

15 December 2016

## Mobilisation of research funding from the UK forestry sector

### Purpose

1. To seek Commissioners' views on a proposed model for increasing the levels of engagement and funding for research from industry.

### Background

2. Funding for Forestry Commission research has been decreasing since 2000 with significant impacts on the nature and scope of the research the FC has been able to undertake. In 2000 the FC spent £11.28m on research<sup>1</sup>; in 2015 the expenditure was £8.64m. The value of the current level of spend would have been worth £6.1m in 2000<sup>2</sup>, or 46% of what we actually spent. In response, many long term experiments have been abandoned, research forests have been developed to minimise time and effort getting to experiments, and some research areas, such as biomass, wildfires and archaeology have been dropped, with other areas becoming more narrowly focussed. Over the same period, new research challenges, such as climate change, pests and diseases, urban forestry, and social science have arisen. Although the SR15 settlement has been relatively benign, inflation, wage increases, and additional cost increases may further reduce the research budget by an estimated 6-10% over the next four years. In 2020, when the current research programme ends, in order to fund the same level of research as 2000 there would need to be a research budget of £17.2m – more than double the current level. See Annex 1.

3. In some other countries the forest industry plays a much larger role in research funding than it does in the UK. For example, industry<sup>3</sup> contributes approximately:
  - 14% of New Zealand's \$21million/year forest science expenditure albeit their associated government funding model is different from the UK's and explicitly recognises the need for consistent non-competitive core funding;
  - 30%<sup>4</sup> of the Finnish Forest Research Institute's €53 (£44) m budget; and
  - Swedish private companies contribute c. 27% of the total Swedish SEK1200 (£102) m funding for collaborative forest research, plus SEK2000 (£170) m to research carried out by companies themselves<sup>5</sup>.

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<sup>1</sup> The Forestry Commission Science and Innovation Strategy for British forestry 2010-2013

<sup>2</sup> <http://www.thisismoney.co.uk/money/bills/article-1633409/Historic-inflation-calculator-value-money-changed-1900.html>

<sup>3</sup> <http://www.nzfoa.org.nz/resources/file-libraries-resources/research-science-technology/480-nz-forestry-science-innovation-plan-january-2012/file>

<sup>4</sup> <http://www.metla.fi/tutkimus/index-en.htm>

4. Within the UK there are a small number of industry/government research programmes, which indicates that the concept is not a novel one.

- The Intellectual Property Office worked with The National Institute for Health Research (NIHR) and the Medical Research Council to develop the model Industry Collaborative Research Agreement (mICRA).
- Defra jointly funded the Programme of Research on Food Waste Disposal with the water industry, through the industry`s collaborative research body UK Water Industry Research (UKWIR).
- The Government's new Agri-Tech strategy, managed and delivered through the Technology Strategy Board, was published jointly by BIS, Defra and DFID. It is co-funded by industry and will provide £160 million of translational research from science to technological innovation and development, aiming to re-position the UK as a world leader in the sustainable intensification of agriculture.

These sorts of collaborations may provide a blueprint for how wider Government and the FC may be able to engage in more formal arrangements in the future. However, this may lead to a different model of research, where it does not primarily rely on Forest Research, but on a much greater breadth of research providers working to common aims and objectives.

## Details

5. Forest Research and the wider Forestry Commission have been successful at developing collaboration and attracting funding support from a wide variety of sources<sup>6</sup>. However, all of these sources are themselves under resource pressures, both within the UK and from potential implications of leaving the EU. To access new funding, and indeed to defend existing levels of government research funding, the case for forestry research must be compelling. The sector needs to be able to demonstrate how forestry adds equivalent, or more, value than other potential areas of investment; and it is also vital to demonstrate industry commitment and leverage through co- funding.

6. Traditionally the UK forest industry has contributed mainly through 'in-kind' resources to close-to market research, mainly through the use of industrial processes, such as sawmilling, improved kiln drying techniques, and testing timber properties, such as strength and density. CFS has been trying to commission a review of 'in-kind' funding to quantify the value of this to date. However, industry sources suggest that the data is not available to do this.

7. The UK forest sector has generally not engaged widely in government programmes that provide businesses with incentives for engaging in research, notably R&D tax incentives and the competitions organised by Innovate UK<sup>7</sup> (now part of the Department of Business,

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<sup>5</sup> Report by Innventia's Kennert Johansson for Swedish government, presented to Forest-Based Technology Platform in June 2016.

