Report of the workshop

'Future research requirements for forestry in England'

sponsored by the Independent Forestry Panel.

Alice Holt Lodge; 9 November 2011

Purpose

To inform the Panel of the main conclusions to emerge from the workshop held on 9 November 2011.

The Panel Secretariat asked Forest Research to organise a workshop to identify the strengths and opportunities of the current research programmes and make recommendations for future research priorities. The workshop was well attended with a good range of participants from the research, policy and practitioner communities. This paper presents the main conclusions (**Executive summary)** and a more detailed analysis of the views which emerged (**Background, Analysis and conclusions)**. The workshop programme, list of attendees (with affiliations) and working papers are also provided (Annexes 1, 2 and 3).

Executive summary

The strengths and opportunities of the current research programmes.

A background paper and two presentations gave an overview of the research which supports forestry in England. Discussion of the strengths and weaknesses of the current research programmes raised the following issues:-

- Serious concerns over the ongoing declining spend on forestry research during the current Spending Review period (2010/11 to 2014/15).
- The need for good partnership working and responsiveness in research programmes and between research funders.
- The extent to which research provision was co-ordinated and that the research community was making a strong enough case for future funding.
- The need for effective knowledge exchange between the forestry sector and research providers.
- The need to tackle current pest and pathogen outbreaks; the new Defra and FC Joint Action Plan on Tree Health and Plant Biosecurity was welcomed.

The workshop did not address the organisational arrangements for delivery of forest research in England, but the sector expressed strong support for Forest Research (FR) which is considered to be making a unique and valuable contribution in support of UK forestry.

Future research priorities

Presentations, breakout groups and participant voting were used to identify short to medium and long term research priorities. Four overall priorities for research and knowledge exchange emerged as being important now and in the future:

- Valuation of and payment for ecosystem services and evidence in support of woodland creation for mitigation of climate change.
- Research on tree pests and diseases, including invasive species (grey squirrels, deer, wild boar, etc).
- Selection, breeding and silviculture for resilience to climate change and pests and pathogens.
- Understanding the motivations and needs of woodland owners and of those who might create woodlands.

Thirty specific research questions were identified and of these the five considered to be priorities by the workshop participants were (verbatim):

1. What do we need to do to improve woodland resilience in the face of pests and pathogens?
2. How to improve the understanding of the special issues of urban trees (importance of pests, climate, species, liability concerns)?

3. Selection, breeding and silviculture for resilience to climate change and pests and diseases.
4. How do you get the complete value of a woodland - all its goods and benefits – into the owners' pocket?
5. What are the barriers to land-use change – farm and other land to trees, woods and forests?

The following themes also emerged: the importance of knowledge exchange (dissemination), the need to use existing knowledge and monitoring, the need for information on the quantity and quality of the existing forest resource and importance of access to woodlands. The value of well managed woodlands in mitigation of climate change is now widely accepted and this underpins the emphasis on woodland creation, on provenance and species selection and on management for climate resilience.

Background

Sixty five individuals were invited to the workshop and 41 attended (see Annex 2) achieving a good representation of the forestry, woodland and tree sector in England. The background paper on the current research programmes (Annex 3) drew mainly on evidence from the web-based databases maintained by purchasers of research, and on the published written evidence provided to the combined Commons and Lords Science and Technology Committee investigation into UK forestry research which was held in July 2011. The principal organisations responsible for funding forestry research updated and amended this overview which was presented and discussed during the first session of the workshop.

The second session addressed future research priorities with presentations on a recent (2008) analysis of UK forestry research priorities (The top ten questions – T10Q study - Petrokofsky *et al*. 2010) and from the Confederation of Forest Industries (CONFOR), Research Councils (Living With Environmental Change), the Forestry Commission and an NGO perspective (Woodland Trust). Annex 4 provides notes of these two sessions and the Powerpoint presentations can be provided if they are required. Five breakout groups, based on the Panel's working themes (see Annex 1) then considered current and future research priorities. Each breakout group provided six research questions and the thirty research question were voted on by all participants. Each participant was asked to cast six votes indicating three short term and three long term priorities; no restrictions were placed on how people could vote.

Analysis and conclusions

Session 1 - Strengths and opportunities of the current research programme

Forestry research is purchased mainly by government through its Departments, their agencies and the research councils. Charities and the forestry sector are also important funders for some focused areas (e.g. on acute oak decline, timber quality and wood utilisation) and also provide highly valued help-in-kind across the programme. EU co-funding under Framework Programme 7 has been between £2M and £4M per year in recent years but this value of leverage may be hard to maintain in future (the EU Horizon 2020 programme). Research is mainly provided by Forest Research, the research councils' institutes, Food and Environment Research Agency, RBG Kew and the Universities. This is often in partnership with organisations such as the Future Trees Trust (broadleaved tree breeding), 'Slowing the Flow' (work on flood management) and a range of other examples as cited at the workshop (Annex 3). An important point to emerge from discussion was the need to distinguish between research to support the forest sector; research into wider environmental issues of relevance to forestry (e.g. the Countryside Survey, work on nitrogen deposition), and assessment/analyses where forestry is one element of a multi-sectoral project e.g. the UK National Ecosystem Assessment, 2012 Climate Change Risk Assessment).

Principal issues raised in discussion were as follows:-

- Concerns over the declining government spend on forestry research during the current spending review period e.g. The Forestry Commission's research budget falls from £11M 2010/11 to £8.2M in 2014/15.
- An acknowledgement of the need for good partnership working and flexibility/responsiveness. Research funders and providers will need to be in a position to respond to the findings of the Forestry Panel.
- The extent to which the Living With Environmental Change Programme (LWEC) had been effective as an alternative to the Forestry Research Coordination Committee. Participants valued the contribution that LWEC and the Environmental Research Funders Forum had made in co-ordinating research on forestry and the environment, but regretted the lack of a national body charged with co-ordinating strategic forestry research.
- There was a view that the needs of the forestry community were not given sufficient weight in the allocation of UK research funding – the sector appeared to have little influence on the research agenda. It was pointed out that researchers and funders may have differing priorities (e.g. maintaining capacity versus achieving budget reductions).
- Research in support of policy formulation and implementation, research to guide practice and research to drive innovation require different approaches and different audiences may need to be consulted in order to establish research priorities.
- The balance between effort on scientific publication and on knowledge exchange was considered and is different for different research providers. Some forest sector representatives felt that even with the emphasis on knowledge exchange over recent years, more effort was still required to communicate research findings. Whilst the outputs from Forest Research (FR) must be of the highest quality, FR is highly valued because of the long-term and highly applied nature of its work and because it is disseminated as user guides and advice notes. It is vital that these important dimensions of FR work are not lost by forcing FR researchers to tackle basic research questions and to publish only in high impact scientific journals.
- The plan for additional research funding under the newly launched Defra and FC joint Action Plan on Tree Health and Plant Biosecurity was welcomed. However, concern was expressed that these resources should be allocated to applied research which would have direct benefits to outbreak prevention and management rather than to basic research.

<u>Session 2a - Identification of future research priorities – five stakeholder views</u>

1. The top ten research questions arising from the Petrokofsky's study undertaken in 2008 are listed in Table 1. This study also strongly advocated a bottom-up approach to identifying research questions since this leads to much greater engagement of the wider forestry community in research priorities.

2. The **CONFOR** presentation called for research in four broad areas:-

   To support Sustainable Forestry Management
   To help respond to the threat of pests and diseases
   To support the transition to a low carbon economy
   To help address key policy issues

3. The **Living With Environmental Change** (LWEC) Programme is a partnership of 22 organisations including the research councils and Government Departments. To date forestry research has had a relatively low profile within LWEC and **research council** funding is focused to achieve excellent science and impact rather than to support the forestry sector. There is a need to persuade funders of the high priority and relevance of forestry research and for the forestry sector and research providers to work collaboratively to make a strong case for research council funding. LWEC has not particularly focused on developing new ways of identifying research priorities and thematic programmes may not be appropriate for the funding and commissioning of applied research.

4. The **Forestry Commission** programme is concerned with both evidence to support policy and practice and to ensure that GB forestry maintains a critical mass of well qualified and highly skilled researchers. The FC Science and Innovation Strategy will be reviewed in 2012 following sector consultation and will be republished in 2013. This will represent one opportunity to respond to the Panel's recommendations on research to meet the needs of forestry in England.

