



Shaping the Scottish bioeconomy together: Forestry

What are the prospects for innovative timber products; are conflicts of use emerging and could regional bioenergy strategies help to avoid these?

BioSTEP stakeholder workshop in the context of the European Forum for Industrial biotechnology and the bioeconomy (EFIB 2016)

Glasgow Science Centre, 18-20 October 2016

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Ownership	Conifers (000 ha)	Broadleaves (000 ha)	Total (000 ha)
National Forest Estate	447	34	480
Private Sector	619	310	929
All Woodland	1066	344	1410

Total area equates to around 17% of land cover. The areas of both the National Forest Estate and Private Sector forests are significant.

It is Scottish Government policy to aim to increase woodland cover by 10,000 hectares per annum. There are other competing land uses.

FORESTRY'S ECONOMIC CONTRIBUTION TO SCOTLAND

WORTH ALMOST

£1 BILLION GVA*

PER YEAR

THAT'S

£771,000,000 GVA

FROM FORESTRY AND
TIMBER PROCESSING

AND

£183,000,000 GVA

FROM FOREST
RECREATION AND TOURISM



EMPLOYS OVER

25,000 FTE

PEOPLE

THAT'S

19,555 FTE

IN FORESTRY AND
TIMBER PROCESSING

AND

6,312 FTE

IN FOREST
RECREATION AND TOURISM

* Gross value added and full-time equivalent taken from "The Economic Contribution of the Forestry Sector in Scotland, 2015"