<sup>6</sup> UK sources include research councils, NGOs and charities, the private sector and academia,

<sup>7</sup> Innovate UK (formerly the Technology Strategy Board/ Department for Trade and Industry) has a UK-wide role, to drive business growth, by encouraging innovation and helping businesses to find new markets and access finance and skills.

Energy and Industrial Strategy), including [Innovation Vouchers](#), Knowledge Transfer Partnerships<sup>8</sup> and [the Small Business Research Initiative \(SBRI\)](#).

8. Strategic forestry research has been seen as the preserve of government, to which industry pays taxes, and this has been widely interpreted as market failure. As the private forest estate now comprises 73% of the national resource, it should be argued that the market failure argument is now weaker, and it is time for the private sector to see research, and supporting funding for it, as an integral part of its business model. To do otherwise will be to witness the gradual decline of capability and capacity, to the point where research undertaken is solely for those who choose to pay for it, with limitations on dissemination.

9. In recent years, industry, mainly through Woodland Heritage working with a number of charitable bodies, has contributed a significant amount of money to support the research into Acute Oak Decline (c£1.5m over the last 5 years). In addition the development of the Sitka spruce tree breeding co-operative is now contributing around £50k industry funding per year, and strategic timber research around £65k per year. While very welcome, these sums are small in relation to the GVA generated by the GB forestry sector, and are always subject to funding availability in any particular year.

10. Recent discussions with some sector players acknowledge that the industry needs to do more to fund research, and this is driven by a concern that the diminishing FC research budget is now insufficient to deliver the evidence that industry needs now and in the future. The challenge is to find a model which helps industry to invest in research, which overcomes the barrier of 'free loading' and which takes a longer term perspective than short term balance sheet preoccupations. There are models deployed elsewhere in the world which achieve this.

11. The New Zealand Forestry Science and Innovation Plan is a collaboration between Government and industry<sup>9</sup>. Together they contribute approximately \$21m/year to forest growing science. Of this approximately 14% is industry funded which is still small given the size of their sector and its relative importance to the NZ economy. Annex 2 sets out some key points from the plan, which are very similar to the issues we need to address in the UK.

12. In Finland, in recent years, the overall budget of the Finnish Forest Research Institute<sup>10</sup> has been about €53 (£44) million, of which about 70% has been direct government funding from the Ministry of Agriculture and Forestry. The funding from other ministries and foundations, private organisations etc., as well as from commissioned services, has been about 30%.

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<sup>8</sup> The UK-wide KTP programme, running since 1975, is part-funded by 17 public sector organisations. It typically has 1000 projects underway. Each project recruits an 'Associate' (recently qualified graduate/Post Doc), to carry out a project for a 'company' (private enterprise, public body or voluntary agency), using skills/technology from the 'knowledge base'.

<sup>9</sup> <http://www.nzfoa.org.nz/resources/file-libraries-resources/research-science-technology/480-nz-forestry-science-innovation-plan-january-2012/file>

<sup>10</sup> <http://www.metla.fi/tutkimus/index-en.htm>

13. In Sweden, forestry research<sup>11</sup> is funded by State funding 31%, Government Foundations, Authorities and Councils 23%, Companies 27%, Private Foundations and Institutions 13%, and the EU 6%. The total funding for forest research is SEK1200 million (£101.5m at current exchange rates), with a further SEK2000 (£170) m research activity carried out within sector companies.

14. Companies from the European forestry, woodworking and pulp/paper sector have also played a strong role in: developing the European forest sector '[Strategic Research Agenda 2030](#)'; co-funding the Forest-Based Technology Platform since 2005; and mobilising c.€189 m funding for the EU bio-based sector via the 2015 European Bio-based Industries Private-Public Partnership.

15. Although forestry contributes a greater proportion of GDP in NZ, Finland and Sweden, these examples demonstrate that industry in these countries plays a much larger role in research funding than it does in the UK, where industry remains highly fragmented. Clearly the mixed-model (industry & government) does work in some circumstances, and we need to find a way to deploy it more effectively in the UK.

### A possible model

16. If we take the current forest research funding from government in the UK as a hub, it should be possible to develop a series of spokes, and other hubs from this core. Annex 3 shows how such a hub/spoke model might work, and act as a vehicle to encourage funding from industry which is relevant to its needs, and allows this to be leveraged through other sources, such as research councils, academia, and increasing levels funding from elsewhere.

