



Transactional Environmental Support System

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A Transactional Environmental Support System for Europe: Who, Why, What, How?

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Promoting Natura 2000 and Sustainable Wildlife Use
Conference at DG Environment (with FACE, ELO & IUCN), 17-18 November 2009, Brussels



Theme 6: Environment (Including Climate Change).

ENV.2007.4.2.1.1. Methodologies for scaling down to the regional and local level the analysis of policy impacts on multifunctional land uses and economic activity

Strategic Objective: To design a decision support system related to environment and land use that will enable policy makers to integrate knowledge from the regional and local level into the decision making process, while also encouraging local people to maintain & restore biodiversity & ecosystem services.



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Who? 14 partners/10 countries

- 1 Aristotle University of Thessaloniki (Greece) Coordination
- 2 Bournemouth University (United Kingdom)
- 3 NERC Centre for Ecology & Hydrology (United Kingdom)
- 4 Anatrack Ltd (United Kingdom)
- 5 Ordenamento e Gestão de Recursos Naturais (Portugal)
- 6 Tero Ltd (Greece)
- 7 European Sustainable Use Specialist Group of IUCN (Belgium)
- 8 Federation of Associations for Hunting and Conservation of the EU
- 9 Pro-Biodiversity Service (Poland)
- 10 Centre for Cartography of Fauna and Flora (Slovenia)
- 11 Szent Istvan University (Hungary)
- 12 Tallinn University of Technology (Estonia)
- 13 Danube Delta National Institute for R&D (Romania)
- 14 WWF Turkey (Turkey)

Why? (TESS objectives)

Europe is losing biodiversity and ability to provide ecosystem services. **Formal Assessment processes (Environmental Impact Assessment, Strategic Environment Assessment) give some protection.** However, individual local stakeholders who manage land and species also make **daily informal decisions**, within an envelope of regulations and fiscal incentives but based mainly on local environments. **The myriad small decisions summate to change land use.**

