XVth World Water Congress - PS7.3 - (14:00-15:30)

Global challenges in water governance: Capacity and Engagement

1. **Participative Catchment Management – the role of trusted intermediaries in delivering IWRM using an ecosystems approach: learning from the Tweed UNESCO HELP basin** - Christopher Spray

2. **River restoration: a strategic approach to planning and management** – David Tickner

3. **Building community flood resilience through innovative communication** – Grant Wright

4. **Capacity-building needs in Alberta's water governance structure** – Wei Xu

5. **Exploring alternative spaces of WASH behaviours among migrants in the UK** – Emmanuel Akpabio

6. **Challenges of doing something new: barriers to natural flood management** – Kirsty Holstead

Participative Catchment Management – the role of 'trusted intermediaries' in delivering integrated water resource management using an Ecosystem Approach: learning from the Tweed UNESCO HELP Basin, UK

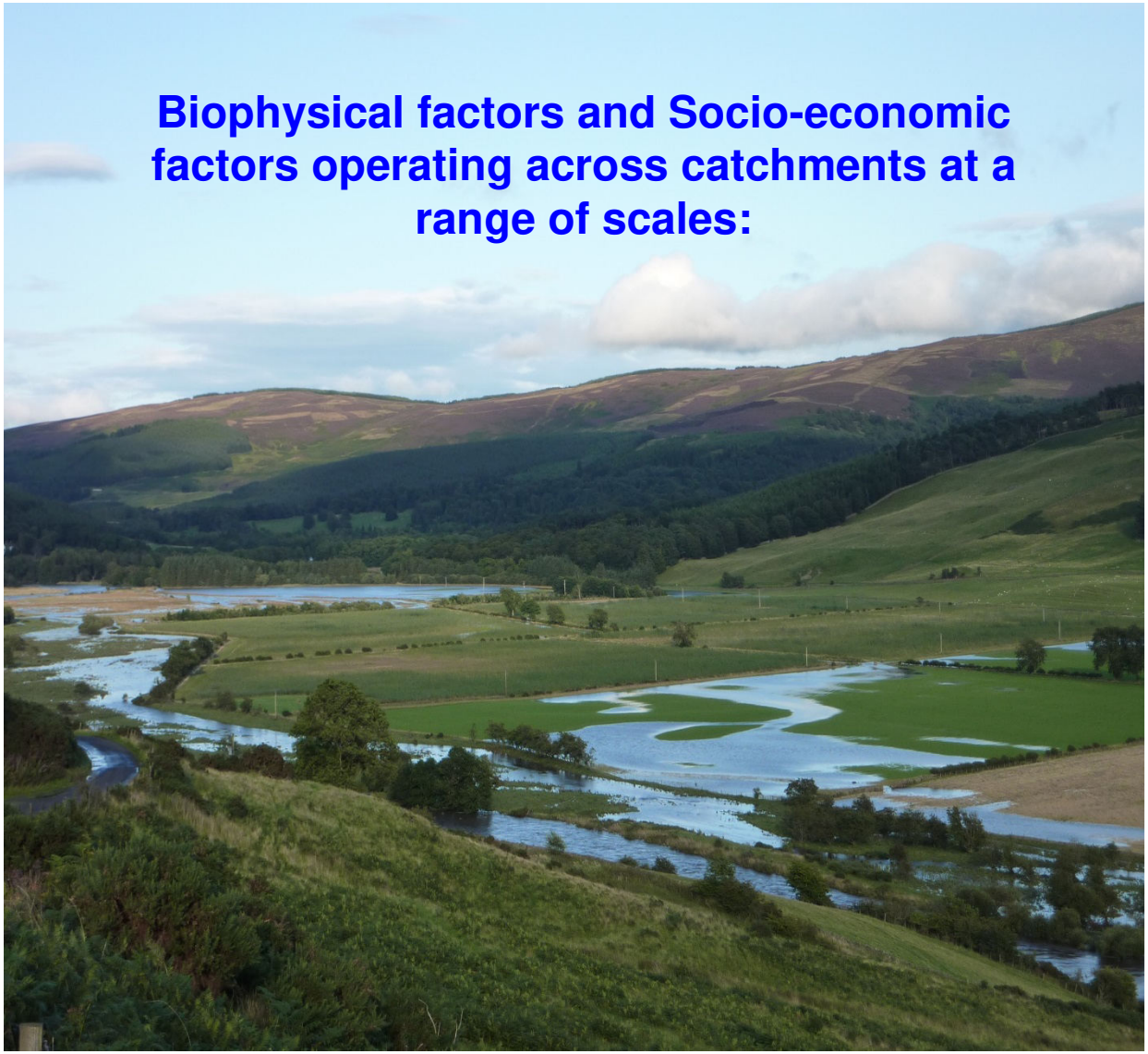
Chris J Spray and Luke Comins

Connectivity and governance in IWRM

“When we try to pick out anything by itself, we find it hitched to everything else in the Universe.”

John Muir (1838 – 1914)

- **Spatially**
- **Temporally**
- **Environmentally**
- **Economically**
- **Socially**
- **Culturally**
- **Governance**



Evolution of a new paradigm? - the Ecosystem Approach

Origins of an ecological/ ecosystem centred approach to natural resources management go back many decades, especially in the field of water management (IWRM):

- Increased attention on the need for **holistic management of the water cycle**
- Increased focus on linkages between **land and water** management
- Need to involve **people with different skills** and knowledge, to deliver **multiple benefits**, for **all**
- Importance of **local** decision-making and the rise of **stakeholder participation**.

- **Formally articulated in the concept of IWRM, and embodied in instruments such as 1992 Dublin Principles, Agenda 21 and championed by GWP**

- **Ecosystem Approach embedded in the Convention of Biological Diversity (1992) and the COP Jakarta (1995) where 12 specific Principles are laid out**

The development of an Ecosystem *Services* Approach

2005: Millennium Ecosystem Assessment (MA)

Assessed the consequences of observed and continuing global ecosystem change for human well-being

Actions required to ensure conservation and sustainable use of ecosystems

2010: The Economics of Ecosystems and Biodiversity (TEEB)

Highlighted economic benefits of biodiversity, growing costs of biodiversity loss and ecosystem degradation

