Transactional Environmental Support System

TESS
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Engaging citizens to Ecosystems Management: lessons learnt from the TESS project

Jason Papathanasiou

2007 - 2013

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Run for **33 months**
and brought together **14 partners from 10 European countries**

There were also Country Coordinators from
**the 27 EU member states
+ Norway, Switzerland, Turkey and Ukraine**

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The project had 5 main research phases:

1. Analysis of government information requirements at national and intermediate levels and identification of local information needs.

2. Creation of a database of models suitable for bio-socio-economic predictions and identifications of gaps in the supply of models and data, compared with the requirements for information.

3. Case studies research and a Pan-European survey and specifically:

a) Case studies of local communities tested how best to meet local decision support needs in exchange for local monitoring that meets central policy requirements. Case studies also examined whether local monitoring can supply the extra environmental data that are needed.

b) A survey of government and local practices, in the 27 EU member states, plus Norway, Switzerland, Turkey and Ukraine, identified factors associated with effective application of formal assessments (EIA+SEA), together with priority areas for internet-based decision support and local monitoring to benefit livelihoods and biodiversity.

4. **The socio-economic and technical design for a Transactional Environmental Support System (TESS),** which is the major result, in order to support exchange of environmental information between central and local levels, as well as to meet commitments in many areas of the Convention of Biodiversity.

5. **Recommendations and policy guidelines (+ dissemination)** based on how biodiversity trends relate to different practices across Europe, addressed to those involved in the formulation, implementation, monitoring and evaluation of policies - at European, national, regional, and local levels

Why: formal systems cannot easily reach to the individual manager

- Europe is losing biodiversity and ability to provide ecosystem services.

- Formal Environmental Assessment processes give some protection and guidance.

- However, individual local stakeholders who manage land and species also make daily informal decisions based mainly on local environments.

- These myriad small decisions summate to change land use and the state of our environment.

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We sought to complement formal environmental assessment with an internet-based Transactional Environmental Support System (TESS) that:

(a) will make it easy for policy makers to integrate local knowledge into their decision making, while

(b) guiding and encouraging local activities that restore and maintain biodiversity and ecosystem services.

Our vision was to enlighten, encourage and empower local communities to support biodiversity restoration across Europe.

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Barriers (top to bottom):
- Unlikely to 'make a difference'
- Difficult to access
- Too expensive
- Too old
- Too difficult to interpret
- Not available at a useful scale
- Insufficient accuracy
- Unavailable - security/privacy
- Too difficult to find

Legend:
- Farmers
- Villagers
- Farming & rural business
- Forestry & non-timber products
- Fisheries & angling
- Hunting & recreational animals
- Nature watching & reserves
- Recreational access
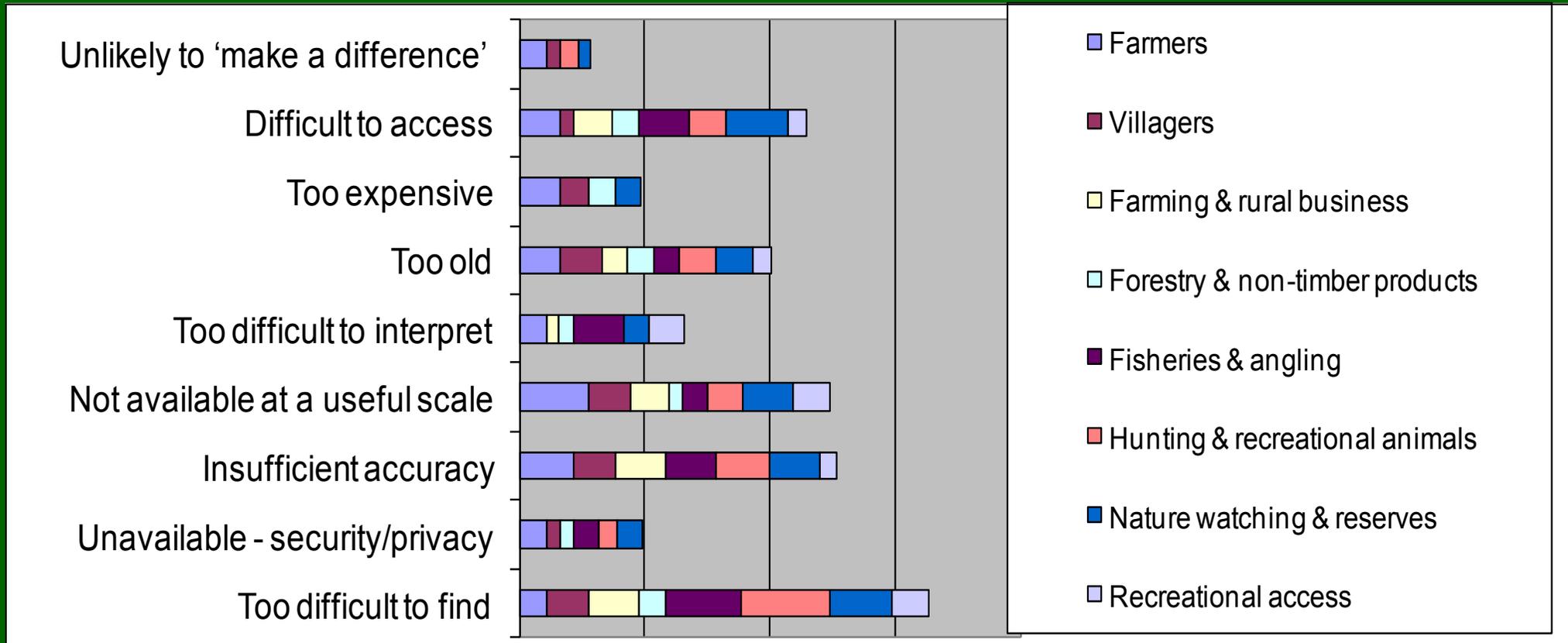
Each barrier was encountered by most of the stakeholders
Difficulty in finding information - major issue
Accuracy, scale, access & age – important

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Local case studies

Local case studies consisted of two projects:
a) the mapping project and
b) the socioeconomic project

Objectives:
a) test how best to meet local decision support needs in exchange for local monitoring that meets central policy requirements
b) assess local attitudes and capabilities

Such information requires mapping of ecological information, for combination with socio-economic information.

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10 case studies from 9 countries

Partner	Study area
AUTH	Municipality of Kerkini (Greece)
IST	Laulasmaa Landscape Protection area (Estonia)
PBS	Zator (Poland)
ERENA	Southeastern Alentejo (Portugal)
DDNI	Sfantu Gheorghe commune (Romania)
WWF-Turkey-1	Egirdir lake, Isparta (Turkey)
WWF-Turkey-2	Firtina Valley, Rize (Turkey)
BU/Anatrack	Frome Catchment (UK)
FACE	Municipality of Gehrden - Leveste (Germany)
SZIU	Bózsva (Hungary)

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Bózsva
(Hungary)

Zator
(Poland)

Laulasmaa
(Estonia)

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Alentejo
(Portugal)

