

A Transactional Environmental Support System for Europe:

Who, Why, What, How?

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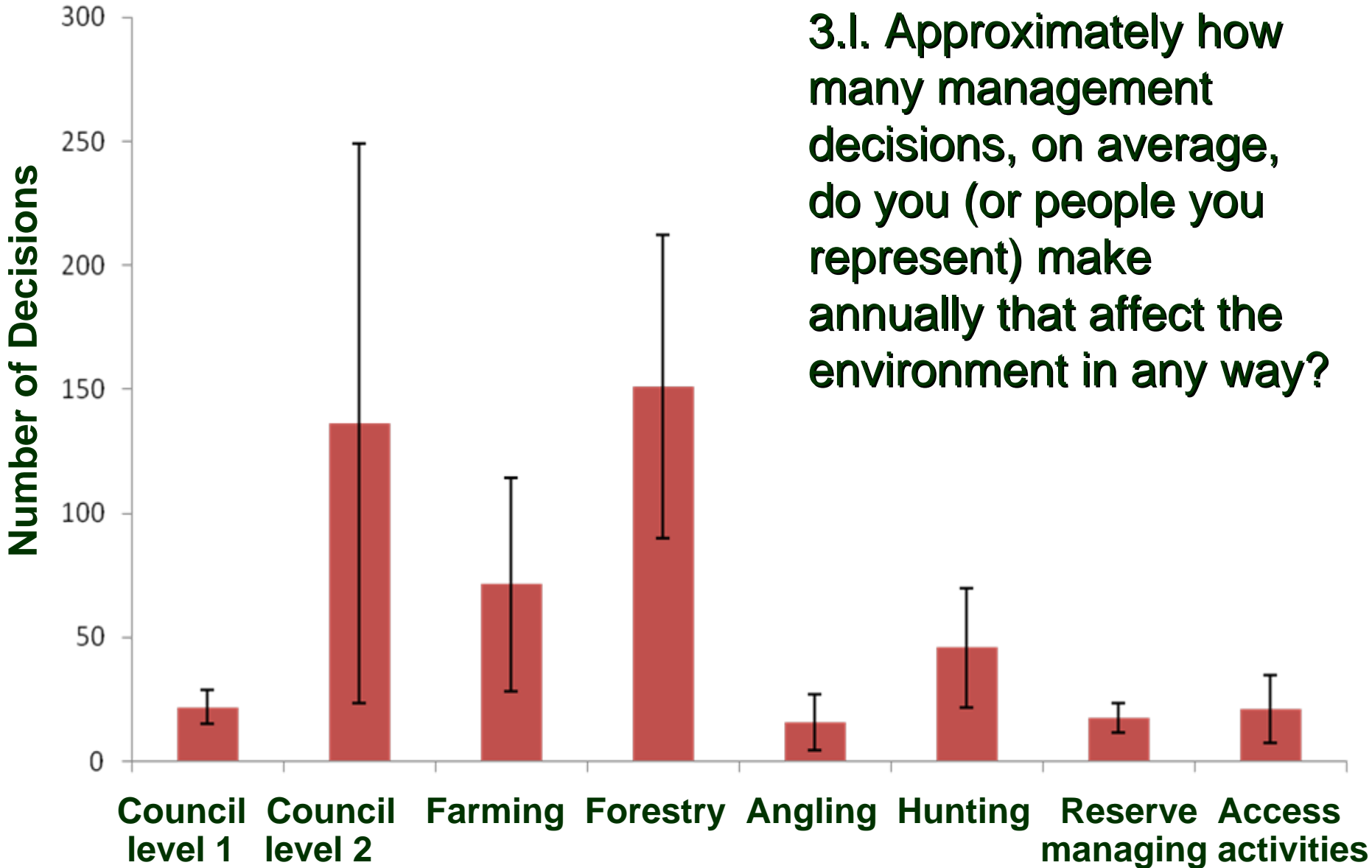
Who? 14 partners/10 countries

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)

