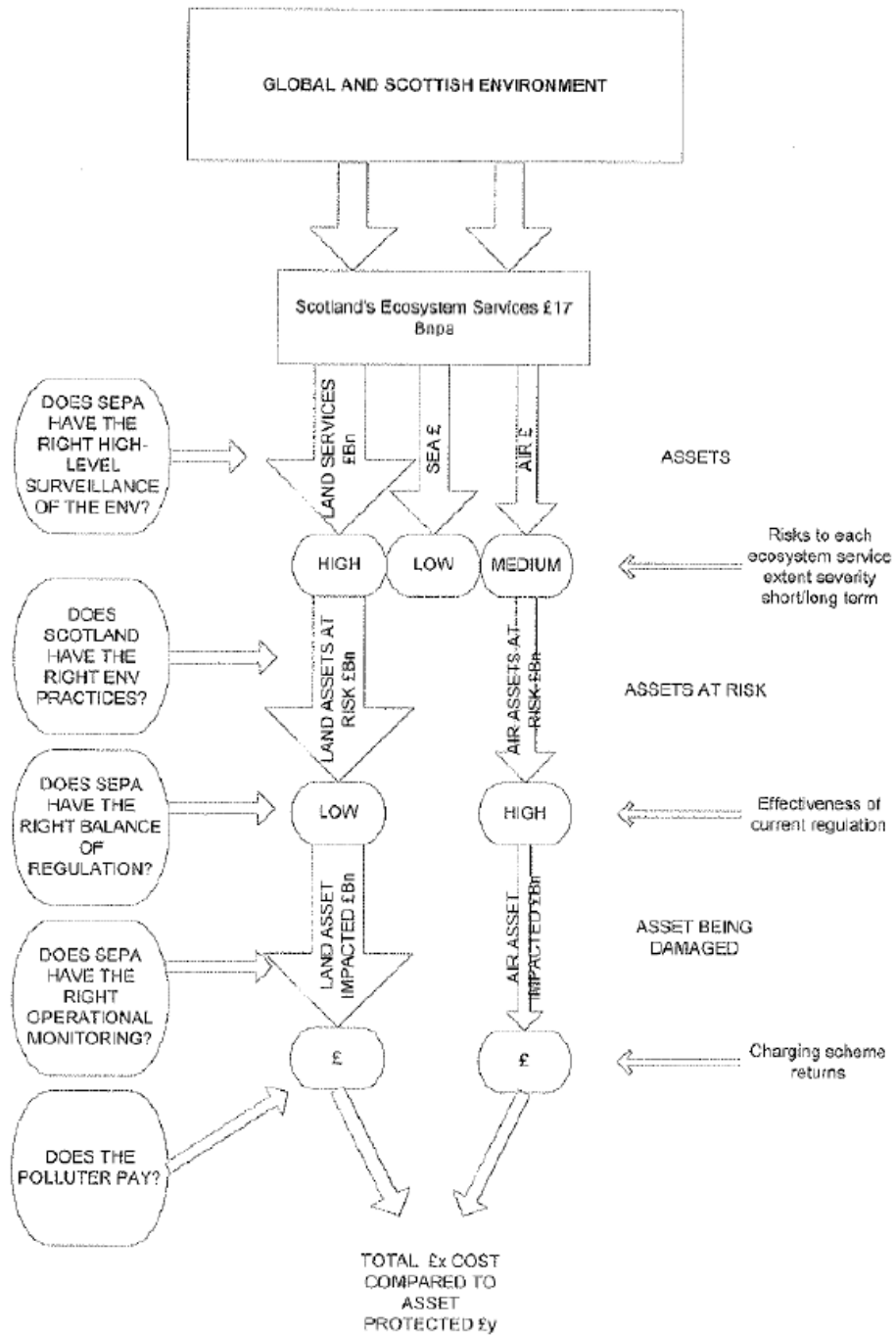


# Use of ecosystem services concept in decision-making

James Curran

ESCom 2015





# Value of Scotland's ecosystems

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**Conservative valuation of  
Scotland's ecosystem services  
is around £25Bn per year**

# Doing the right things?

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Compartment	Share of value
Land	7 (28%)
Freshwater	7 (28%)
Coastal and estuary	11 (44%)