GANTT-like TESS work-packages

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WP2

Central
Decision
flows

Workshop
& report

WP3

Local
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NOW

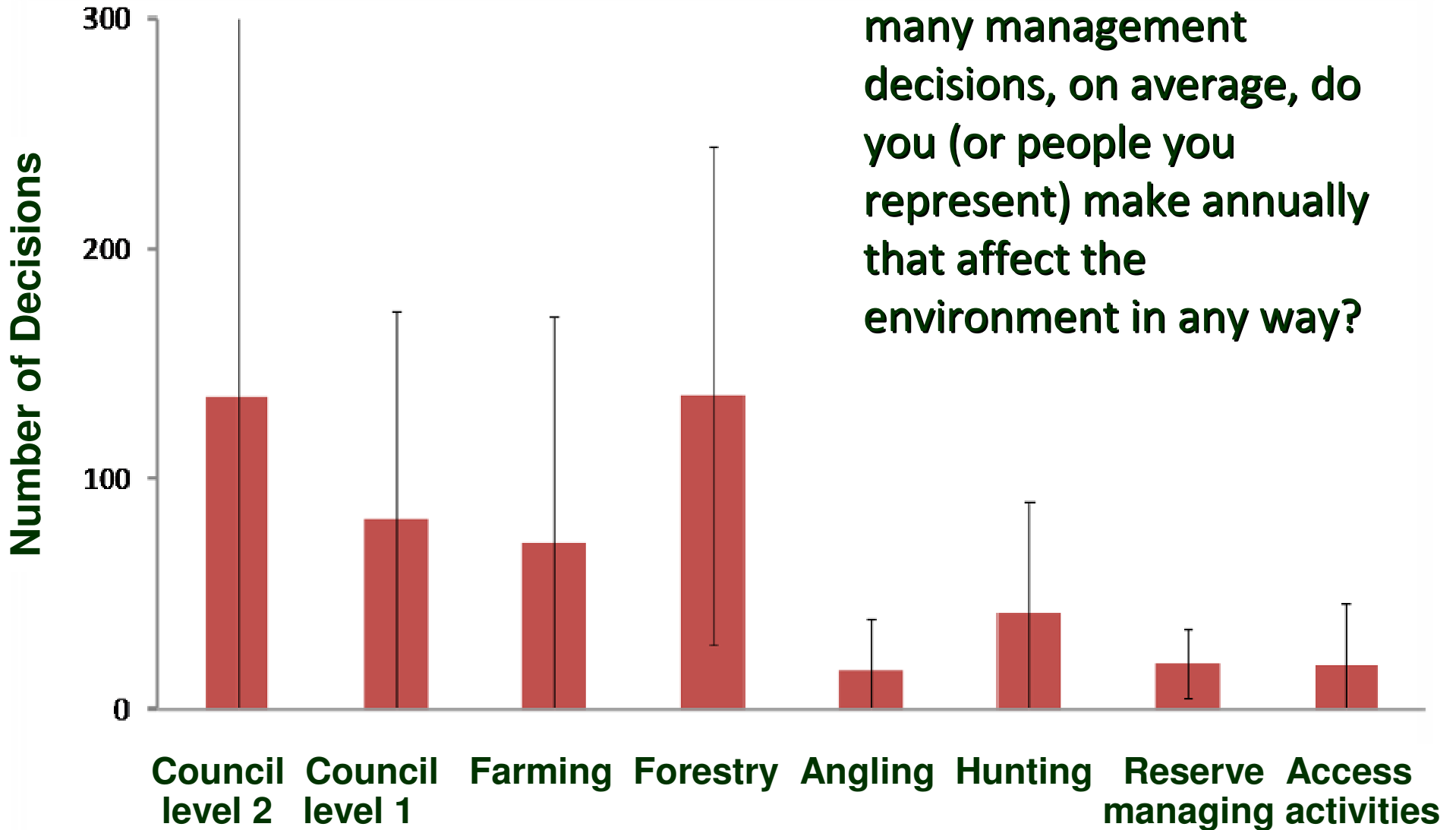
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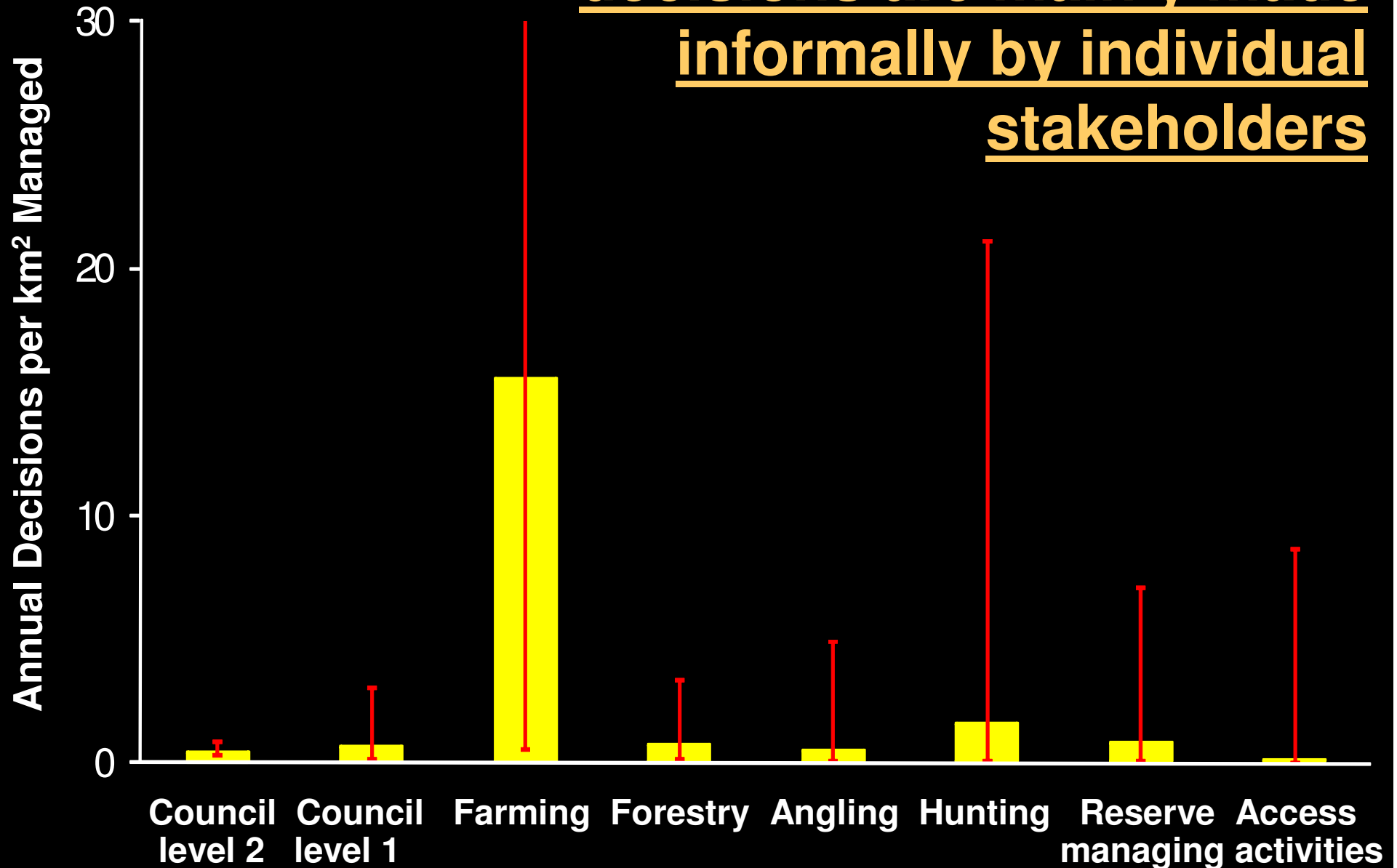
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Who makes local decisions?

3.1. Approximately how many management decisions, on average, do you (or people you represent) make annually that affect the environment in any way?



In terms of area managed,
decisions are mainly made
informally by individual
stakeholders



Why do these decisions cause loss of biodiversity?

Understanding of causes is growing.

For 30 declining bird species in UK, Prof. Ian Newton (2004, *Ibis* 146:579-600) identifies:

(i) weed control, (ii) early ploughing, (iii) grassland management, (iv) intensified stocking, (v) hedgerow loss & (vi) predation.

All can be addressed, in many cases by de-intensification measures that have low cost

...but how to motivate such de-intensification?

2004: Millennium Assessment Ecosystem Services from Land Use

**Supporting
Regulating**

*Primarily public goods,
regulated and public funded.
Biodiversity needed?*

Provisioning

*Extensively private goods; but
livestock & intensive crops
have impacts on biodiversity.*

Cultural

*However, recreation payments
for wild resources can increase
the benefits of biodiversity and
promote de-intensification.*



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1992: Convention on Biological Diversity (Rio de Janeiro)

Defines Sustainable Use: of components of biodiversity in a way and at a rate that does not lead to the long term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

Sustainable Use in 13/19 substantive articles, e.g.

