

Pan-European Analysis of Environmental Assessment Processes

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ABSTRACT

This chapter presents data on variation between national and local levels for information requirements, and on the pattern of data within these levels across Europe. It notes high decision-making, use and generation of information at local level, with high variability between countries in some factors relevant to governance of environmental decisions.

INTRODUCTION

The strategic objective of TESS is “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 and restore biodiversity ecosystem services”. To design such a system, three requirements are to:

- Identify the information needs of policy makers and how this information is obtained;
- Identify information needs for decision making at more local levels; and
- Identify governance that aids biodiversity and thus that such a system should support.

These requirements were the basis for the Pan-European survey.

The pilot studies of governance in Chapters 2 and 3 tested questions to be used for the Pan-European survey, while Chapter 4 showed how information flows could be visualised to examine differing requirements between stakeholders and levels of government. Chapter 5 started a process of assessing forecasting capabilities available in models. Chapter 6 set the scene for more detailed analysis of how governance may impact the environment, and hence be guided through a TESS, by describing the Pan-European survey and resulting database of 65 variables across 31 countries.

The variation in cultural history and governance processes across Europe provides a rich field for analysis of associations between social institutions and impacts on the environment. Some of these associations are likely to be causal, and thus indicate governance mechanisms which, if identified, can be used to minimise adverse impacts or even promote beneficial ones. Thus, if governance mechanism A causes impact B, modifying A may provide useful adaptive governance. Alternatively, if environmental impact B affects people and thus relates strongly and

causally to a socio-economic impact C, and C is more easily measured than B, then C may be a useful indicator of B.

Chapter 6 included recognition that robust analyses of associations need statistically representative information. However, robust analyses also need to take into account the patterning of information across countries. The patterns across countries are of interest because they show differences between countries; however, patterns also need to be smoothed (and if possible normalised) before use in the parametric multivariate analyses in Chapter 8. Thus, looking back to Figure 4 in Chapter 6, a majority of 12 countries had 3 Ministries at national level making decisions affecting the environment, with 9 having just one or two such Ministries and then a tail of 1-2 countries each having 4,5,6,7 or 8 Ministries involved, again totalling 9 countries. This skewed pattern gave 3 categories (of 9, 12 and 9 countries with 1-2, 3 and 4-8 Ministries respectively, for analyses in Chapter 8 to see whether environmental outcomes related to having more Ministries involved.

ENVIRONMENTAL DECISIONS

Decision Levels and Numbers

Decisions recorded at National Level

Authorities at National level were asked to specify the level (National, Sub-National, Local or between Local and Sub-National, here called Regional) or at which decisions on SEA, EIA, BAP, CAP or LUP are approved in their country (Figure 1). Clearly, approvals for CBD and CAP processes are given mainly at national level, whereas SEA and EIA approvals occur at all levels (with a tendency for strategic assessments to be approved at slightly higher levels. Other formal Land Use Planning proposals are approved locally.

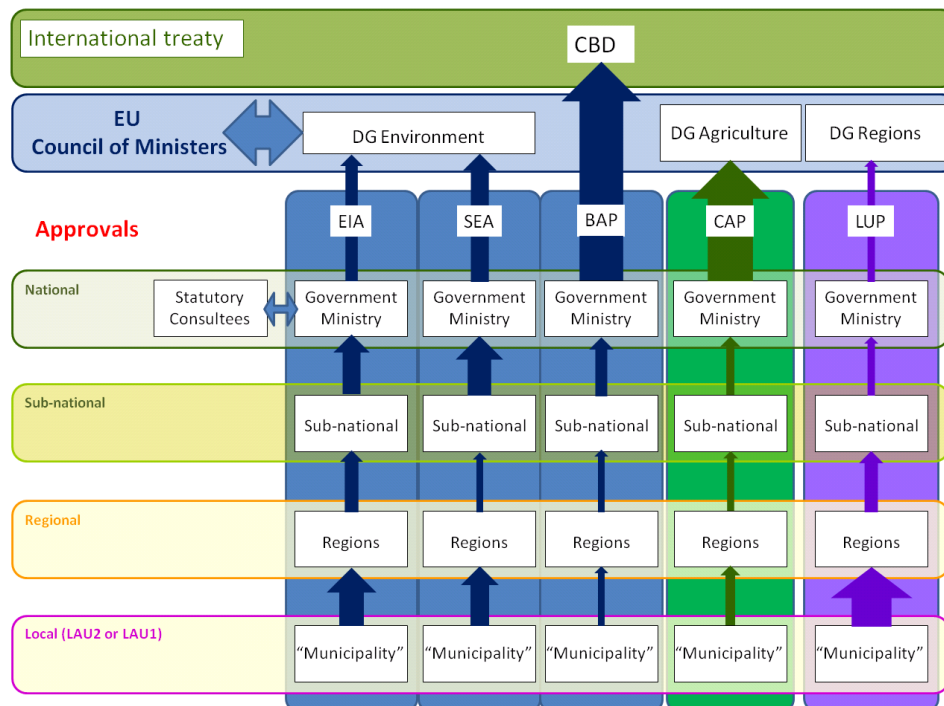


Figure 1. Arrow width reflects the lowest level at which decisions are made across countries. Decisions for CBD and CAP commitments occur mainly at national level, SEA and EIA at all levels and other formal Land Use Planning locally.