17. Successful examples from elsewhere suggest that two key drivers for industry engagement are:

- The role industry plays in the commissioning of the research to make it relevant to their needs
- The relevance and applicability of the outcomes of that research for them

18. One such approach which is being explored currently to use these drivers is tree breeding. Tree breeding research is one of the FR programmes, which has decreased significantly over the last decade, due to budget reductions and the need to deploy greater resources into tree health. Working with Future Trees Trust, Confor, FR, and the wider industry a draft National Tree Improvement Strategy for the UK has been developed. This was discussed at a well-attended meeting at the end of October with 56 delegates from across the whole forestry supply chain. Whilst acknowledging that there will be some difficult issues, such as funding, governance, and intellectual property to overcome, the meeting overwhelmingly supported the concept.

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<sup>11</sup>[http://www.forestindustries.se/MediaBinaryLoader.axd?MediaArchive\\_FileID=4e041c87-0147-4f43-9b13-3a2122d9aaf0&FileName=Facts+and+figures+2014.pdf](http://www.forestindustries.se/MediaBinaryLoader.axd?MediaArchive_FileID=4e041c87-0147-4f43-9b13-3a2122d9aaf0&FileName=Facts+and+figures+2014.pdf)

19. This model is based on the very successful EU ERA-NET WoodWisdom project which has to date brought some 15 countries together to fund 62 projects with a total value of €85m. Since the first call in 2004, the Forestry Commission (FCGB and FCS) has invested just £0.45m to gain access to all of the projects, and perhaps more importantly provide UK researchers with access to the project networks.

20. The model does not, at this stage, ask industry to put resources into a common pot for researchers to do good things with. It is based around a shared strategic vision, which will be delivered by a combination of partners, such as Forest Research, industry, academia, NGOs and others. The strategy will detail what research is required, and it will be up to all of the partners to contribute to its delivery. By having a shared vision and a collaborative approach, the opportunities for accessing Research Council, charitable, and other funds will be much greater. The whole industry can speak to politicians and opinion formers with a single voice, which will enhance its visibility and strengthen its offer to society. Partners will fund and work on the projects of most interest to them, thus increasing engagement and adoption of the scientific results and novel techniques much more rapidly than hitherto.

### Resource Implications

21. None. CFS engagement will be to facilitate and assist the process.

### Risk Assessment

22. The major risk will be if industry fails to respond to the challenge and the capability and capacity to undertake forestry research continues to diminish.

23. To mitigate this, the proposed approach builds on initiatives to increase industry collaboration that are already underway in Forest Research, from their development of the tree breeding cooperative with the sector through to their engagement with Innovate UK and provision of the UK National Support Group to the European Forest-based Technology Platform. Support from industry is positive. The challenge is to find a mechanism which overcomes the barriers mentioned above.

24. Should industry provide significant funding, it will inevitably look to having greater influence on the research agenda, and new governance arrangements will be required. This may pose a challenge if the three GB countries wish to ensure continuing full control over the agenda and, under the proposed model, would be a medium to long term issue for resolution. Given current discussions around the future of Forest Research, having industry as a long term partner in this could bring significant benefits to offset the loss of full control.

### Communications

25. Good communications with industry will be essential to making this work. This will develop the confidence and trust for a long term arrangement of mutual benefit.

26. Good communications with Forest Research and with the Devolved administrations will also be needed, to ensure that there is no duplication of effort or lack of awareness about progress. Communication of progress and deadlines met for disseminating the results of

research will be vital to deliver the culture change necessary for the mixed funding model proposed.

### Implementation and Evaluation

27. Given the prevailing economic conditions for government funding, and the need for increasing our research capability these present a once in a generation opportunity to set the framework for industry and wider funding for forestry research in the UK for years to come. The first step, which the hub and spoke model will help facilitate, will be to change the culture for research funding. Once this is done, more sophisticated and longer term approaches should be possible.

### Timeline

28. If Commissioners agree the recommendation below, a proposed timeline is outlined to maintain pace and ensure that industry colleagues remain engaged with the issue.

Activity	Result	Date
Seek FCEB endorsement of the proposal	Achieved - FCEB meeting	19 October
Seek industry endorsement of model at National Tree Improvement Strategy meeting	Achieved - National Conference Centre, Birmingham	26 October
Produce 2 <sup>nd</sup> draft of NTIS and draft action plan	Underway and well advanced for circulation to meeting delegates before Christmas break	Dec
One to one discussions with industry leads	To be arranged	Dec
Confor / ICF meeting to discuss wider research funding	TBC	Dec/Jan

### Recommendation

29. That Commissioners discuss the paper, and agree that CFS and Forest Research should continue to work with the sector to develop a new model for joint research commissioning and funding.