Art. 10: Protect & encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

Art. 11: Adopt economically and socially sound measures that act as incentives for conservation and sustainable use of components of biological diversity. **(BUT: is this worth anything...?)**

Governance & Ecosystem Management for Conservation of Biodiversity (GEMCONBIO)

Pan-European Survey: Use of Wild Resources

Recreational fishing (European Anglers Alliance)
Bird-watching (Birdlife Partners)
Collecting fungi (European Council Cons. Fungi)
Collecting wild plant materials (Plantlife)
Hunting Game-Birds (e.g. grouse, ducks)
Hunting Ungulates (e.g. deer, boar) (FACE)
27 country coordinators, 19 languages



Participation and annual spending

	Proportion of EU population surveyed	Participants grossed up millions	Annual spend € billions
Hunting	96-100%	6.6	16
Angling	64-94%	23	19
Collecting: Fungi	42%	[45]¹	
Plant Products	7%	[135]¹	
Bird-Watching	81%	6.2	{8}²

^{1,2}unreliable due to [low survey%]{few spend data}

Annual spend in EU on Hunting, Angling and Bird-watching is likely to be at least €40 Billion.

SPEND: Hunting
(private)

in 2006
in the EU

€16
billion

Angling

€19
billion

Watching

€8
billion

GEMCONBIO survey of hunting, angling, watching:
34 million adults (7% population) spend >€40 billion.

- In 2006, equivalent US spending was \$120 billion
- €40 billion is about €200 for each cultivated EU ha
- CAP budget is €57 a year, 44% agri-environment
- It costs €6 billion to run Natura 2000 (17% of EU)

BUT Conservation through Use of Biodiversity is COMPLEX!

Protection (sticks)

- Laws for Species
- Habitat Reserves
- Educational
- 12% of land (EU 20%)
- Simple (opp costs)

Incentives (carrots)

- State subsidy
- Conserve-by-use
- Culture-friendly
- everywhere?
- Complex

Conserving=Protecting BARELY STARTED!
How to implement conservation through use?

Abstract

We seek to complement formal assessment (EIA/SEA) with an internet-based (automated) system that:

- (a) delivers model-based context-adaptive expert guidance to guide local land users, to optimise environmental services and incomes, in exchange for**
- (b) information on their decisions, and monitored results, that summate to guide central policy.**

How? An exchange between local stakeholders & central policymakers

Decision support for managers of land and species:
Councils, Farmers, Foresters, Reserve managers, Anglers, Hunters, Access Interests

1. What does central policy and planning have?
Capability to produce complex knowledge.

e.g. Environmental Information System for Planners

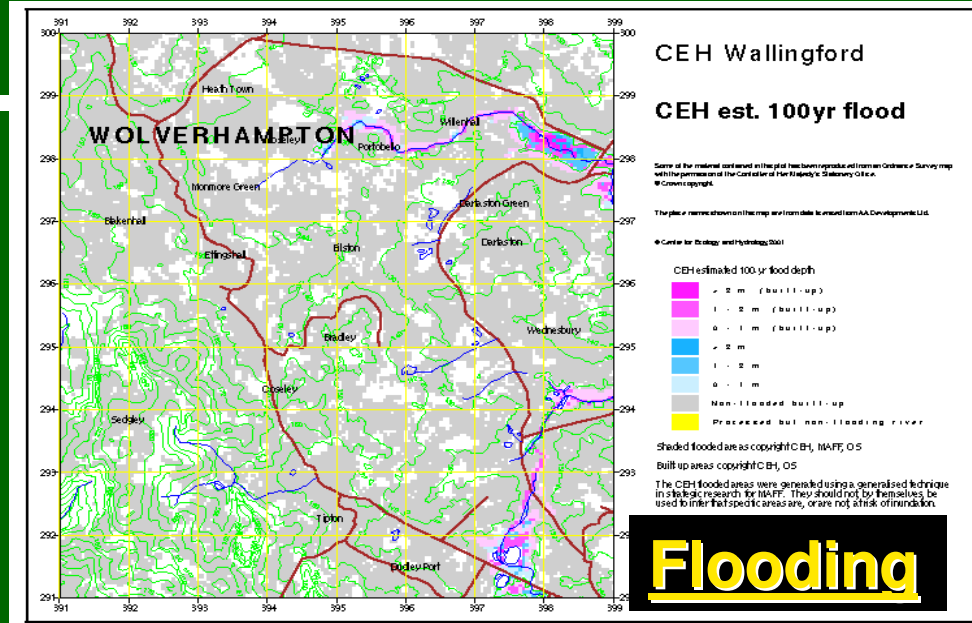
A prototype demonstrator that provided Complex Knowledge to help planners apply environment data and understanding in the planning process.



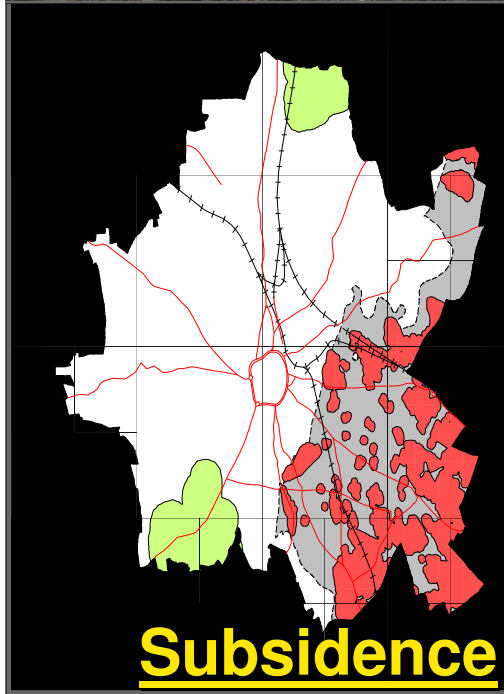
Origin: BGS, CEH and Nottingham University