The numbers of SEA and EIA decisions (Table 1) were extremely variable, and where Country Co-ordinators obtained figures these did not always correspond with other EU wide enquiries for the Commission as part of its latest periodic review of the implementation of the Directives (COWI 2009a and COWI 2009b). EIAs are for projects and should therefore be carried out more often than SEAs, which are supposed to be for sectoral plans of administrative areas. However, some countries reported numbers of SEAs far greater than both their own EIAs and the SEAs in other countries, and at the same time few EIAs relative to other countries. Perhaps what would be EIA in some countries was being treated as SEA in others. To derive an index of formal assessments, as a governance process indicator, we averaged EIAs and SEAs if numbers were given for both and otherwise used the single (EIA value given).

Table 1. Number of SEAs and EIAs completed annually within surveyed countries.

Country	SEAs (years covered)	EIAs (years covered)
Austria	77 ^{ab} (2002-2008)	8 ^{ab} (1994-2005)
Belgium	No data	56 ^c (2009, Wallonia only)
Bulgaria	33 ^{ab} (2007-2008)	157 ^{ab} (2007-2008)
Cyprus	No data	No data
Czech Republic	50 ^a (2009)	2394 ^a (2009)
Denmark	No data	128 ^{ae}
Estonia	30 ^c (2009)	100 ^c (2009)
Finland	1500 ^{cd} (2006-2008)	45 ^{ab} (2006-2009)
France	350 ^c (2009)	4000 ^c
Germany	No data	775 ^c (2005)
Greece	No data	1600 ^c (1996 - 2009)
Hungary	90 ^c (2006)	475 ^c (2006)
Ireland	50 ^c (2007-2009)	190 ^a (2007-2009)
Italy	No data	No data
Latvia	60 ^{ab} (2005-2009)	15 ^a (2005-2009)
Lithuania	180 ^a (2009)	1200 ^a (2009)
Luxembourg	4 ^a (2009)	30 ^c (2009)
Malta	No data	57 ^c (2008-9)
Netherlands	70 ^b (2000-2009)	150 ^{bc} (2000-2009)
Norway	No data	98 ^c (1991-2005)
Poland	No data	No data
Portugal	10 ^c (2009)	102 ^a (2000-2009)
Romania	84 ^c (2006-2007)	179 ^c (2006)
Slovakia	120 ^c (2009)	565 ^a (2009)
Slovenia	No data	150 ^c (2009)
Spain	No data	215 ^{be} (2002-2006)
Sweden	1600 ^a (2006)	1750 ^{bc} (2005-2006)
Switzerland	Not applicable	350 ^c (2009)
Turkey	Not applicable	200 ^a (2009)
UK	450 ^{bc} (2006)	313 ^a (2007)
Ukraine	13 ^{bc} (2007-2008)	600 ^c (2009)

a. Precise figure provided; b. Figure based on average of numbers or median of ranges depending on which were provided; c. Estimated figure provided; d. Includes land use plans; e. From COWI (2009a) Table 6.2, Annex 1 plus Annex II.

As expected, the index of formal assessments correlated with land area across countries ($P = 0.005$). However, there was much variation in this relationship and the two smallest countries were outliers along the general trend line (Figure 2).

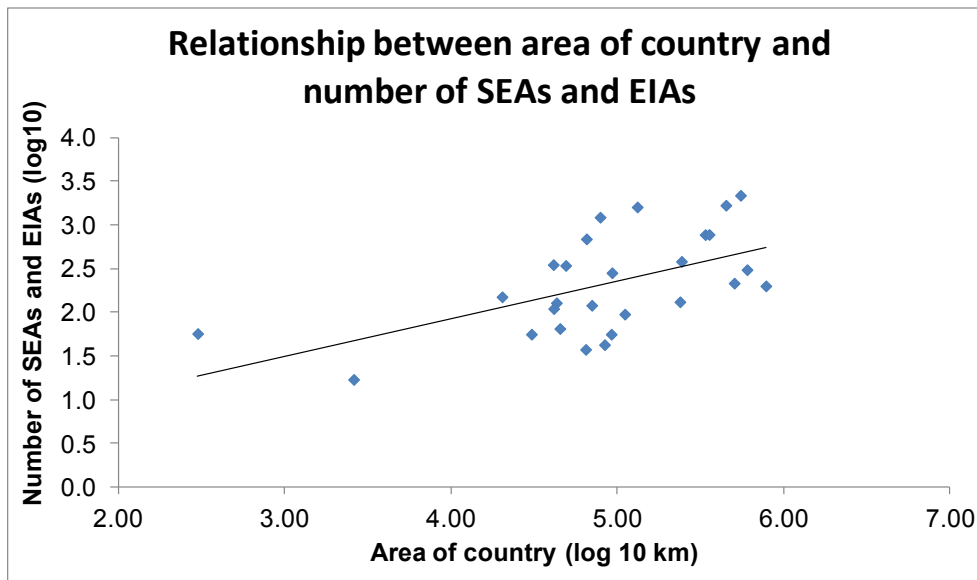


Figure 2. The combined number of Strategic Environmental Assessments and Environment Impact Assessments (from Table 1) increased with size of country.

