

# Assessing public goods from woodlands: can we see more than wood from the trees?

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- Public goods from woodlands
- Accounting for public goods
- Valuation of public goods
- Future public goods a simulation approach
- Comparison of simulation outputs
- Recreation physical health benefit approach
- Discussion appropriate scales and methods, contributions to policy



### Public goods from woodlands





### Valuing goods from woodlands



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### Accounting for public goods

ES / natural capital benefit	Simulation model	Natural Capital Accounts		
		UK (ONS)	Wales (Gov)	England (FC)
Timber stock	Total biomass	Timber (stock) – conifer broadleaved	Timber (standing)	
	Sawlog volume			
Timber flow	Small diameter volume	N/A	Timber (extracted)	Timber (produced)
Carbon stock	Carbon (stored – half biomass)	Stored carbon (tonnes)		
Carbon sequestration			Carbon sequestration	Carbon sequestration
Recreation	Recreation index	Expenditure – travel, parking, admission	Expenditure – travel, parking, admission	Number of visits per year
Air quality		SO <sup>2</sup> , NO <sup>2</sup> , PM <sup>2.5</sup> and O <sup>3</sup> health impacts	SO <sup>2</sup> and PM <sup>10</sup> absorption	
Biodiversity	Biodiversity index	Specialist Woodland bird index		

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### Valuing Welsh Forest Resources

Service	Timber extraction	Carbon sequestration	Recreation*	Air quality	Total
Value, £ million, 2015 prices	28.3	108	85	385	606.3

Annual value of service flows from forests in Wales in 2015

Composite total annual values for Timber, Carbon and Air filtration ecosystem services in the years 2012 to 2015 (£ million, 2015 prices)



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### Valuation of Welsh Forest Resources

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The Research Agency of the Forestry Commission

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## Scotland's future Forest Resources

### CLIMATE CHANGE PLAN

Third Report on Proposals and Polices 2018-2032 Summary Document



The Scottish Government's Climate Change plan ambition to increase woodland cover 18% to 21% by 2032, contributing to: absorbing greenhouse gas emissions

flood risk mitigation and improving water quality

improving biodiversity

improving people's health and wellbeing

# Scottish Forestry Strategy 2019-29 consultation 50-year vision

Promoting multi-purpose forestry and the sustainable management of Scotland's forests and woodlands.

The right tree, in the right place for the right purpose.

### Scotland's Forestry Strategy 2019-2029

A Consultation Draft

September 2018





## Simulation approach



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## Simulation approach







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Ecosystem	Valuation type	
Service		
Timber	Market price	
production		
Carbon	Social cost	
Biodiversity	Stated preference, e.g.	
	willingness to pay	
Recreation	Revealed preference,	
	e.g. expenditure	

Are we missing values?



## Scotland's future Forest Resources

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improving people's health and wellbeing

## Scotland's Forestry Strategy 2019-2029

A Consultation Draft

# Scottish Forestry Strategy 2019-29 consultation 10-year objectives

Use Scotland's forest and woodland resources to empower more people to improve their health and life chances.



# Valuing recreational health benefits

Traditionally based on expenditure (travel,

on-site spend, associated spend)

Health benefits from exercise

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Reduce burden on public health budgets



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# **Recreation – health benefits**



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# **Recreation – health benefits**





Calculation of physical health benefits

### **Recommended guidelines**

"a minimum of 30 minutes of moderate-intensity physical activity 5 days a week or at least 20 minutes of vigorous-intensity physical activity 3 days a week"

<b>Duration</b> (time taken)	Intensity	Frequency			
	<b>X</b> (the rate of energy expenditure – or <b>X</b>	(how often it			
	rate at which calories are burnt)	occurs)			
(National Institute for Health Care Excellence, 2008)					



Calculation of economic physical health benefits

### Quality adjusted life years (QALYs)

measures of the health benefits that combine duration and quality of life (free from pain and mental disturbance)

QALYs used by NICE to determine cost-effectiveness of 'interventions' £20,000 threshold

### Annual recreation values (£2581 - £70,832) across woodlands

vary considerably between woodlands due to the range of facilities provided, activities undertaken, frequency of visits and proximity of population.

### Infrastructure required

cost-benefit analyses suggest that multi-use trails can produce a **1:11 return**, i.e. for every £1 spent society gets a return of £11 in health-related benefits



### Goods & services benefit society at different spatial scales:

Carbon – global commodity. Mitigation to meet **national** targets and contributes at a **global** scale;

Water quality and flood mitigation at a **catchment** scale but **national** consequences?

Biodiversity at the landscape scale but local importance

Recreation requires **local** scale assessment and valuation but contributes to **national** health



A range of benefits from woodlands can be achieved alongside timber revenues, contributing to meeting national policy objectives.

By assessing and valuing the contribution woodlands make to society land managers are better able to justify decisions and demonstrate multiple values from their land.

Some valuation methods are more appropriate at broad scales, e.g. Carbon is a global commodity, water at a catchment scale whilst other approaches such as recreation require local scale valuation.

However, valuation of some goods and services, such as biodiversity remain contested and difficult to assess.