Managing Waste



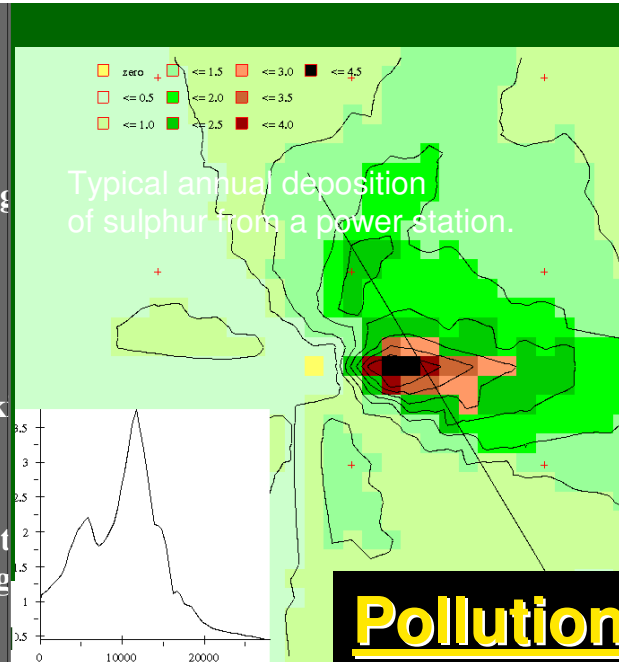
Flooding



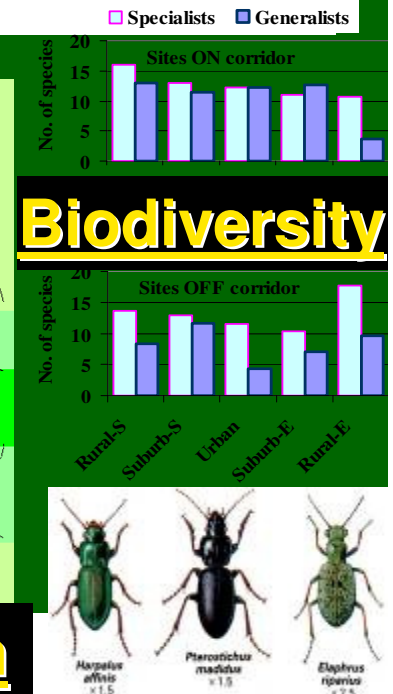
Subsidence

UNDERMINING

- Exposed coalfield. Risk of subsidence over former workings
- Exposed coalfield. Areas of potential subsidence over undocumented workings
- Possible minor subsidence relating to modern deep mining