Decisions at local level

Local authorities recorded responsibility for formal decisions (SEA+EIA) separately from informal decisions for managing land and species in areas owned by the government or elsewhere. There was much variation in the number of informal decisions likely to affect biodiversity taken annually by local authorities and individual stakeholders (Figure 3).

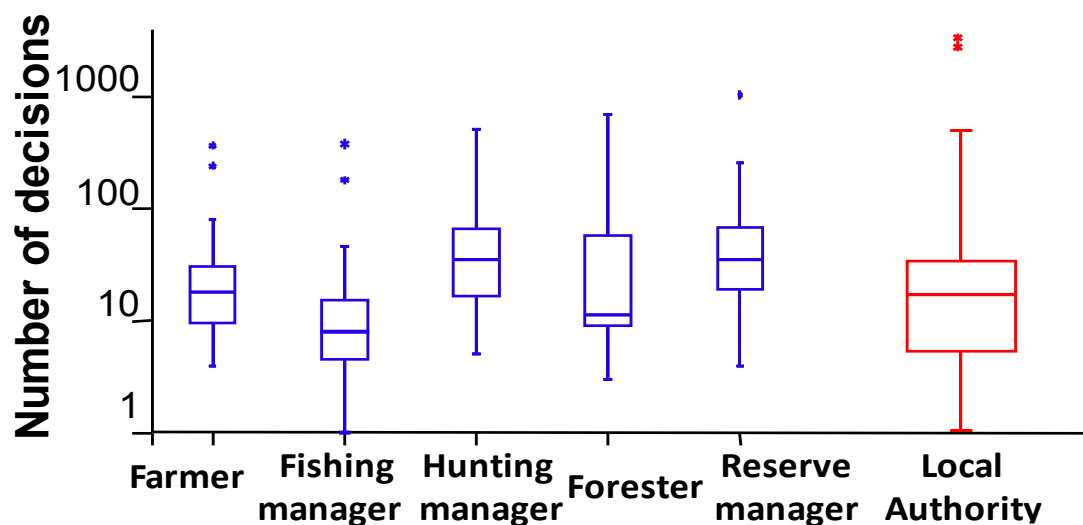


Figure 3. Numbers of management decisions affecting the environment that are made annually by private stakeholders & local councils (or their representatives). Data are shown as means with quartile boxes, decile bars and outlying values.

Local authorities were making 3-20 informal decisions annually and, based on national numbers of formal assessment, less than one formal decision. Numbers of informal decisions by other stakeholders were broadly similar. However, informal decisions by local authorities tended to cover much smaller areas than for other stakeholders. Taking into account the greater average areas affected by decisions of private managers and the greater number of them than of councils, all except managers of fisheries had a decision density 4-5 orders of magnitude greater than for local authorities (Figure 4).

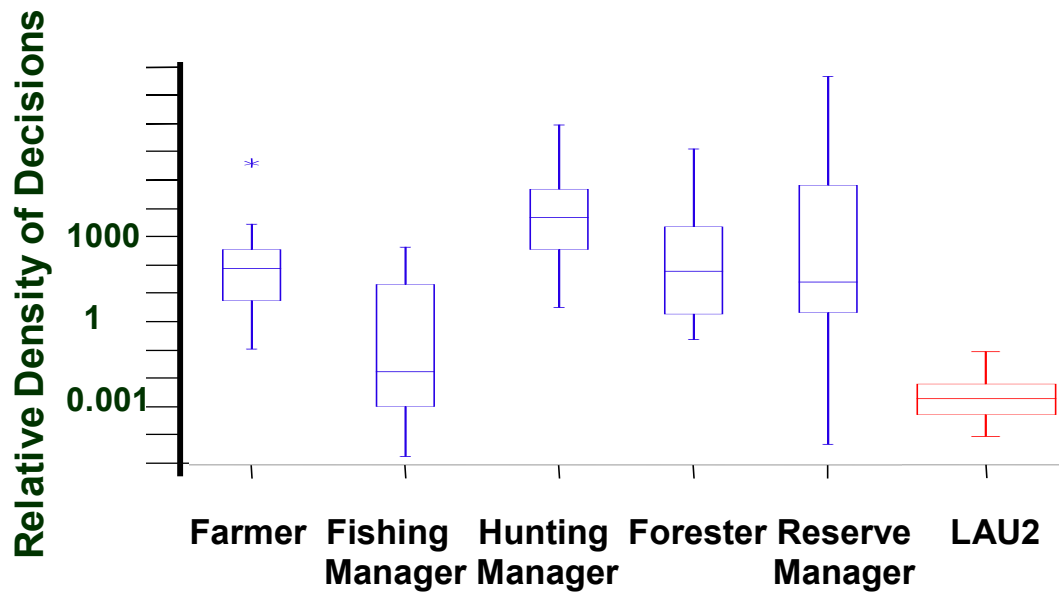


Figure 4. The intensity of decisions, taking account not only of decision numbers per management unit but also area covered by each decision and relative abundance of different management units, indicates greater importance of private than state decisions.

Information sources and types

All respondents reported that between a quarter and a third of information on biodiversity and ecosystem services came from government sources, including agencies (Figure 5). However, the proportion of information from other sources varied appreciably between levels. Information from published sources, including the internet, and from NGOs or consultancy firms, declined from 50% in total at national level to 38% for the average private manager and 29% for hunters. At the same time, use of local information increased from 16% to 35% for the average private manager and 42% for managers of hunting areas, who used most local knowledge, plans and records.