Firtina Valley
(Turkey)
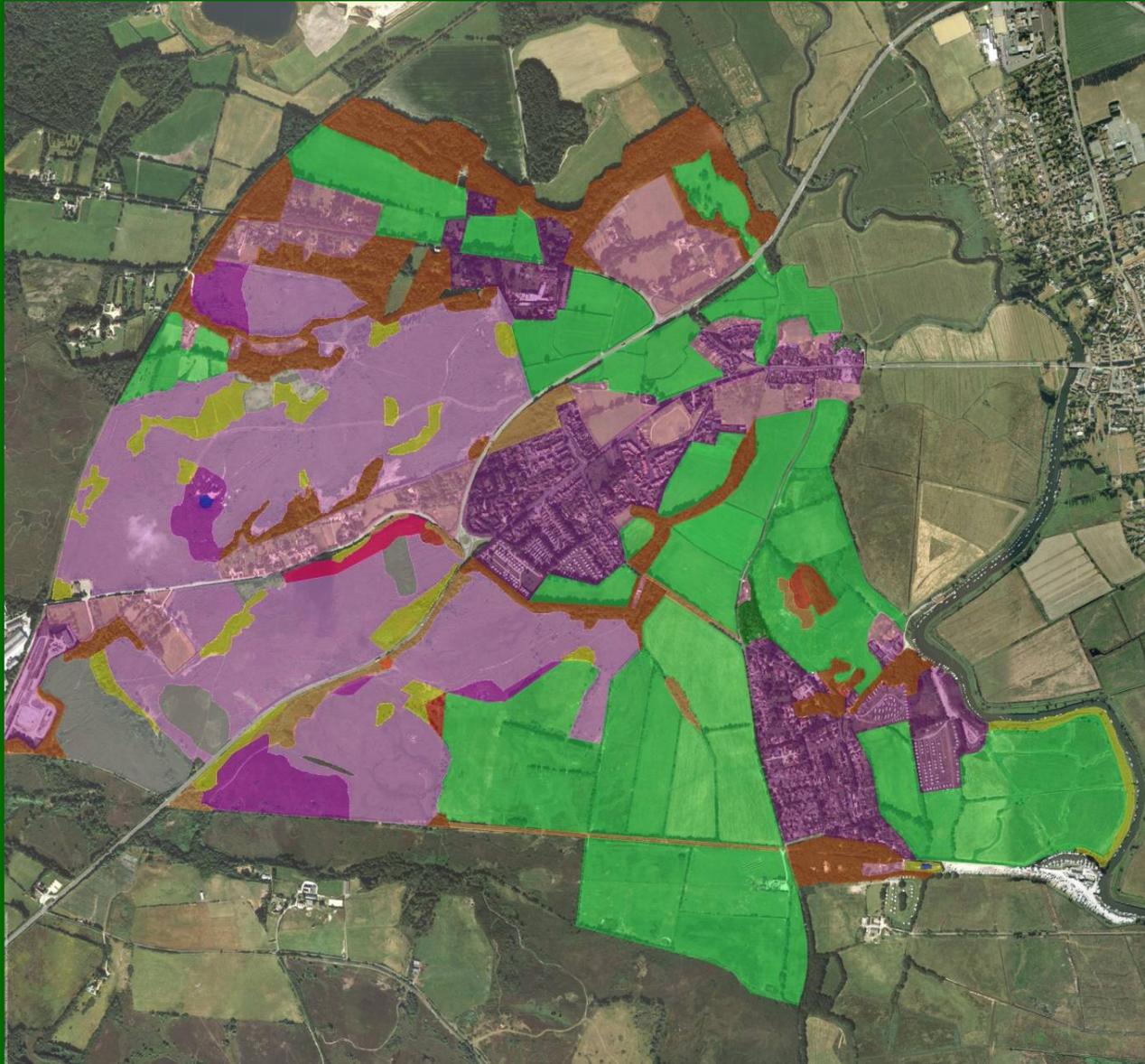
Maps from farmers

Do payments to farmers under the Common Agricultural Policy subsidy rules require a map from the farmer?

No — 17%
Yes — 83%
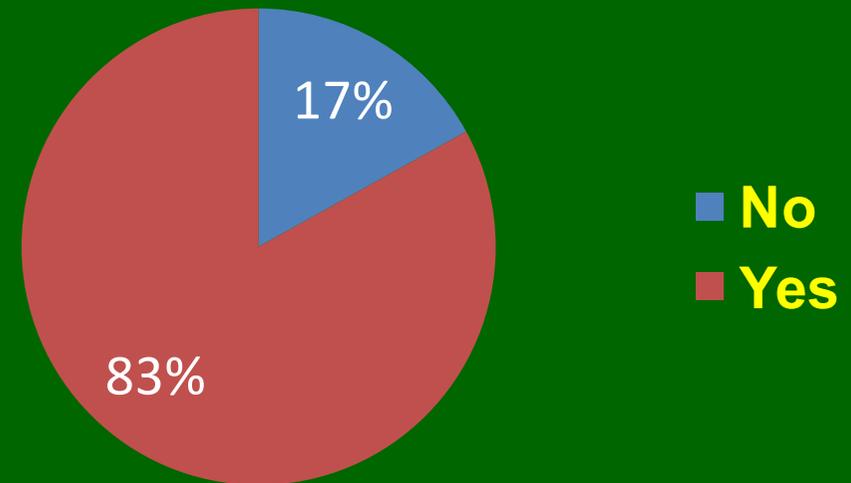
If 'yes', can this be in electronic format?

No — 12%
Yes — 71%
Not relevant — 17%
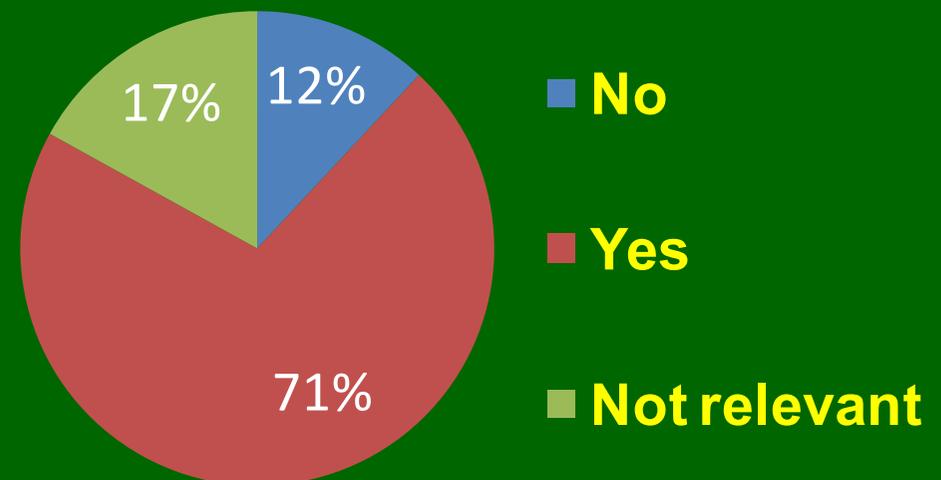
Mapping: Greek case study area

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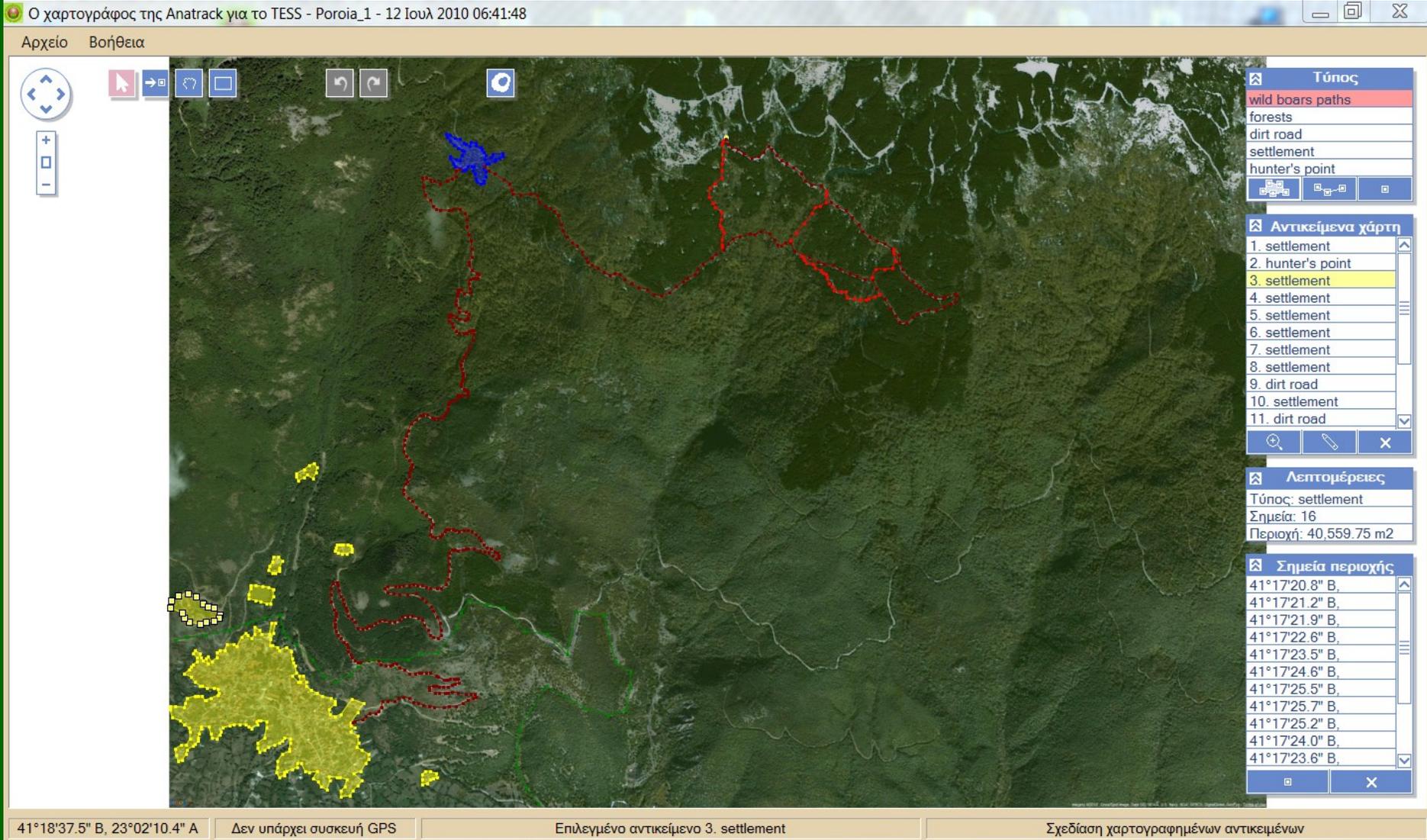
Objective