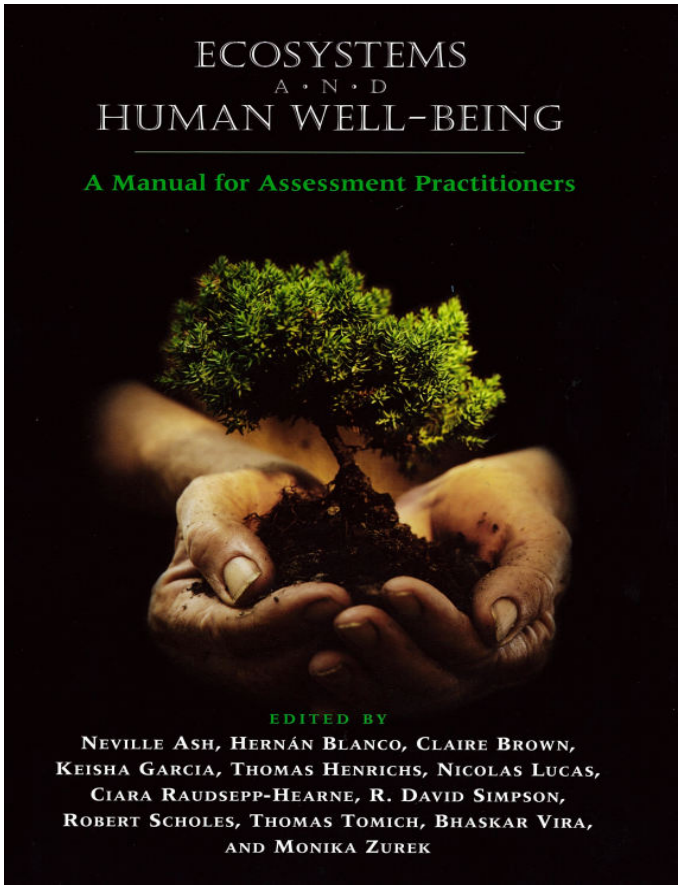
Comprehensive assessment of principles of measuring and valuing ecosystem services and biodiversity

2011: The UK National Ecosystem Assessment

Describe the key factors (drivers of change) affecting the UK's ecosystems

Look to the future (2060) to evaluate change under plausible scenarios and consider a range of response options

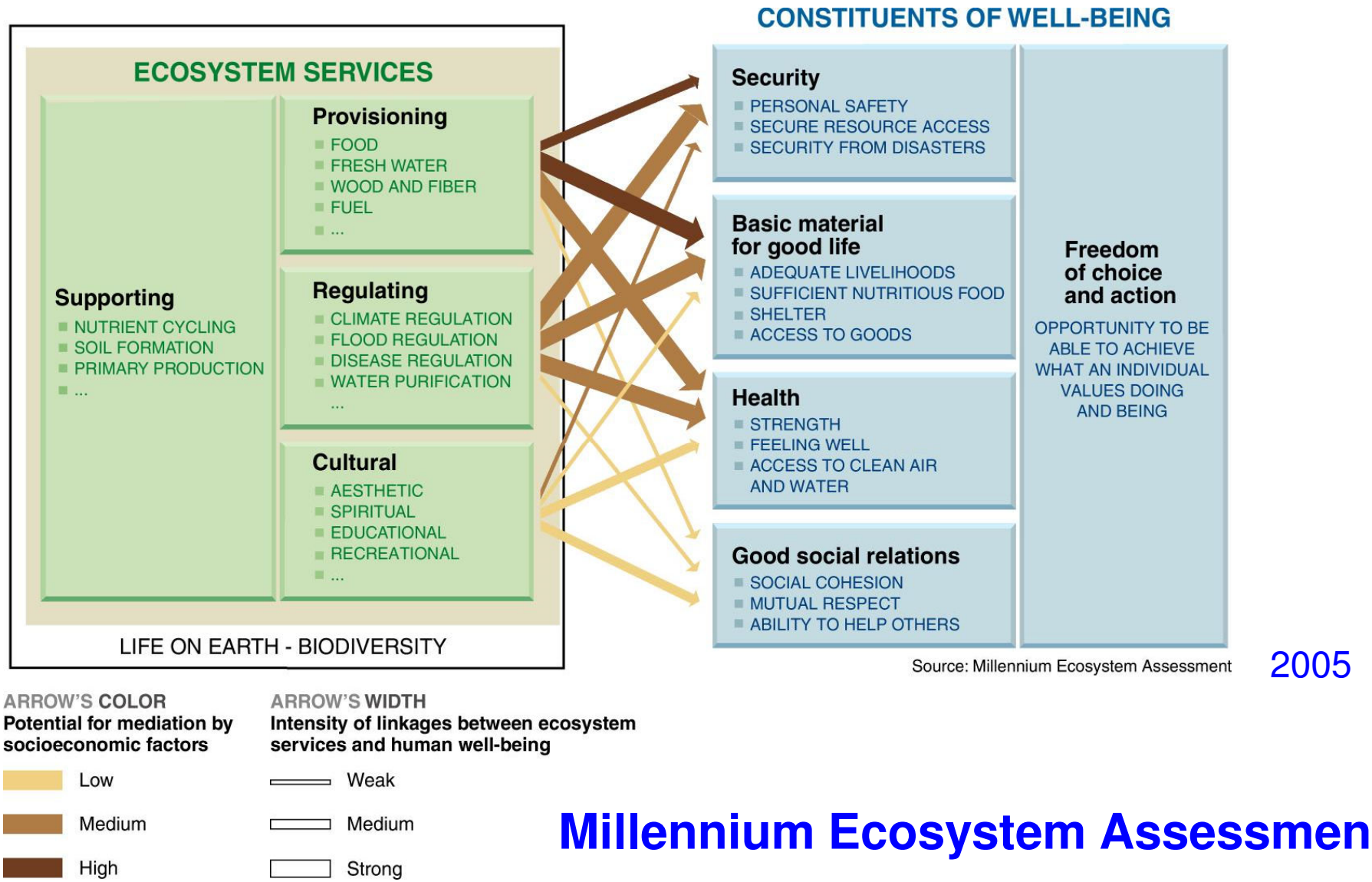
Value the contribution of ecosystem services to human well-being through economic and non-economic analyses.