5. Mike Townsend (**Woodland Trust**) noted the gap between national policy and decisions made at the scale of the land management unit, citing examples of the low rate of woodland creation and management, and low achievement in the establishment of bioenergy crops. Research questions and national aspirations need to be seen in the context of the decisions faced by landowners and communicated in suitably targeted ways. This reinforces the need to consult forestry practitioners over research priorities.

Discussion again focused on the extent to which forestry had gained the support of the range of people and professional groups. It was felt that research needed to have a main part in developing the opportunities for woodland management and timber supply and in decision making over land-use strategies. The potential of plantation forestry and intensification of wood production globally were highlighted. It was noted that consultation is essential in the planning of research and of forest strategy but it should be born in mind that practitioners are likely to highlight immediate issues rather than future scenarios and horizon scanning. Defra, directly and via the FC, are major funders of forestry research but that the Department of Energy and Climate Change and of Communities and Local Government (DECC and DCLG) also had responsibilities for biomass and urban trees respectively.

<u>Session 2b - Identification of future research priorities – top thirty research questions</u>

Table 2 shows the 30 research questions which arose from the breakout sessions. These are listed in priority order according to the total number of votes (short and medium term in red and longer-term in green) irrespective of which breakout group identified the question and without consideration of the overlap between questions.

As with the 2008 T10Q study, a research question on pests, disease and invasive species came out with the greatest number of votes. Indeed 5 of the 30 research

questions to arise related to pests and pathogens, of which only three came from the breakout group asked to consider tree health. Tree health research questions are in positions 1, 3 and 6 in Table 2. The message here is clear. The sector is very concerned about an increased number of pest and pathogen outbreaks which has been seen in recent years, and there is no doubt that there are real expectations over the potential benefit from the new Tree Health and Plant Biosecurity Action Plan. Concern over invasive pests also covers grey squirrels, deer and wild boar. Funding for research into woodland deer and grey squirrels is currently declining with the view being taken that emphasis should now be on the implementation of research ("translational" research) and knowledge exchange.

The second question to emerge concerns the 'special issues of urban trees', a priority which did not emerge from the T10Q study. This is an area which has risen up the agenda over the last few years as the benefits of greenspace and trees in urban areas have become increasingly clear. These benefits are important in the context of a worsening urban environment as climate changes, the availability of space for recreation and poor urban air quality. In addition, the importation of trees ready for planting in towns and cities has been identified as a key route for the arrival of tree pests and pathogens.

The third priority is the need for selection, breeding and silviculture for resilience to climate change and pests and diseases. This is a very broad research question with tree breeding programmes and silvicultural work being significant elements in the current UK research programme. Focusing these efforts to provide trees and woodlands resilient to climate change and to pests and diseases represents a very effective strategy. The fourth and fifth priorities cover valuation and payment for ecosystem services and the evidence base required to achieve woodland creation. Both these priorities emerged from all the breakout groups and were expressed in a number of the research questions. Neither issue emerged in the same way in the 2008 study indicating that thinking has developed since then.

For some of the research questions which were identified there is a clear designation of them as either short/medium or long term priorities (Table 1). Question 8 on identification of who owns England's woodlands to allow the targeting of initiatives comes out equal top of the voting for short/medium term questions along with question 2 on the understanding of urban trees. This suggests that identification of woodland owners in England it is seen as a tractable job which could be delivered. The urgency for urban tree work is perhaps explained by the second part of the question which identifies pests and diseases, climate, species choice and liability concerns. It is interesting that new research on oak processionary moth, potentially a very serious pest problem, currently only in urban parts of England, has subsequently been initiated (January 2012). As for question 2 on woodland ownership, questions 15 and 19 also received only short/medium term votes and both address specific and immediate issues for woodland owners and managers – evidence to support woodland creation and whether public access should be restricted in order to prevent the spread of pests and diseases. Only question 9 on using management experience and long-term monitoring was considered to be only a longer-term research issue. In discussion the importance of maintaining capacity for environmental and forest monitoring was raised, and it was felt that such work should be seen as part of the management overhead.

Where the separate breakout groups formulated research questions which addressed the same issue this issue may not emerge as a high priority because votes were split between more than one similar question. In Table 3 the research questions have been put together into groups where similar research needs were identified (overall priorities) and the votes have been summed. This overcomes the problem of similar research questions splitting votes and decreasing the ranking of issued cover in more than one research question. This provides clear evidence of the views on research priorities of the workshop participants.. Four overall priorities emerged from this analysis (Table 2): 1) Valuation of and payment for ecosystem services and evidence in support of woodland creation for mitigation of climate change – with 79 votes; 2) Research on tree pests and diseases, including invasive species (grey squirrels, deer, wild boar, etc) – with 48 votes; 3) Selection, breeding and silviculture for resilience to climate change and pests and pathogens – with 32 votes and 4) Understanding the motivations and needs of woodland owners and of those who might create woodlands – with 30 votes. In addition there were five specific and independent research questions which did not fall within these four overall groupings.

Twelve questions addressed the need for accurate valuation of ecosystem services, for evidence on which to base land-use change (particularly woodland creation for mitigation of climate change) and for directing incentives and payments for ecosystem services. The need to understand forest carbon budgets and for foresters to have access to information for prediction of carbon benefits (research question no 10) is an example of how this general area includes some specific requests for evidence and decision support systems. The related issues of valuation and incentives are clearly a major concern for the forestry sector in England. Payment for ecosystem services could potentially move forestry away from the current situation in which timber and grants provide the major sources of income from woodlands. The wider and less visible 'regulating' services provided by woodlands (e.g. pollution mitigation, soil, water and flood protection) emerged less clearly as priorities and this is probably a reflection of the current financial framework of forest incentives which does not reward the sector for wider regulatory services. Woodland owners have put forward the case that 'the wood that pays is the wood that provides sustainable public benefits'. The last question in this grouping raises the question how the value of benefits might change with any changes to the Public Forest Estate in England.

The second and third main groupings of questions (overall priorities) are those which address concerns over pests and pathogens and over the need for research programmes to address tree selection and breeding and silviculture to achieve resilience to climate change and pests and diseases. The re-examination of provenance and species choice and of forest management to achieve adaptation to, and mitigation of climate change are established overarching research priorities. It is of interest that mitigation of and adaptation to climate change have not emerged higher as individual research questions. These issues were at position 4 of the T10Q study in 2008 and are currently very high priorities for international organisations and for international forestry. In this analysis and in the discussions at the workshop climate change emerged as an established driver which needs to be considered in addressing most of the specific research questions. Our understanding

of forest carbon budgets, greenhouse gas balance and life cycle analysis is sufficient for the general case for woodland creation to be made and in order to provide some practical guidance However these issues remain vital and need to be addressed through further research and the provision of evidence to support the case for woodland creation and management (e.g. where and how to achieve woodland creation, evidence to support the Woodland Carbon Code, woodfuel biomass etc.). Similarly adaptation to climate change will remain a priority with the need to re-evaluate provenance and species choice, for tree breeding and for management to provide varied and resilient woodlands. The exploitation of molecular technologies both in tree breeding programmes and the development of forest products was also highlighted.

The last grouping of similar priorities is of five questions concerned with the engagement of woodland owners and other land managers, and the associated questions of how to incentivise woodland creation and management. This area emerged at question 6 of the T10Q analysis and was phrased as follows 'Who are the private woodland owners and how can they be engaged and influence? What are their concerns'. Current levels of woodland management and creation in England are lower than are required under existing and probably also future woodland, biomass energy and climate change strategies. An additional research question to those in this grouping (4 in Table 2) and related to them which arose in the discussion was the need to explore the barriers to community woodland ownership and management.

The last grouping is of specific unrelated research questions. The first being the need for research and policy on urban trees which has already been discussed. The question of improving the dissemination of research and project co-ordination (second question of this group) had already been highlighted in the discussion sessions. The question of making the best use of the evidence which is available highlights the need for a directed forestry research capacity to be maintained; again a point raised in discussion. There is clearly a need for information on the amount and quality of England's woodlands for both policy and production forecasting. The last research question sought to understand the barriers to and facilitators of access to woodland and to identify the impacts of access on the objectives of woodland owners.

References

Petrokofsky, G. *et al.* (2010). A participatory process for identifying and prioritizing policy-relevant research questions in natural resource management: a case study from the UK forestry sector. *Forestry*, 83(4): 357-367

Table 1 The top ten research questions (T10Qs) from the 2008 study of UK forestry research priorities (from Petrokofsky *et al* 2010).