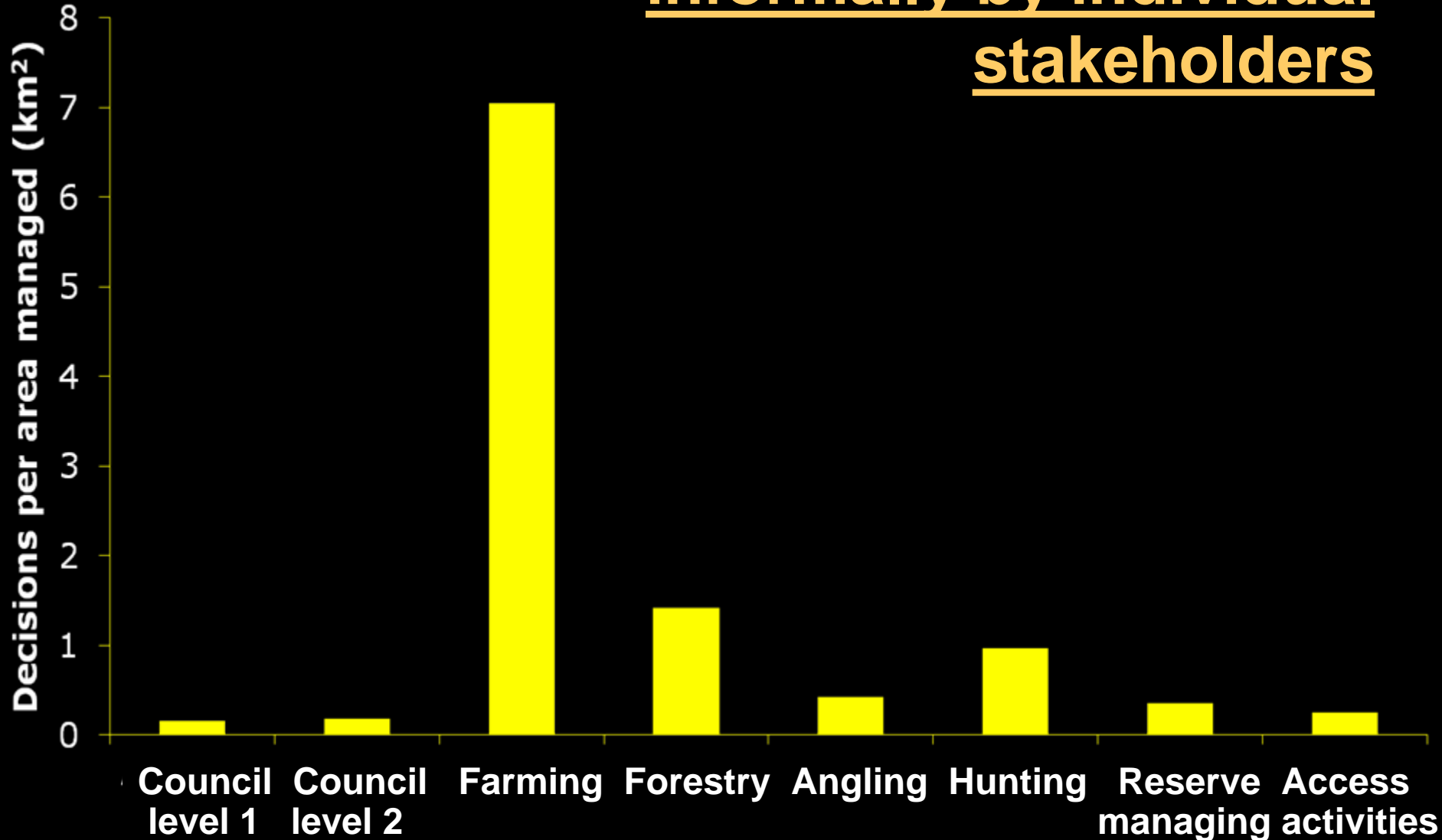
Why? (TESS objectives)

Europe is losing biodiversity and ability to provide ecosystem services. **Formal Environmental Assessment processes (Environmental Impact Assessment, Strategic EA) 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.**

Who makes local decisions?