Develop a digital map of Sfântu Gheorghe local biodiversity for Common Sea-buckthorn (*Hippophae rhamnoides*) and Sand Morning Glory (*Convulvus persicus*).
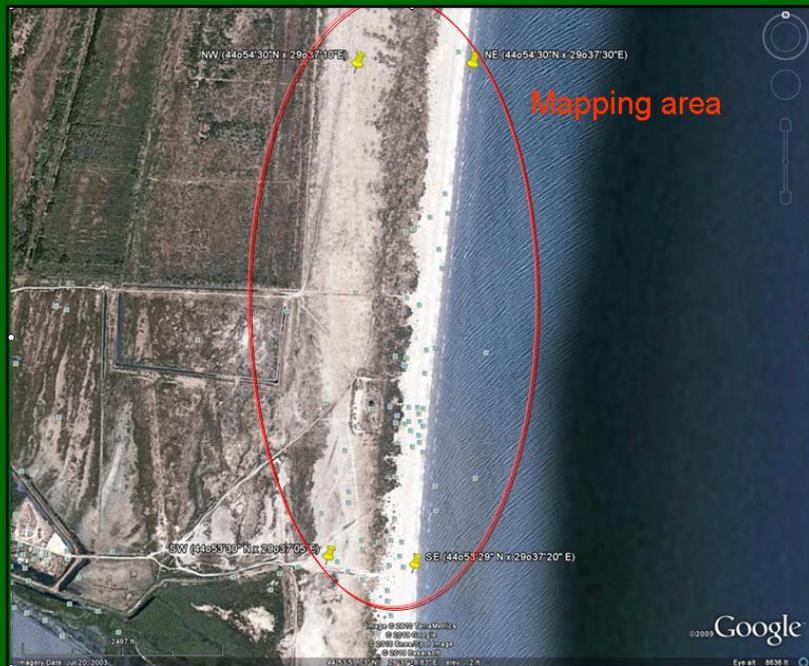
Mapping area

Study area: Black Sea coastline and beach on Sfântu Gheorghe locality, between 44° 54' 30'' N and 29° 37' 30'' E .

Methods: Anatract mapper software & Algiz7 table PC with GPS
Scientist & schoolchildren

Anatrack Mapper software worked properly with tablet PCs with integrated GPS for real time positioning in the field;

Children enjoyed for mapping their local biodiversity and habitats
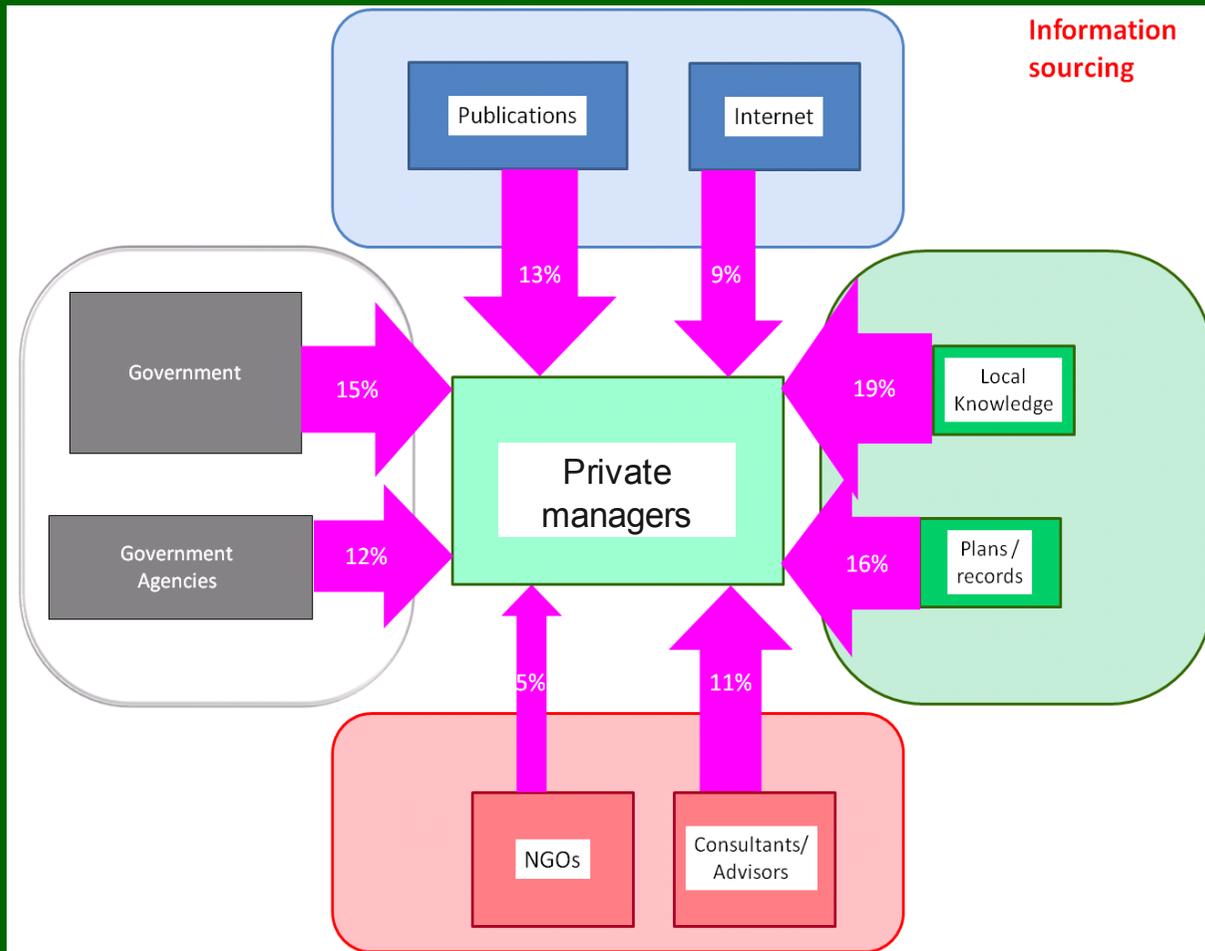
The proportion of information on biodiversity & ecosystem services that was sourced from different suppliers by private managers of land and species in general

A five-part questionnaire was developed:

• Administrative area background

• Case study project planning - engagement with the local community

• Before, for community and helpers

• End of the case study implementation

• Helpers after

4. Before, for community and helpers.

You will need to survey 20 households at random in your area to assess their attitudes and knowledge of environmental issues at the start and finish of the a list of households, or of the electorate, if this is available in your administrative area, or to randomise from a comprehensive list of street names and ho stratified basis). This sheet should also be filled by all helpers (i.e. those from the local community who volunteer to assist with the project work as adv problems accessing the above lists may use selected well stratified samples.