Island Press (http://islandpress.org/)

UNEP-WCMC (www.unep-wcmc.org)

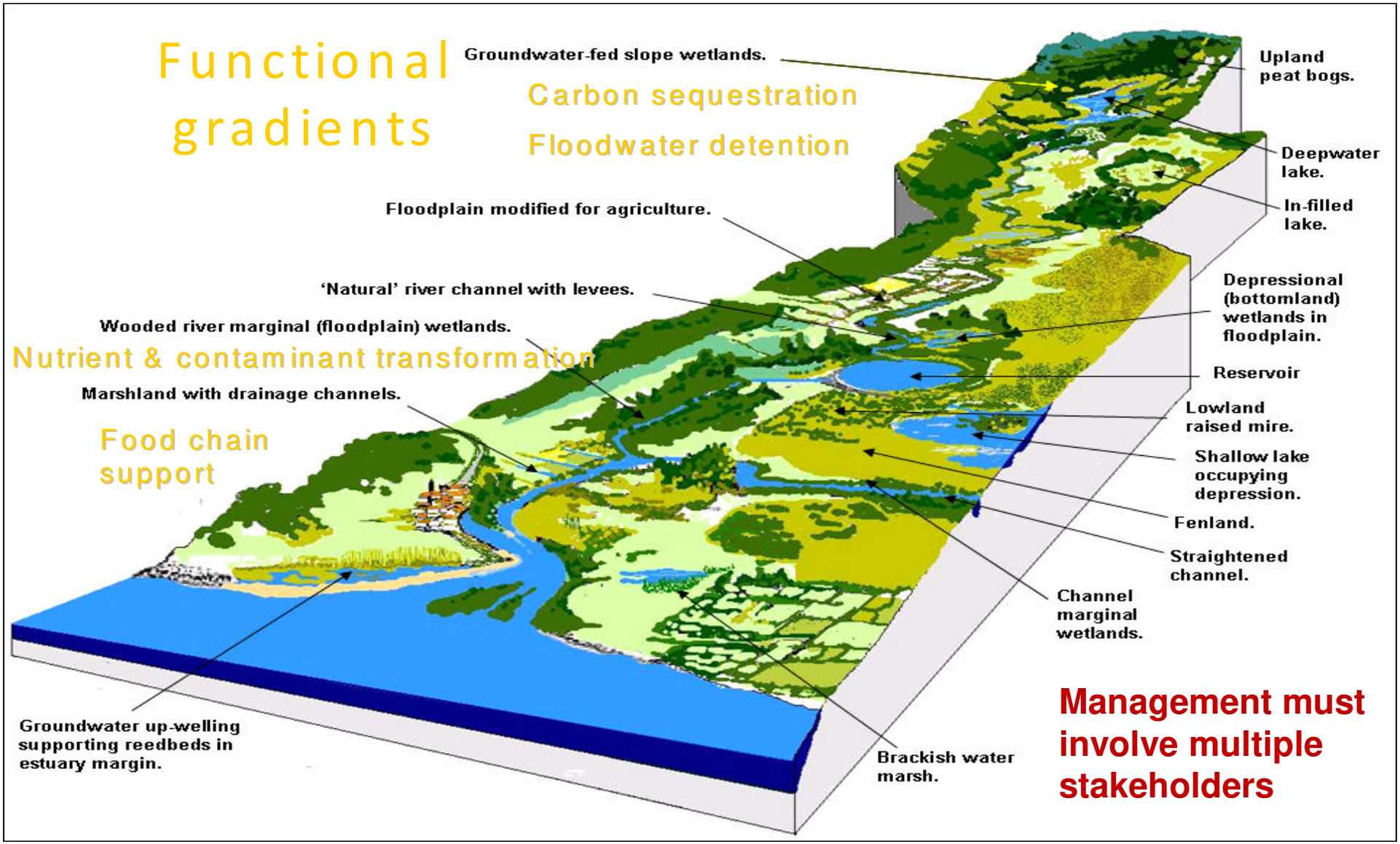
Linking habitats, *ecosystems*, *services* and well being



2005

Millennium Ecosystem Assessment

Ecosystem Services derived from Wetlands – new way of identifying the multiple benefits and integrated nature of the system



Management must involve multiple stakeholders

Millennium Ecosystem Assessment - 2005

Four main findings:

- In last 50 years **humans have changed ecosystems more rapidly and extensively** than ever before to meet growing demands for, largely, provisioning services;

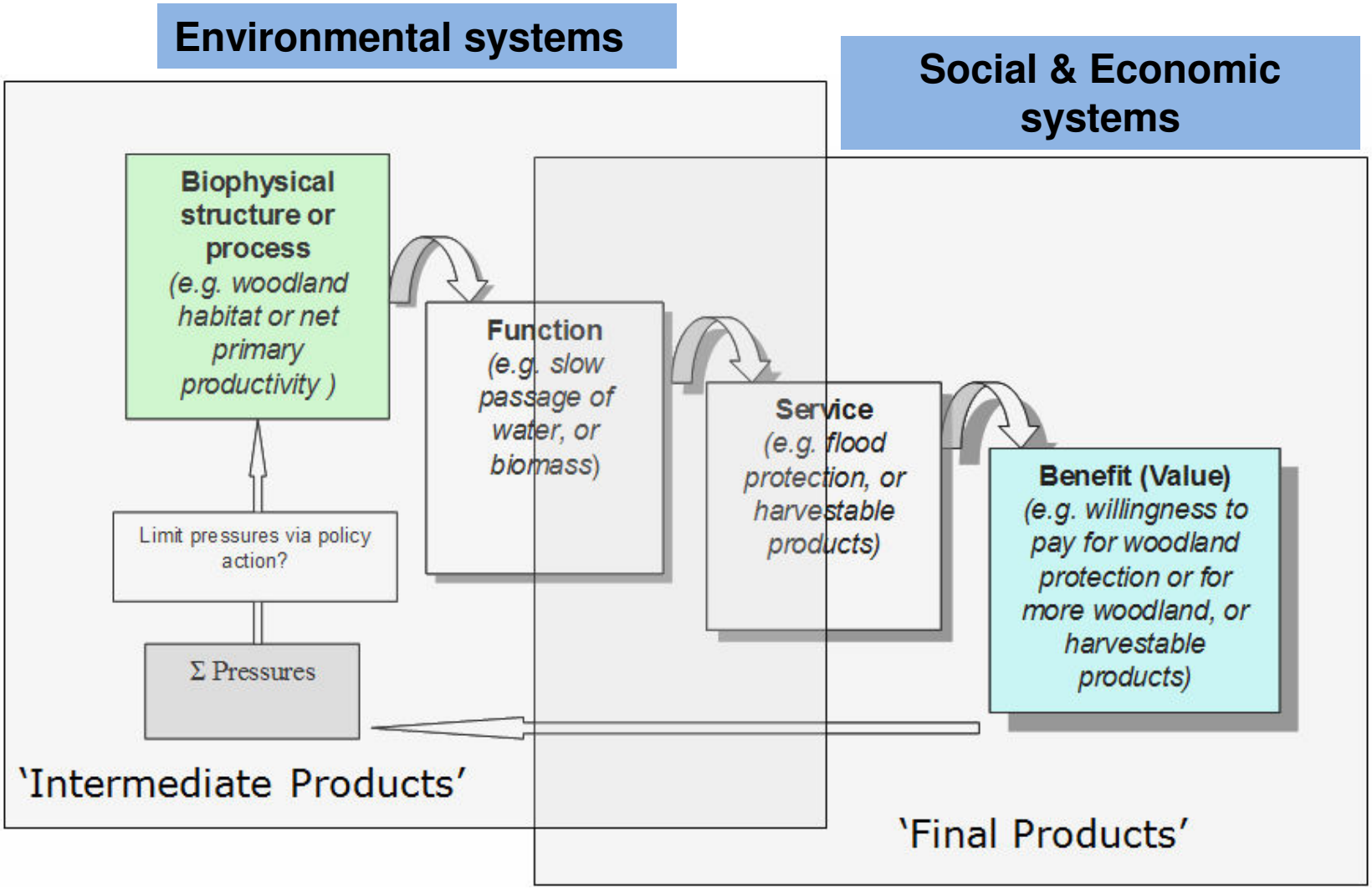
- These changes have contributed to **substantial net gains in human well-being and economic development, *but*** at a growing cost in the form of degradation of many ecosystem services, increased risk of non-linear responses and worsening poverty for key groups;