Compare to regulatory effort: water 70%, air 18%, land 13%

Monitoring effort also not ideally aligned

# Value for Money?

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Published Scottish Government spend 2015/16 on environment is  
around £250M  
(SNH, SEPA, NPAs, ZWS, MS, R&D, CC, Flooding)

Protecting ecosystem services worth £25Bn  
So each £1 spent protects £100 services

This is 1% compared to insurance protection of a rented house at  
around 5% of return

# Cost recovery – a different approach?

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A cost-recovery scheme could be based on the model of businesses paying an effective insurance premium to protect the ecosystem services on which they depend (eg a river to discharge into, atmosphere to emit into, clean rain/land for production)



This concept would reinforce the inter-connectivity of ecosystem services and the need for flexible regulatory intervention

But ... it breaks Treasury rules

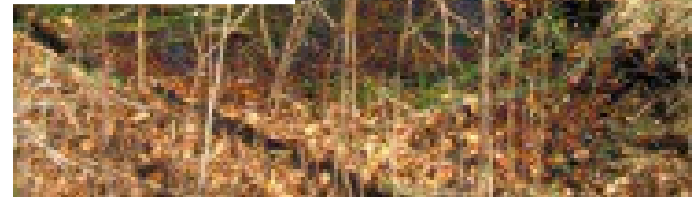


# Regional application: Flood risk strategy SEA

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1. Runoff reduction
2. River and floodplain restoration
3. Storage, conveyance and control
4. River Defences
5. Coastal restoration
6. Coastal defences



# Extract from integrated assessment for Highland LPD

Service	Runoff reduction	Storage & Conveyance
Carbon storage	++	--
Water quality	++	--
Water flow	++	++
Erosion protection	++	+/-
Food provision	+/-	+/-
Drinking water	+	negligible
Recreation	++	+/-
Spiritual & Cultural	+	-