Question	Answer

All before

	Do you (or others in your household) ever engage in the following (please use X to indicate your answer):	Yes	No	If "Yes", about how much per adult was spent on this (fees, equipment, travel, lodging etc) in 2009?	Do you consider that those e to protect, maintain or	
					always	usually
a)	Feed birds or other wildlife?					
	Collect wild snails, fungi, fruits, flowers or other plant materials?					
	Do outdoor pursuits eg. walking/skiing/climbing/boating/camping/off-road cycling?					
	Go horse-riding?					
	Make excursions in order to watch wildlife?					
	Cultivate a garden or lawn?					
	Go fishing?					
	Go hunting with gun, dog or other animal?					
	Farming?					
	Forestry?					
	Do you (or others in your household) value wild species for (please use X to indicate your answer):	Highly		Not at all		

Socioeconomic: questionnaire data

Variables

- Feed birds or other wildlife
- Collect wild snails, fungi, fruits, flowers or other plant materials
- Do outdoor pursuits
- cycling
- Go horse-riding
- Make excursions in order to watch wildlife
- Cultivate a garden or lawn
- Go fishing
- Go hunting with gun, dog or other animal
- Farming
- Forestry

Benefits

- Food
- Wildlife-related recreation
- Tourism
- Other biodiversity-based source of income
- Aesthetics and other intrinsic value
- Environmental security such as flood protection
- Other benefits

Costs

- Damage from pest species to household food or property
- Damage from pests, predators or weeds to livestock, crops or woodland
- Increasing the risk of fire
- Increasing the risk of flooding
- Transmission of disease to humans or livestock
- Other issues

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For the main occupations and other sources of income dependent on land, biodiversity or other ecosystem services in the last 20 years, please indicate if they have increased or declined

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g. Statement
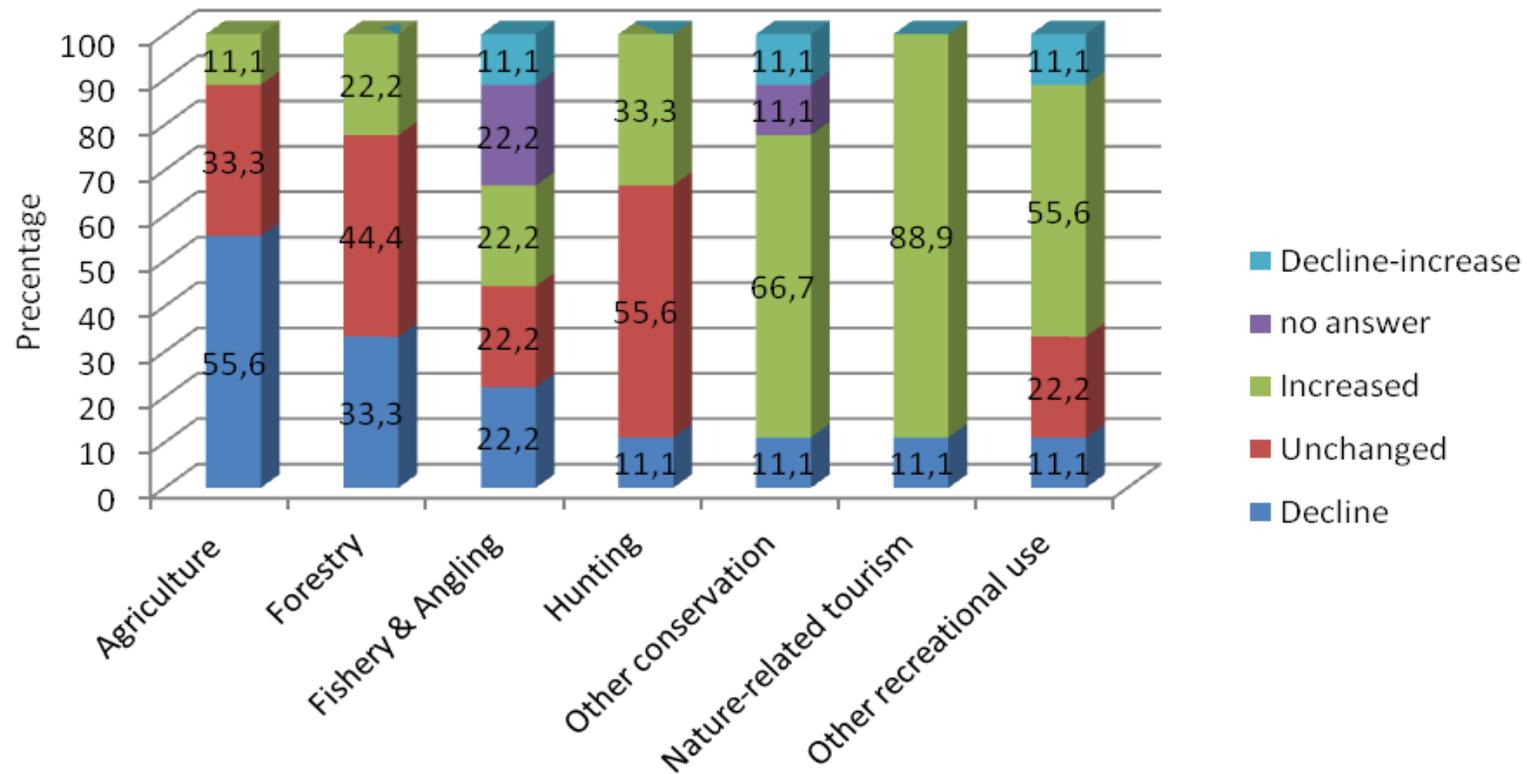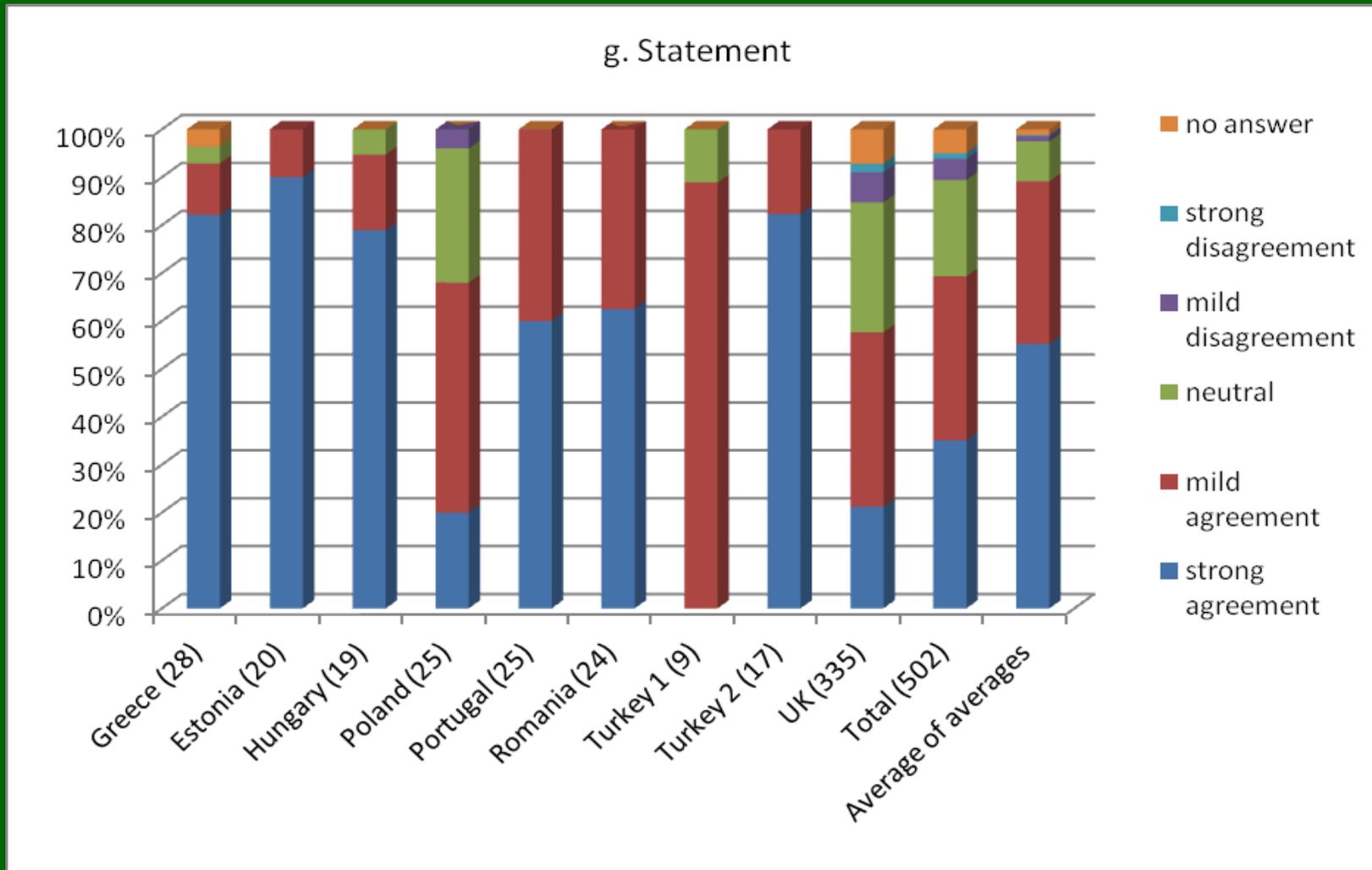
"It is time for all those who benefit from the richness of nature (biodiversity) and the services of ecosystems, not just those who wish to protect the environment, to contribute to its conservation"

