

ALTERNATIVE FOREST MANAGEMENT MODELS FOR IRELAND'S WESTERN PEATLAND FORESTS - BRIDGING THE GAPS?

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An ALTERFOR workshop

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Video (Zoom)

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Introduction

The Irish western peatland forests and the policy and stakeholder conflicts

Current Forest Management Models

Alternative Forest Management Models

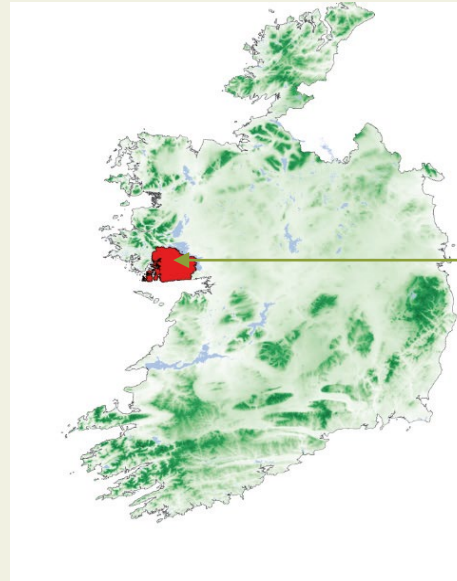
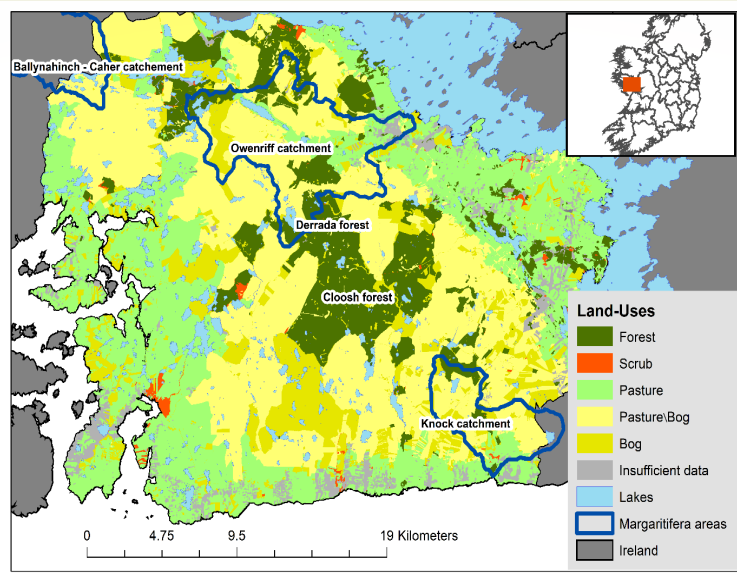
Climate change scenarios and timber price dynamics

Examples of Ecosystem Service provision levels

Discussion – management and policy implications

Conclusions

Case Study Area - Barony of Moycullen, Ireland



Representing one-third of the Irish forest estate that is located on blanket peatland
 Poor soils (fertility, drainage) limit species choice, especially without fertilisation
 Located on the Atlantic seaboard, windthrow is a problem in mature stands
 The area contains many lakes and streams, with salmon and freshwater pearl mussel
 The main stakeholders are Coillte (Irish State forest company), private forest owners, Forest Service, Environmental Protection Agency, Inland Fisheries Ireland, National Parks and Wildlife Service and several NGOs (fishing, hiking, etc.)