Pollution

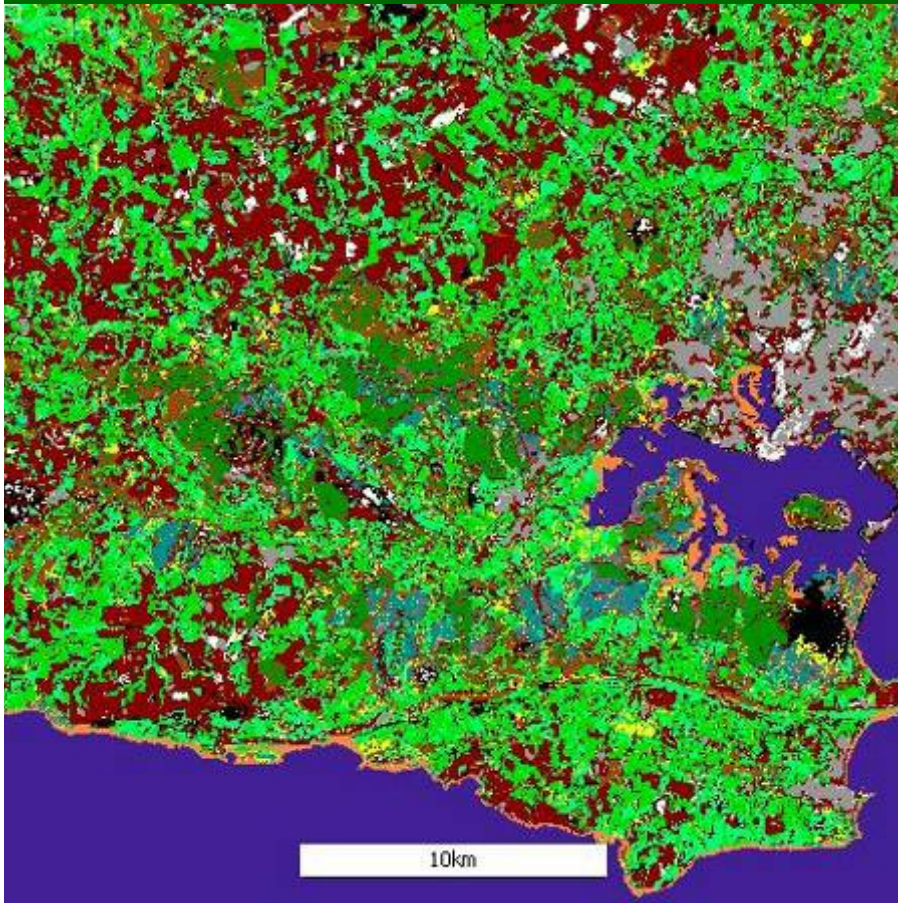


How? An exchange between local stakeholders & central policymakers

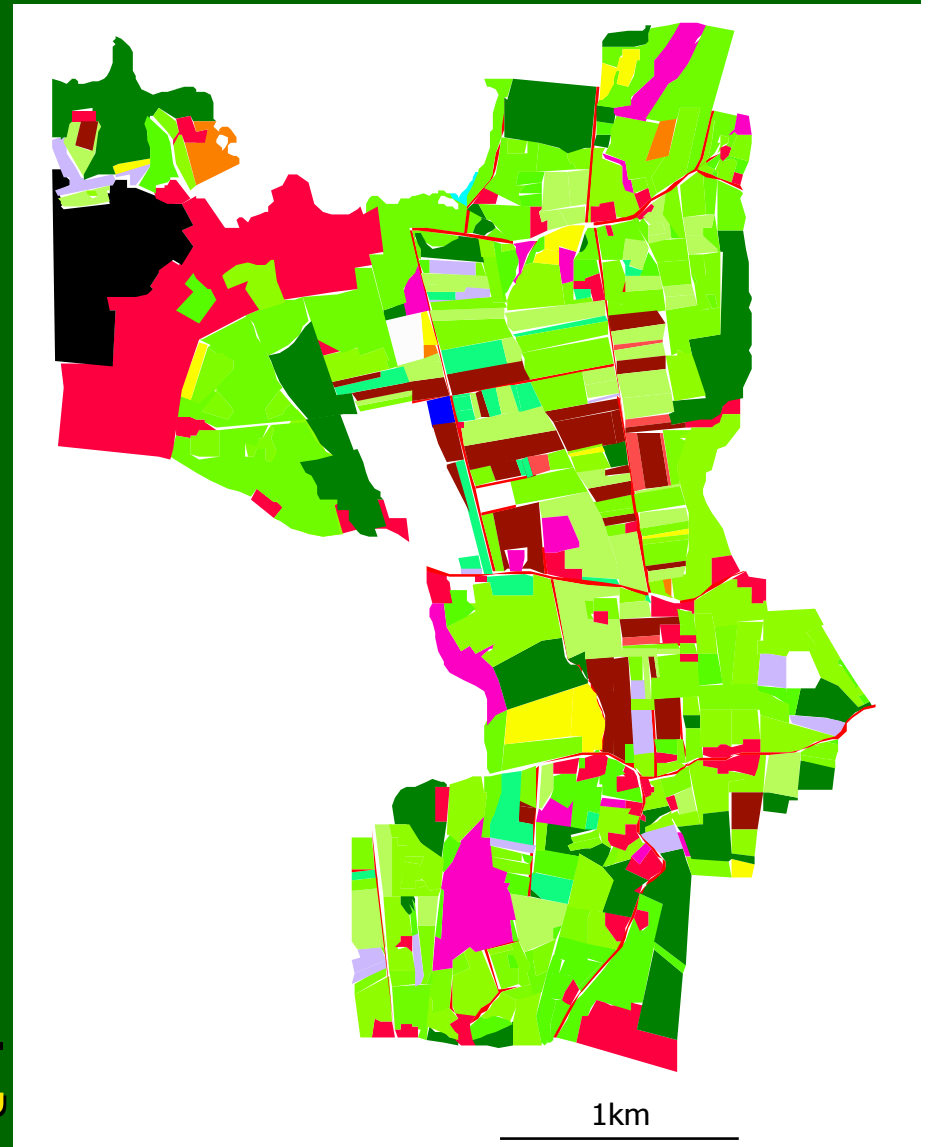
Decision support for managers of land and species: **Councils, Farmers, Foresters, Reserve managers, Anglers, Hunters, Access Interests**

1. What does central policy and planning have?
Capability to produce complex knowledge.
2. What does central policy and planning need?
Local knowledge and local actions.

Remote mapping (CEH Landcover 1990) is marvellous,
but scale restricts detail,



so is best in combination with
local mapping (eg. farm plans,
civic groups) and species
monitoring (e.g. by wildlife
watchers, hunters & anglers).



Ground-based for detail,
(by Swedish hunters, 1985)

How? An exchange between local stakeholders & central policymakers

Decision support for managers of land and species: **Councils, Farmers, Foresters, Reserve managers, Anglers, Hunters, Access Interests**

1. What does central policy and planning have?
Capability to produce complex knowledge.
2. What does central policy and planning need?
Local knowledge and local actions.
3. What do local managers of land & species have?
Local knowledge & capabilities (skill, cash, time).
4. What do local managers of land & species need?
Complex knowledge to guide their actions.



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Exchanging decision-support for local knowledge and actions

<u>SCALE</u>	<u>CONTEXT / QUESTION</u>	<u>OPERATION MODE</u>
Field individual	! BEEP ! <u>HARRIER NEST AHEAD</u> Divert harvester for 20 meters	<i>Map on communication device with GPS-auto-location capability.</i>
Farm individual	If I use my land like this in future, what happens to my income, game bags and nitrate run-offs?	<i>Auto-guides on farm plan: optimizing game, fishing and farm income.</i>
Parish community	How do we route this path to optimise views while minimising erosion and wildlife disturbance?	<i>Headland mapping GIS: walking (pay-parking), horse-riding (licence).</i>
Higher government	If trends in land-use continue for 20 years, how can we still meet planned biodiversity targets?	<i>Scenario: model subsidy payments for leveraging sustainable use activities.</i>



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How? (TESS abstract)

A Transactional Environmental Support System, for aiding wise local actions centrally, could help recreational activities leverage de-intensification with enhanced income & stakeholder cohesion.