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All case study areas
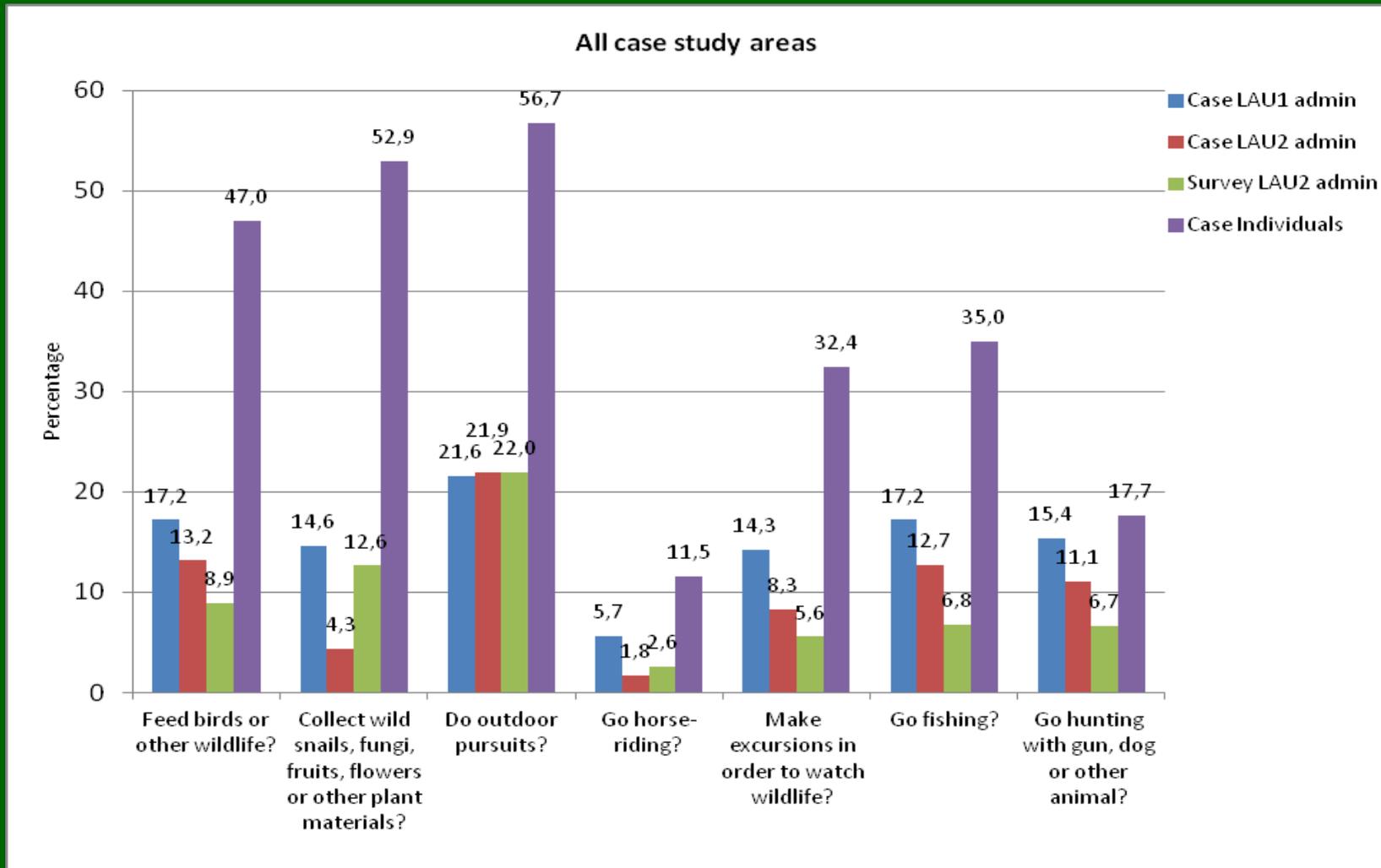
Percentages of people involved in particular activities in all case studies according to estimates from LAU1, LAU2, averaged LAU2 and Individuals
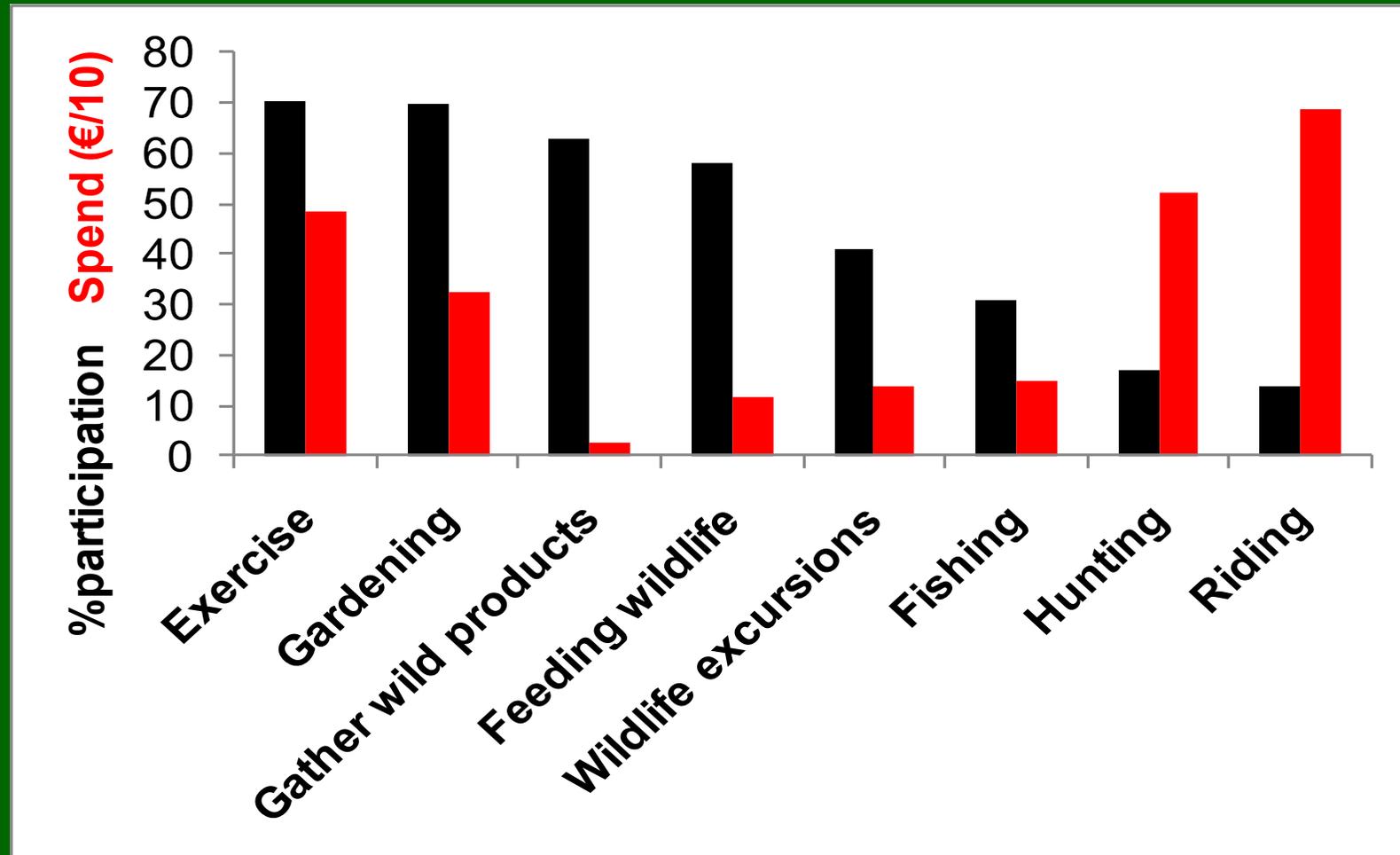
The percentage of rural households sampled across 8 EU states participation that participated in various activities in the countryside (black bars) and their average annual spending on it (red bars).

