Transactional Environmental Support System

A Transactional Environmental Support System for Europe:

Who, Why, What, How?

Robert Kenward, Anatrack Ltd

2007 - 2013

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)

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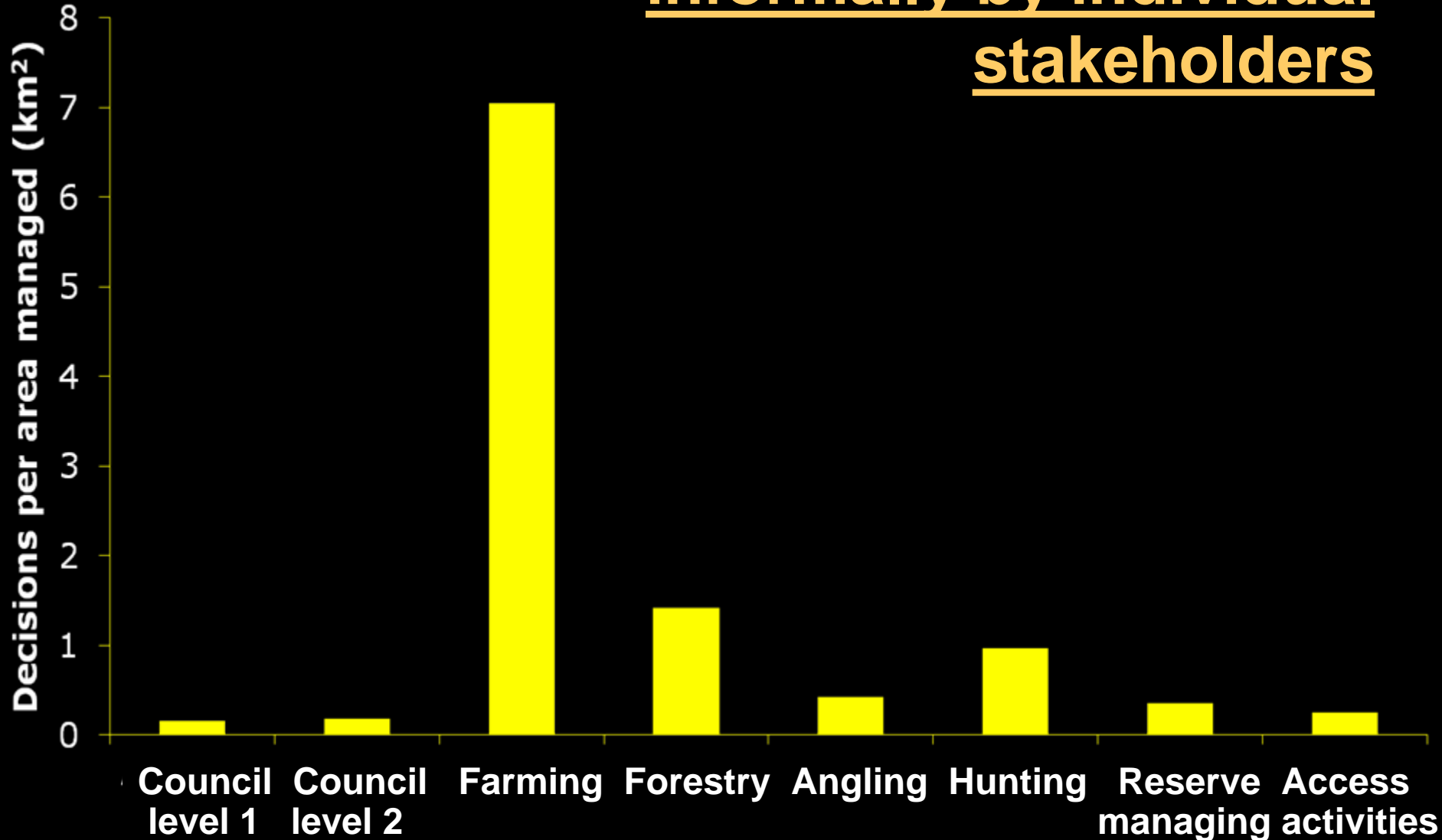
Europe is losing biodiversity and ability to provide ecosystem services. Formal Environmental Assessment processes (Environmental Impact Assessment, Strategic EA) give some protection. However, individual local stakeholders who manage land and species also make daily informal decisions, within an envelope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

Who makes local decisions?