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



What? (TESS abstract)

We seek to complement formal assessment with an internet-based Transactional Environmental Support System that:

(a) collates all ways to leverage biodiversity enhancement, uses models to predict economic & biodiversity impacts of small-scale actions, and delivers context-adaptive decision support, so that local people can optimise incomes from ecosystem services, in exchange for

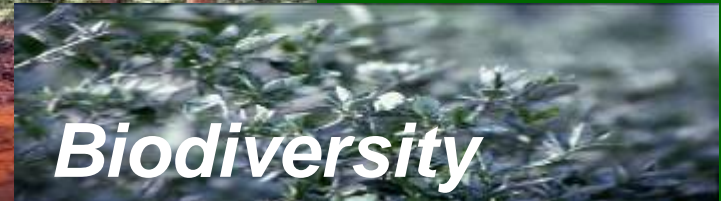
(b) information on their decisions, and monitored results, which integrate to support decisions of central assessors for adaptive governance (regulations & fiscal incentives).

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**

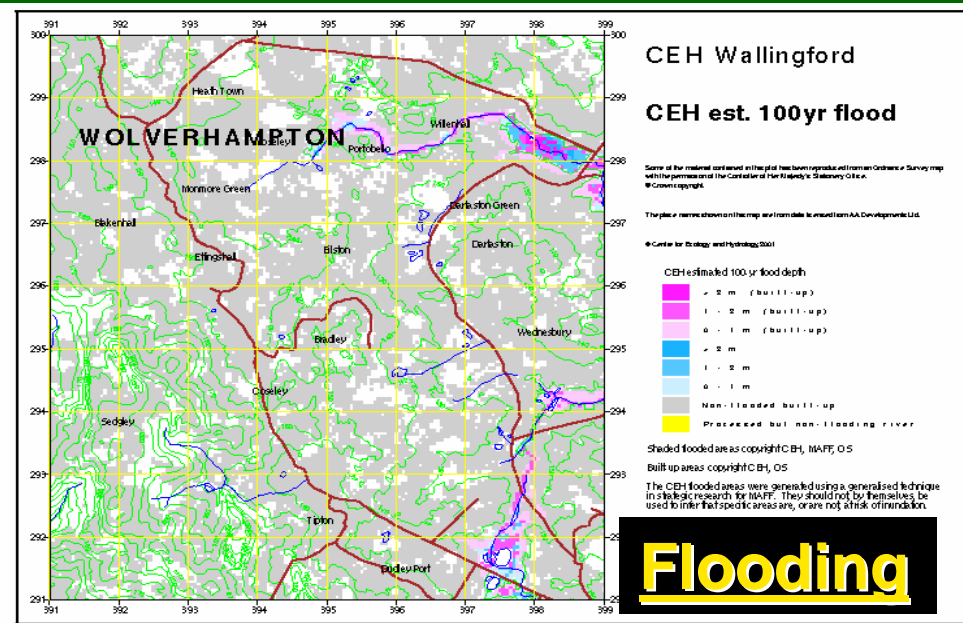
- 1. What does central policy and planning have?
Capability to produce complex knowledge.**