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c. Before the project, had there been other projects like this in your area?
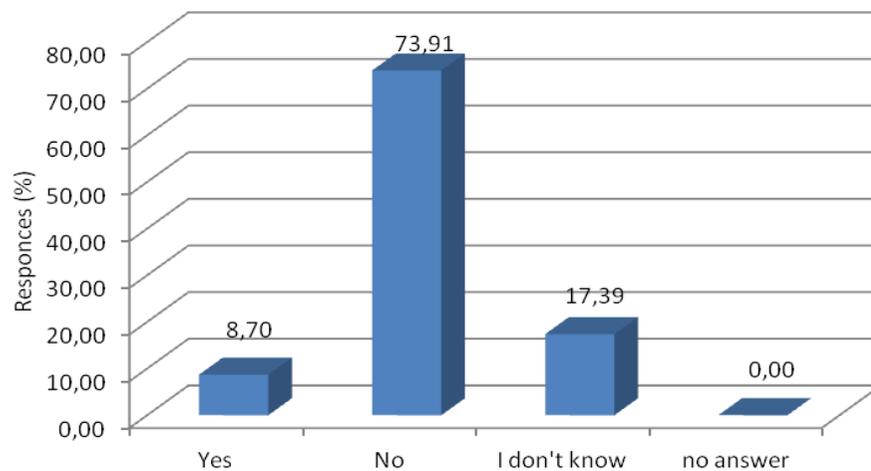
j. How do you rate your gain in knowledge from participation?
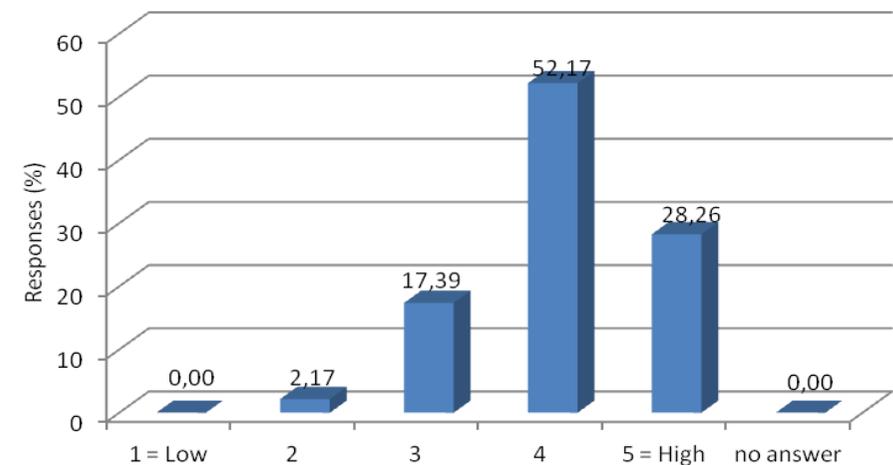
d. Before the project, did you have any experience with mapping equipment?
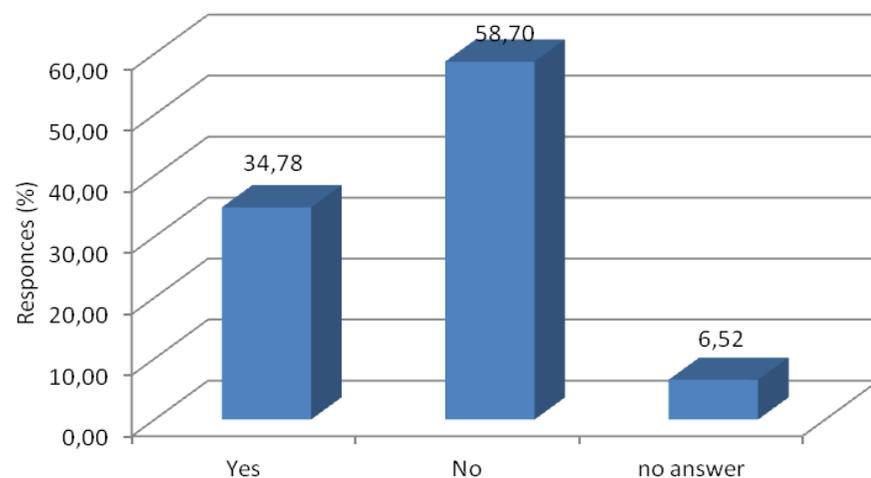
n. Do you think that this kind of projects must be supported nationally too?

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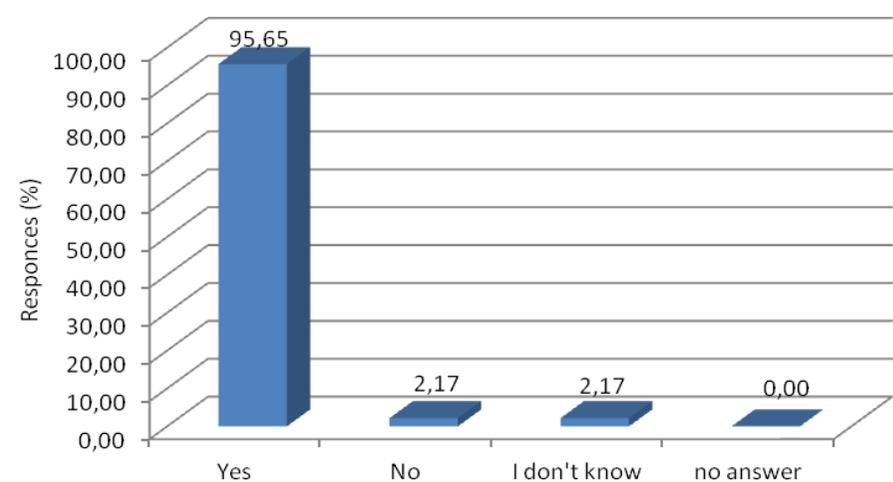
- local residents' motivations to participate in both the socio-economic and mapping project vary

- it is a common desire for locals across case studies to have more data

- continually updated and easily and freely accessed databases would be very welcomed

- the case studies' implementation teams recorded a genuine interest of the local populations' willingness to participate voluntarily in such projects

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Local people appeared to be in position to provide:
  a) data regarding mostly previous mapping and other relevant projects, if any,
  b) some data on species/habitats and c) on main occupations and economic activities.

Local participants encountered problems during the socioeconomic project planning:
  • lack of IT education and training,
  • mistrust between the locals as well as towards authorities,
  • lack of necessary data,
  • complicated decision making processes
  • and the fact that local people are not fully aware of the opportunities for activities related to biodiversity.

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- A very strong proportion of the local residents across case studies have a rather positive and pragmatic attitude towards biodiversity
- Estimates of participation in the activities at LAU1 and LAU2 in the case studies generally underestimated the actual participation of individuals quite strongly.
- Knowledge and data shared by local residents could be integrated from the regional and local level into environmental decision making and support sound elaboration of EIAs and SEAs.
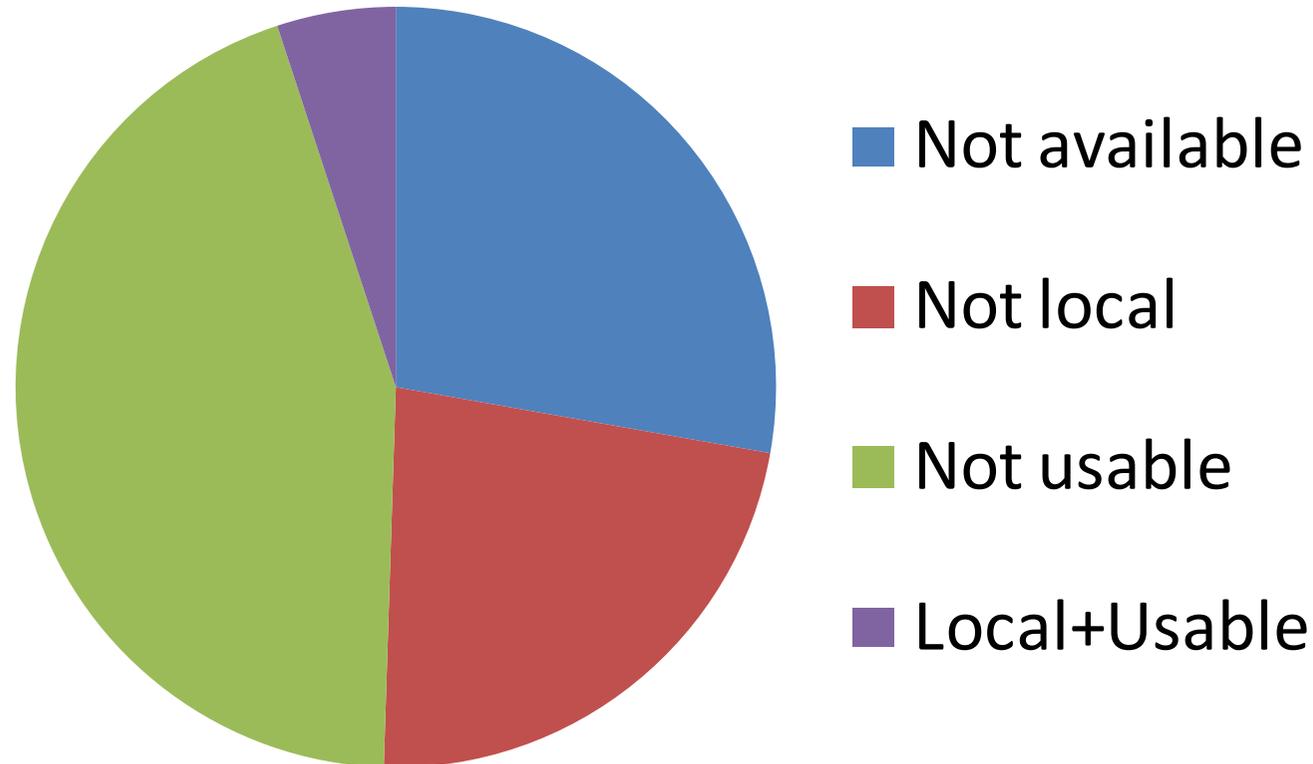
The proportions of 198 initial models in the TESS database that were not available as downloads or web-services, not suitable for local level, or not user-friendly enough for local managers of land, water and species