Requirements of Convention on Biological Diversity, for local empowerment and enlightenment, would be met by better monitoring and adaptive management but also continuous formal bio-socio-economic assessment from emergent indicators.

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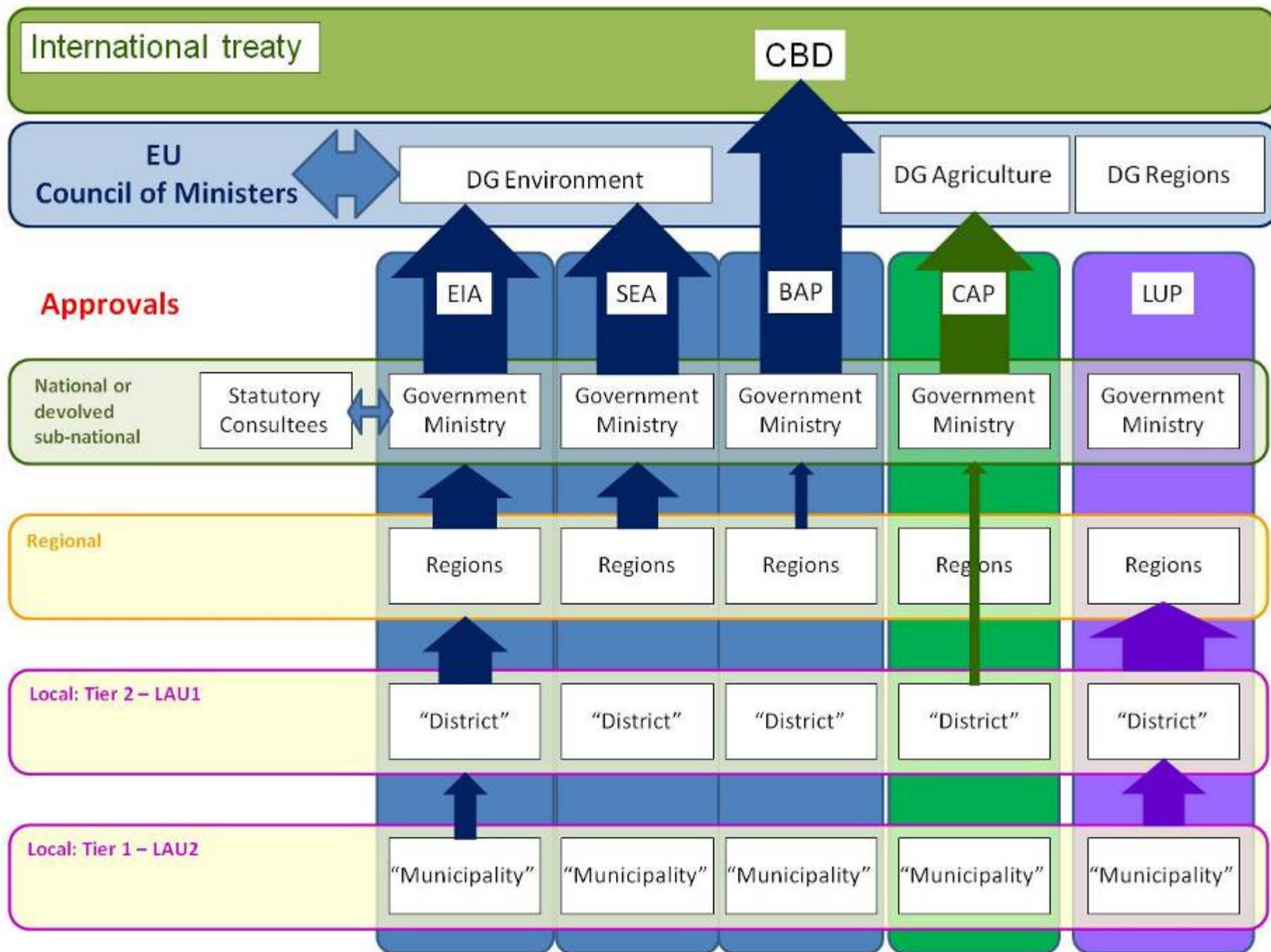
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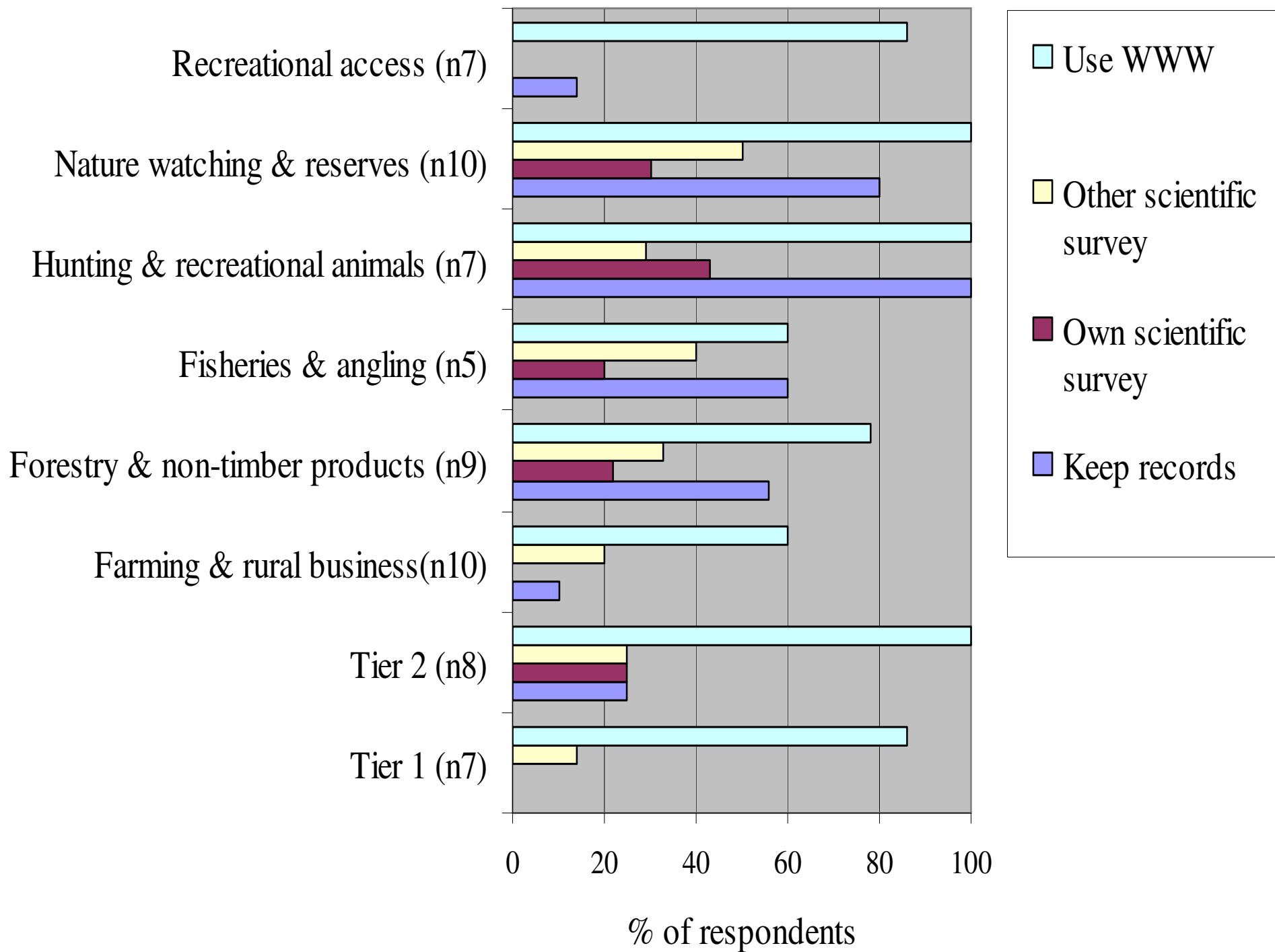
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Building conservation from recreational wild resource use