If the information from each of the eight sources is partitioned into that required for managing habitats, species, socio-economic considerations and hazards, it becomes clear that, compared with national governments, local authorities and managers are depending especially on their own and other local information regarding habitats. At local level there is dependence on government agencies and consultancy firms for information on socio-economic factors and environmental hazards (Figure 6), though this effect varies considerably between different private managers of land and species (Figure 7). In the case of managers of fisheries and nature reserves, it was information on species that came especially from consultancies and government or government agencies, but hunters obtained most species information too from local knowledge and own records.

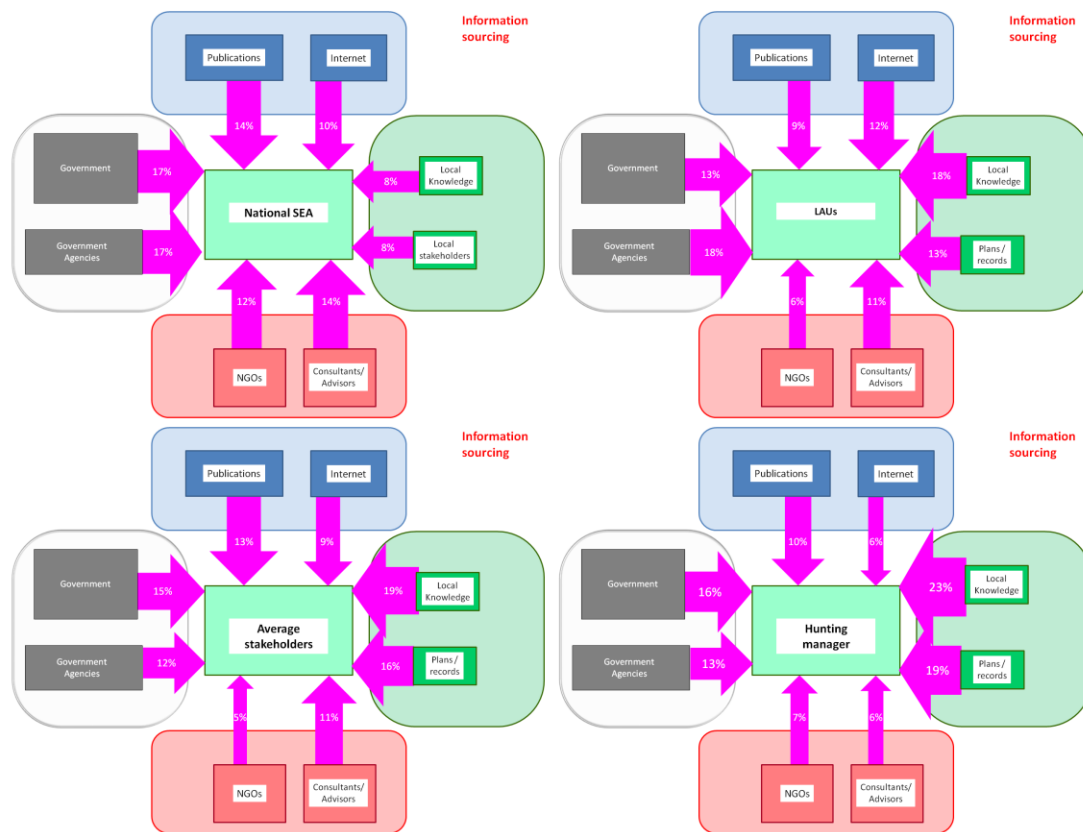


Figure 5. The proportion of information on biodiversity & ecosystem services that was sourced from different suppliers by (i) national government, (ii) local authorities, (iii) private managers of land and species in general and (iv) hunters in particular.