3.l. Approximately how many management decisions, on average, do you (or people you represent) make annually that affect the environment in any way?
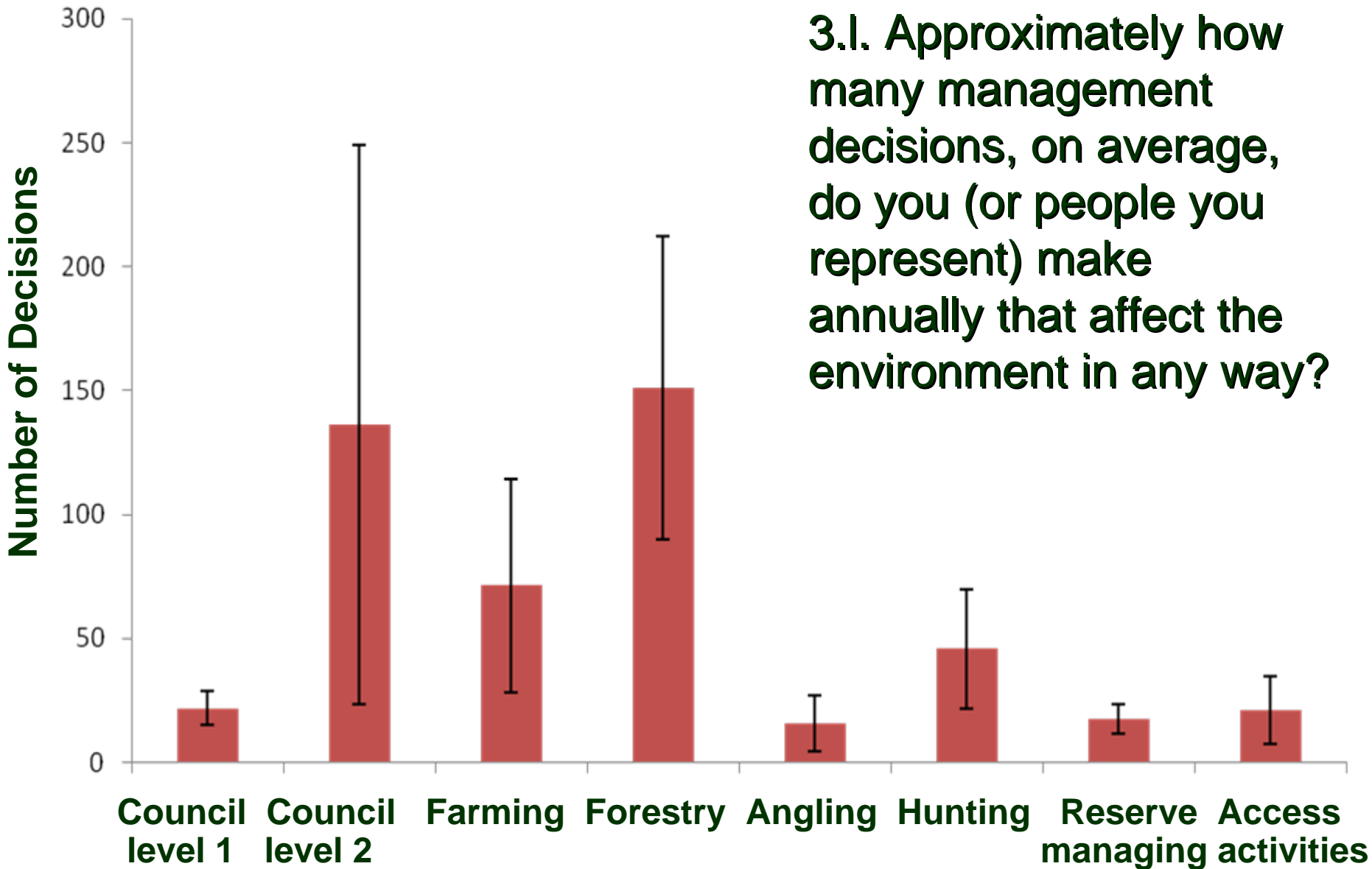
in terms of area managed, decisions are mainly made informally by individual stakeholders

Y-axis: Decisions per area managed (km²)

Categories: Council level 1, Council level 2, Farming, Forestry, Angling, Hunting, Reserve managing activities, Access

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).