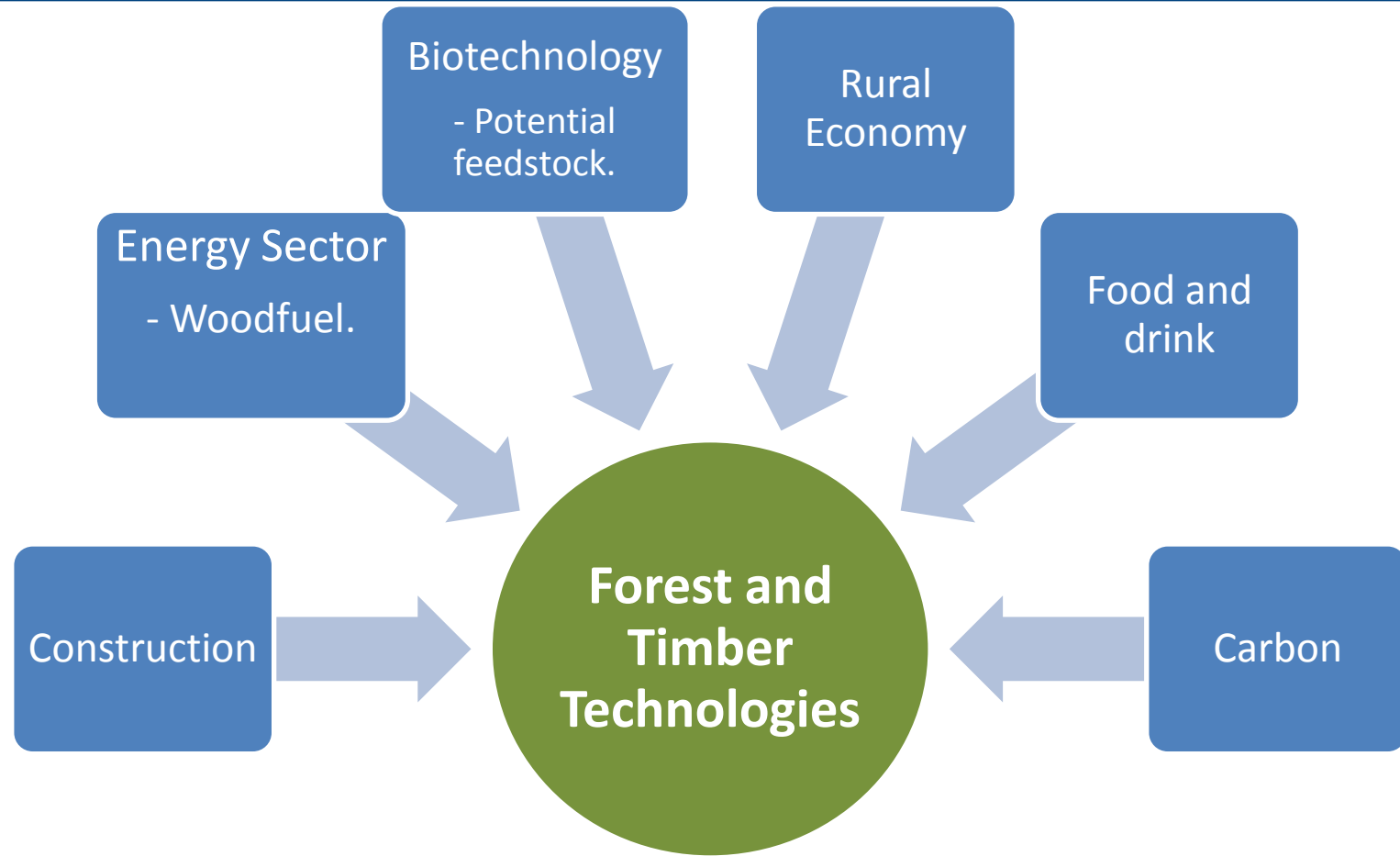
Economic Growth

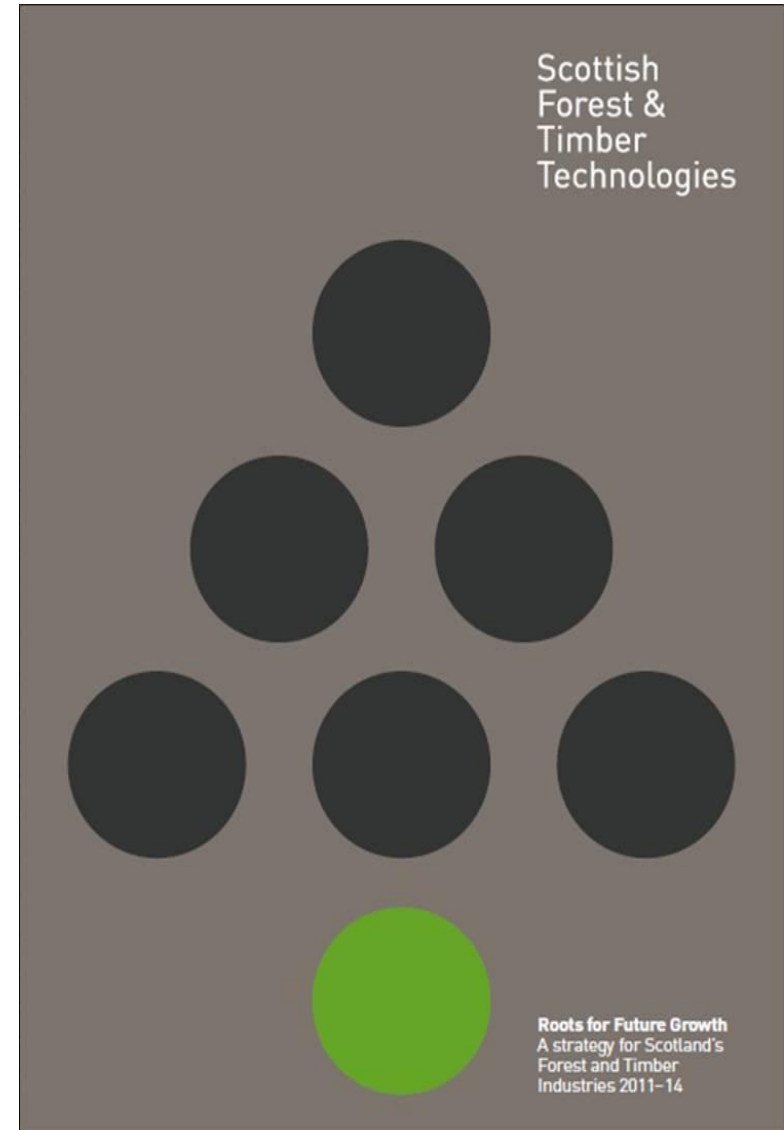
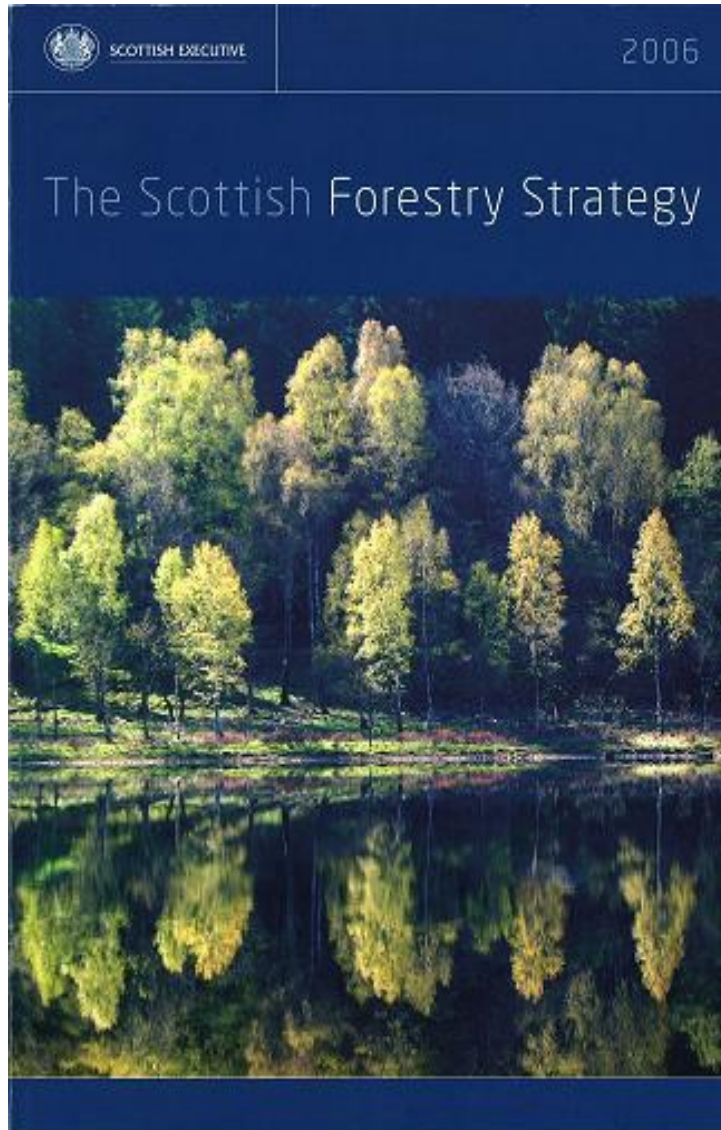
- Reduce imports - High demand for timber products.
- Underpinning the rural economy.
- Encourage investment in processing and manufacturing (Primary and secondary).
- Increase value of domestic timber supply chain.
 - Product Development and innovation.