Table 3 – Top 10 questions determined by votes cast at T10Qs workshop in 2008

Question	Percentage of votes cast
What are the most technically and financially effective ways of identifying, monitoring and controlling invasive species, pests and disease?	45
How can we achieve better understanding between foresters and other parts of society?	42
What are the most effective landscape planting schemes to ensure connectivity between woodland fragments while maintaining connectivity between other land use types?	39
How will climate change affect both natural forest ecosystems and forestry and how should management be adapted to minimise adverse impacts and optimise benefits?	34
What is the value of forestry to human health and well-being?	34
Who are the private woodland owners and how can they be engaged and influenced? What are their concerns?	34
Which parts of forest ecosystem form the largest and most stable carbon pools and how are these impacted by forest management and climate change?	32
How can we address the economic, environmental, social and institutional constraints of expanding woodfuel in the UK?	32
What species or provenances should we be considering in relation to a range of forestry systems including urban and agroforestry, in the light of climate change?	32
What are the barriers to knowledge transfer in forestry from research to practice and how can they be removed?	32

Table 2 – Top thirty research priorities (2011 IFP workshop) list in order of total number of votes (short to medium – red and long term – green priorities) as awarded by participants on 9 November 2011.

Research questions from the breakout groups		No. of short/ medium and long term votes	Total number of votes
1	What do we need to do to improve woodland resilience in the face of pests and diseases?	10+12	22
2	How to improve understanding the special issues of urban trees (importance of pests, climate, species, liability concerns)?	12+4	16
3.	Selection, breeding and silviculture for resilience to climate change and pests and diseases.	5+10	15
4.	How do you get the complete value of a woodland - all its goods and benefits – into the owners' pocket?	6+9	15
5.	What are the barriers to land-use change – farm and other land to trees, woods and forests?	3+11	14
6.	How to detect pests and diseases at low levels	12+1	13
7.	How to improve research dissemination techniques – Policy/Local Authorities - researchers - landowners - funders. Improve co-ordination of projects, proposals, outputs	3+9	12
8.	Unless we know who owns England's woods and forests, how can we target appropriate research, levers and interventions?	12	12
9.	How to capitalise on 'unplanned expts' from management (data mining, long term monitoring).	11	11
10.	Whole ecosystem carbon budgeting and development of tools for forest managers	6+3	9
11.	What is the potential for tree breeding to improve the quality/quantity of the growing stock?	5+4	9
12.	How to exploit new molecular technologies.	2+6	8
13.	How to decide landscape balance: management, creation, other land-use. Decision trees/mechanisms	2+6	8
14.	What motivates and incentivises owners to manage woodlands?	1+7	8
15.	Scientific basis to support land-use strategies in relation to woodland creation.	6	6
16.	What are novel and management impacts – biodiversity (unintended consequences of change) – Linking aspects, clearing *Phytophthora* areas, woodfuel, carbon forestry	4+3	7
17.	Practical case studies for payments for ecosystem services	4+3	7
18.	How to improve prediction and control of pests, pathogens and invasives.	4+2	6
19.	What is the interaction between access for pests and disease e.g. transmission, monitoring, treatment, impact on sense of place, access itself.	6	6
20.	How to incentivise those who create woodland to continue maintaining and caring for them i.e. how do we make them sustainable?	2+4	6

21.	Who, how and through what routes do we engage with unmanaged woodland owners (case studies)?	3+2	5
22.	How to value the benefits and drawbacks of woodland access – what, how much, where, scale, who? – and use this to test impact of changes e.g. on the Public Forest Estate – an extra hectare of accessible woodland.	2+2	4
23.	What are the real and perceived barriers for collaboration between woodland owners?	3+1	4
24.	What is the quality/quantity of available material (according to species now and in the future?)	2+2	4
25.	How can the value of the benefits be transferred into income/reduced costs/easier achievement of objectives for landowners?	1+1	2
26.	What are the barriers to and facilitators of access to woodland (citizens & landowners). (What are the impacts of access on woodland & woodland owners' objectives)?	2	2
27.	How to set up a mechanism to engage citizens in monitoring and responding to tree disease outbreaks?	1	1
28.	How to capture ecosystem service values – society – owners. Scaling up.	1	1
29.	How can we make forestry less 'scary' and more amenable to the untrained but interested?	1	1
30.	What would be the impact in value of benefits of changes in resources for the Public Forest Estate?		0

Table 3 – Top thirty research priorities (2011 IFP workshop) grouped into four overall priorities, with five specific independent priorities which did not fall into a group of priorities.

Overall priority 1: Valuation of and payment for ecosystem services, evidence in support of woodland creation for mitigation of climate change.

1.	How do you get the complete value of a woodland - all its goods and benefits – into the owners' pocket?	6+9	15
2.	What are the barriers to land-use change – farm and other land to trees, woods and forests?	3+11	14
3.	Whole ecosystem carbon budgeting and development of tools for forest managers	6+3	9
4.	How to decide landscape balance: management, woodland creation, other land-use. Decision trees/mechanisms	2+6	8
5.	What are novel and management impacts – biodiversity (unintended consequences of change) – Linking aspects, clearing *Phytophthora* areas, woodfuel, carbon forestry	4+3	7
6.	Practical case studies for payments for ecosystem services	4+3	7
7.	Scientific basis to support land-use strategies in relation to woodland creation.	6	6
8.	How to incentivise those who create woodland to continue maintaining and caring for them i.e. how do we make them sustainable?	2+4	6
9.	How to value the benefits and drawbacks of woodland access – what, how much, where, scale, who? – and use this to test impact of changes e.g. on the Public Forest Estate – an extra hectare of accessible woodland.	2+2	4
10.	How can the value of the benefits be transferred into income/reduced costs/easier achievement of objectives for landowners?	1+1	2
11.	How to capture ecosystem service values – society – owners. Scaling up.	1	1
12.	What would be the impact in value of benefits of changes in resources for the Public Forest Estate?		0
	Totals	37 42	79

Overall priority 2: Tree pest and diseases, including invasive species (squirrels, deer, wild boar, etc)

1	What do we need to do to improve woodland resilience in the face of pests and diseases?	10+12	22
2.	How to detect pests and diseases at low levels	12+1	13
3.	How to improve prediction and control of pests, pathogens and invasives.	4+2	6
4.	What is the interaction between access for pests and disease e.g. transmission, monitoring, treatment, impact on sense of place, access itself.	6	6
5.	How to set up a mechanism to engage citizens in monitoring and responding to tree disease outbreaks?	1	1
	Totals	32 16	48

Overall priority 3: Selection, breeding and silviculture for resilience to climate change and pests and pathogens

1.	Selection, breeding and silviculture for resilience to climate change and pests and diseases.	5+10	15
2.	What is the potential for tree breeding to improve the quality/quantity of the growing stock?	5+4	9
3.	How to exploit new molecular technologies.	2+6	8
	Totals	12 20	32

Overall priority 4: Engagement with woodland owners

1.	Unless we know who owns England's woods and forests, how can we target appropriate research, levers and interventions?	12	12
2.	What motivates and incentivises owners to manage woodlands?	1+7	8
3.	Who, how and through what routes do we engage with unmanaged woodland owners (case studies)?	3+2	5
4.	What are the real and perceived barriers for collaboration between woodland owners?	3+1	4
5.	How can we make forestry less 'scary' and more amenable to the untrained but interested?	1	1
	Totals	19 11	30

Specific, independent research questions

1.	How to improve understanding the special issues of urban trees (importance of pests, etc., climate, species, liability concerns)	12+4	16
2.	How to improve research dissemination techniques – Policy/Local Authorities - researchers - landowners - funders. Improve co-ordination of projects, proposals, outputs	3+9	12
3.	How to capitalise on 'unplanned expts' from management (data mining, long term monitoring).	11	11
4.	What is the quality/quantity of available material (according to species now and in the future?)	2+2	4
5.	What are the barriers to and facilitators of access to woodland (citizens and landowners). (What are the impacts of access on woodland and woodland owners' objectives)?	2	2
	Totals	17 28	45

Annex 1 Independent Forestry Panel Workshop: *Future research requirements for forestry in England*