Decision support for managers of land and species: Councils, Farmers, Foresters, Reserve managers, Anglers, Hunters, Access Interests
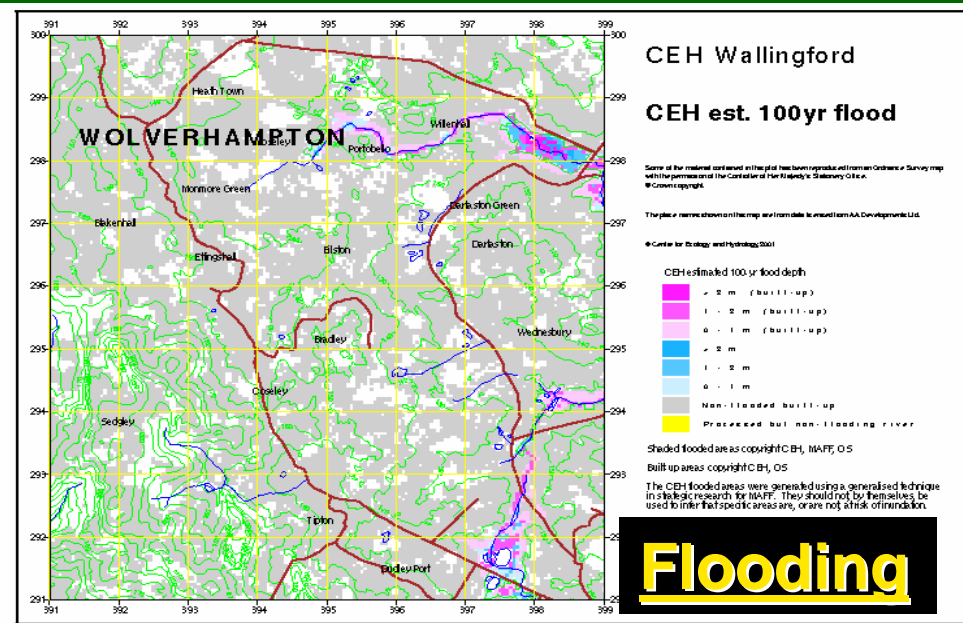
1. What does central policy and planning **have**? **Capability to produce complex knowledge.**

TESS — Transactional Environmental Support System

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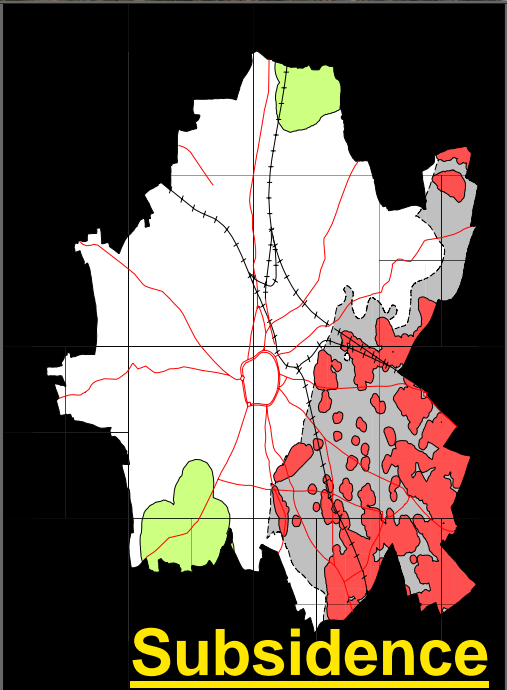
Land stability *Subsidence*