Climate Change Mitigation

- Carbon Sequestration through tree growth.
- Offer low carbon substitution for construction products that have higher embodied energy.
- Carbon storage within products such as massive timber and timber frames.

Industries Supported by Forestry and Timber Technologies



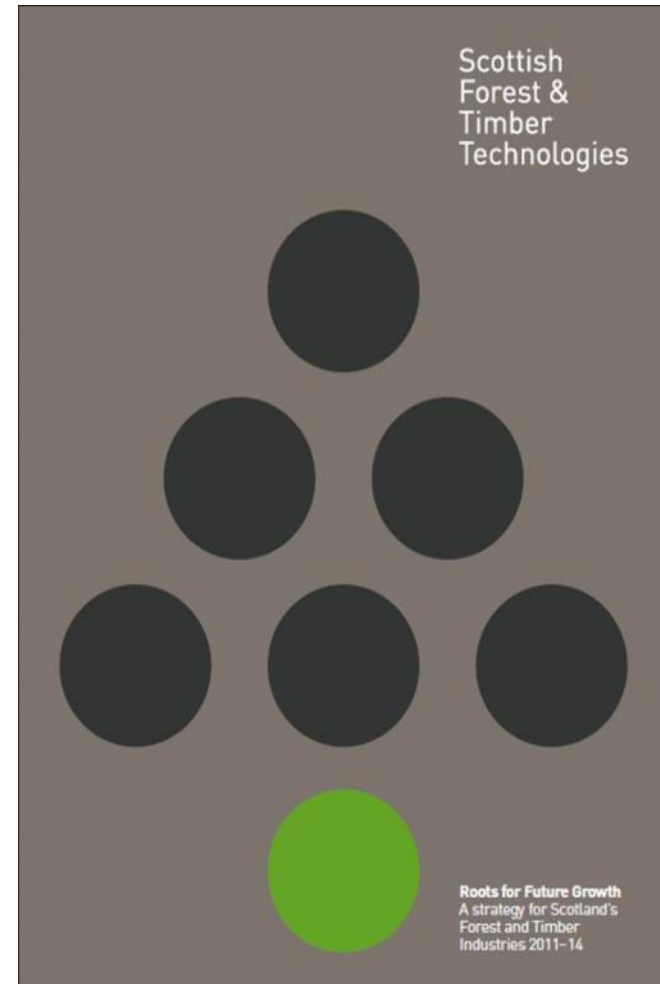


**Maximise the productive capacity
of Scotland's woodlands and forests**

**Grow the market share and value
added of Scotland's forest**

**Grow and communicate the
industry's contribution to Scotland**

**Grow the skills and capacity of our
people**



<http://www.forestryscotland.com/>

Focus area 1: “Maximise productive capacity of Scotland’s Woodlands and Forests” – Current/planned activities