- The **loss of ecosystem services will grow significantly worse** and threaten achieving the Millennium Development Goals;

- The challenge of reversing degradation of ecosystems while meeting increasing demands for their services can be partially met under certain scenarios BUT these **involve significant changes in policy, institutions and practices that are currently not under way.**

Clearly IWRM, for all its areas of excellence is not halting these losses

Ecosystems services seen as cascades: - connecting the bio-physical to the socio-economic



Challenge: making the connections

(Haines-Young & Potschin, 2009)

Ecosystem Services Approach to Land use - the new bits - but HOW?

- As a concept, the Ecosystem services approach ***extends consideration of ecosystem functioning to the benefits people obtain from the environment,*** through the processes of provisioning, regulating, supporting and cultural services provided by different land uses and their associated ecosystems

- the focus is on ***planning*** (options for change) and ***scenarios,*** and ***values***

- the realisation of multiple benefits to different stakeholders ***through the recognition and mapping of ecosystem services***

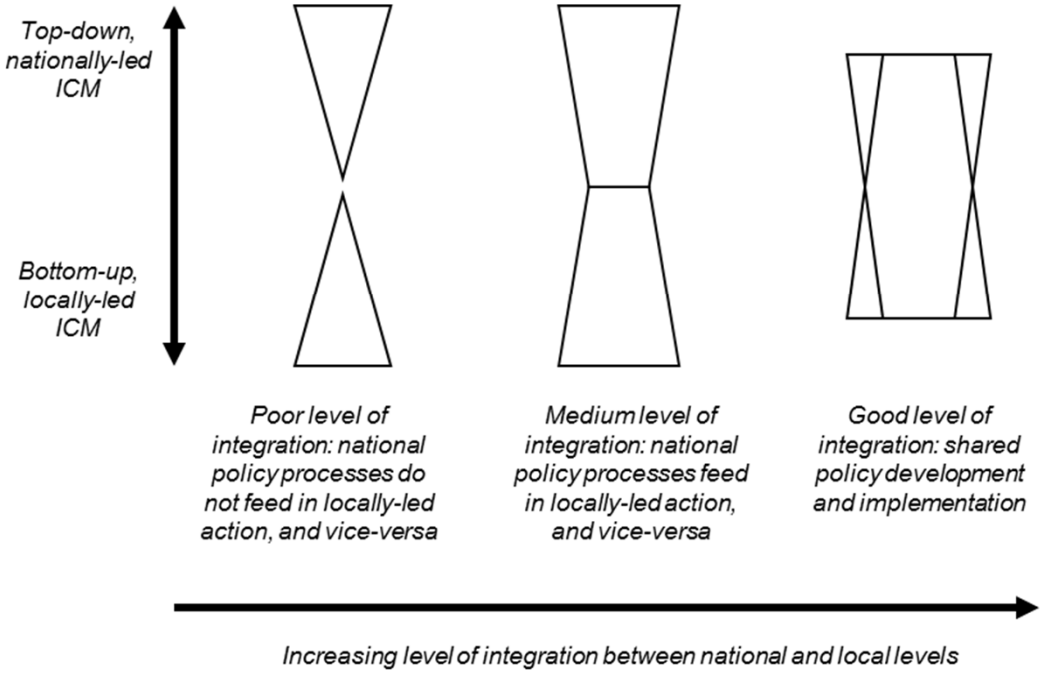
- the need to ***involve local communities*** through identification of their values, ***participative management*** and scenario planning

But how to accommodate legal, 'top down' demands?

HELP needed in linking ‘state’ and ‘society’