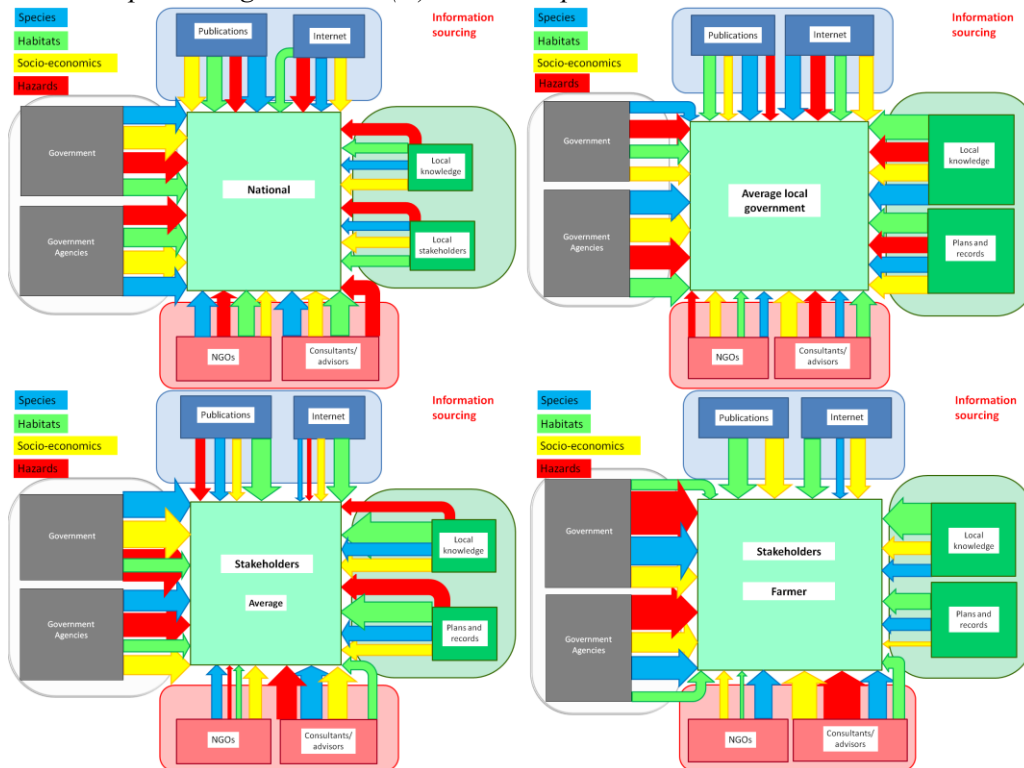


Figure 6. The proportion of information on species, habitats, socio-economic considerations and hazards that were reported from different sources by national government, local authorities, private managers in general and farmers in particular.

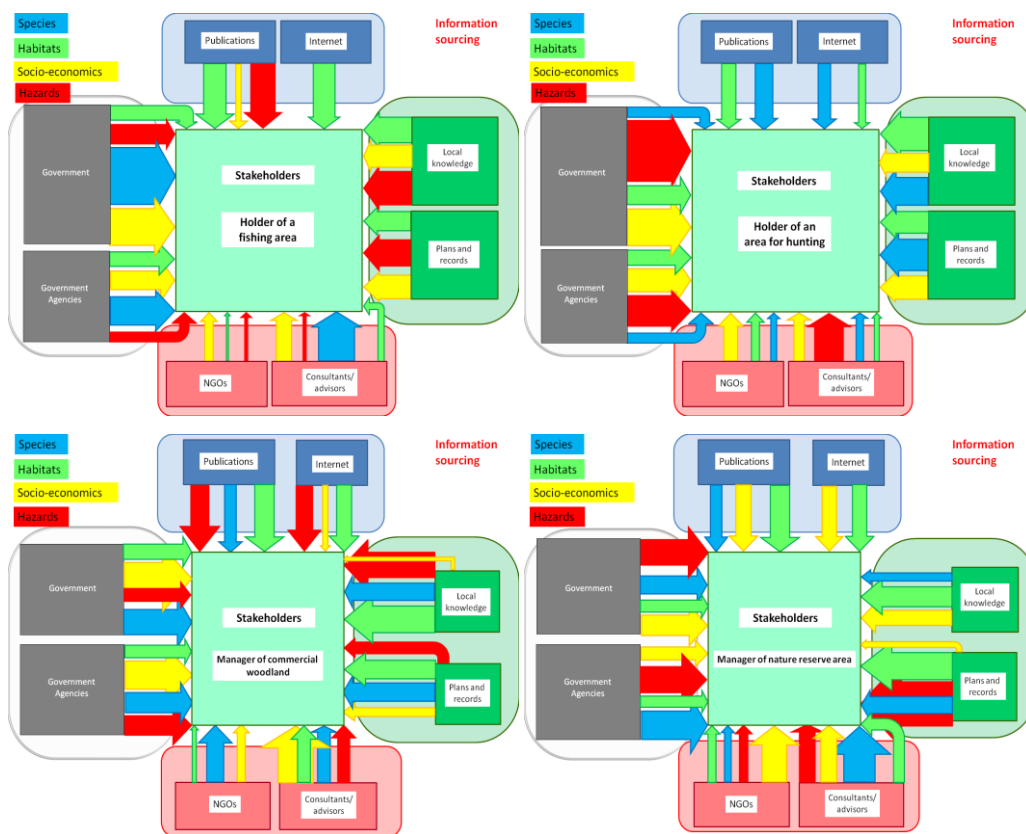


Figure 7. The proportion of information on species, habitats, socio-economic considerations and hazards that were reported from different sources by local managers of fishing, hunting, forestry and nature reserve areas.

The requirement of administrators for information on ecosystems for provisioning (crops, medical, biofuels), regulating (flood/fire/disease hazards) and supporting (water/air/ soil quality) services was also very variable (Figure 8), whereas information on cultural services (amenity, recreation, tourism) was generally in demand (except for Italy, Romania and Switzerland). Information on biodiversity (protected and harmful species and habitat maps) was also generally in demand, except for Hungary, Italy and Lithuania.