Conflicts and Issues

Legacy forest plantations, established in the 1970s and 80s, with the objectives of timber production and the provision of employment

Forestry's impacts on water quality, especially given the presence of fresh water pearl mussel

Society's changing demands: recreation, amenity, water quality, biodiversity, conservation

The wide open landscape, which attracts visitors from all over the world, with blocks of man-made forest located in the middle

Ireland's climate change mitigation commitments and carbon sequestration requirements

The profitability of forest management on blanket peat

Forest management models that are largely focused on environmentally-constrained intensive timber production

Current Forest Management Models

Sitka spruce monocultures - 2,500 stems/ha

Sitka spruce mixtures – also contains mixtures of Douglas fir, Norway spruce, Scots pine, etc. - 2,500 stems/ha

Lodgepole pine monocultures - 2,500 stems/ha

Broadleaves – managed for continuous thinning or clearfell harvesting

Buffer zones / setbacks – established around water courses and along roads as stands are being clearfelled

Native Woodland Sites – protected due to their high biodiversity

These are not sufficient to resolve the policy and stakeholder conflicts

Alternative Forest Management Models

Lodgepole pine 1,600 stems/ha – planted and then harvested for biomass at age 50-55 years

Lodgepole pine 1,100 stems/ha – planted and retained indefinitely

Nephin thin – heavy thinning of lodgepole pine monocultures to 500 stems/ha, followed by retention

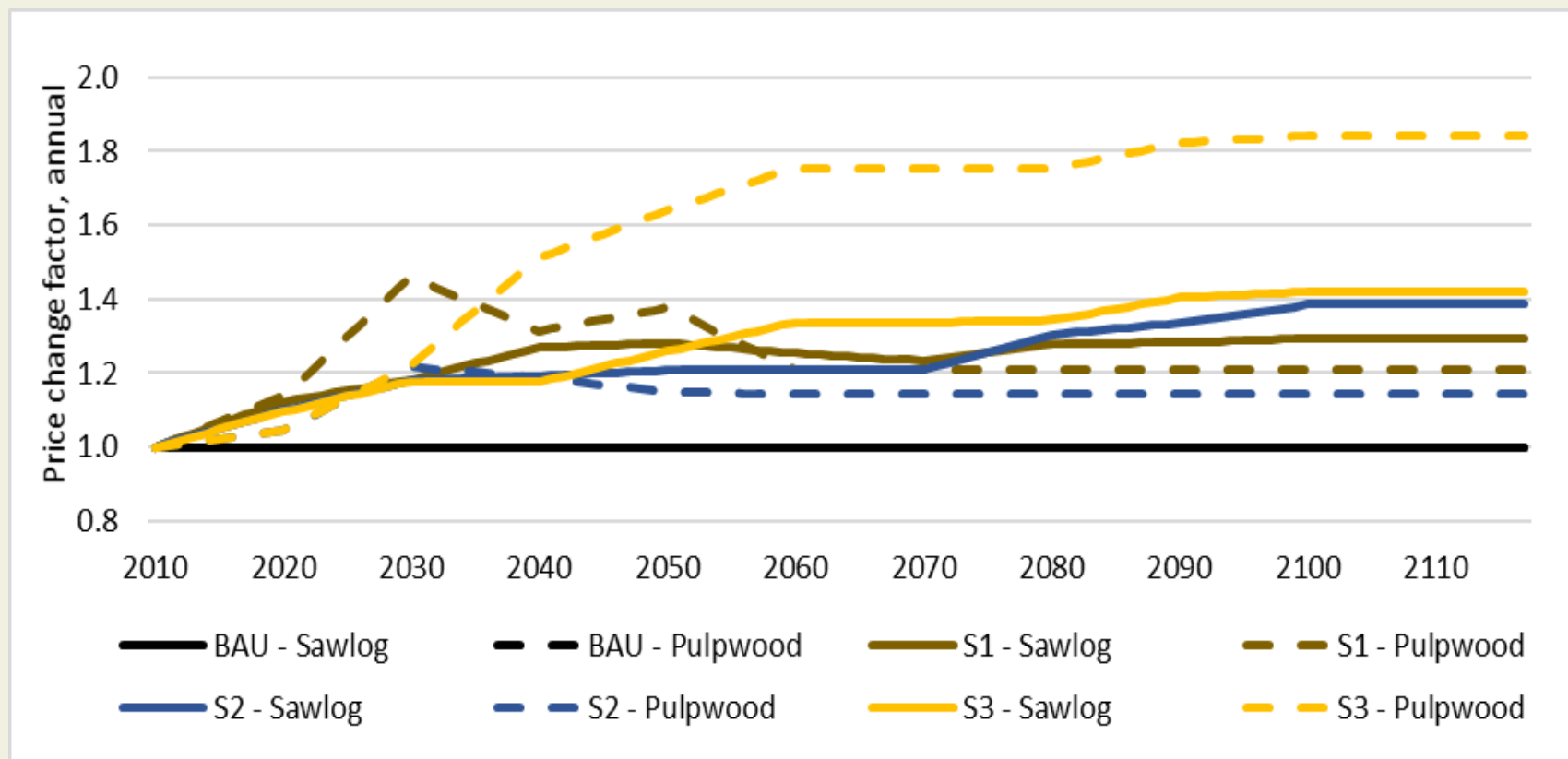
Modified Kronoberg – Sitka spruce and downy birch mixture, planted, thinned and managed for spruce sawlog production