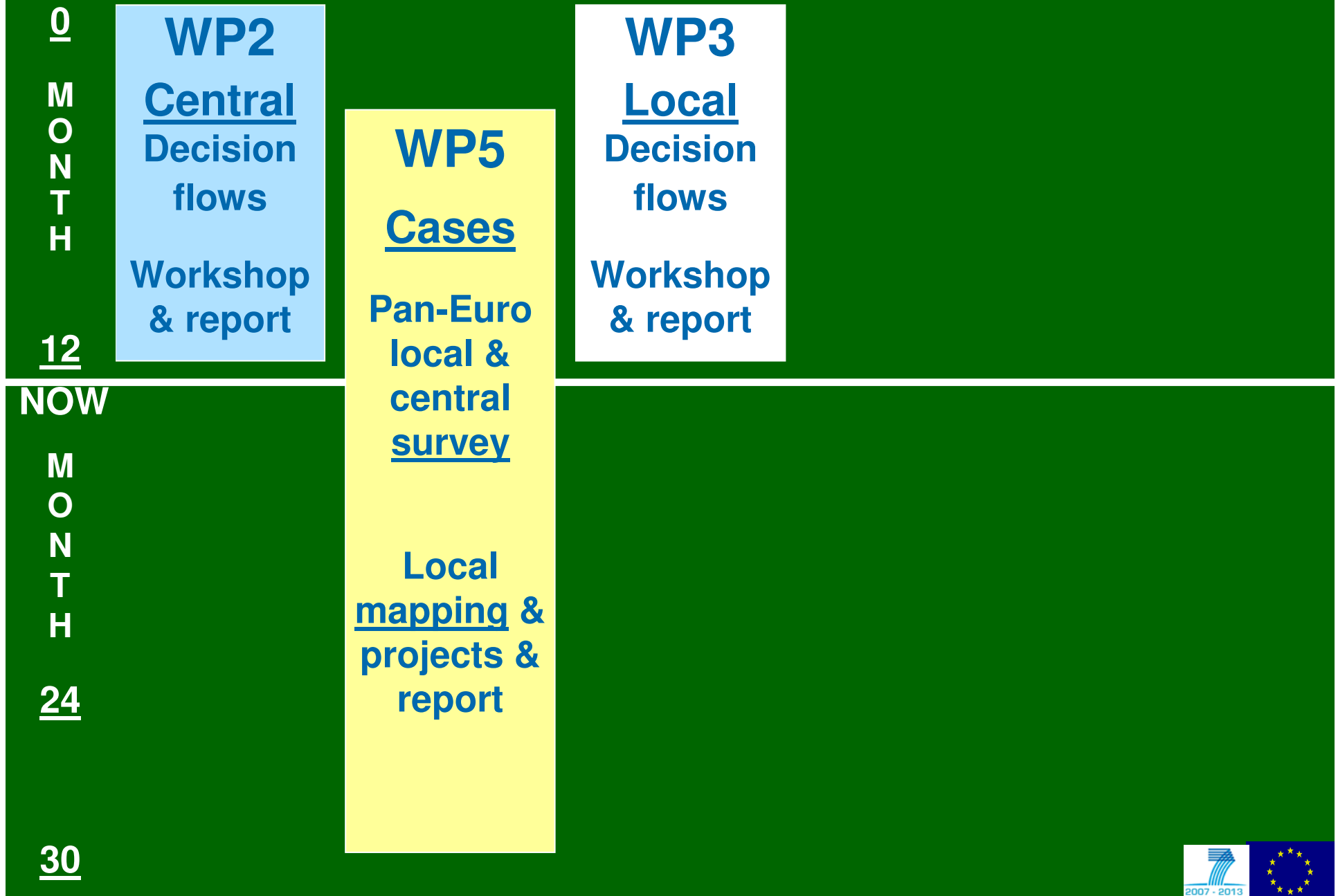
Can millions of wild resource beneficiaries become Ambassadors for the Environment?