Programme – 9 November 2011

09:30 – 09:50	Arrival	Refreshments available
09:50 – 10:00	Welcome, The Independent Forestry Panel, and workshop objectives	Chair - Nick Brown, University of Oxford & Deborah Wells, Panel Secretariat
10.00 – 10.15	The current FC research context and GB Science & Innovation Strategy	Roger Coppock Forestry Commission
Session 1: The current research programme		
10:15 – 10:35	Review of existing forestry research programmes	Peter Freer-Smith Forest Research
10:35 – 10:45	Discussion: What are the strengths and opportunities of the current forestry research?	Facilitated by the Chair
10:45 – 11:15	Coffee break	
Session 2a: Identifying future research priorities in forestry		
11:15 – 11:20	Introduction to Session 2a	Chair
11:20 – 11:30	Review of forest sector research priorities	Gillian Petrokofsky University of Oxford
11:30 – 11:40	Forest sector research priorities for the future	Caroline Harrison CONFOR
11:40 – 11:50	Living with Environmental Change/Research Councils' priorities	Andrew Watkinson Living With Environmental Change
11:50 – 12:00	Forestry Commission/Forest Research priorities	Roger Coppock Forestry Commission
12:00 – 12:10	NGO perspective on research priorities	Mike Townsend Woodland Trust
12:10 – 12:30	Round-up of Session 2a and introduction to Session 2b	Chair
12:30 – 13:15	Lunch	

Session 2b: working groups to identify future research priorities		
13:15 – 14:15	Thematic working groups to discuss and identify research priorities: *1.* Climate change *(and tree health)* *2.* Landscape, biodiversity *(and ecosystem services)* 3. Access to woodlands, other public benefits and community engagement 4. Financial sustainability of the forestry and timber sectors 5. Levers and interventions	All
14:15 – 15:00	Feedback from working groups and voting on research priorities	Facilitated by Chair
15:00 – 15:30	Round-up of the day and next steps	Peter Freer-Smith
15:30	Tea and depart	

Annex 2 - Research Gaps Workshop – Attendance List

Name	Affiliation	D
Forestry Panel Member		
Caroline Harrison on behalf of Stuart Goodall	Confederation of Forest Industries (CONFOR)	Chief Executive
Independent Forestry Panel Secretariat members		
Deborah Wells	(Department of Enviornment, Food and Rural Affairs [Defra])	-
Keith Kirby	(Natural England)	-
Other invitees		
Sarah Andrews	Defra	Economist
Tanya Arkle	Defra	Landscape an Programme
Nick Brown	University of Oxford	Principal, Lina
Roger Coppock	Forestry Commission (FC)	Head of Advis
Jamie Cordery on behalf of Peter Watson	Deer Initiative	South East Dee
Peter Costigan	Defra	Science Co-ord Environment an
Dominic Driver	Forestry Commission England (FCE)	Head of Wood National Exper
Julian Evans	Institute of Chartered Foresters (ICF)	Vice President
Peter Freer-Smith	FC	Chief Scientist
Alison Griffin	Defra	Domestic Fores
Debbie Harding	Biotechnology & Biological Sciences Research Council	Head of Agricu
Wilma Harper	FC	Head of Corpo Support
Karen Haysom on behalf of Carol Williams	Bat Conservation Trust	Director of Co
Ray Hawes on behalf of Ian Wright	National Trust	Head of Fores

Rik Packenham	Continuous Cover Forestry Group	Coordinator En
Amanda Pearce on behalf of Helen Phillips	Natural England	National Accoun Partnerships an (Land Managem
James Pendlebury	FR	Chief Executiv
Gillian Petrokofsky	Oxford University	Researcher
Sir David Read	University of Sheffield	
Geraint Richards	Duchy of Cornwall	Head Foreste
Peter Savill	British IHT/Future Trees Trust	Chairman
Caroline Season	Department of Energy & Climate Change	Senior Policy Ad Team
Mike Seville	Country Land + Business Association	Forestry & Wo
Phil Tidey	Small Woods Association	Membership Se and Technical)
Mike Townsend	Woodland Trust	Senior Adviser
Martin Ward	Food and Environment Research Agency (FERA)	Head of Policy
Andrew Watkinson	Living With Environmental Change (LWEC)	Director
Andrew Weatherall	University of Cumbria	Research Fello
Hugh Williams	FR	Head of Opera

Annex 3 - Independent Forest Panel Workshop: Future research requirements for forestry in England, (9 November 2011)

Background note: **The existing research programme**

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1. The context and aims of the workshop

The Independent Forestry Panel was established in March 2011 by the Secretary of State, Caroline Spelman, to advise Government on the future direction of forestry and woodland policy in England. The Panel has identified and wishes to explore five themes to frame their work. The working titles of these are:-

a) Climate change;

b) Landscape and biodiversity;

c) Access to woodland and other public benefits and community engagement;

d) Financial sustainability of the forestry and timber use sectors and

e) Levers and interventions.

The Panel is keen that the multi-purpose nature of forests and woodlands be fully reflected and have recognised that increasing woodland cover is a key issue that runs through these themes. The Panel will make the most of existing evidence and expertise. It also hopes to contribute to putting forward information in a clear and readily understandable way to build up understanding of forests and woodlands outside of those already closely involved in forestry.

To this end the Panel Secretariat asked Forest Research to organise this workshop in order to synthesise existing research and ensure that it addresses existing policy and operational needs for forestry in England. Forest Research also wishes to support wider engagement in thinking through what further research, education and capacity building may be needed to address issues arising from the panel's deliberations on its terms of reference. The aim of the workshop is to bring together people from the research, policy and practitioner communities to share ideas and understanding, and to produce a short report to the Panel Secretariat highlighting the current strengths of, and gaps in, the research programmes and making recommendations for future research priorities in England. These recommendations will be taken into consideration during the full review of the Science and Innovation Strategy for British Forestry being undertaken by FCGB in 2012.

The programme for 9 November has two sessions. In the first our understanding of existing forestry research programmes and their contribution to policy development, as presented here, will be summarised. This will be followed by a discussion session during which participants will be asked to consider the strengths and opportunities of the current forestry research programme. In a second session five speakers representing different stakeholders will set out their current and future research priorities. (Gillian Petrokofsky will give an account of a comprehensive study of forestry research priorities, Petrokofsky *et al* 2010, Stuart Goodall will present forest

sector views, Andrew Watkinson will describe the priorities of the Living with Environmental Change Programme and the Research Councils, and Roger Coppock and Mike Townsend will present FC and Woodland Trust priorities respectively). Five breakout working groups will then discuss and identify research priorities within each of the Panel's themes. Following discussion of the conclusions reached by the breakout groups, workshop participants will be asked to vote in order to reach an overall workshop view of priorities.

More time has been given to the identification of future research priorities (session 2a and b), than to setting out the current programme. This is because this paper sets current understanding on the existing forestry research programme.

2. Current research programmes of direct relevance to forestry in England

In the UK, woodlands are a major feature of the landscape (c. 13% of land cover). Forests are some of the most important ecosystems on the planet. The recent launch of the National Ecosystem Assessment highlighted the vital role of forests in providing a wide range of ecosystem services for society. Managed sustainably, they provide long term employment and wood and timber products for use by society, contributing £7.2bn per annum to the UK economy. In addition they provide a haven for wildlife and biodiversity, and a source of relaxation and enjoyment for the millions of people who visit them each year. For forests to thrive in a constantly evolving environment, a sound evidence base to underpin policy or management decisions is essential.

2.1 The UK forestry research programme 1995 to 2005

Historically most forestry research in the UK has been funded by government. The most recent complete systematic analysis of UK forestry and woodland research was completed in 2006 and covered the years 1995 to 2006 (FRCC, 2005). In 2005/6 annual expenditure on UK forestry and tree related research by all organisations was c. £26.4M and had been at about this value for the 10 year period with some year to year fluctuations. This analysis was based on a very broad definition of forestry research projects. The 2006 analysis showed that at that time less than about a quarter (£6.8M) of funding of forestry research was provided by the EU, the Research Councils, the sector and charities. The remaining funding (£19.6M) being government funding from the Forestry Commission, the devolved Administrations, DFID, Defra, DECC and BIS. A significant amount of the research spend by DFID and NERC was on overseas and tropical forestry projects (up to £7.7M per year).