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Ecosystem service type	Information demand	Information supply	Conclusion
Biodiversity	high	low	thematic gap!
Provisioning	low	high	ok
Regulating	medium	low	thematic gap!
Supporting	medium	high	ok
Cultural	medium	low	thematic gap!
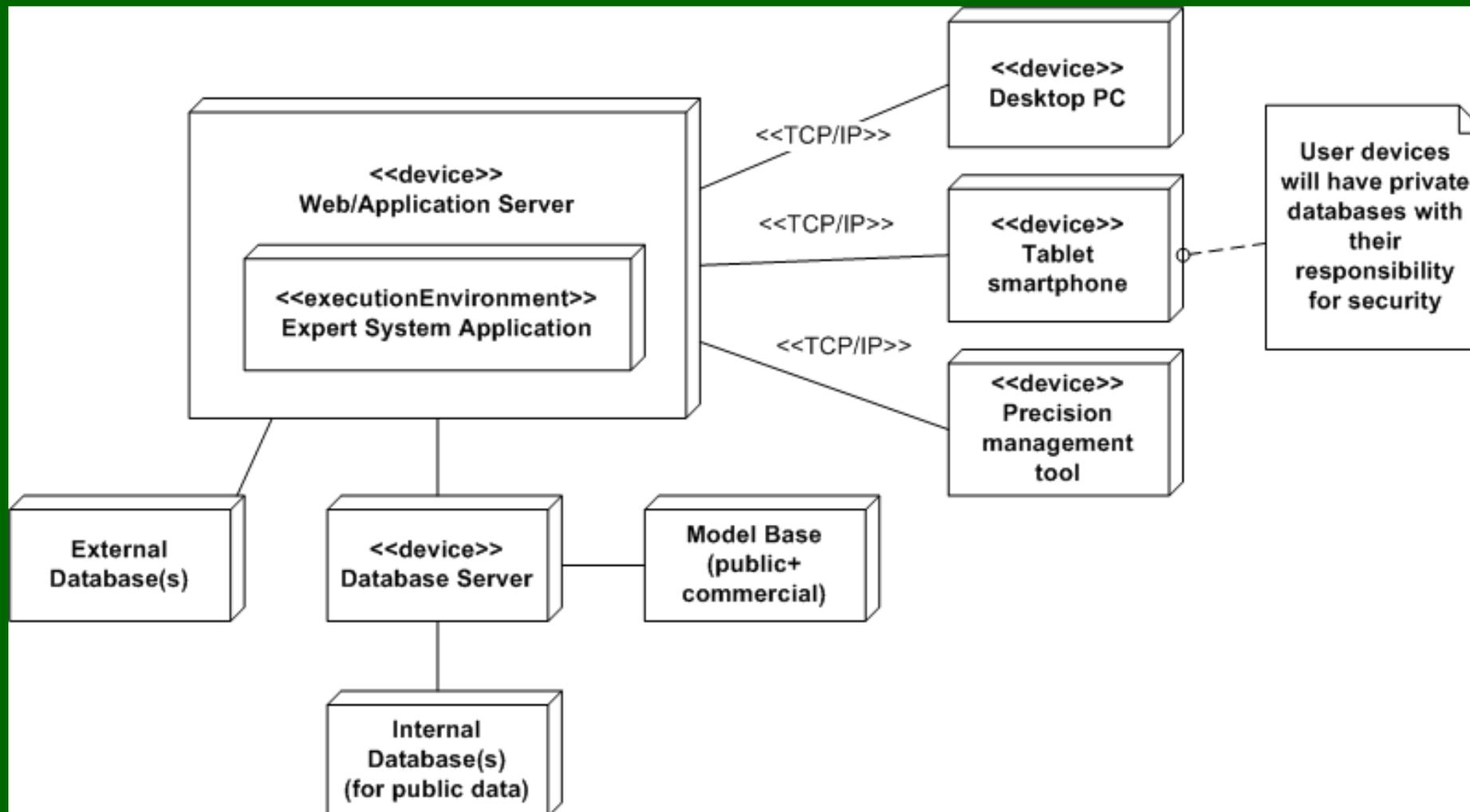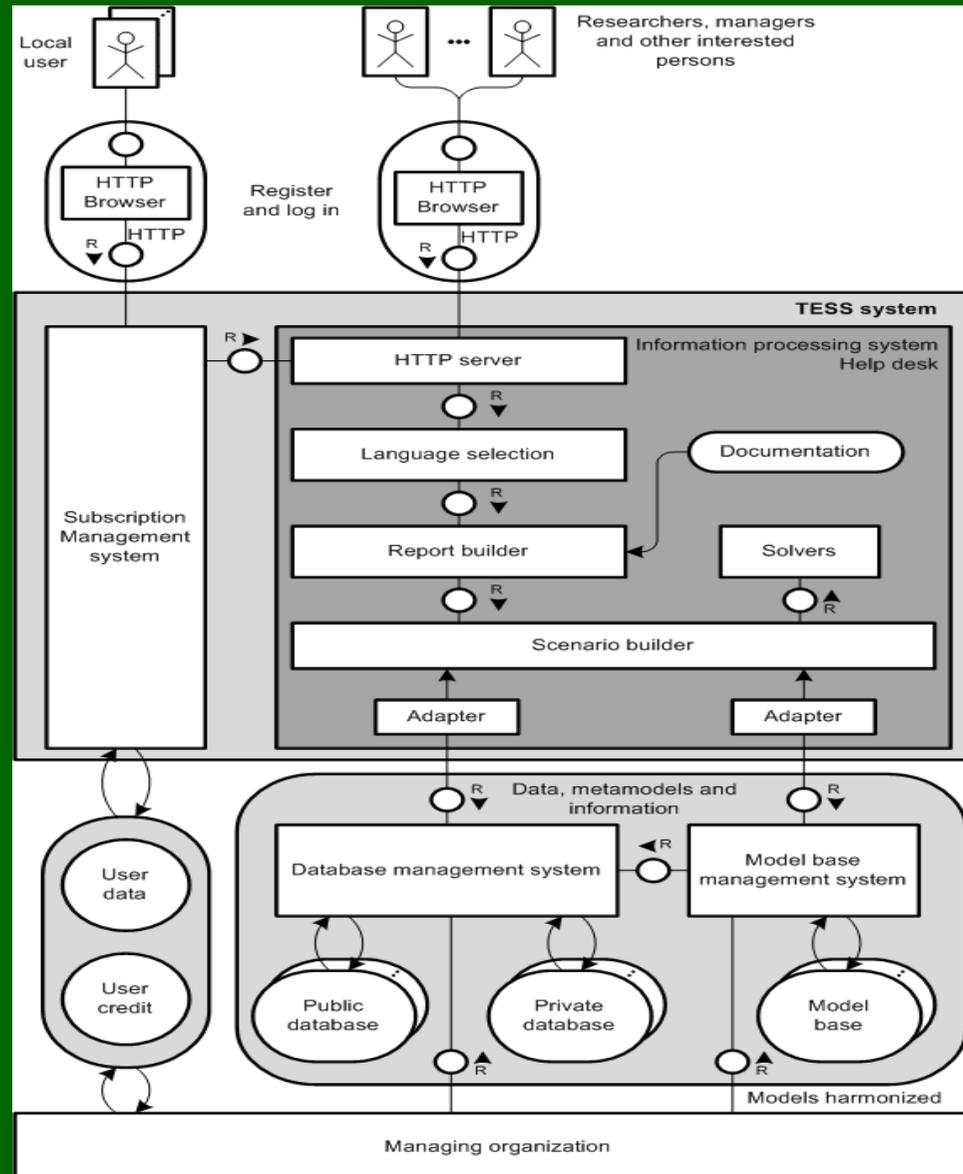
What features are on your website and what would you like on an ideal site?