- Update supply and demand study.
- Explore viability, operability and feasibility of carbon fund to facilitate accelerated rate of new planting.
- Continue to improve our understanding of the timber properties of all potential productive trees species to maximise production.



Focus area 2: Grow and communicate the industry's contribution to Scotland – Current/planned activities

2016 Campaign focused on timber frame housing:

- Wood for Good “Modern Timber House” publication - April.
- 4 Conferences across GB before July.
- 14 RIBA/TRADA CPD events.
- 8 Regional meetings per annum.
- <http://blogs.napier.ac.uk/cwst/>
- <http://www.forestryscotland.com/>

The Modern Timber House

Publication Proposal to Wood for Good

Prepared by Peter Wilson, Director, the Wood Studio
Institute for Sustainable Construction, Edinburgh Napier University



**Focus Area 3: Grow the market share and value added of Scotland's forest products –
Current/planned activities**

Current Task Groups

- Construction Product Innovation and Market Development .
 - Engineered wood products.
 - Wood fibre insulation.
 - Timber components in off site construction and retrofit markets.
 - Building regulations re-timber construction.
- Emerging markets:
 - Bio-refining.
 - Nanocellulose technology.

Emerging Markets: Marketing material for wood fibre as a feedstock for a biorefinery in Scotland

Feedstock

- Supply and demand study of availability.
- Characteristics of wood fibre.
- Chemical composition of softwoods and hardwoods

Process

- What processes are used in other parts of the world. What works, what doesn't?
- Process appropriate to characteristics and availability of feedstock in Scotland/UK.
- Economic viable scale?

Products and market development

- Matching chemical composition to existing markets in Scotland and further afield.
- Viability of product and market development.
- Opportunities for exporting outputs of biorefinery.

The Biorefinery Roadmap for Scotland



Chemical Sciences
SCOTLAND

Adding value through innovative construction products

Task Group identified most likely opportunities for new products and systems to add value to wood fibre supply chain:

- Engineered wood products such as
- Cross laminated timber,
- Glulam, Nail-lam, dowel-lam and
- Retrofit panels.

Advanced Construction Centre

- Scottish Construction Innovation Centre in partnership with FC Scotland - £1M investment in equipment to initiate innovation in timber in construction.

Specialised equipment for timber sector:

- Offsite Manufacture Pilot Line
- Cross Laminate Timber Vacuum Table
- Sub-Component Construction Table
- CNC Timber Processing
- Airlay Thermobond Pilot Line.

Adding value through forest floor efficiencies

- Initial meeting of small working group of private sector operations managers.
- Initial thoughts on priority areas for development:
 - Using harvesting data, improve inventory forecast (yield, quality and form)
 - Decrease rotation lengths without loss of quality through genomics.
 - Improved collaborative timber logistics (right timber for right processor)
 - Maximizing wood fibre recovery from harvesting.
- Any thoughts on these or other project proposals?

Barriers and conflicts?

- Competition for the wood resource if supply cannot be maintained in the long term
- Bioenergy could be a threat to ‘best use of wood’?
- ‘Mobilising wood resource’ versus forest carbon sequestration
- Wood supply versus maintaining/enhancing other ecosystem services (recreation/tourism, non-wood products, habitat conservation, protection of soils and water courses)
- Drive for ‘resilience’ versus the need for consistent wood feedstocks
- Small-scale rural/community-based development versus large-scale industrial development.

Opportunities and synergies?

- Woodland creation linked to carbon markets (watch out for organic soils)
- Broadleaf forest resource – is this a missed opportunity; is it difficult to realise?
- Bioenergy could be an opportunity for better use of wood?
 - Small scale context
 - Linked to development of ‘wood stations’, biorefineries, wood cascading)
- Match resources to scale, to uses and the users.

Thank you for Listening

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