The bottom line conclusions from the 2006 keyword analysis were that Dissemination, Biodiversity, Climate Change, Habitats and Entomology were the main topics funded and that there was a trend for greater integration of forestry with other rural, social and environmental objectives. Table 1 from this FRCC research collation details analysis of expenditure by subject area and keyword. Over the years that the collation was conducted, the keyword analysis proved to be a good indicator of trends in forestry research. These research trends also highlighted changes in forestry policy as expenditure on research shifted ahead of policy changes and followed behind them to support implementation and practice. Climate change research which had only recently entered the programme had continued to increase in importance and funding agencies were also placing emphasis on dissemination.

Table 1a – Estimates of costs by subject area for 02/03, 03/04, 04/05 and 05/06 (£000s in £s 02/03, 03/04, 04/05 and 05/06)

	Year ending March			
Subject Area	**2003**	**2004**	**2005**	**2006**
Tree Biology	723	1053	607	874
Tropical	2400	6562	7712	5221
Tree Improvement & Genetics	1608	1692	1916	2492
Expansion (New planting)	604	295	210	176
Protection	3216	3229	3143	3226
Forest Resources & Silviculture	5846	5873	5322	5540
Arboricultural	60	158	309	4
Wood Utilisation & Processing	2784	1518	1006	1477
Environmental Interactions	3614	4145	4012	4195
Recreation & Community Participation	457	384	309	762
Conservation & Biodiversity	2108	5208	1715	2266

Table 1b – Costs by main keyword (£000s in £s, 03/04, 04/05 and 05/06). Note – projects have a number of keywords so that project costs may be shown more than once.

Keyword	**2003/04**	**Keyword**	**2004/05**	**Keyword**	**2005/06**
Habitats	3310	Dissemination	3575	Dissemination	3370
Socio-economics	2863	Socio-economics	3366	Water quality/quantity	3019
Biodiversity	2306	Biodiversity	2132	Biodiversity	2245
Landscape ecology	2243	Marketing	1830	Climate Change	2032
Water Quality/Quantity	1508	Economics	1531	Molecular Genetics	1908
Agroforestry	1472	Climate change	1516	Habitats	1646
Soils	1351	Tree breeding	1469	Entomology	1457
Dissemination	1397	Agroforestry	1326	Sustainability/soils	1436
Climate Change	1262	Habitats	1296	Landscape Ecology	1335
Timber Prop/Pulp	1189	Entomology	1276	Ecology	1227

2.2 Current (2011/12) UK research programme on forestry and woodlands

The House of Commons Science & Technology Committee undertook an enquiry into UK forestry research in July 2011 and the written evidence presented to the Committee is a useful source of data on both the current research spend and the priorities of those organisations who presented evidence.

The account of current UK research which follows here is a synthesis of the evidence presented to the Committee with some additional information.

Forestry Commission

Is probably still the largest funder of research of direct value to UK forestry, although the DFID and Research Council spend on overseas, mainly tropical, forestry research may be greater. The FC's budget for research will reduce from £11M in 2010/11 (the same as the 2005 value) to £8.2M in 2014/15. This research budget provides the evidence base for forestry policy and also in support of forest management. There is a strong emphasis on knowledge exchange and a close working relationship with the

sector. A major part of this programme is delivered by the FC's research agency – Forest Research (FR) – often in partnership with other organisations and with co-funding from other funders. A wide range of subject areas are supported by the FC as follows:-

- Tree health
- Climate change
- Social policy research including economics,
- Ecosystem and landscape ecology
- Integrated forest monitoring
- Forest hydrology and soils
- Street trees and urban greenspace
- Modelling for climate change
- Wind and timber properties and
- Species and gene conservation.

The current FC research programme focuses on Ecosystem resilience and climate change (tree pests and pathogens, climate change – adaptation and mitigation and on work to support sustainable forest management and society). Annex 1 attached here lists the FC research programmes 2011/12. Full details are available on the FC research catalogue on www.forestry.gov.uk . The FC recently reviewed FR's research programme in order to achieve the budget savings required over the SR10 period (2011/12 through to 2014/15). Expenditure will be reduced for tree breeding, silviculture, wood and timber properties and social science and six research programmes will close over the SR10 period, namely: habitat management, vertebrate management, woodfuel and biomass, cultural heritage and technical development. Some essential work from programmes which are closing will be incorporated into other work and where possible the expertise will be retained although often with reduced capacity.

Defra

Defra does not generally directly fund forest and woodland research as this falls within the FC remit. However, Defra is currently investing in a major programme to address the threat posed to forests, historic gardens and heathland by *Phytophthora* in England and Wales. This is £23M over 5 years of which about £1.5M is for research; the remainder covering operational response and monitoring. Defra and FC, working with a range of interested parties, published an action plan for tree health and plant biosecurity, in October 2011. The themes of import controls, practical actions and stakeholder engagement are underpinned by the theme on essential research to underpin delivery. Defra has allocated up to £7m over the next three years for new research, covering natural and social science as well as economics, and mostly to let by open competition. Defra is also working with LWEC to promote tree health research and maximise partnership opportunities with other LWEC partner organisations, and is also looking for opportunities with wider potential co-funders. The Action Plan has read-across to elements all five of the Independent Panel's main theme areas. In addition Defra invests in wider environmental evidence of relevant to forestry issues, for example, into climate change, land use, wildfire management and biosecurity. Defra also funds research such as Countryside Survey and the National

Ecosystem Assessment which provide contextual information about forests and woodland.

Fera

At the time of the HoC hearing Fera's expenditure on work related to forestry issues was forecast as £60K and £40K on Longhorn beetle (*Anoplophora*) species in 2011/12 and 2012/13, plus work under the *phytophthora* programme outlined above. Fera also has EU co-funding for some tree-related research and undertake research on vertebrates which are a problem in both farmland and woodlands (deer and wild boar).

Natural England

Natural England's forestry and woodland related research programmes have tended to be c. £100 to £500K per year, much of this on woodland species, general site monitoring with a particular focus on ancient semi-natural woodlands, landscape, protected areas and conservation. In 2010/11 Natural England's spend was £284K on tree and woodland related research. Financial cutbacks from the SR mean that Natural England is reviewing where it can put its limited research funds as well as the balance of its proposals of work more generally. There is likely to be a re-focussing of effort onto delivery through Higher Level Stewardship on primarily agricultural land. Natural England will also administer a new £7.5 million grant scheme to establish Nature Improvement Areas (NIAs) on behalf of Defra and other partners, including the Forestry Commission. There seems likely to be a concomitant reduction in direct forestry and tree related research that Natural England funds.

Natural Environment Research Council (NERC)

NERC funds forest research through its three funding streams – Research Programmes, Responsive Mode and National Capability for which only the universities and research institutes not owned and primarily funded by government are eligible. This 'independent research organisation' criteria applies across the research councils, and under the rule RBG Kew is eligible for funding whilst Forest Research and Fera are not. In the last five years (2006/07 to 2010/11) a total of £33M (between £3M and £7M per year) has been spent on forestry related research in the Council's Research Programme and Responsive Mode. Responsive mode funding currently includes research on adaptive genomics and the physiology of pine species and on climate change impacts on forest biodiversity. Full details of these projects are available on the NERC website http://gotw.nerc.ac.uk/list_full.asp .

As with Defra spending, NERC also invests a significant amount of ecosystem research relevant to forestry, for example process-level investigations of the interactions between nitrogen deposition, carbon, biogenic emissions and ecosystem effects. The assessment of critical loads of nitrogen, acid deposition and heavy metals, with atmospheric deposition being of particular importance for forest ecosystems. CEH are involved in long term studies of forest biodiversity and with the Scottish Government's developing Centre of Excellence in Climate Change, with a remit to contribute on forest research. It is also involved in studies to assess impact of forest fragmentation and climate change (with the Centre for Tropical Forest Science,

Earthwatch Institute and Oxford University) and tree diseases including fungal pathogens and oak tree galls.

Biotechnology and Biological Sciences Research Council (BBSRC)

The Council's current strategic research priorities are: food security, industrial biotechnology and bioenergy, and basic bioscience underpinning health. Forestry and tree-related research does fall within BBSRC's remit and proposals are considered for responsive-mode funding from universities, research council institutes and institutions with 'Independent Research Organisation' status. BBSRC estimates its expenditure on research relevant to forestry was between £297K and £657K per year between 2005 and 2009 increasing to £2,3M in 2009/10 due to investment in willow breeding for use as a feedstock for biofuel production and as biomass for other uses. BBSRC also supports a substantial body of research on the pathology and epidemiology of plant and crop pathogens and pests, some of which are closely related to tree diseases and pests (e.g *Phytophthora*).