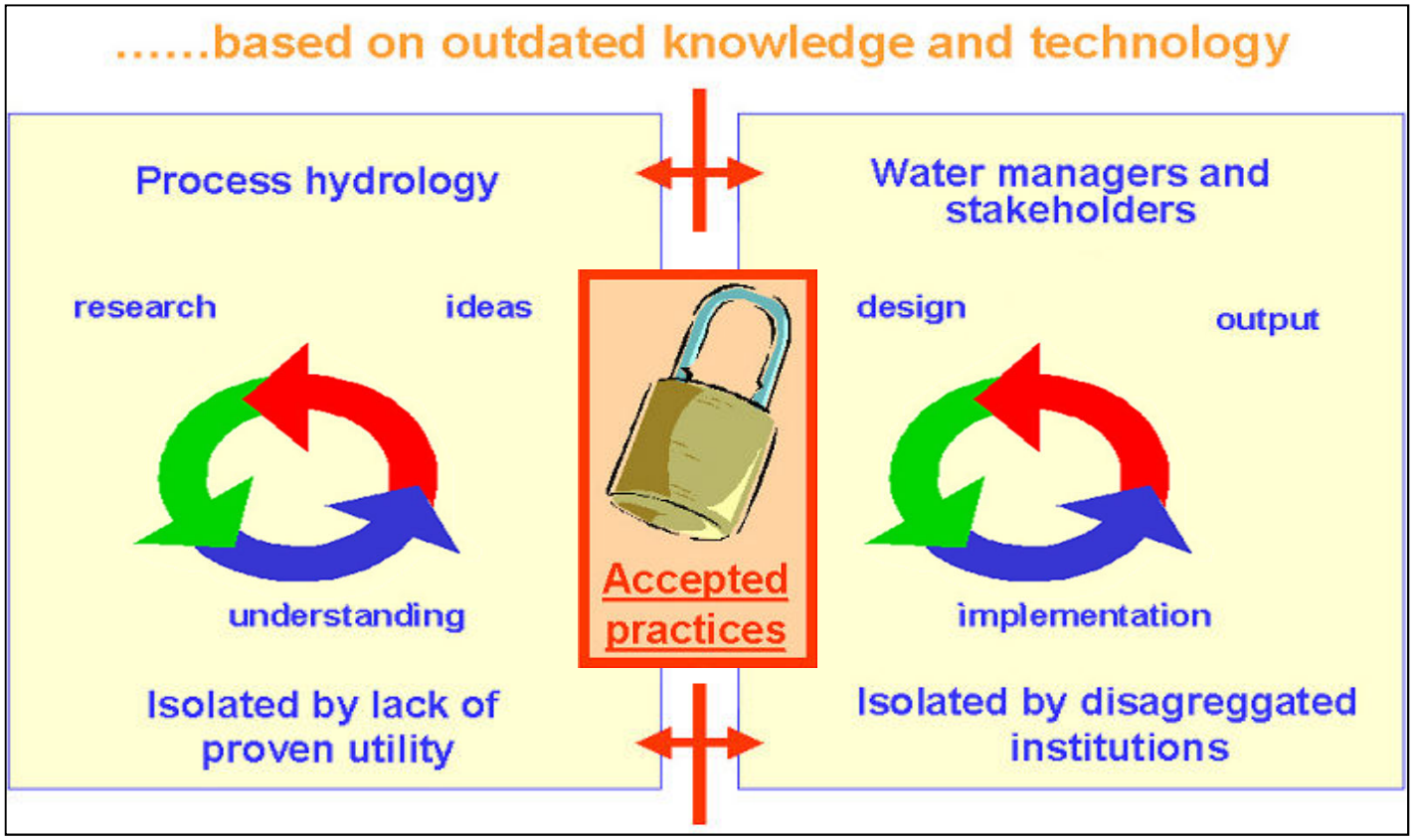
Connecting Governance layers in water management:

- The challenge of aligning top down, national targets for water management (e.g. EU Water Framework Directive) with desires of local communities



- The need for a ‘trusted intermediary’ between ‘state’ and society’
- NGO role

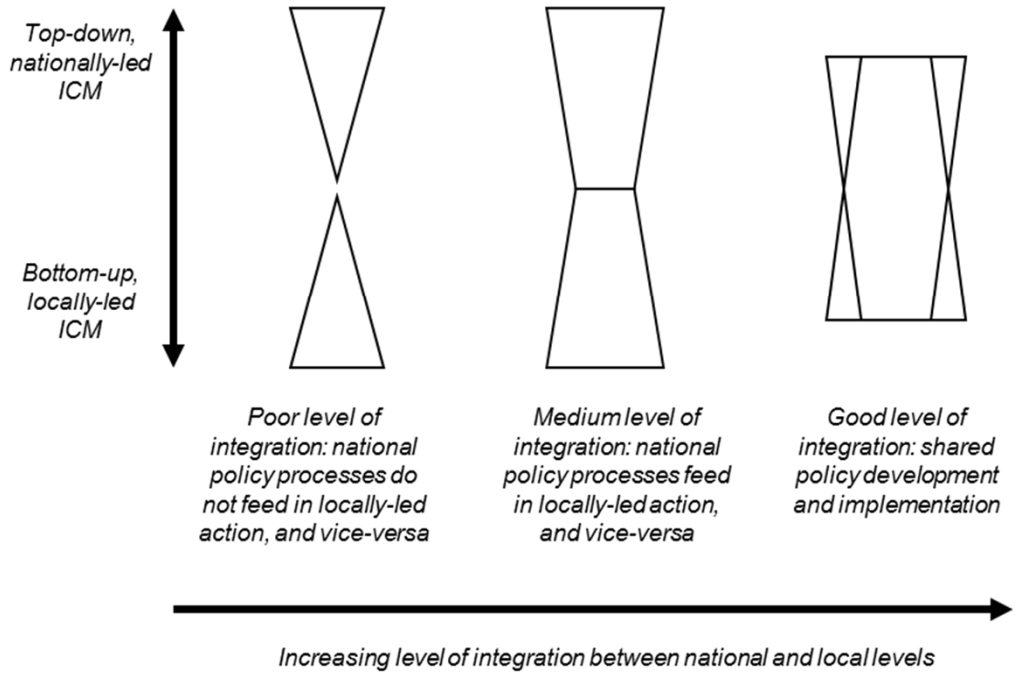
HELP needed in unlocking the "Paradigm Lock" of catchment management



Linking academic research…. with…. practitioners and local knowledge

Trusted Intermediary linking state and society – Tweed Forum

Participative Catchment-based NGO - Operating in the centre ground between academia and land managers; and between 'state' and 'society'



- Achieving multiple benefits for catchment management
- Bringing in new knowledge
- Bringing in new resources
- Bringing in new partners
- Taking an Ecosystems Approach to sustainable land / water management

Who *TWEED FORUM* is…..cross border participatory Catchment NGO

GOVERNMENT DEPARTMENTS AND AGENCIES

Department for the Environment, Food and Rural Affairs
Environment Agency
Forestry Commission Scotland
Natural England
Scottish Environment Protection Agency
Scottish Government
Scottish Natural Heritage
Scottish Water
Scottish Enterprise Borders
Visit Scotland

PRIVATE / VOLUNTARY SECTOR

Borders Anglers Federation
Borders Forest Trust
Northumbrian Water
Northumbrian Wildlife Trust
River Tweed Commissioners
Royal Society for the Protection of Birds
Scottish Agricultural College
Scottish Borders Rural Partnership
Scottish Rural Property and Business Association
Scottish National Farmers Union
Southern Uplands Partnership
Tweed Foundation

LOCAL AUTHORITIES

Northumberland County Council
Northumberland National Park Authority
Scottish Borders Council

- 6 independent trustees/directors
- 6 permanent staff
- Initially founded in 1991
- Limited company and charity, based in Melrose

Tweed – designated a UNESCO HELP Basin in 2009

and Winner of the first ever UK Rivers Prize - May 2015!