Roger Coppock  
December 2016

## Annex 1 - Value of current FC research budget

### Forest Research Annual Spend

This note considers the value of the current research programme being implemented by Forest Research in light of i. previous funding and ii. the end of the current programme.

Forest Research carries out programmes of commissioned research funded by Forestry Commission Scotland, Forestry Commission England and the Welsh Government with management of the programmes overseen by Corporate and Forestry Support. The current programme, the Science and Innovation Strategy (SIS) has an annual value of £8.5m and runs from 2015 until 2020. By comparison, the annual spend in 2000 was £11.3m.

In nominal terms this is a decrease of £2.8m per annum, about 25%. However, comparing 'nominal values' from different time periods does not reflect changes in wages and overheads due to inflation. This results in misleading comparisons. It is necessary to remove the effects of inflation in order to compare 'real values' from different time periods.

Using the GDP deflator to adjust for inflation, the 2015 research budget of £8.5m is equivalent to £6.1m in real terms in '2000 prices.' This means a real terms decrease in funded research of 46% rather than 25%. In 2020, when the current research programme ends, in order to fund the same level of research as 2000 there would need to be a research budget of £17.2m – more than double the current level.

**Table 1: GDP Deflator Comparison of current and previous FR budget**

		Value of Programme:	
Year	GDP Deflator	Current SIS	Previous
2000	71.622	6.1	11.3
2015	100	8.5	15.8
2020	109.22	9.3	17.2
Average Inflation 2000 - 2015:			2.39%
Forecast Avg. Inflation 2015 - 2020:			1.53%

The GDP deflator is a general measure of inflation in the UK economy published regularly by HM Treasury. It is a much broader measure of inflation than alternative measures, such as the CPI which measures consumer prices, as it includes the prices of all domestically produced goods, investment goods, government services and exports.

GDP Deflators: A User Guide:

<https://www.gov.uk/government/publications/gross-domestic-product-gdp-deflators-user-guide/gdp-deflators-user-guide>

GDP Deflators: As At March 2016:

<https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-march-2016-quarterly-national-accounts>

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March 2016

## **Annex 2 – New Zealand Forestry Science and Innovation Plan**

New Zealand's biological resources are its key global competitive advantage. Plantation forestry sustainably uses these resources to produce wood, energy and store carbon. Plantations designed for customer needs in the end market will provide the feedstock for a high-tech manufacturing industry based in NZ and exporting finished goods abroad. To attract this investment, produce from plantations needs to meet manufacturers' requirements e.g. consistent quality, fit for purpose, competitively priced and sustainably supplied. Scandinavia provides an example of how such forest industries survive in a high-wage economy so that once companies have invested in NZ they will stay for the long-term. This science and innovation plan describes research to transform plantation forestry from a log production business to the starting point of a market led and automated capital-intensive manufacturing industry. The potential opportunity is for NZ to grow the forest industry by \$3 billion by 2030 and to have more in common with Sweden and Finland than just conifer forests.

There are several key enablers for success that need to be implemented before significant progress can be made. These include:

1. Alignment of science effort with the strategic direction of industry. The move to better align science with industry needs and to encourage collaboration between science providers, rather than competition, is an excellent start to CRI reform and to improve the returns from research investment to the forestry sector and NZ as a whole.
2. Ensuring that the quality of science in the NZ forestry sector is world class. There is an urgent need to ensure that the importance of science to NZ's economic performance continues to extend throughout NZ and to influence the country's culture encouraging bright students to pursue a career in science. Top scientists must be adequately rewarded to remain in NZ and to work in research that can benefit key sectors such as plantation forestry.
3. Industry and research providers stepping up to the challenge. Industry too needs to play its part; most importantly by identifying research needs, the most effective delivery mechanisms. Industry is committed to increase funding to forest growing research provided it is confident that the research proposed will deliver value. Mechanisms are in place to deliver on this partnership approach, but much greater investment in people, as well as in projects, is required to ensure high quality science that delivers benefit to the sector.

The main opportunities facing NZ forestry in the next 10 years to which research can contribute include:

1. Increasing profitability from existing forests.
2. Fully exploiting the approaching increase in harvest volume expected.
3. Increasing productivity and wood quality from new planting and replanting.
4. Protection from biosecurity threats.
5. Reducing costs.
6. Demonstrating sustainability and renewability.
7. Managing carbon credits and liabilities.
8. Other ecosystem services: nitrogen reduction, soil conservation, improved water quality, and peak flood reduction.
9. Promoting the increased use of wood and wood fibre.
10. Integrating forestry for sustainable land use on intensively farmed lowlands.

# Annex 3 – Hub and spoke model for UK forestry research