++	+	+/-	-	--
Significant benefit	Benefit	Mixed	Adverse	Significant adverse



# User feedback?

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Minimal  
additional time

A consistent  
framework

More  
comprehensive  
and intuitive

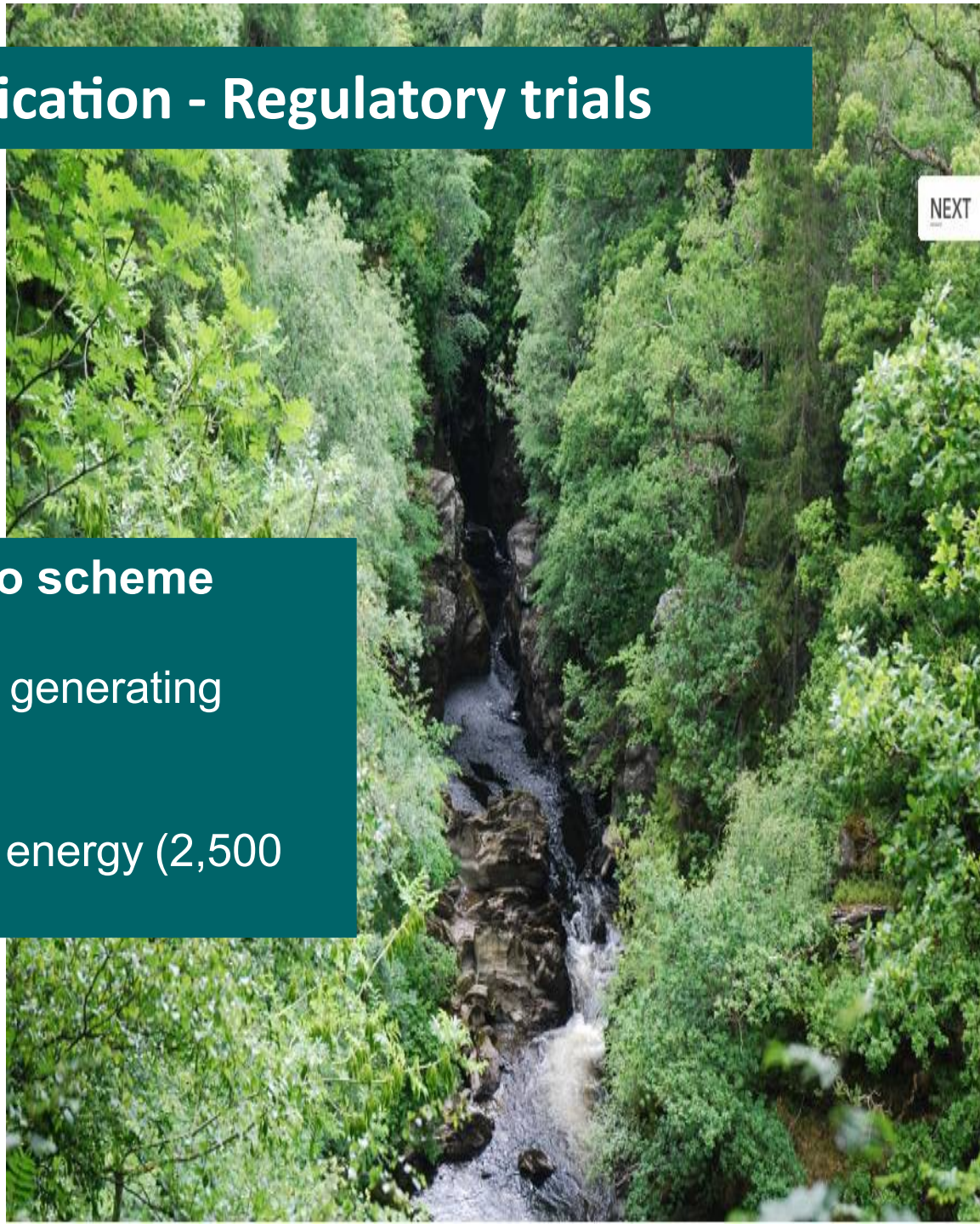
More relevant  
to the local  
area

Final  
assessment  
better justified

# Local application - Regulatory trials

## Proposed River Braan hydro scheme

- Run-of-river hydro electricity generating scheme in Perthshire
- 11.6GWh/year of renewable energy (2,500 homes)



# Ecosystem services information on Spotfire – River Braan example

## Ecosystem service categories

Layers

200 km  
100 mi

UNITED KINGDOM

© OpenStreetMap contributors

● Culture and quality of life, Functions a

## Water body pressures

Water Body	Pressure	Pres
6576 : River Braan	Abstraction	Not pres
	Alien species	Not pres
	Diffuse source pollution	Not pres
	Flow regulation	Not pres
	Morphological (fish barrier)	Not pres
	Morphological alterations	Not pres
	Point source pollution	Not pres

## Service per water body

WB Name	Service Category	Ecosystem Service Type	Service
6576 : River Braan	Culture and quality of life	Contribution to valuable lan...	Service
		Historic environment	Service
		Kayaking, sailing and boating	Service
		Provision of habitat for iconi...	Service
		Recreational fishing	Service
		Spirituality	Service
		Swimming, diving and surfing	No service
		Walking and running	Service
		Functions and processes	Dilution and dispersal of reg...
	Dilution and dispersal of reg...		No service
	Dilution and dispersal of reg...		Service
	Potential contribution to nat...		Service
	Products	Agricultural production	No service
		Contribution to commercial f...	No service
		Drinking water	No service
		Fin fish farming	No service
		Hydro electricity generation	No service
		Shellfish farming	No service

## Water body status

Water Body	Reporting parameter	Status
6576 : River Braan	Overall status	Good
	Flows and Levels	High
	Water quality	High
	Overall chemistry	Pass

# Proposed River Braan hydro scheme continued

## 3. Overall significance of impacts on ecosystem services

Positively affected	Adversely affected
Electricity generation	Maintenance of water cycle and baseline flows
Management that reduces global carbon emissions	Spawning and nursery habitats
	Landscape viewing
	Active recreation
	Sense of place, artistic representations of nature
	Habitat for iconic species
	Nature watching
	Recreational fishing
	Historic environment

### Overall judgement:

*proposed scheme likely to have an adverse impact on ecosystem services provision*

#### Key

Large benefit

Medium benefit

Minor benefit

Small adverse

Medium adverse

Large adverse

# What difference does it make?

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