Flood Hazard

Pollution

Biodiversity

Origin: BGS, CEH and Nottingham University
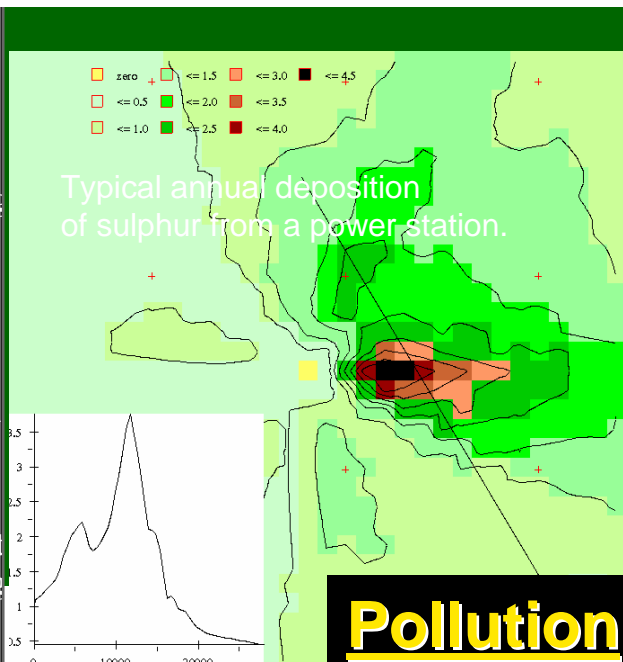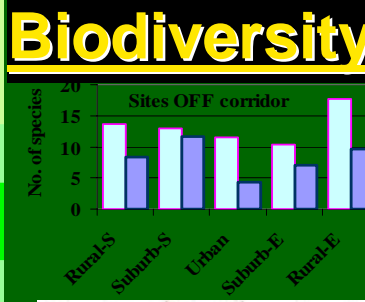
Some capabilities

Managing Waste

Flooding

UNDERMINING

Exposed coalfield. Risk of subsidence over former workings

Exposed coalfield. Areas of potential subsidence over undocumented work

Possible minor subsidence relating to modern deep mining
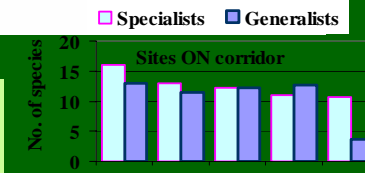
Subsidence

Biodiversity

Pollution

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,**

10km
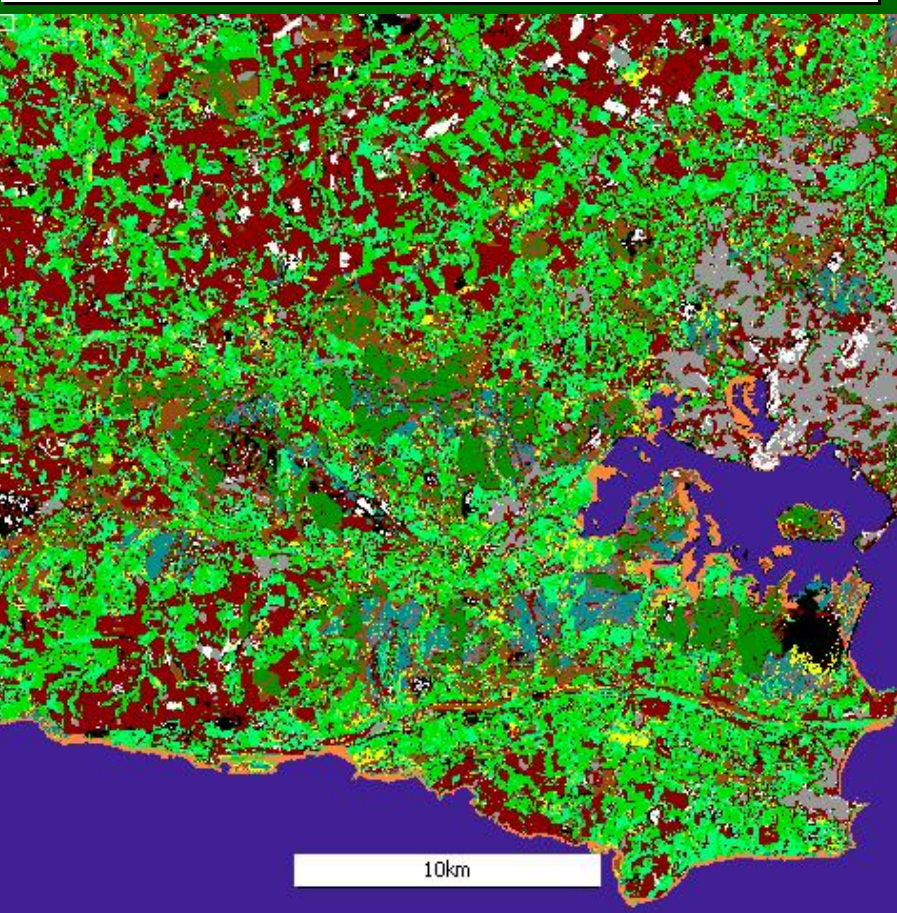
so is best in combination with local mapping (eg. farm plans, civic groups) and species monitoring (e.g. by wildlife watchers, hunters & anglers).