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■ Present ■ Prioritised ■ Aspiration

- A service for mapping areas or routes managed or of…
- Supporting advice for production from land or…
- Systems for monitoring wild animals or plants, including…
- A user-edited collation (wiki) of management advice for such…
- Decision support systems and management advice for such…
- Examples of best practice in Conservation from Use of…

-6   -1   4   9
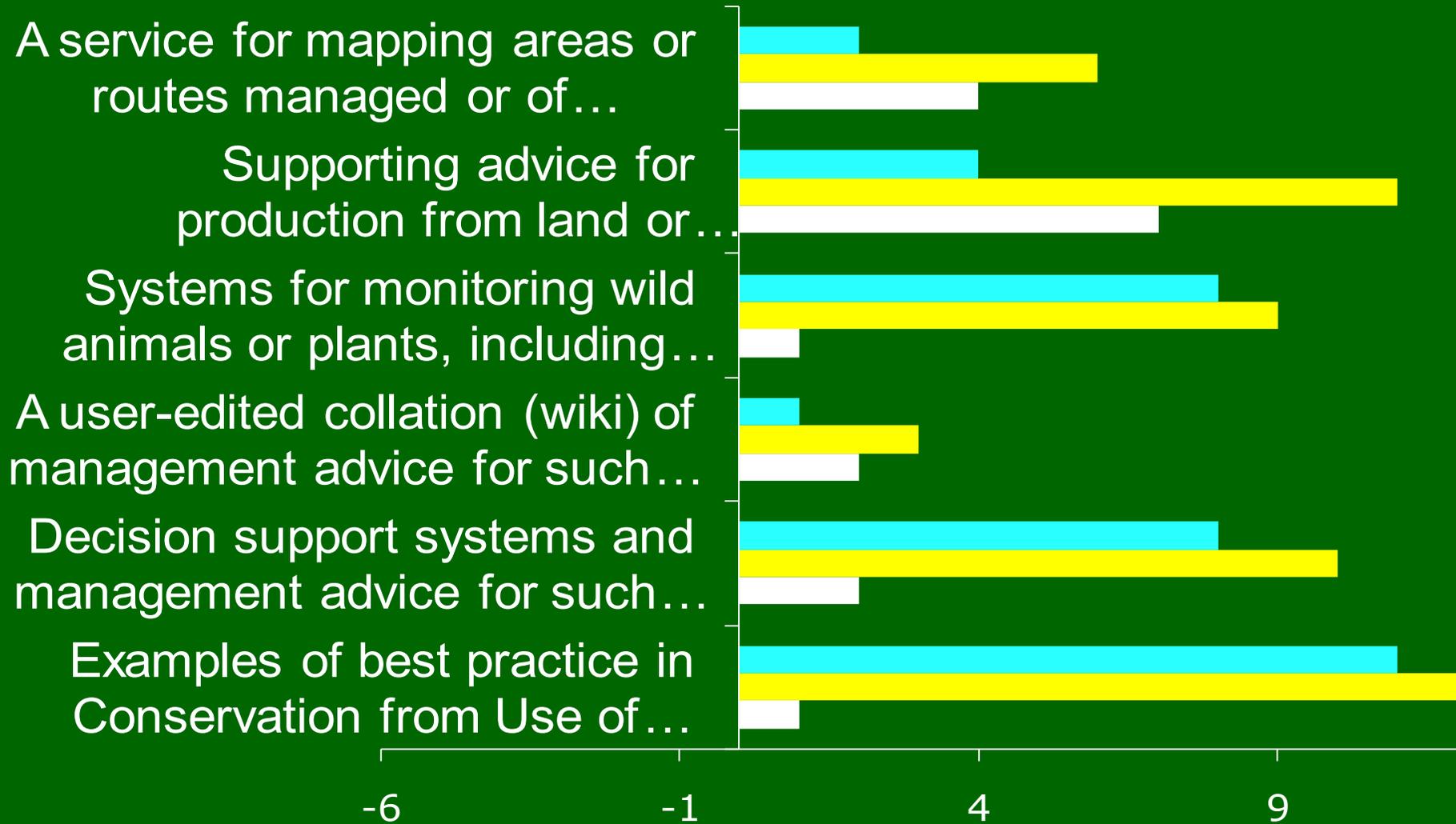
On which environmental topics would your members or clients most welcome information?

Percent of Respondents

Environmental recreation and access…
Eco-tourism capacity and impacts
Amenity areas (parks, paths, verges)
Soil quality, fertility & erosion risk
Air quality (and pollution)
Water quality, availability and pollution
Risk of disease from wildlife (to people…
Fire risk / protection
Flood risk / protection
Biofuels
Cultivated food, livestock or forest crops
Economically exploited wild species…
Habitat maps (eg. protected,…
Species that are invasive or harmful for…
Protected species

0   20   40   60   80

- ➢ **Guideline 5:** *The Commission and Member States should consider encouraging the Biodiversity Action Plan model of collaboration between stakeholders for biodiversity restoration to provide regional and local frameworks for information gathering and monitoring.*

- ➢ **Guideline 6:** *The design of an effective environmental information system needs to standardise and centrally collate a wide variety of ecological and socio-economic data that can be scaled for delivery at all levels. However, the precise data requirements need to be understood and, as far as possible, quantified in more detail.*

- ➢ **Guideline 7:** *In order to refine information needs for different statutory authorities and stakeholder groups further Pan-European survey work will be needed. This would be enormously facilitated if Eurostat were able to establish rigorous sampling frames across Europe for the groups of land users identified by TESS and for local governments with specific functions.*

➢ **Guideline 9:** *The relevance of participation in wildlife-related activities by millions of EU citizens and the direct and indirect spending associated with these activities should be appreciated by policy-makers.*

➢ **Guideline 10:** *Accordingly Eurostat should be invited to carry out assessments of these activities across EU Member States by appropriate sampling methods, as has been practised for a number of decades in the United States.*

➢ **Guideline 12:** *Biodiversity conservation policies need to take full account of the perceptions and attitudes of the people who live closest to wildlife and the countryside if their support for and active participation in conservation is to be secured. These attitudes should be regularly surveyed by the Commission, using the highly developed tools available to Eurostat.*

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- **Guideline 11:** *Noting the rapid progress made in the development of digital tablets, the fall in prices and their dramatic uptake by the public over the last two years, European institutions, national governments and agencies should promote further experiments and training for local people in mapping biodiversity monitoring, conservation and for other purposes.*

- **Guideline 13:** *Land-use changes both inside and outside protected areas, including Natura 2000, are of fundamental importance for conservation policy. Those recorded by recent CORINE data merit urgent investigation. A locally-based recording and mapping system such as is being developed by TESS could rapidly feed information to higher governmental levels, enabling policy adjustments to be made as appropriate.*

- **Guideline 17:** *In developing internet-based advice and support for land managers using simple mapping tools, attention should be given to what works and is practical for them, using feedback and market testing and bringing together best practice guidance from a wide variety of sources.*

R. E. Kenward, M. J. Whittingham, S. Arampatzis, B. D. Manos, T. Hahn, A. Terry, R. Simoncini, J. Alcorn, O. Bastian, M. Donlan, K. Elowe, F. Franzén, Z. Karacsonyi, M. Larsson, D. Manou, I. Navodaru, O. Papadopoulou, J. Papathanasiou, A. von Raggamby, R. J. A. Sharp, T. Söderqvist, Å. Soutukorva, L. Vavrova, N. J. Aebischer, N. Leader-Williams, and C. Rutz. "Towards Adaptive Governance: Associations from Environmental Case Studies". PNAS (Proceedings of the National Academy of Sciences of the United States of America), vol. 108, no 13, 5308-5312, March 29, 2011

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Thank you