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

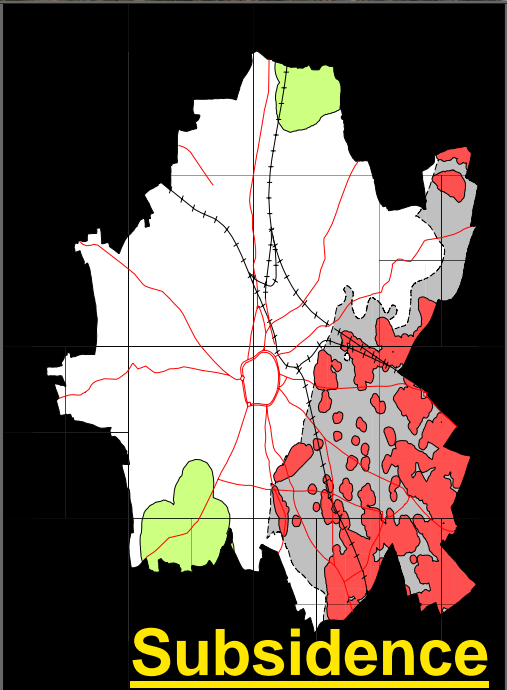




Managing Waste



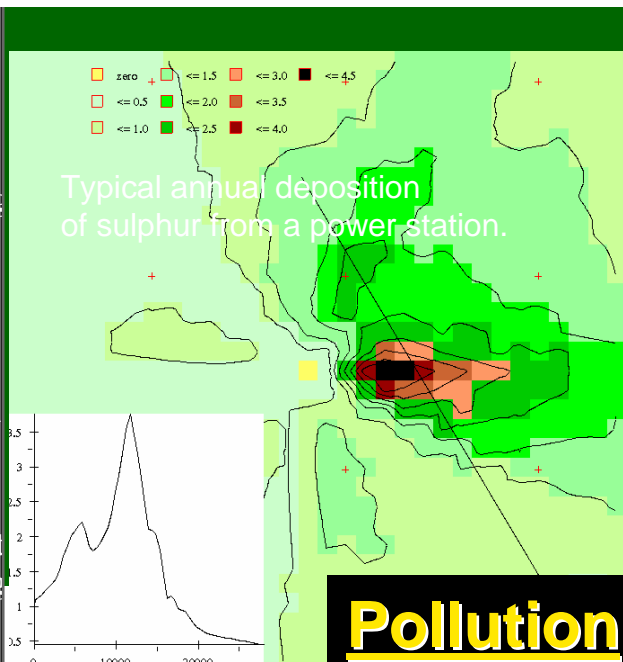
Flooding



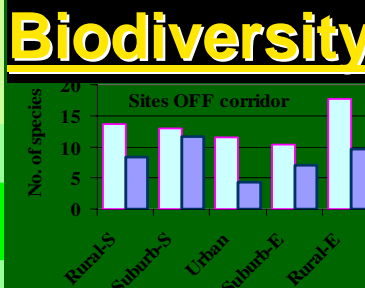
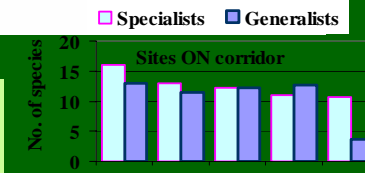
Subsidence