Living With Environmental Change (LWEC)

LWEC is a £1 billion, 10-year research programme, managed by NERC on behalf of a partnership of Research Councils, UK government departments and agencies, devolved administrations, local government and industry partners. Established in 2008, it has built on previous RC programmes (including RELU, the Rural Economy and Land Use programme) to address environmental change at a regional and global scale and provide an evidence base that will assist the management of climate change. LWEC partners identify the most pressing economic and social challenges to do with environmental change, align their efforts to meet those challenges and co-ordinate funding for the leading multidisciplinary research and observation that the UK can offer.

For example, a search of the LWEC project database shows 52 projects with the word 'forestry' in their description in the last three years. These projects are listed in Annex 2 and are funded by NERC, Defra, EPSRC and the Scottish Government and delivered by the university departments and Research Council institutes such as CEH (www.environmentalresearch.info/).

The forestry sector – industry and charities

Research has a critical part to play in the delivery of the benefits provided by forestry and woodlands managed by both the public forest estate and the private sector. The forestry sector is highly fragmented, comprising a large number of SMEs and relatively few large companies. As a largely non-profit making (often grant-aided) sector, forestry relies substantially on government-funded research.

The importance of forestry in the Scottish economy has resulted in significant industry contribution to the research effort in Scotland, particularly through the Scottish Forest Industries Cluster, which has made a significant contribution to research by providing in kind support and access to sites. The Forest Products Research Institute (FPRI) at Edinburgh Napier University was established in 2003 and has subsequently become a main centre of excellence for UK forest products and timber research. Initially funded

by the Forestry Commission and Scottish Enterprise, FPRI has successfully secured additional EU funding. Its current research priorities are to improve use of the current UK forest resource and to improve wood quality for higher value uses (e.g. construction).

England and Wales have partnerships similar to the Scottish Forest Industries Cluster, though these have been less well funded, perhaps reflecting the lower importance of forestry in the English and Welsh economies. In total, the UK forestry sector probably funds c. £0.5M research per year, focused on addressing practical issues (such as evaluation of standing crop quality).

The UK forestry sector and land based industries receive little attention from the Technology Strategy Board (TSB), as they are not seen as high value sectors with significant potential for innovation or export. The sector tends consequently not to engage with TSB innovation and research programmes (e.g. Small Business Research Initiative, Knowledge Transfer Partnerships, R&D tax credits or Collaborative Research grants).

A number of charities fund forestry research, in particular the Scottish Forestry Trust which spends about £80K per year with projects covering issues like the adaptation of British tree populations to climate change, a survey of Bechstein's bats, the Social History of Scottish Forestry and Continuous Cover Forestry in Glentress. The Trust's projects are often delivered as PhD studentships. Other charities currently funding forestry research include the Leverhulme Trust, The Woodland Trust and the Rufford Foundation. In recent years a significant proportion of this funding has addressed tree pests and diseases. The Future Trees Trust, formerly the British and Irish Hardwood Trust (BIHT) is an active partnership which has for some years led in the selection and breeding of hardwoods. The Trust's work is now providing improved planting material to the sector which represents a significant achievement.

EU funded research

UK researchers have proved highly capable of winning cutting edge EU research funding in forestry. The amount of EU funding for forestry research in the UK varies considerably from year to year as the emphasis of different funding programmes changes and according to whether the UK wins roles in key projects. Between 2003 and 2006, EU co-funding represented 4% - 8.6% of total UK spend. In recent years with international attention focused on forestry, EU co-funding of UK projects has probably increased, although the data have not been collated and this trend is unlikely to be sustained in future. All EU funding requires matched funding from national sources and the UK's participation in EU funded projects is limited by the amount of UK matched funding available.

The Framework Programme (currently FP7) is the main programme funding research per se however other EU initiatives such as the Biodiversa ERA-NET have also funded several forestry related projects (see www.biodiversa.org) COST Actions (EU intergovernmental framework for European Cooperation in Science and Technology) provide important knowledge exchange networks for emergent new topics. LIFE+ (EU funding on Nature, biodiversity & environment policy) and Interreg (funding to stimulate cooperation between regions) programmes fund important demonstration and

knowledge exchange projects. Examples of forestry-related EU projects are shown in Annex 3.

Department for International Development

DFID has a Research and Evidence Directorate responsible for research in support of the Department's objectives. Much of the forestry-related research falls within DFID's Forestry Research Programme which has the objective of helping country partners in the eradication of poverty by supporting research on priority developmental programmes of the forest-dependent poor. While this is a significant research programme of clear importance globally and to the Millennium Development Goals, these projects have little impact on UK domestic forestry policy and practice.
The DFID website provides the details of the current programme (http://www.dfid.gov.uk/r4d/SearchResearchDatabase.asp)

Woodland Trust

The Woodland Trust commissions research and undertakes evidence gathering of various kinds in support of its objectives. These include original research, literature reviews, surveys and case studies, Think Tank and media reports. The Trust's aims are:

- Work with others to plant more native trees to enable the creation of more native woodlands and places rich in trees
- Protect native woods, trees and their wildlife for the future
- Inspire everyone to enjoy and value woods and trees

Examples of recent and current research interests include:

- Role of woodland within agricultural systems for improving water regimes for pasture and arable crops – literature review (Harper Adams University College)
- Role of woodland within agricultural systems to reduce farm net carbon balance - literature review (Harper Adams University College)
- Role of woodland within agricultural systems to mitigate pollution - literature review (Harper Adams University College)
- Integrating trees into farming systems for water management (sponsored by RBC Bluewater project)
- The role of trees in gardens for water management (sponsored by RBC Bluewater project)
- Trees for Farms in Wales – in house publication
- Trees or Turf (LUC)
- Landowner Attitudes to woodland creation and management in the UK (Forest Research)
- Forest Dynamics – understanding flows into and out of the total forest resource (Ecotech consultants)
- Review of trees outside woods (Oxford Plant Sciences)
- Restoration of planted ancient woodland sites – resurvey of original research sites (Oxford Plant Sciences)
- Northern Ireland ancient woodland inventory (Queens University)

- Space for people – review of accessible woodland against the woodland access standard.

3. Conclusions

The funding of forestry research in the UK and the capacity to provide the research required was relatively stable up until 2010. Research was, and still is, principally funded by government departments, their agencies and the research councils, with significant contributions from European funding, the UK forestry sector and a number of charities.

Research is chiefly provided by Forest Research, the research council institutes, Fera and the universities. The FRCC collations showed that ongoing changes in research direction are closely linked to the development of forest policy. Over the past decade biodiversity and conservation, and then climate change and socio-economic research have gained in significance. Other important changes have included the development of EU co-funding, the integration of long-established university forestry departments into larger rural and environmental schools and the evolution of Research Council programmes funded by multiple Councils (such as RELU and LWEC).

FR and other research institutes have tended to address more directly the research required to support the development of forestry policy and the practical needs of the forestry sector. Universities and RC institutes have continued to provide the capacity to undertake more fundamental research, primarily resourced through Research Council responsive mode funding. Collaboration between the research institutes and universities has been strengthened through co-financing, joint working and the co-supervision of research studentships.

The funding of forestry research by UK government departments and agencies will decline between now and 2014/15 and this will inevitably result in concomitant loss of EU matched funding. This change has already resulted in a careful consideration of priorities and continued vigilance about future priorities will be needed for the sector to respond to changing needs and opportunities, for example as the UK develops its carbon management plans and as Europe develops its roadmap for a Resource Efficient Europe. With adept co-ordination of activities and continued close partnership working across the research organisations which support the forestry sector, the UK will continue to have the capability to meet future research requirements.

References

Forestry Commission. (2010). The Forestry Commission Science and innovation strategy for British forestry 2010-2013. Edinburgh. 2nd edition 37pp.

Petrokofsky, *et al*. (2010). A participatory process for identifying and prioritising policy-relevant research questions in natural resource management: a case study from the UK forestry sector. Forestry **83** No. 4. 357-367.