1km

Ground-based for detail, (by Swedish hunters, 1985)
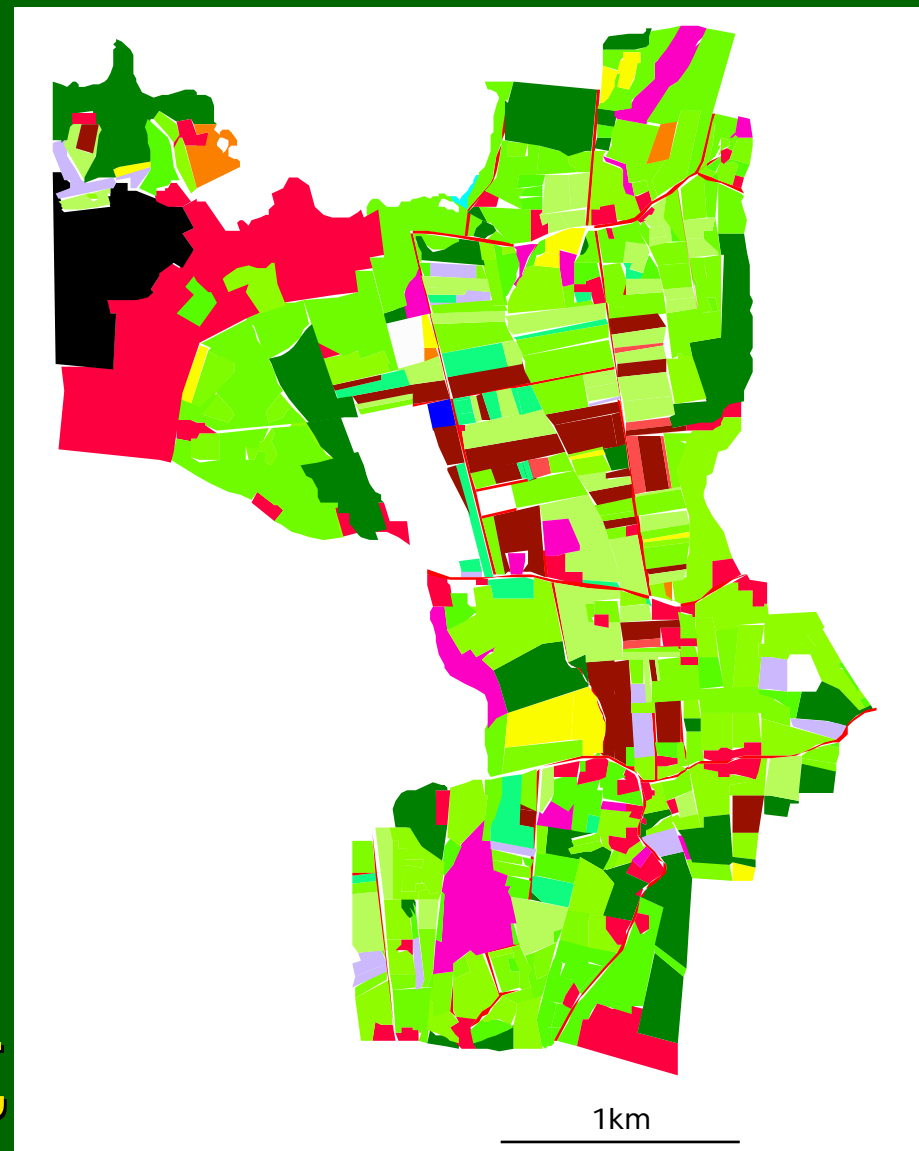
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Decision support for managers of land and species: Councils, Farmers, Foresters, Reserve managers, Anglers, Hunters, Access Interests

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

TESS — Transactional Environmental Support System

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

How? (TESS abstract)

TESS
Transactional Environmental Support System

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

<u>Requirements of Convention on Biological Diversity</u>, 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?