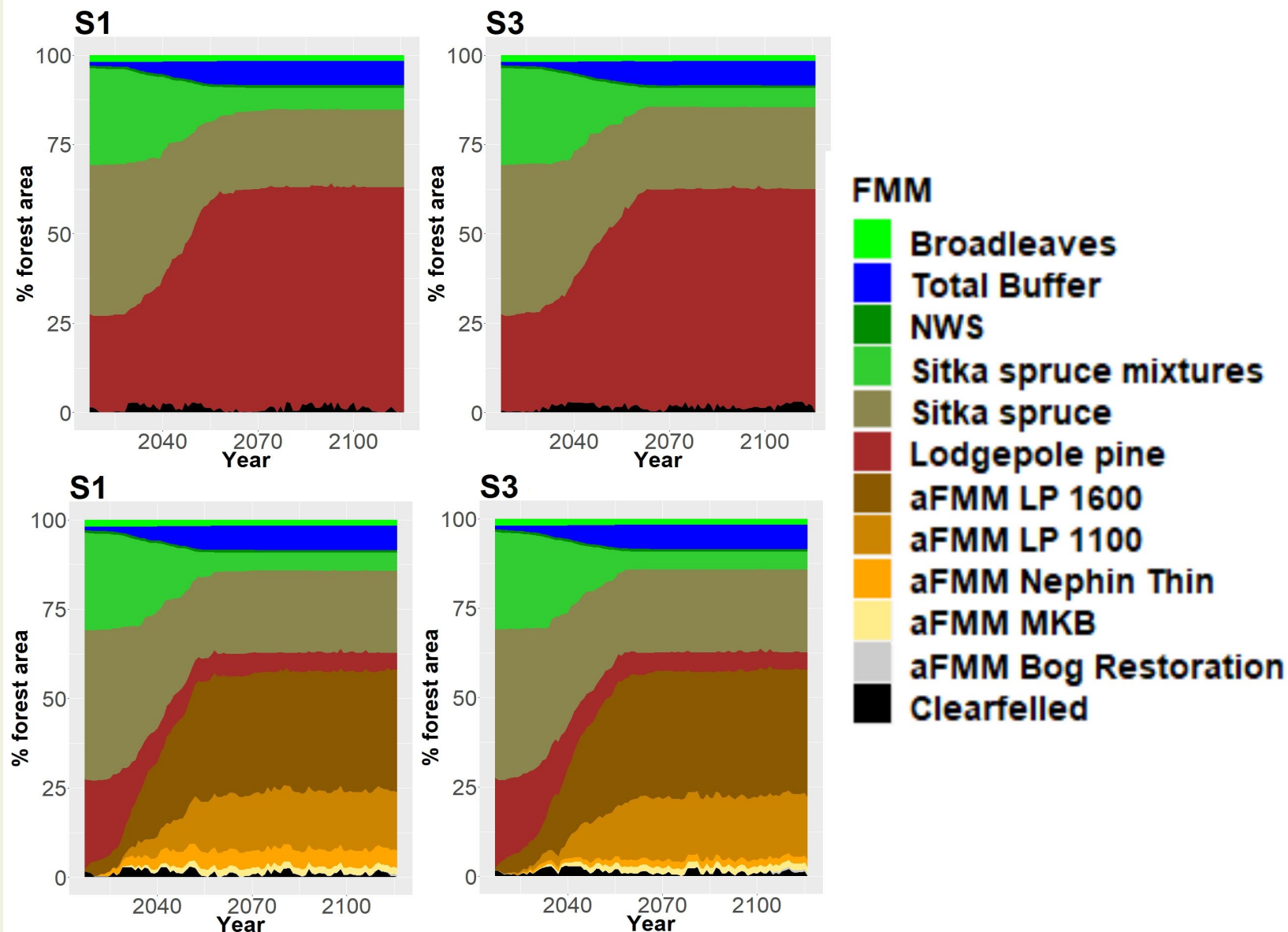
Bog restoration – restoration of bog to natural conditions