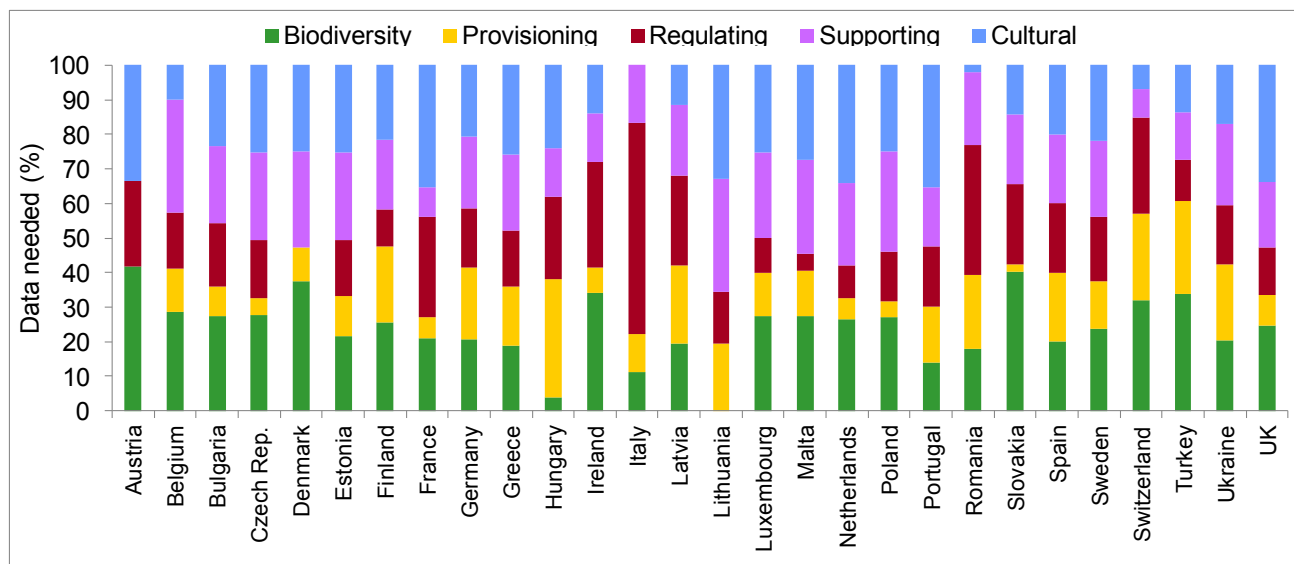


Figure 8. The proportions of different types of data that were needed by local administrations for making environmental decisions.

GOVERNANCE INDICATORS

Much information from the Pan-European survey was provided as responses to whether a particular condition was always, sometimes or never applied, as lists of consulted organisations or publications which were then simply counted, or, in a few cases, perceived influence during consultation was scored by both local and national administrators. The patterns of the resulting data are described here for national and local levels, before analysis for impacts in Chapter 8.

National Level

SEA and EIA

Consultation is an important part of the process for SEAs and EIAs, with a requirement for government departments responsible for policy to nominate **statutory consultees**, i.e expert national bodies, who must be consulted by those compiling assessments for EIA projects or SEA plans and strategies. The number of consultees was very variable, and 5 states were apparently not fulfilling this obligation (see Figure 4 in Chapter 6).

It was usual for NGOs to be able to comment on EIAs, with 1-2 NGOs being routinely consulted in 7 countries and 4-6 in 14 countries. This distribution was quite strongly bimodal with peaks at only 1-2 and also with a full list of 6 NGOs (see Figure 4 in Chapter 6).

Only a minority of countries (8) reported referring to European level government for guidance on their SEAs. However, noting that 9 countries reported referring to European level government for guidance on EIAs (1-2 times annually in all cases except one state that reported taking advice from European Commission about 6 times a year), there was scope for combination in an index of international consultation. Of 28 countries, 19 combined standard guidance literature with a requirement for reference from lower levels to national level for these assessments, with either literature or referral alone in 6 more.

Since 2002, SEA has been applied to plans and programmes covering (i) Sustainable development, (ii) Ecological infrastructure, (iii) Waste management, (iv) Transport, (v) Energy, (vi) Climate change, (vii) Agricultural, (viii) Forestry, (ix) other sectors. The majority of countries addressed 7-9 of these nine possible topics for SEA, although assessments in three countries considered only 2-4 of them. The lack of variability made this a poor process variable for further analysis.

All countries reported requirement in EIA processes for developers to present alternative development approaches and to offer mitigation, through creation of conservation benefit elsewhere, such as habitat creation, and in many cases this was mandatory. Similarly, there was a general requirement, often mandatory for monitoring of the results of the decision if development followed. In 13 countries these requirements were always mandatory, in 14 cases sometimes mandatory and in one case this was voluntary.

In all countries the developer paid for the EIA, and in all cases except one out of 28 responses the developer was involved in collecting the information, although in 11 cases this was in conjunction with government and/or NGOs. The responsibility of developers for monitoring was variable, with the developer or consultant alone responsible in 9 cases, the developer in conjunction with NGOs or government agencies in 11, government alone in 6, with NGOs in 2 and NGO alone in 2 (Figure 9). Notably, 6 of 25 countries (nearly 25%) also restricted information availability to government. It was also interesting that developers were not always responsible for paying for the monitoring of EIA outcomes. In most countries (80%), the developer was involved in paying for subsequent monitoring, although in just under 40% of these there were some costs borne by NGOs or government agencies. In the 20% of countries where developers do not pay for monitoring, the total cost was met by government.