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: <u>**Hunting**</u>   <u>**Angling**</u>   <u>**Watching**</u>
(private)

**in 2006
in the EU**

€16 billion

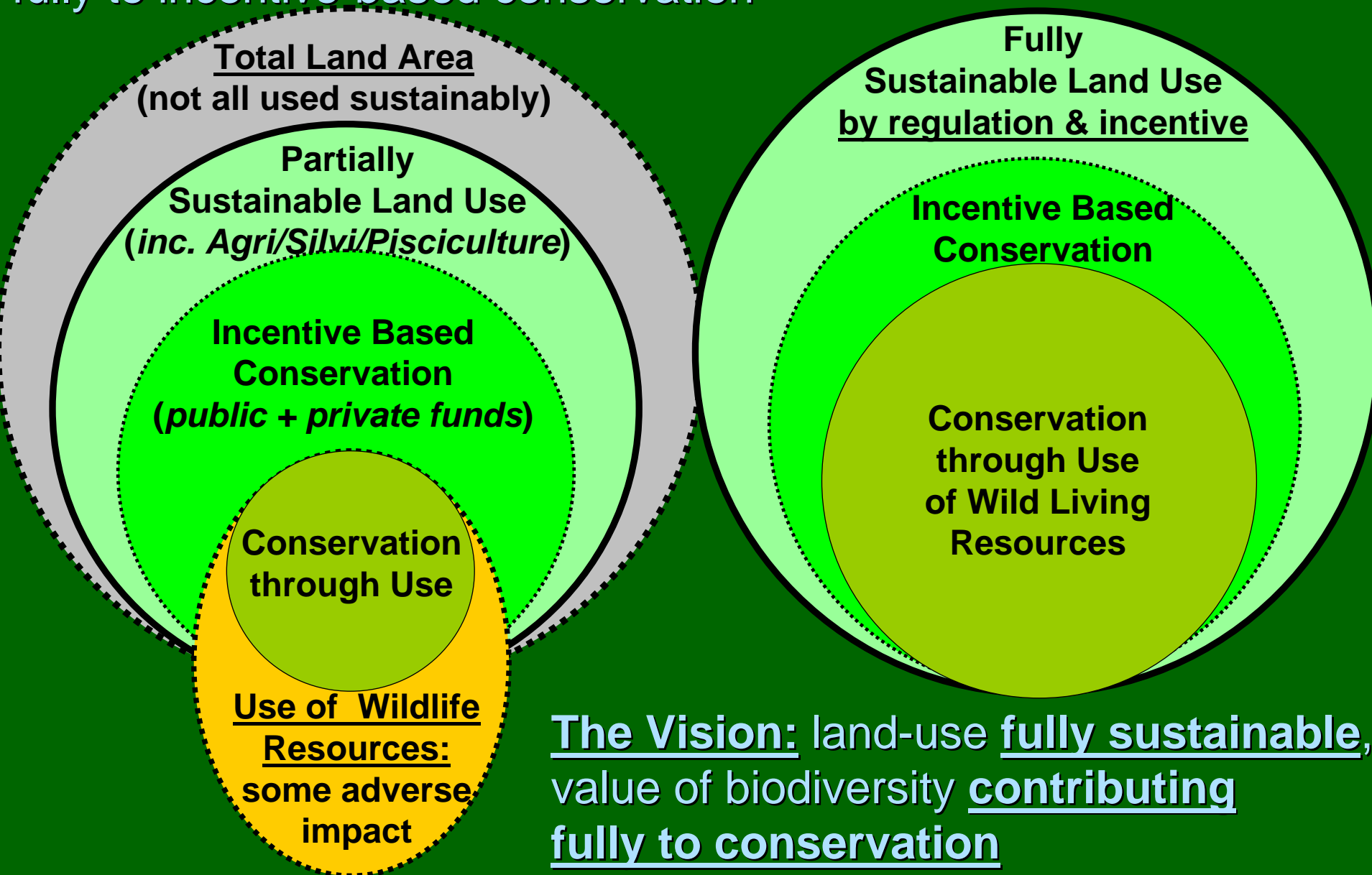€19 billion

€8 billion

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

- **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)**

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

The TESS vision

Total Land Area (not all used sustainably)

Partially Sustainable Land Use (*inc. Agri/Silvi/Pisciculture*)

Incentive Based Conservation (*public + private funds*)