Annex 1 - FC Programmes 2011/12

Ecosystem resilience and climate change (c. £4.9M)

- Forest hydrology and soils
- Economic research for sustainable forest management
- Managing forest carbon and GHG balances
- Forest climate change adaptation strategies
- Urban trees and greenspace in a changing climate
- Integrated forest monitoring
- Advice and scientific support for tree health
- Species and gene conservation

Sustainable forest management and society (c. £4.4M)

- Alternative management approaches
- Operational efficiency in a sustainable forest-industry wood chain*
- Habitat management*
- Vertebrate management*
- Regeneration and sustainable silviculture*
- Wood and timber properties
- Tree selection and breeding
- Woodfuel and biomass research*
- Social research for forestry in sustainable society
- NFI GB + IFOS Research

* *Programmes due to close by the end of 2014/15 but with essential elements to be incorporated into other programmes.*

Annex 2

Envirobase

Search results from www.envirobase.info generated on 29/9/11 13:32:04
You searched in descriptions
For research projects and research programmes
Work starting last 3 years
Including all records
Your search text was: **forestry**
Your search matched 52 records in the database.

Id	Type	Title	Lead Funder
RES16853	Project	Investigation of the economics and potential environmental impacts of production of short rotation coppicing on poorer quality land.	SG
RES15728	Project	Review of LULUCF (Land Use, Land Use Change and Forestry) inventory	Defra
RES15470	Project	Feasibility of Greenhouse Gas (GHG) mitigation methods	Defra
RES17578	Project	Scoping study on population of land use component of LULUCF	Defra
RES18262	Project	CLAD: Carbon Landscapes and Drainage	NERC
RES18192	Project	CLAD: Carbon Landscapes and Drainage	NERC
RES18737	Project	Do Archaea dominate nitrification in acid soils?	NERC
RES20006	Project	Impacts of nitrogen deposition on the forest carbon cycle: from ecosystem manipulations to national scale predictions.	NERC
RES20002	Project	Impacts of nitrogen deposition on the forest carbon cycle: from ecosystem manipulations to national scale predictions.	NERC
RES21506	Project	REDD Horizon – positioning for a future of sustainable forestry	NERC
RES21744	Project	Effects of global climate change and agro-forestry practices on soil carbon and nutrient fluxes in Breckland	NERC
RES24329	Project	'Climate change and tropical forestry: regulatory aspects'	NERC
RES12434	Project	Carbon capture from power plant and atmosphere	EPSRC
RES12435	Project	Carbon capture from power plant and atmosphere	EPSRC
RES16630	Project	Roadmaps integrating Research, Technology and Development (RTD) in developing realistic GHG mitigation options from agriculture up to 2030.	Defra

RES17021	Project	Trade-offs between biodiversity conservation and economic development in tropical forests	NERC
RES18367	Project	Climate change and management of forest biodiversity: predicting the impacts of climate matching strategies on plant-herbivore-enemy interactions	NERC
RES18720	Project	Climate change and management of forest biodiversity: predicting the impacts of climate matching strategies on plant-herbivore-enemy interactions	NERC
RES19562	Project	Forest dependent poor at the agricultural frontier: the complexity of poverty and the promise of sustainable forest ecosystems in Amazonia	NERC
RES21409	Project	Satellite LiDAR enhancement of Forest Inventory and Production Forecast capabilities.	NERC
RES22339	Project	Searching for sustainable land management strategies aimed at decoupling greenhouse gas emissions from economic performance.	NERC
RES22603	Project	The effects of drought stress on aphid/plant interactions	NERC
RES10197	Project	Incorporating Integrated Habitat Networks into RBMP process – Clyde Pilot study	
RES15693	Project	Estimating the economic costs of invasive non-native species on the British economy.	SG
RES9993	Project	Trends, long term survival and ecological values of hedgerow trees: development of population models to inform strategy	Defra
RES17288	Project	Alternative solutions for restoring biodiversity and regenerating rural economies.	Defra
RES17129	Project	Carbon markets and forest conservation: understanding the impacts on biodiversity	Defra
RES16901	Project	Intra-and inter-specific competition and the evolution of cooperation in *Bacillus thuringiensis*	NERC
RES17938	Project	Aphid secondary symbionts: a eukaryote horizontal gene pool	NERC
RES18111	Project	Aphid secondary symbionts: a eukaryote horizontal gene pool	NERC
RES17787	Project	Biomass energy – optimising its contribution to poverty reduction and ecosystem services	NERC
RES18083	Project	CAMARV: Capacity Building for Mangrove Assessment, Restoration and Valuation in East Africa	NERC
RES19366	Project	Early Concept for New Mission: A Spaceborne Multispectral Canopy Lidar	NERC

RES19406	Project	Early Concept for New Mission: A Spaceborne Multispectral Canopy Lidar	NERC
RES19600	Project	Early Concept for New Mission: A Spaceborne Multispectral Canopy Lidar	NERC
RES18444	Project	Ecosystem service sustainability and poverty reduction under land use change: A case study in Yunnan Province, China.	NERC
RES18503	Project	Ecosystem services for poverty alleviation under multiple stresses in mountainous Western China	NERC
RES18547	Project	Ecosystem services for poverty alleviation under multiple stresses in mountainous Western China	NERC
RES18605	Project	EnergyScapes and Ecosystem Services	NERC
RES18738	Project	EnergyScapes and Ecosystem Services	NERC
RES18641	Project	EnergyScapes and Ecosystem Services	NERC
RES18684	Project	EnergyScapes and Ecosystem Services	NERC
RES18606	Project	EnergyScapes and Ecosystem Services	NERC
RES19341	Project	EnergyScapes and Ecosystem Services	NERC
RES18544	Project	EnergyScapes and Ecosystem Services	NERC
RES18405	Project	EnergyScapes and Ecosystem Services	NERC
RES18416	Project	EnergyScapes and Ecosystem Services	NERC
RES20215	Project	Livelihoods from ecosystems – reviewing dryland African experiences and opportunties, and developing novel research strategies and partnerships.	NERC
RES21454	Project	The impacts of ecosystem services and environmental governance on human well-being in the Pongola region, South Africa.	NERC
RES21862	Project	Safeguarding local equity as global values of ecosystem services rise.	NERC
RES24279	Project	Mid – Late Holocene landscape development in the Inshriach Forest, Strathspey, Scottish Highlands.	NERC
RES23639	Project	How do forest soil microbial communities contribute to climate change and carbon cycling?	NERC

Annex 3

FP7 projects

EUPHRESCO	European Phytosanitary Research Coordination (ERA-Net)
MOTIVE	Models for adaptive forest management
NOVELTREE	Novel tree breeding strategies
REPHRAME	Development of improved methods for detection, control and eradication of pine wood nematode in support of EU Plant Health policy
ISEFOR	Increasing sustainability of European forests, modelling for Security Against Invasive Pests and Pathogens under Climate change
TRANZFOR	International research exchange programme for forest scientists
ANOPLORISK	The risk from longhorn beetles - *Anoplophthora*

FR6 projects

TREEBREEDEX	A working Model Network of Tree Improvement towards a Competitive, Multifunctional and Sustainable European Forestry
EFORWOOD	Sustainability impact assessment of the forestry-wood chain
BIOSOIL	Improving the common European baseline of forest soild for environmental applications
EFORWOOD	Sustainability impact assessment of the forestry-wood chain
COMFOR	Tools and Methods for improved health and performance in forest enterprises
PORTCHECK	Development of generic on-site molecular diagnostics for EU quarantine pests and pathogens
RAPRA	Risk Assessment of Phytophthora ramorum
RECOAL	Reintegration of coal ash disposal sites and migration of pollution in the West Balkan area
SENSOR	Sustainability impact assessment - tools for environmental, social and economic effects of multifunctional land use in European regions

COST Actions

FP0902	Development and harmonisation of new operational research and assessment procedures for sustainable forest biomass supply
PERMIT	Pathway Evaluation and Pest Risk Management in Transport
DIAROD	Determining Invasiveness and Risk of Dothistroma (red band)
ECHOES	Expected climate change and options for EU silviculture
FORSYS	Forest management decision support systems
FP0801	Established and emerging **phytophthora**: threats to woodland and forest ecosystems
FP0603	Forest models for resource and decision support in sustainable forest management

LIFE+ and Interreg projects

FutMon	Development and implementation of EU-level forest monitoring system
FORESTCLIM	Forestry & climate change
MULTIFOR	Management of Multifunctional forests
IMPACT	Influence of climate change on the impacts of tree pests and pathogens.
REINFFORCE	Resource infrastructure for monitoring and adapting European Atlantic forests under changing climate
Northern ToSIA	Tool for Sustainability Impact Assessment
STORMRISK	Development of storm resistant landscapes through regional co-operation, adapted management and RISK communication

Annex 4 –Notes of discussion after workshop session 1 & 2 (Draft)

Introduction: The current FC research context and GB Science an Innovation Strategy.