Global climate scenarios

Scenario	Short name	Narrative	Temperature change by 2100
Business As Usual	BAU	N/A	0 °C
Scenario 1 Reference	S1	No effort to halt Climate Change	3.5 °C
Scenario 2 EU Bioenergy	S2	EU effort to halt Climate Change	2.5°C
Scenario 3 Global Bioenergy	S3	Global effort to halt Climate Change	1.5°C

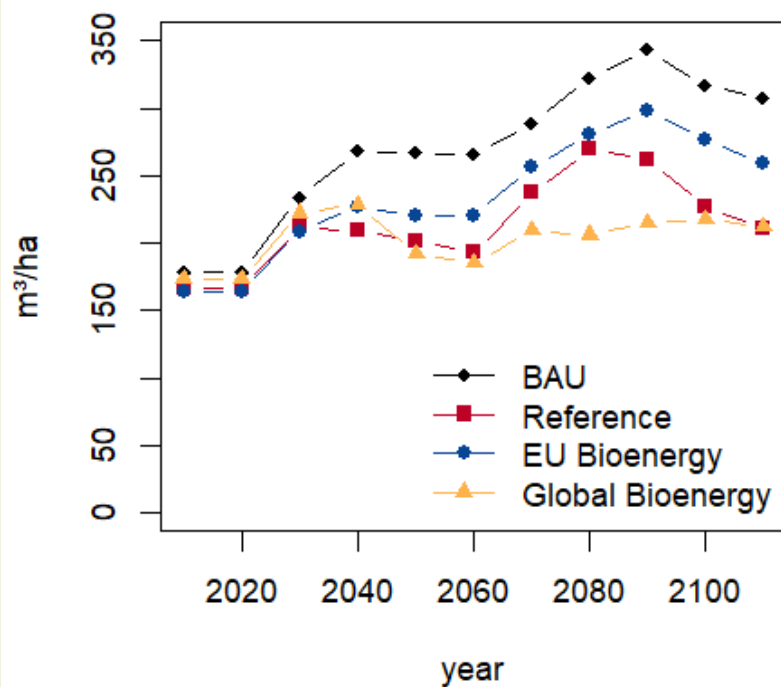
Dynamic timber prices



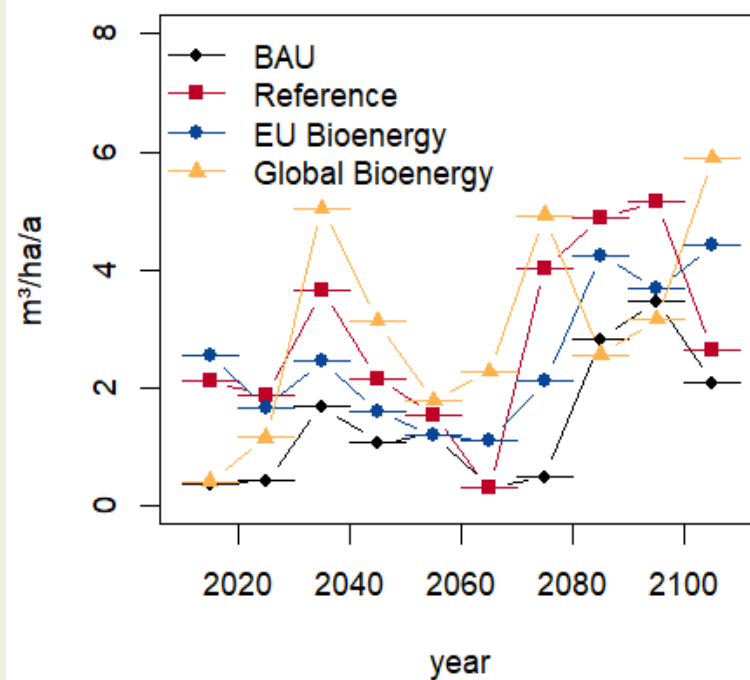


Timber

Standing Volume

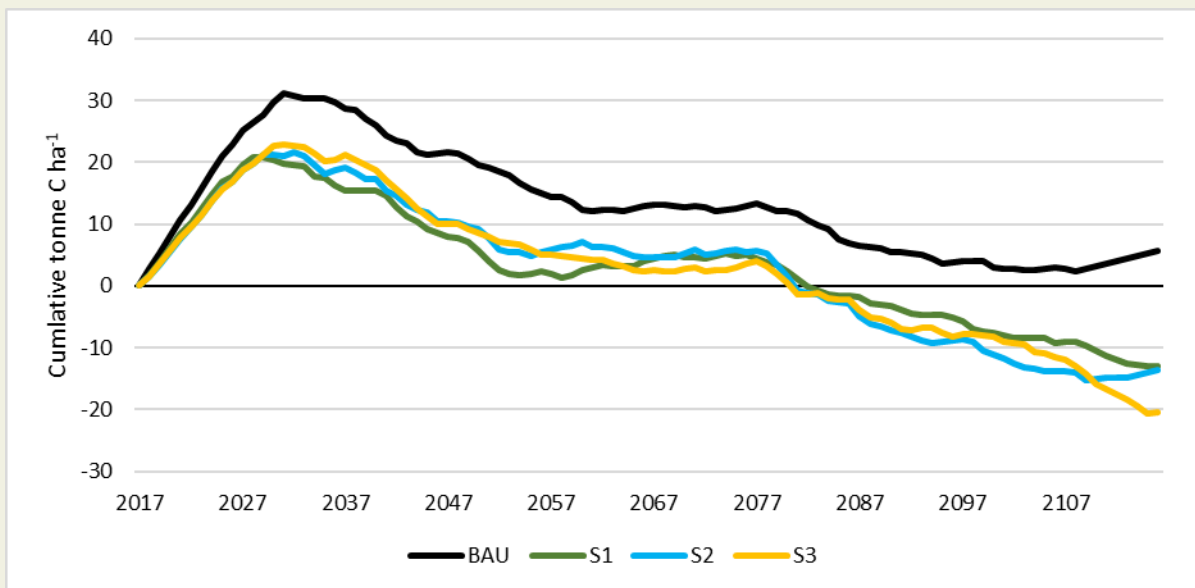


Pulpwood Volume

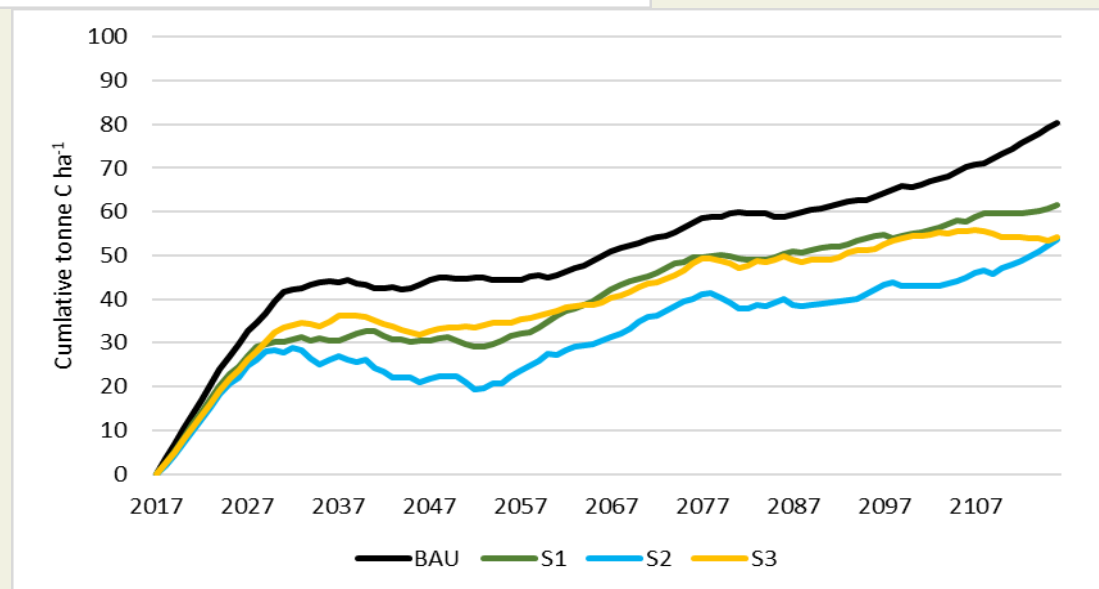