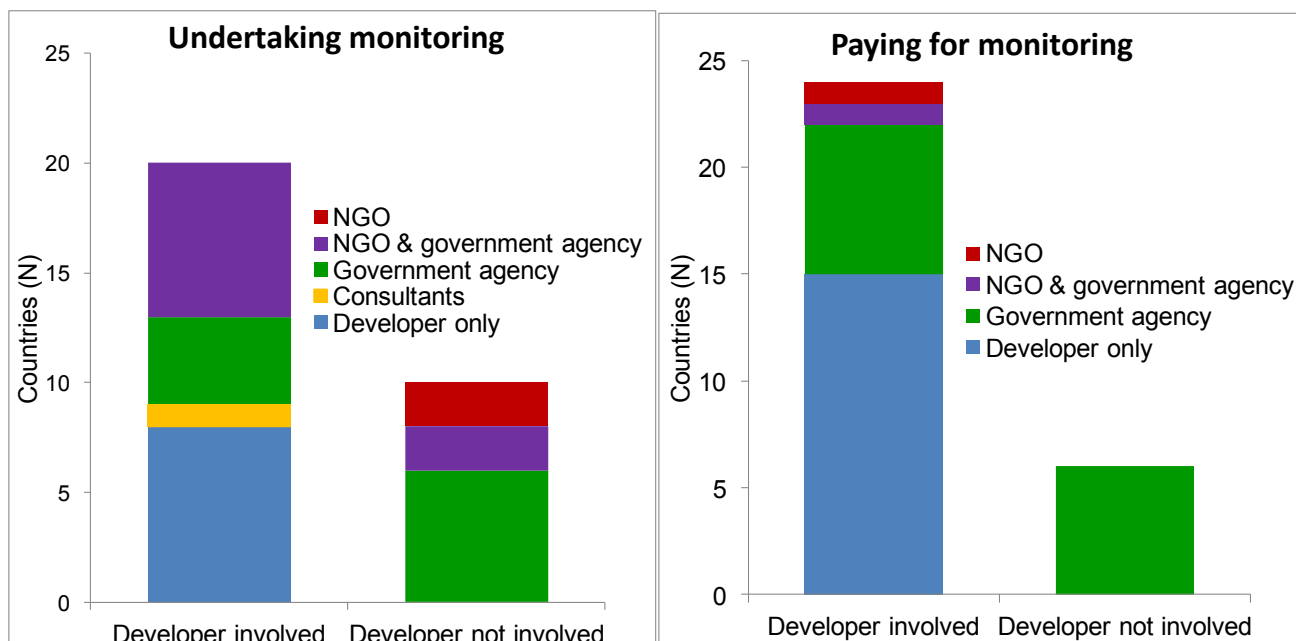


Figure 9. Most countries involved the developer in monitoring EIA effects (left) and paying for it (right). In other countries, government agencies were strongly involved.

BAP/NBSAP

To comply with commitments to the Convention on Biological Diversity, countries are required to produce National Biodiversity Strategy Action Plans (NBSAPs), sometimes just called Biodiversity Action Plans (BAPs). In 11 cases this involved government alone; in 13 cases there were partnerships (with a strong government role in 6).

Most countries have done plans only at national level. In one case the plans were only for habitats, in two cases only for individual species, and in six cases only for individual species and individual habitats. In 9 countries, all plans were composite for species and their habitats, and in 3 a mix of individual species and habitats or composites, with 4 countries having no plans. Only 6 of 25 countries were conducting local biodiversity action plans, in 4 cases as composites and in 2 cases only for individual species.

Agri-Environment Schemes

Agricultural Environment Scheme (AES) payments were available in 75% of countries for all land where appropriate conditions are observed; six other countries provide payment only in Natura 2000 sites (Emerald Network outside the EU), and one makes payments for these and other designated land. A map is required from applicants before giving funding in 86% of countries, of which only 3 do not accept a digital map. Most countries (75%) also require information on species or habitats before making payments. Greece was the alone in requiring neither biodiversity information nor a map. Only two countries did not monitor compliance in AES schemes and in 79% there was also monitoring of both compliance and environmental outcomes.

Land Use Planning

The ability to make consistent environmental decisions is likely to be influenced by whether government issues guidance (a) to those making decisions for statutory assessments and on land use, and (b) to those who comment on the process. The sum of guidance documents was a simple indicator of such guidance (see Figure 4 in Chapter 6).

Other measures of capacity were the accessibility and quality of data for environmental assessments and land use planning. Scores of accessibility were based on whether all or some of the data were (a) accessible to anyone concerned, (b) accessible via the internet (c) fragmented (i.e. are there multiple sources) and (d) only available after payment of charges. Scores for quality were similarly based on responses to questions of whether data were (e) reasonably up-to-date, (f) available at a local scale, (g) of sufficient accuracy, and included (h) habitat maps, (i) species populations distributions and (j) any density and trend information in relation to (h &/or i). Accessibility was especially poor in Belgium, Hungary, Ireland, Netherlands, Portugal and Spain (Figure 10).