- Need to organise and educate users
- Activate their conservation potential
- Help them monitor species, restore habitats

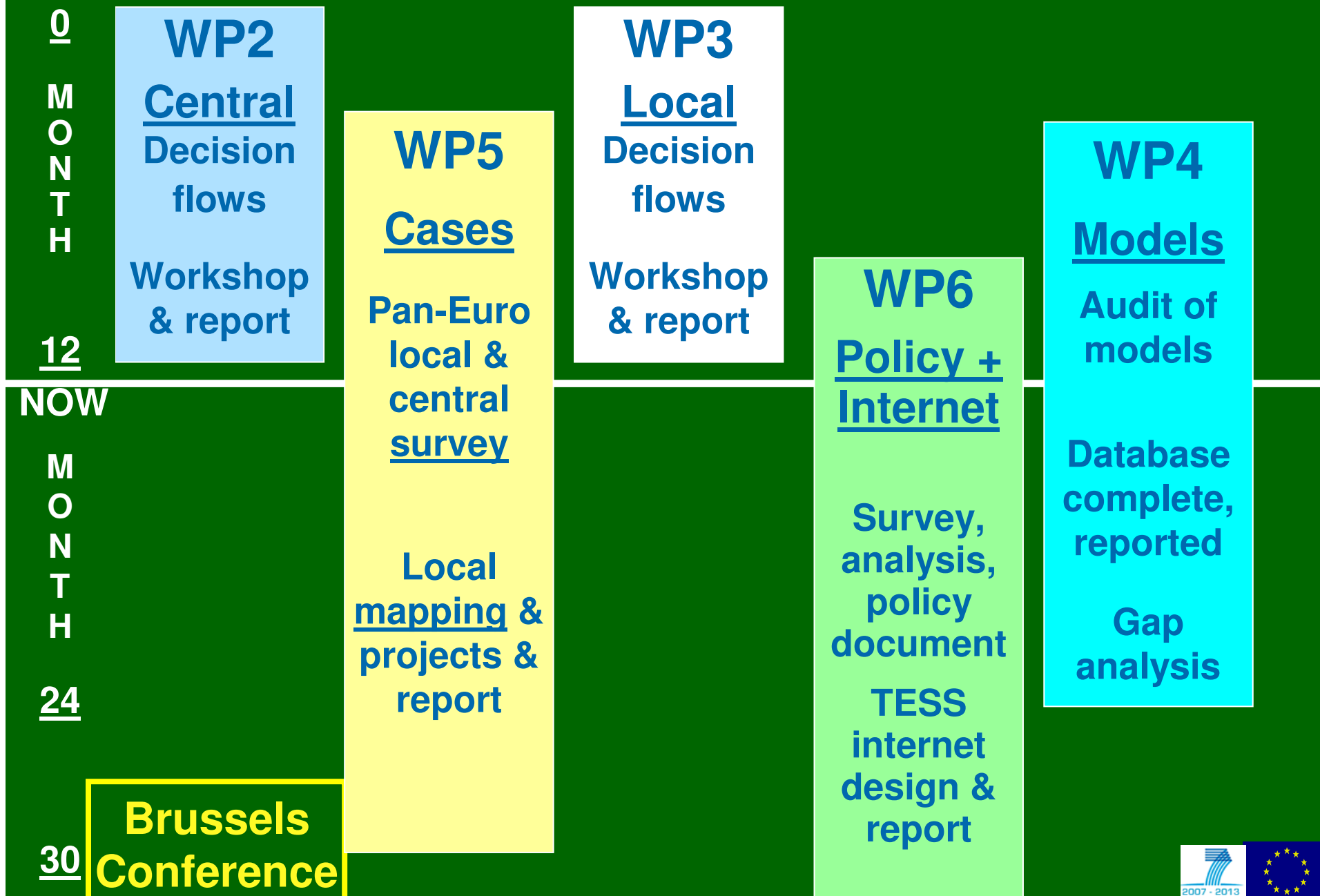
Hunters are brilliantly organised for data & restoration projects

Can gatherers of wild fungi/fruit/flowers be engaged too? (angling model via TESS?)

GANTT-like TESS work-packages



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CONCLUSIONS

- Europe is losing ability to provide ecosystem services based on wild biodiversity.
- Regulations give some protection but not for most of the myriad decisions of individuals that change land use outside strictly protected areas.
- TESS aims to collate & automate local delivery of all ways to leverage biodiversity enhancement, to (i) predict impacts of small-scale actions on incomes & biodiversity, (ii) support decisions & monitor results so that (iii) central assessors can adapt governance (regulatory & fiscal incentives).



**Thank you
for listening**

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