Carbon sequestration

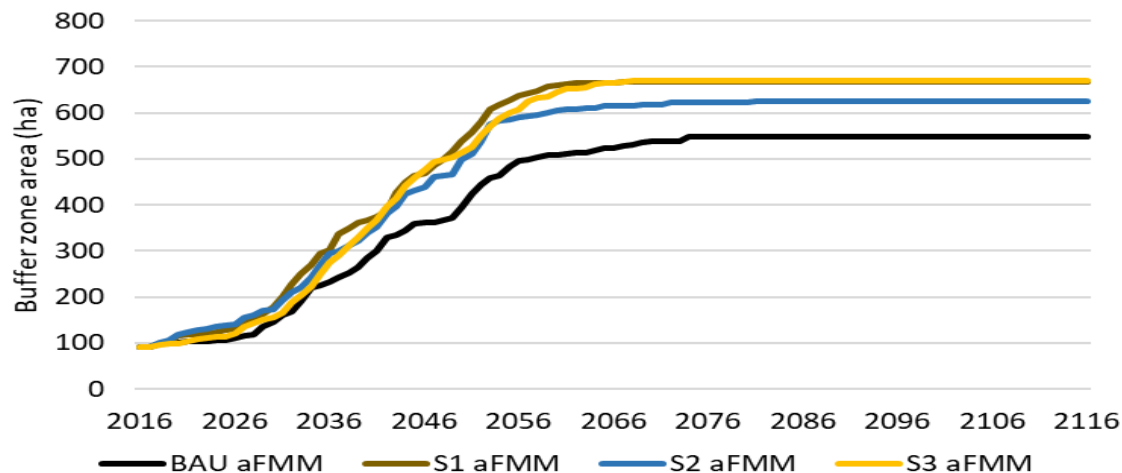
Cumulative carbon storage in the forest, for the four aFMM scenarios



Cumulative carbon storage in the forest, for the four aFMM scenarios, excluding the impact of carbon emissions from forested peat soils