Hydrology for the Environment, Life and Policy (HELP)
established by UNESCO in 1999

Global network of *c.* 90 basins "*delivering social, economic and environmental benefits to stakeholders through research towards sustainable and appropriate use of water*"

River Tweed length: 156 kms

Catchment: 5,000 sq km

Scotland (84%): England (16%)

Mainly agricultural & valley towns

130,000 pop., tourism, farming (sheep & cereals), Salmon, Rugby, Tweed wool

Tweed Forum – examples of current activities linking to IWRM policy

Tweed Forum facilitating and managing:
Science evidence-base for Sustainable catchment management and community participation

- **Restoring degraded river systems**
  - Habitat improvement
  - Flood risk reduction
  - Community involvement
- **Stakeholder participation** in decision-making on catchment-wide Land Use
  - piloting the national Land Use Strategy using an Ecosystem Approach

Tweed Forum – Catchment stakeholder NGO

University of Dundee - UNESCO IHP-HELP Centre

University of Dundee

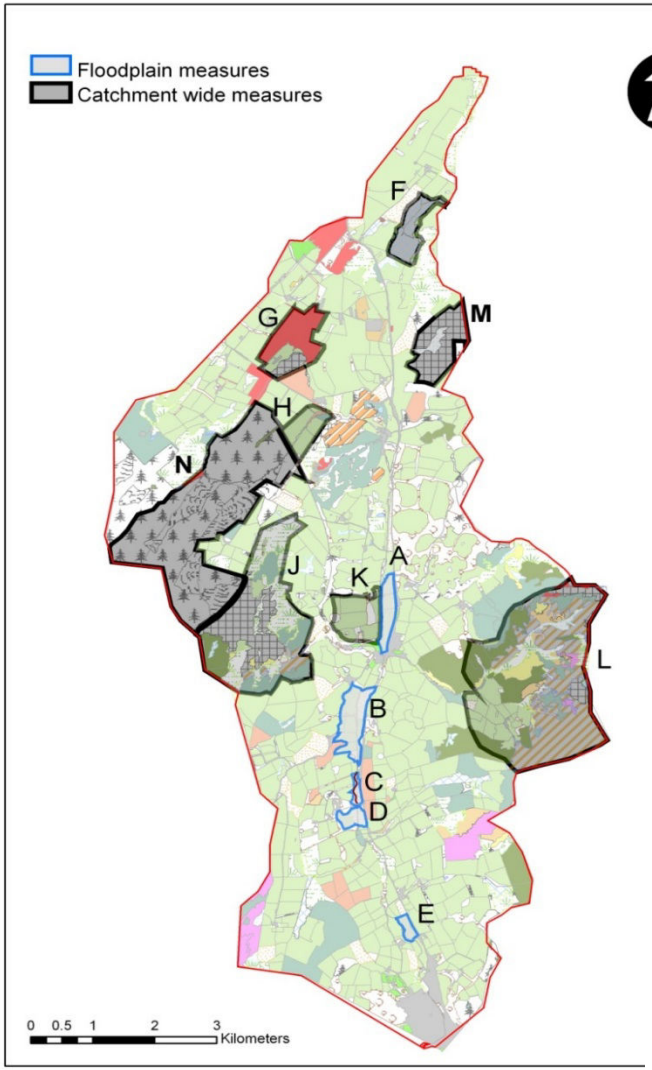
SEPA Scottish Environment Protection Agency

The Scottish Government

TWEED FORUM

Working with academia, land managers & policy developers

Creating the science evidence-base for policy on catchment management



Eddleston Water Restoration

Selected measures to improve river habitats and reduce flooding:

N: create ponds, wetlands, riparian woodland block ditches, large woody debris

A: breach/set back embankments, new fence margins, riparian woodland, wet woodland, large woody debris

L: Reduced stocking density, tributary and floodplain forest

C: re-meander channel, riparian woodland

Project aims

- Restore the river and its catchment whilst promoting the livelihoods of those deriving income from the sustainable management of farms, forests and fishery

- **Measure costs & benefits of:**
  - **reduction in flood risk;**
  - **the other ecosystem service benefits from habitat restoration;**
  - **land manager attitudes to catchment management**

Working with national & local government, and communities

Piloting an Ecosystem Approach to Land Use Strategy at Catchment scale

Tweed Forum role to:

Test the delivery of Scottish Land Use Strategy using an Ecosystem Approach and ***ecosystem service mapping*** *at a regional scale*.

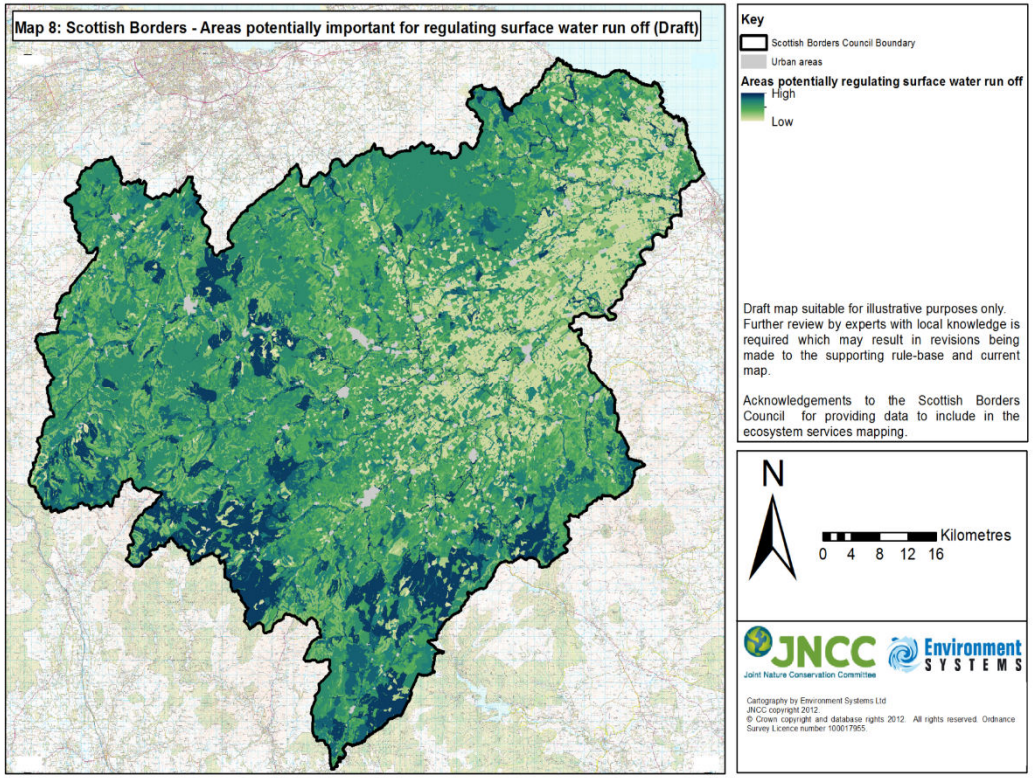
Work through '***democratic process***' and via **Stakeholder partnerships** to explore delivery of multiple benefits under different current and future *policy scenarios* related to climate change