Conservation through Use

Use of Wildlife Resources: some adverse impact

Fully Sustainable Land Use by regulation & incentive

Incentive Based Conservation

Conservation through Use of Wild Living Resources

The Vision: land-use **fully sustainable**, value of biodiversity **contributing fully to conservation**
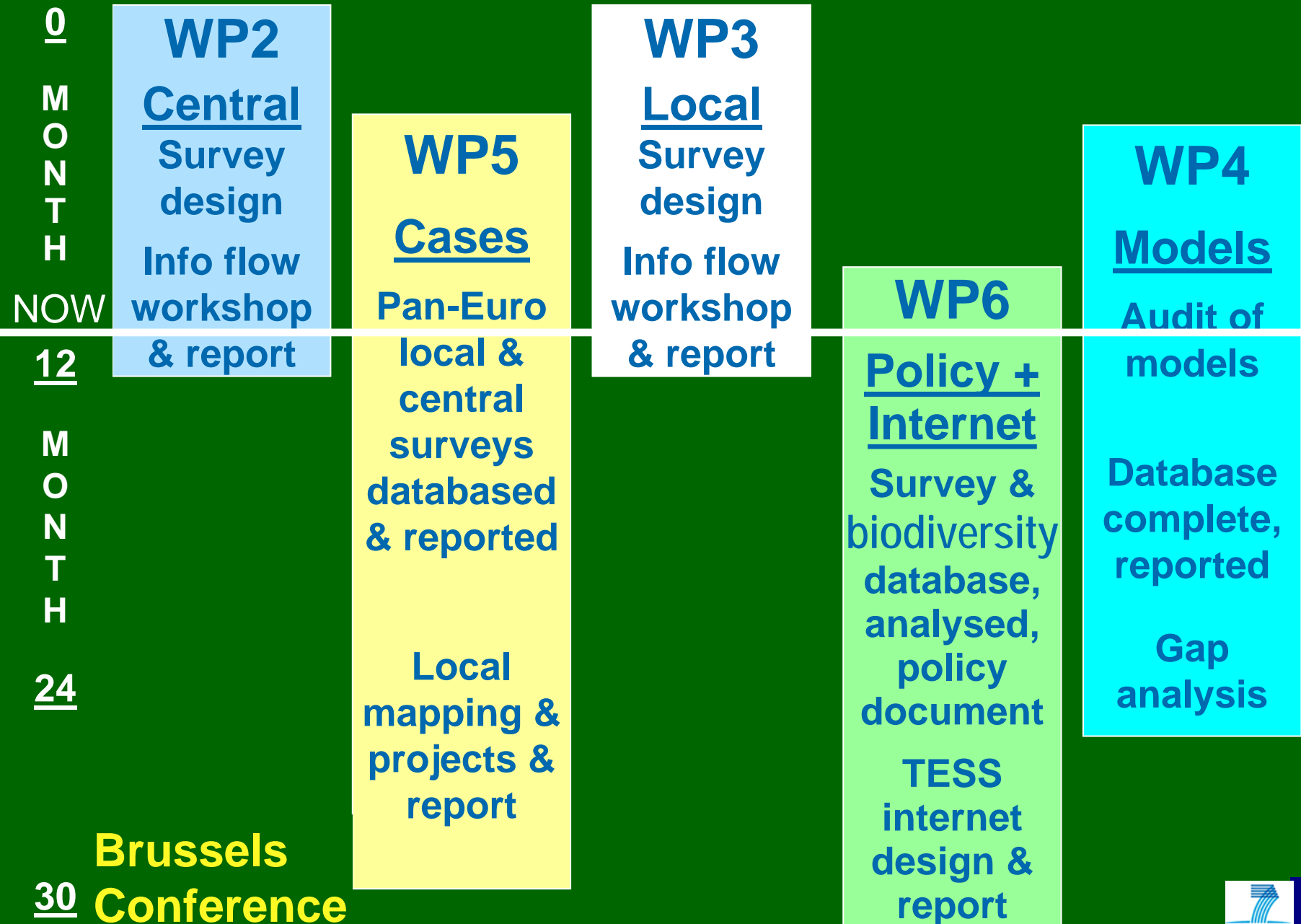
• Europe is losing ability to provide ecosystem services based on wild biodiversity.

• 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

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M O N T H

NOW

12

M O N T H

24

30

WP2
Central
Survey design

Info flow workshop & report

WP5
Cases
Pan-Euro local & central surveys databased & reported

Local mapping & projects & report

WP3
Local
Survey design

Info flow workshop & report

WP6
Policy + Internet
Survey & biodiversity database, analysed, policy document

TESS internet design & report

WP4
Models
Audit of models

Database complete, reported

Gap analysis

Brussels Conference

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Thank you for listening

www.tess-project.eu