The current FC research context and GB Science an Innovation Strategy was presented by Roger Coppock (Head of Analysts, FC). He described the FR's approach to providing high quality research in a time of declining funds; the FC research budget in 2011/12 was £11.496million that was declining to £8.2m by 14/15. This was set in a historical context where the FC research budget in FY 2000/01 would now be equivalent to £14m. He noted that it was essential that the FC continued to support and deliver high quality research and was optimistic this would be the case. This will be achieved through a combination of prioritising research; having flexible programmes of work; marrying short term flexibility with the need for longer term continuity; giving clear direction on research needs; levering in additional funds where possible (currently leverage of c25% is being achieved on some programmes but this was, due the nature of topics, not possible for all); managing an ordered transition (closure/development of programmes) and; reducing internal transaction costs.

There were many questions on financial and staff resources. Support was given to reallocate funds to research, although it was appreciated this could mean taking funds from elsewhere. Concerns were raised over budget reductions resulting in the loss of staff and expertise that was difficult to replace, and/or with particular research disciplines loosing staff and becoming less than the critical mass required to undertake research. Support was given to bringing in funds from external sources (such as the EU) although concerns were raised that securing additional funds could dominate staff time at the expense of research. A related question concerned whether the increased use of external funds would diminish the research effort put into FC needs. It was noted that at present the FC are largely responsive to (c.f. driving) EU research agendas. It was recognised that there can be differences in the research needs of England, Scotland and Wales. The FC's Research Strategy Management Board acts as a focus to resolve and determine common issues and determine GB wide priorities on behalf of the forestry sector. Countries also have their own research budgets and can/do commission work for specific research needs.

Session 1: The Current Research Programme.

Peter Freer-Smith (Departmental Chief Scientist) provided an overview of the existing forestry research programmes within the FC, Defra (Department of the Environment, Food and Rural Affairs), Fera (Food and Environment Research Agency), NE (Natural England), RCs (Research Councils), LWEC (Living with Environmental Change), EU and funded by the industry and charities. He noted that he had not included DfID (Department for International Development) as this work is overseas. The significant "help in kind" from the sector was also recognised and fully acknowledged, but was not quantified. The significant contribution that research had made to, and enabled, forests was highlighted: the era of forests for production (1919-1960) has been helped/made possible by understanding on issues such as species choice, provenance and entomology up to the current day where an era of change, new markets and adaptability had been made possible by research into climate change, biomass, carbon, ecosystem services, tree risk etc.

Questions centred on the co-ordination of research effort, with a general view being that there was a need for more partnership working, some duplication of research effort and confusion as to "who was doing what". It was noted that the FRCC (Forestry Research Co-ordination Committee) had been unsuccessful as it was not sufficiently forward looking and failed to attract sufficient support. There was also concern that it was unclear as to who was determining what research was being carried out, with ownership being spread amongst the FC, Defra (and other Government Departments), the research councils and the EU. It was also unclear who is making the case for more funding for research. The issue of competing priorities for researchers and funders was also raised - the value of scientists writing peer reviewed papers has high scientific merit and is subject to questioning and probing by the scientific community. It was felt that these papers are very important to "test" the science and that this information can (and is) used to inform, influence and determine policy and practice. However, whilst peer reviewed papers are important (and many researchers are assessed partly on their publication record) it was appreciated that the needs and time demands can lead to other forms of research outputs being required.

Session 2a: Identifying future research priorities in forestry

Gillian Petrokovsky (University of Oxford) described the research she had undertaken into the engagement of stakeholders into (forestry related) science and policy. She described the tools used

to seek and facilitate views on the Top 10 research questions for forestry.

Caroline Harrison (ConFor) expressed concerns and reservations over current and future funding, arguing that funding reductions must be reversed and extra funding must be brought in to raise funds to previous levels. Research was sought in four areas; sustainable forest management (with an emphasis on the value of woods and timber as an economic resource); pests and diseases; low carbon economy and current policy issues (such as the ecological values of plantations and the importance and safety of pesticides/herbicides).

Andrew Watkinson (LWEC) described how LWEC (launched 2008, comprising 22 publically funded organisations with a collective research budget of £1billion) was seeking to provide an evidence base at a systems scale within the landscape. He noted the five themes of the panel were, in research terms, being addressed by research led by DECC (Department for Energy and Climate Change); NERC (Natural Environment Research Council); Defra/Arts and Communities Research Council); ESRC (Environment and Social Research Council). He noted that forestry research had a low profile within LWEC and the Research Council funding. He advocated that in order to change this that forestry needed to persuade funders of the high priority/relevance of this discipline(s), to work collaboratively and to make their case persuasively and strongly.

Roger Coppock (Head of Analysts, FC) highlighted the FC/FR priorities 2010-2013. These comprise research into climate change mitigation, natural resource protection and enhancement, sustainable consumption and production, sustainable communities. He noted that the value of research included giving evidence for both policy and practice, having information that could be disseminated to different audiences and ensuring that GB kept a body of high quality and well connected/respected researchers. He noted that the FC Science and Innovation Strategy will be reviewed in 2012 and published in 2013. The stakeholder engagement will be led by the FC in Wales, England and Scotland and will fully involve groups within the forestry sector through a range of seminars, workshops conferences etc.

Mike Townsend (Woodland Trust) gave a NGO (Non Governmental organisation) perspective on research priorities. He noted that research can, and does, inform and influence policy and delivery. However he noted significant gaps between policy and actual land management decisions at the "unit level" – (i.e. by the landowners). He cited examples of this as including: despite much policy and

advice there are low rates of woodland creation and management; variable levels of woodfuel activity; and unequal/different policies at national/country level as regards ecosystems. He noted that dissemination of research/policy needs to be put in terms that the audience will read, understand and be engaged by. He also highlighted the type of publications- and that bulky documents, however valid and important, remain largely unread. The importance of peer approval, not policy/evidence, was often the most significant driver in determining land use change. He advocated that the forestry sector needs to rethink the way that research questions are posed, identify the national aspirations for forestry, match that to, and test that against, the "reality" facing landowners, and communicate in audience specific ways.

In discussion, there was broad agreement that the ability to transfer forestry research was dependent upon better, and better targeted, communication. It was felt that this was a reflection of the issues that face forestry, in that it can/is perceived as "just trees" and is not seen as a wider part of the landscape (urban and rural) and that forestry has not gained sufficient support with a broader range of land-users, researchers and professional groups. Better engagement of the farming community (who own significant areas of woodland) was regarded as essential. The example of forestry standards was cited as an example of an excellent (and important) body of work that would not gain significant support as the nature of the document was inaccessible to the audience. The difficulty of successful knowledge exchange was also highlighted as regards continuous cover systems - a consultant noting that "to many woodland owners it (CCF) is unheard of". Conversely, the delegates agreed that Forest Research had an excellent and long track record of communicating to/with the forestry sector, with work on *Phytophthora* and its impact on the forestry sector cited as an exemplar. The group felt that research must have an important part to play in future woodland opportunities arising from concerns over timber supply and land use. New flexible silvicultural systems (such as agroforestry) as well as the intensification of the use of existing planted forests were cited as examples.

The group discussed matters of governance and leadership: asking who is leading research in the forestry sector, who is able to lobby effectively for more resources for research and how should other Government departments be funding tree and forest-related research? It was noted that DECC (Department of Energy and Climate Change) and DCLG (Department for communities and Local Government) also fund research – for example on forestry/energy issues and urban forestry respectively. The issue of what research was required, and what was the balance of research "types"-

between “blue sky”, policy relevant research and research with immediate practical relevance, was also discussed.

Session 2b: Identifying future research priorities

The group split into five thematic working groups to discuss and identify research priorities for each of the Panels themes. The group then re-assembled and “voted” allocating up to three immediate and medium term research priorities (red stickers) and up to 3 longer term research priorities (green stickers). Some of the research questions were similar, so they have been grouped together in the analysis as below. The ungrouped results are also shown for reference (Appendix X)