UNDERMINING

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



Pollution



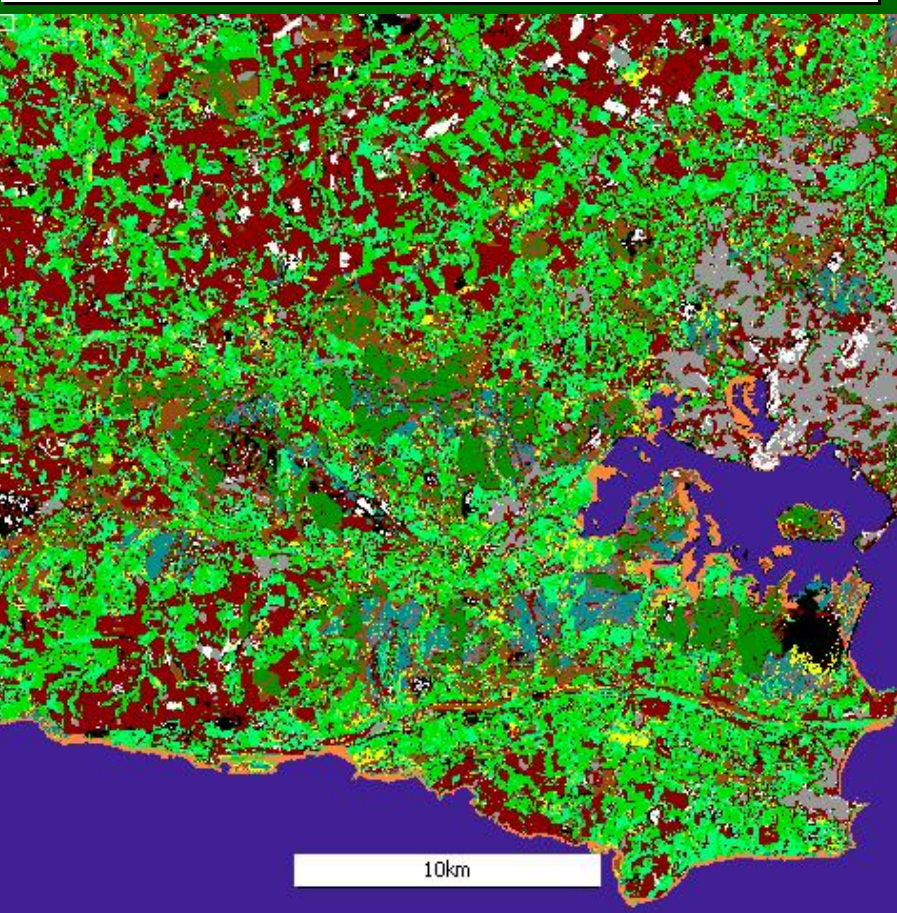
Biodiversity

How? An exchange between local stakeholders & central policymakers

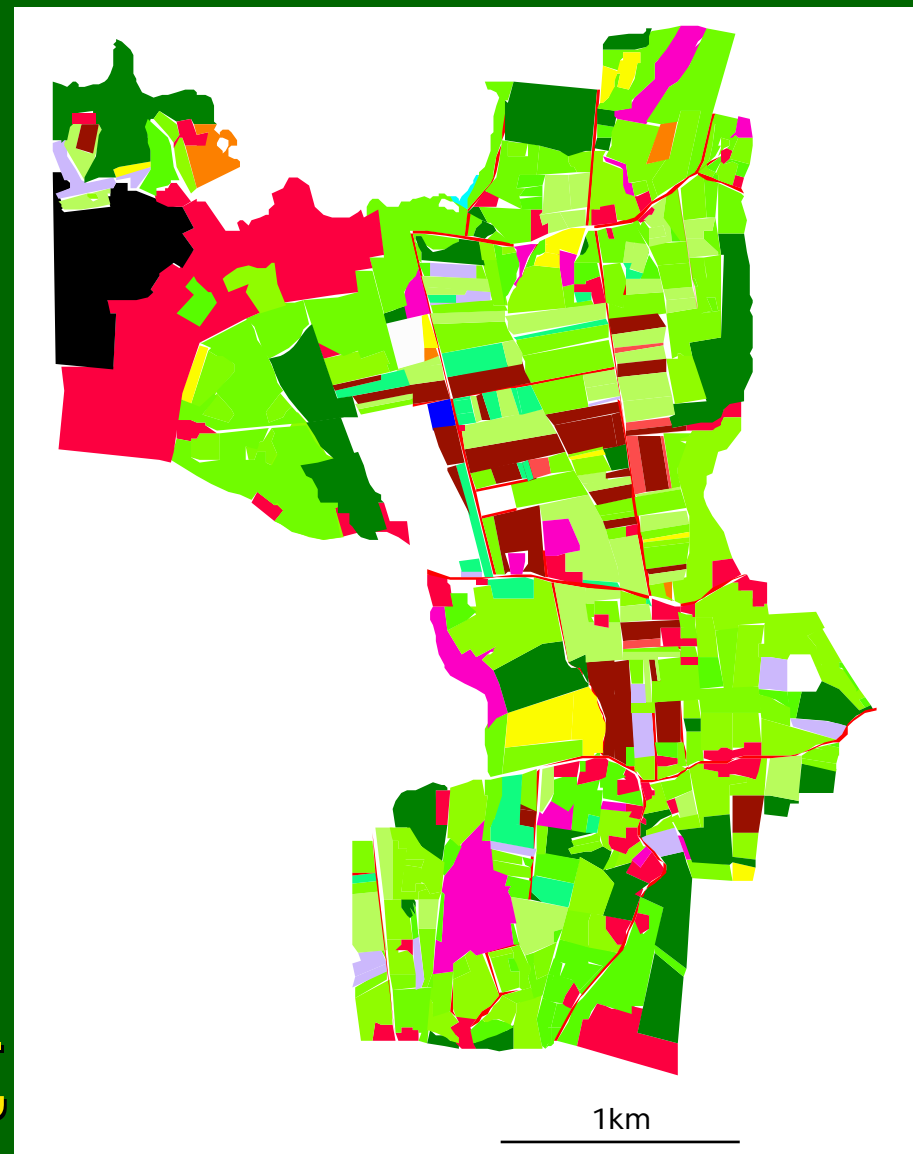
Decision support for managers of land and species: **Councils, Farmers, Foresters, Reserve managers, Anglers, Hunters, Access Interests**

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)

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.

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>

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.

**Supporting
Regulating**

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

Provisioning

*Extensively private goods, can
become livestock & intensive
crops that impact biodiversity.*

Cultural

*Science, education, recreation &
use of biodiversity all provide
incentives to de-intensify land
and restore biodiversity –
BUT HOW CAN THEY HELP?*

How can de-intensification help reverse biodiversity loss?