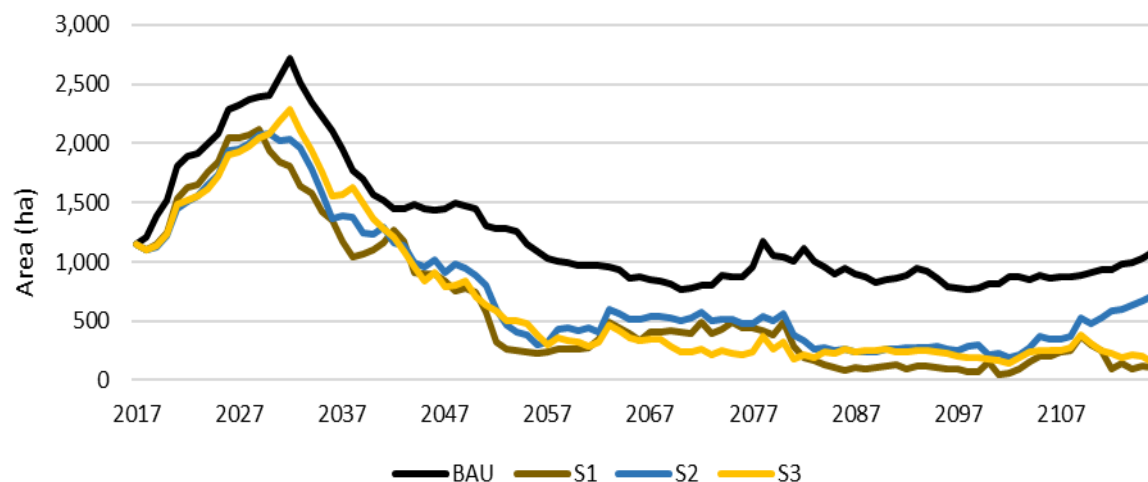
Buffer zones



Total buffer zone area in the four aFMM scenarios

Windthrow risk

Forest area with windthrow risk over 70%, for the four aFMM scenarios



Discussion

Alternative Forest Management Models can improve NPV, windthrow risk, biodiversity, water quality and aesthetic beauty, but reduce carbon sequestration and harvest volumes

Forest owners / managers will want to use the alternative models if the management objectives of the western peatland forests are re-evaluated

Large changes in forest landscape composition can be expected in the future, even using only the current management models (e.g. ban on aerial fertilisation, establishment of buffer zones)

‘Medium to high’ climate change scenarios alone result in reduced profitability of the forests, but the associated expanding bioeconomy will compensate for this

Trials / demonstrations of alternative management models are needed to quantify stand development and ES provision, and for training and education purposes

Further modelling refinement is necessary, especially in relation to the frequency and intensity of catastrophic events (drought, flooding, storm, diseases, fire)

Conclusions

This study has indicated that the introduction of alternative forest management models is recommendable

The landscape will then provide a different and more comprehensive mix of ecosystem services, but there are clear trade-offs

Responding to changing global conditions is crucial to realise the full suite of ecosystem values in the future (adaptive forest management)

Forest policy needs to change to support the introduction of the alternative Forest Management Models



Thank you

Alternative FMMs	Objectives	Obstacles
Lodgepole pine fibre: 1,600 - 2,000 stems/ha	Cheaper reforestation, produce wood fibre on poorer productive sites	Few uncertainties about development
Lodgepole pine biodiversity: 1,100 stems/ha	Cheap reforestation of marginal sites; biodiversity	Rhododendron encroachment
Nephin thin – very heavy thin followed by 'no management'	Wilderness areas on marginal sites	Rhododendron encroachment
Modified Kronoberg System: mixture of birch and Sitka	Sawlog production on productive sites without fertilisation	Finding suitable sites, browsing
Bog restoration	Natural habitat restoration	High restoration cost