnerships with other funders;
- secure specialist expertise and competencies not available from Forest Research;
- maintain expertise in external centres of excellence where key competencies and facilities are of strategic importance to UK forestry;
- benefit from alternative perspectives.

Funding change

We are already carrying out research in all of the areas that our stakeholders have identified as strategic priorities. However, we will review our existing portfolio of research projects to find where effort can be reduced to strengthen investment in the priorities. In advance of this detailed analysis, we have already made commitments to increase expenditure in three areas to help us towards our objectives. They are:

- social and economic research;
- knowledge transfer;
- special projects and innovation (to allow scientists in Forest Research to seize opportunities for new partnerships and innovative research).

Our priority topics are given in more detail overleaf.



Strategic priorities

Social and economic development

We already have a significant commitment to social research but stakeholders have clearly identified an appetite for more, particularly directed towards the support that forestry can give in encouraging sustainable rural economies. Stakeholders also identified the potential for forestry to contribute to health, education and recreation as critical areas for research, alongside obtaining a better grasp of society's needs and expectations from forestry. In pursuing these, we will not lose sight of another clear message from stakeholders that such research should be directed at realisable outcomes not just theoretical understanding.

Since 1998, the Forestry Commission has increased expenditure on social and economic research, principally the former, from 3% to 6% of total expenditure. This has been achieved in part through the creation of a small Social Research Unit in Forest Research. We will strengthen this team, in particular through provision of economic expertise, aiming at an increase in expenditure by about 40% (to approximately 9% of total expenditure) over the next three years. Because of the importance of this area, we will continue to look for opportunities for even greater increase. We also recognise that research programmes primarily in other disciplines often contain an element of social gain. We will aim to expand the social and economic 'capture' in programmes outside those directed purely at social and economic research.

Climate change

Measures to mitigate climate change and adapt to its impacts are high priorities for UK government and the devolved administrations. Supporting research is vital and forestry research must be a part of this. In order to develop adaptation policies we need a better understanding of what will make woodland ecosystems resilient in a changing physical and biological environment. We also aim to bring social science to bear on these problems so that we can be more confident that the solutions developed by our physical and biological scientists are not out of step with social needs and preoccupations. Equally importantly, we should explore how woodlands might support wider social adaptation strategies to the challenges of climate change.



The role that forests play in the mitigation of climate change through carbon sequestration is a subject of scientific and public controversy. In the face of a barrage of results from research around the world, we must maintain a scientific capacity to understand and advise on the competing claims and to fill gaps specific to British forests.

Monitoring and evaluation

Forestry policies and their implementation through management practices have changed markedly in the last 20 years. However, development of evidence to track the effectiveness of these changes has not kept pace. There are many demands for monitoring performance, including those built into the *UK Forestry Standard*. Monitoring and evaluation extend beyond research but research has much to contribute in unravelling the complicated and uncertain links between public expenditure decisions and outcomes. Scientific support and advice will also be necessary in:

- developing suitably robust and informative indicators for the aspects of forest condition relevant to particular policy requirements;
- devising and implementing appropriate monitoring systems and protocols;
- analysing the lessons to be learned from the results of monitoring.

Involvement from a number of disciplines will be required and in some cases, social and economic research for example, existing provision may have to be strengthened.

Soil and water management

Policy, regulation and practice to protect soil and water resources have increasingly recognised land use and land management as major influences. This is already evident in the EU's Water Framework Directive and in European initiatives on the monitoring and conservation of soil condition. Recent policy development in flood management has also underlined the potential importance of land management activities. Forestry is involved in these developments and our research will continue to explore the relationships between woodland cover and the soil and water environments. Some elements of the research will be strategic – modelling for example – and some will be highly applied – developing practice for using woodland as buffers against diffuse pollution for example. In the past much of our research has been 'defensive',



investigating means to prevent forestry damaging soil and water. In future we will devote more resources to research that guides policies and practices towards using woodland to assist protection of soil and water and mitigation of flooding. In order to do this, we will strengthen our relationships with other land-use interests, particularly the Environment Agency, the Scottish Environment Protection Agency, the Environment and Heritage Service and their parent Departments.

Forest products

Revenue from products, principally wood, remains crucial to the sustainability of British woodland. Low unit-value for the primary product reinforces the need for research and advice to add value to traditional forest products and to develop management systems that deliver them. We must also use research, in partnership with others, to explore new products from forests especially where these could reduce use of non-renewable alternatives. The greatest interest is in energy, where government policies for increased use of renewable energy recognise biomass as a potentially important resource. Forestry can be a substantial contributor and it is vital for forest products to gain their proper place in these markets if the forestry sector is to play a full role in sustainable rural economies. Our stakeholders across the UK recognise that effective use of wood and its derivatives as fuel sources, requires research support.

Changing silviculture

Commercial forestry practice in the UK developed predominantly as a plantation system with clear-cutting to produce large volumes of fast grown timber. Management intervention to produce timber is still based in large measure on large-scale, disruptive, clear-felling and re-planting. However, a combination of environmental, social and economic pressures is guiding practice towards less intensive, alternative silvicultural systems – called ‘low-impact’ or ‘continuous cover’ systems. This change is a huge technical challenge; if it is successfully delivered, the character of our forests will change dramatically and give rise to new streams of economic, environmental and social costs and benefits. Innovation will be swift but will require urgent and continuing investigation and evaluation. Managers will need practical guidance from researchers and those specialised in technical development to help provide answers to a number of immediate issues. Amongst these are the balance sheet of inputs versus outputs and

regeneration techniques to make these new management regimes sustainable. New approaches to risk assessment and management of threats from climate, pests and diseases will also have to be developed. A shift of resources in research and technological support away from 'traditional' UK silviculture will be necessary.

Biodiversity and habitat restoration

The increased emphasis on biodiversity requested by stakeholders will be reflected across all our scientific programmes, including those devoted to monitoring and evaluation of benefits. To cope with a changing physical environment, continuing research is required to develop the concepts of resilience and robustness for British woodland and to apply them at a landscape scale. Our already considerable capacity in modelling at landscape scale must be strongly linked to other UK and European research to address such problems as spatial planning, habitat fragmentation, gene flow, and dispersal and colonisation of species.

The restoration of natural and semi-natural habitats, and their associated species, is a major policy objective across the world stimulated by the Convention on Biological Diversity. Delivering effective restoration is not straightforward and requires co-ordinated research by a wide range of agencies on techniques for restoring threatened habitats that have been inappropriately managed. A particular concern for the forestry sector is the restoration of Ancient Woodland Sites that have been converted to plantation forestry. We will continue to play our part in research directed at conservation and restoration, and will support cross-departmental co-ordinating bodies such as the UK Biodiversity Research Advisory Group.

Plant health

The recent outbreak of two new tree diseases caused by *Phytophthora ramorum* and *Phytophthora kernoviae* has underlined the need for a team of pathologists and entomologists that is experienced in tree pests and diseases and capable of carrying out both strategic research and 'fire brigade' investigation of new problems. This capacity will be maintained in our Research Agency and its effectiveness enhanced by seeking opportunities for collaboration with other plant health teams experienced in dealing with new or non-indigenous pests and diseases.



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