Understanding of causes of loss 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: who pays? – Are public funds (e.g. agri-environment) large enough? Anything else...?

Convention on Biological Diversity

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

Article 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...?)**



SPEND: Hunting
(private)

in 2006
in the EU

€16
billion

Angling

€19
billion

Watching

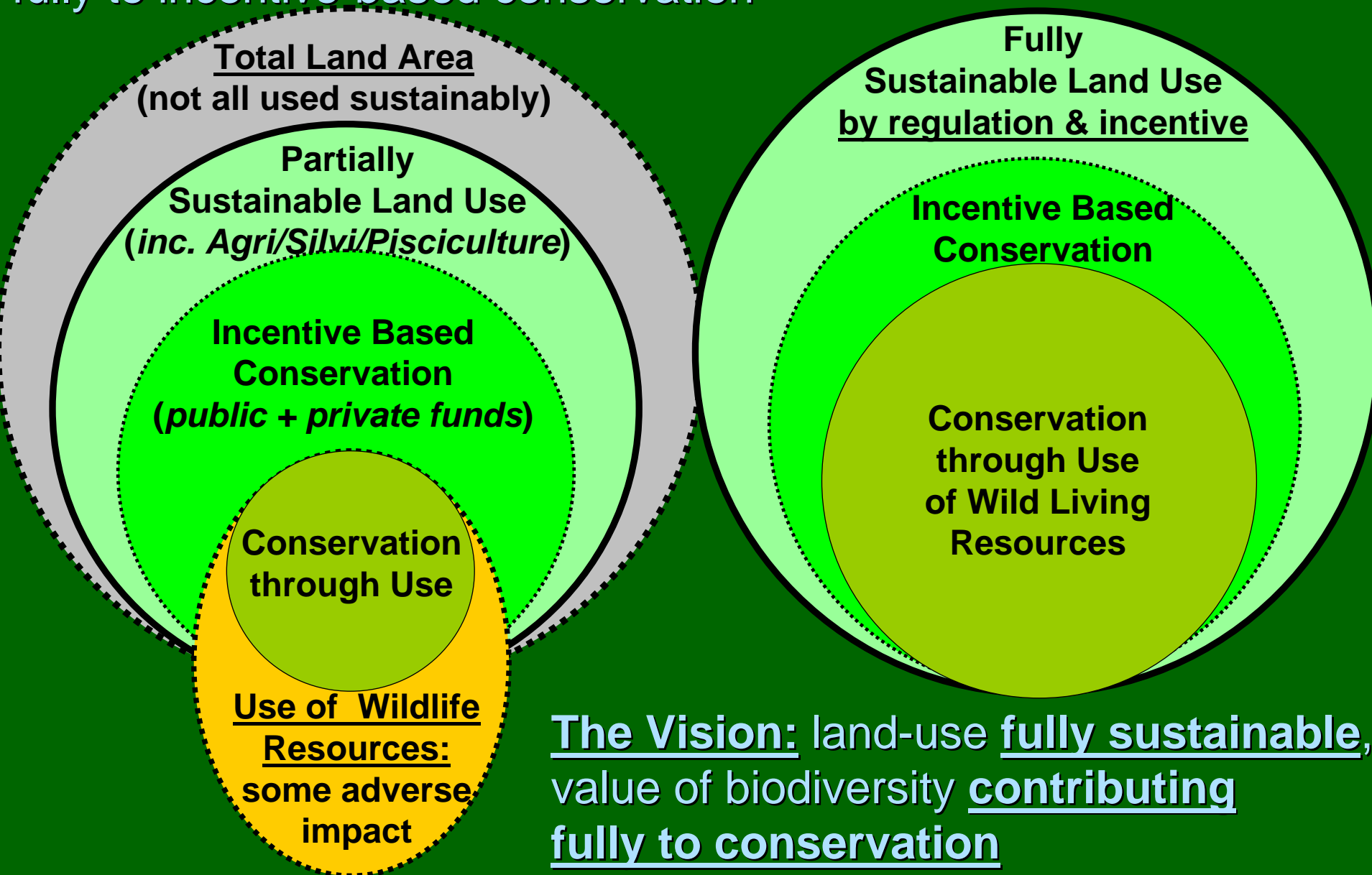
€8
billion

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)