Provisioning services - (4) *1. Crops, 2. Livestock, 3. Renewable energy, 4. Timber*

Regulating services- (6) 1. Water quality, 2. Flood risk, 3. Soil erosion, 4. Sediment risk for watercourses, 5. Soil carbon resource, 6. Vegetation carbon resource

Supporting services - (2) 1. Biodiversity, 2. Pollination

Cultural services- (4) 1. Sense of place, 2. Game & Sporting, 3. Historic sites, 4. Landscape designations.



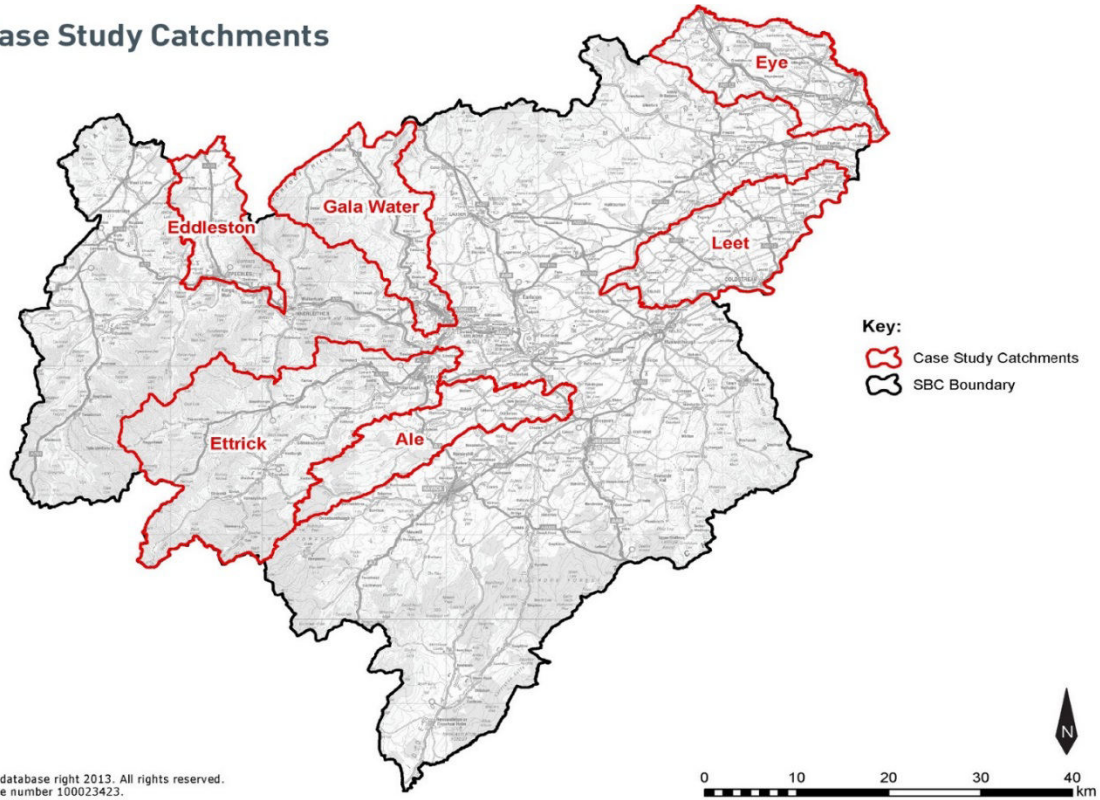
Working with national & local government, and communities

Undertaking the major Stakeholder engagement Process

Tweed Forum:
Trusted and Knowledgeable Intermediary roles:

- Stakeholder engagement at a scale not undertaken before for catchment planning and management
- Over 1,000 individuals attended workshops and seminars
- All local and regional agencies, organisations and local community councils engaged
- Worked through Tweed Forum as the lead

Fig 1: Case Study Catchments



Case study sub-catchments represent all local land use issues.

Local knowledge and networks essential

Identified key interactions between the different land uses and ecosystem services - Stakeholder consultation - Interaction/multiple benefits matrix

Existing ecosystem services

Possible New Land Use \ Existing Land Use	Food production - livestock and crops	Timber and Woodland	Renewable Energy (wind farms)	Natural flood management	Diffuse pollution control	Carbon storage (soil & vegetation)	Recreation	Development sites	Biodiversity
Food production - livestock and crops		- - [1]	+	- -	- - -	-	- +	-	- -
Timber and Woodland	- -		0	- +	++ - -	+(+)	+ -	-	-
Renewable Energy (wind farms)	0	-		-	-	- -	- -	+	-
Natural flood management	- -	+	+		++	+++	+	- - -	++
Diffuse pollution control	-	+	+	+		+	+-	- +	+++
Carbon storage (soil & vegetation)	- (+)	0	+- -	+	++		+	- - -	++
Recreation	-	+++	- -	+	-	+-		- +	-
Development sites	- - -	- - -	- +	- - -	- - -	- - -	-		- - +
Biodiversity	-	+	+	++	++	+	+	+	

Proposed expansion of service

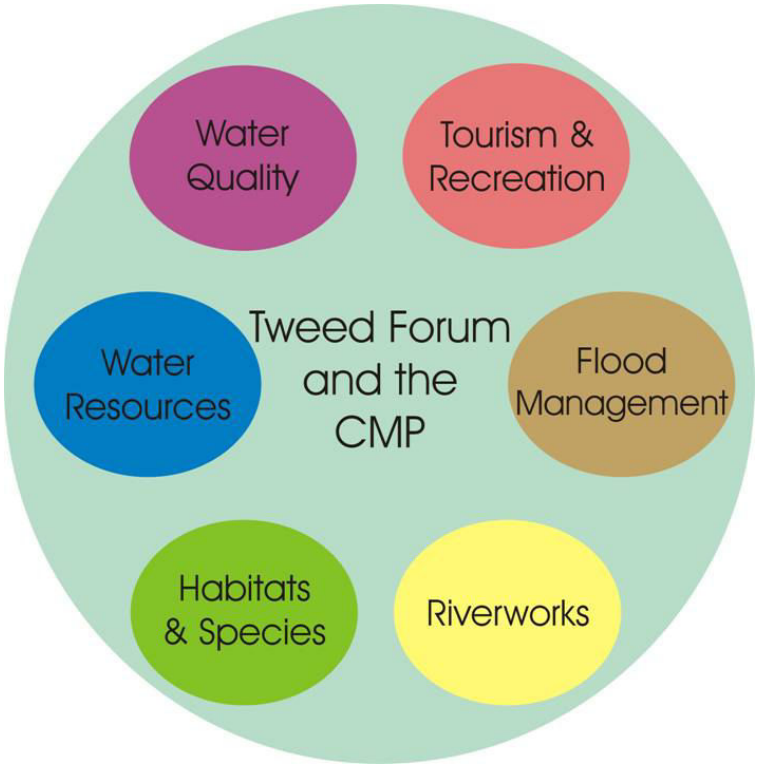
Yellow - interaction maps (9) incl. softwood conifer plantation