Now: land-use not fully sustainable,
wild resource use not contributing
fully to incentive-based conservation

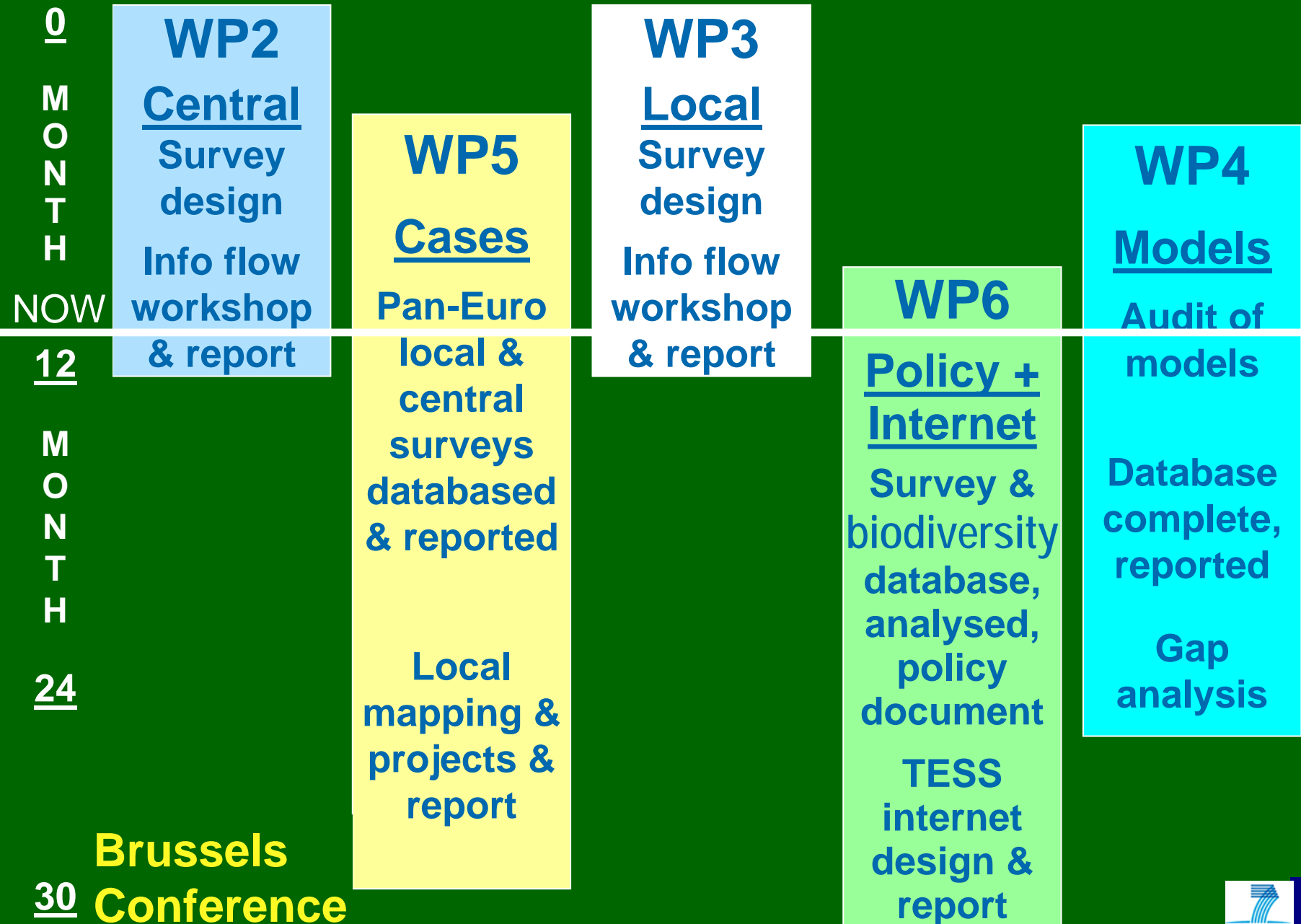
The TESS vision



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).

GANTT-like TESS work-packages





**Thank you
for listening**