Blue - Multi-benefit maps (15) incl. native woodland expansion

The matrix was designed by considering mainstream, land use senario's within the Scottish Borders rather than specialist features. For the existing land use "Recreation' would include specialist playing fields and footpaths etc. Biodiversity refers to sites being managed to enhance biodiversity either through designation or individual farming practices. Natural flood management are where an existing scheme is present. To read the interactions, for example, at [1] the negative effects would be from a situation such as the felling of farm woodland to grow crops, rather than agro-forestry (which could produce a neutral effect), as this is currently not a common or likely land use in the SBC area. Renewable energy in SBC at present concentrates on wind energy and therefore only wind energy has been considered. Development here refers to standard planning development, rather than environmentally sensitive development.

Tweed Forum's Catchment Management Plan

Tweed Forum's Catchment Management Plan – based on 6 themes developed in participation with stakeholders



- **Carried out detailed catchment-wide local consultation** – 11 public evening meetings, leaflets, press coverage
- **Themes developed by a series of working groups**
- **Draft CMP reviewed** by local organisations
- **CMP reviewed in 2005** and again in **2009** by Forum membership

Plan pre-dates Water Framework Directive – created 'bottom up' in 2003

Tweed Forum's CMP and the Government's statutory River Basin Management Plans for the EU Water Framework Directive (WFD)

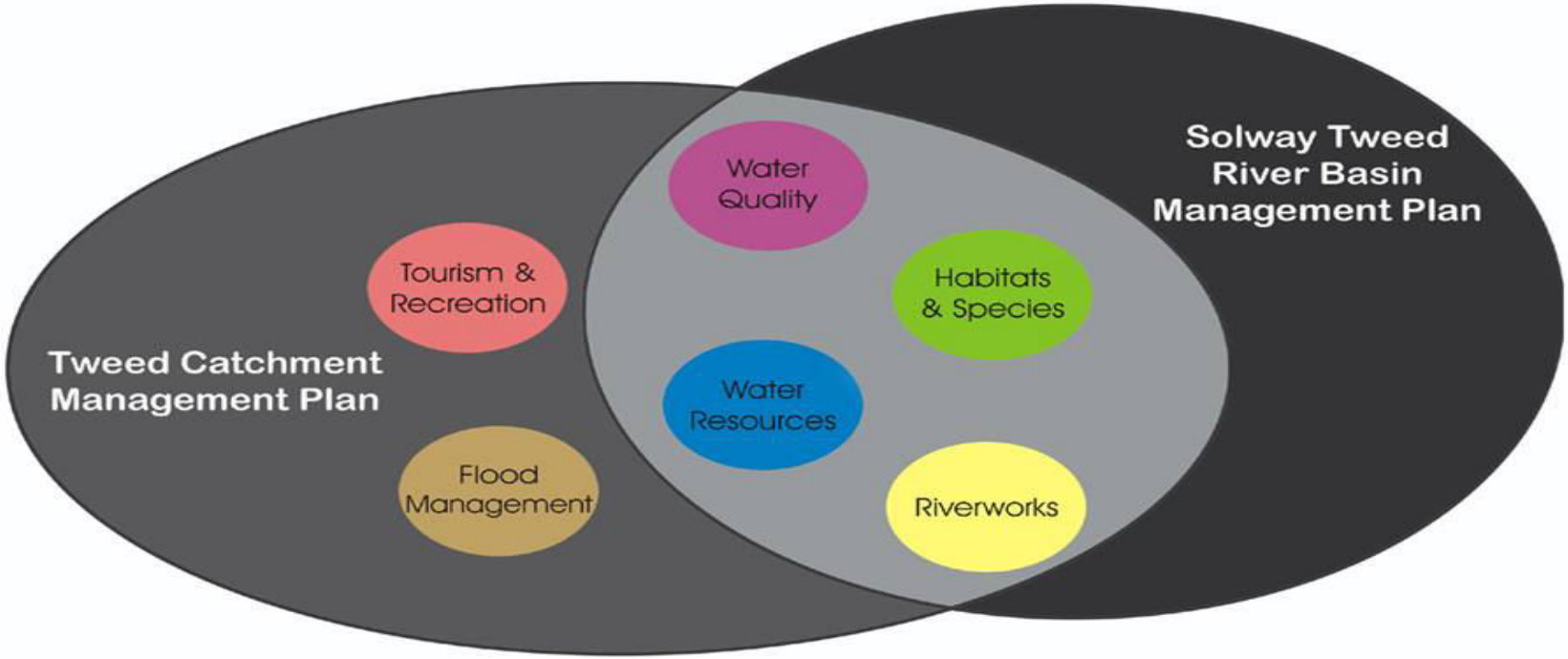
Governance:

- In Scotland, stakeholder participation in WFD river basin management planning is done through 8 Area Advisory Groups
- **Uniquely, Tweed Forum is used as the Area Advisory Group for the Tweed River basin, as Government recognise that Effective stakeholder engagement already exists**
- Helps integrate RBMP with Tweed CMP, and ensures regulatory regimes meet in the middle
- Use Tweed Forum networks and working groups to resolve specific issues and promote best practice

Voluntary and Statutory IWRM basin management plans: -

linking necessary to deliver through partnerships, but aims and priorities differ

Tweed Forum as the trusted intermediary linking stakeholders and working through an ecosystems approach



Bottom up, community priorities
Delivering integrated Tweed CMP
Aims and projects taken forward through Working Groups and partners' actions

Top down, regulatory framework
Delivering river basin management plan
Measures identified to improve ecological status of "failing" water bodies