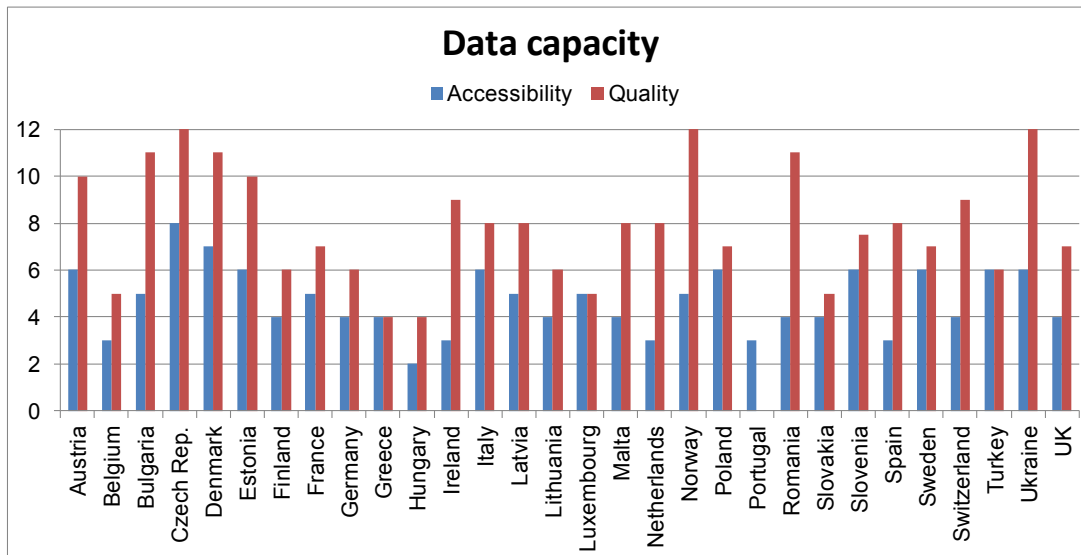


Figure 10. Scores (y-axis) for data accessibility and quality across survey countries.

All countries required significant negative effects on biodiversity to be taken into account during planning processes other than SEA and EIA, although in six cases this was only sometimes considered; similarly, all except one country claimed to support biodiversity positively at least some of the time during planning. Another question was whether or not national laws covering SEA, EIA or LUP required ecological connectivity beyond a development site to be taken into account. Of 24 countries responding, 67% reported this type of legislation.

Finally, as an indicator of the complexity of process for environmental decision-making at national level, a count was made of all the ministries involved in decisions about use of land and species (including permits for hunting and fishing). There were mostly 2-3 ministries involved, although 6-8 for 6 of the 28 countries (see Figure 4 in Chapter 6).

Local Level

As well as assessing the numbers of formal and informal decisions of local authorities and their information requirements, the survey considered the degree of digital capability for monitoring. Local administrators were asked whether they took part in scientific study of species or habitats (scoring 3), kept records from systematic survey (scoring 2) or kept occasional records (scoring 1) or both; they also scored 1 point if they used a GIS and 2 point if they could name it, for a maximum score of 5. This was averaged across the 3-5 local authorities that were surveyed in each country (Figure 11).

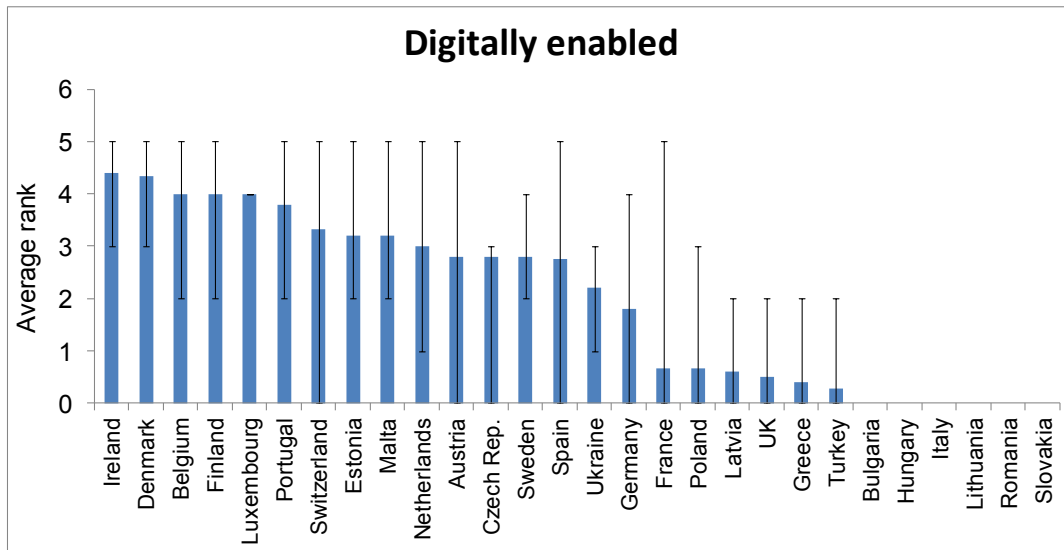


Figure 11. Local authorities in countries with high digital enablement scores were those that used GIS and regularly surveyed some species or habitats. Histograms show means and bars show range of scores across LAU2s in each country.

The remaining data from local authorities were more subjective. For example, as an index of objectives, local authorities had been asked to estimate the proportion of their time for statutory decisions on land use (SEA, EIA, LUP) was spent assessing either (a) the economic, (b) the social or (c) the environmental aspects (see Figure 8). Similarly, there were subjective estimates of whether the information on biodiversity and ecosystem services that was needed was actually available. There was very great variation in the estimates of both need and availability of necessary information (Figure 12). The Czech Republic, Sweden and Switzerland stood out in requiring a great deal of information and having much of their needs met, with Germany, Luxembourg and the Netherlands well served in relation to more modest demand. Greece, Ireland, Latvia, Malta, Portugal and Spain had quite large unmet demands for information, while the needs of Austria, Belgium, France, Hungary, Italy and the UK were the most modest.

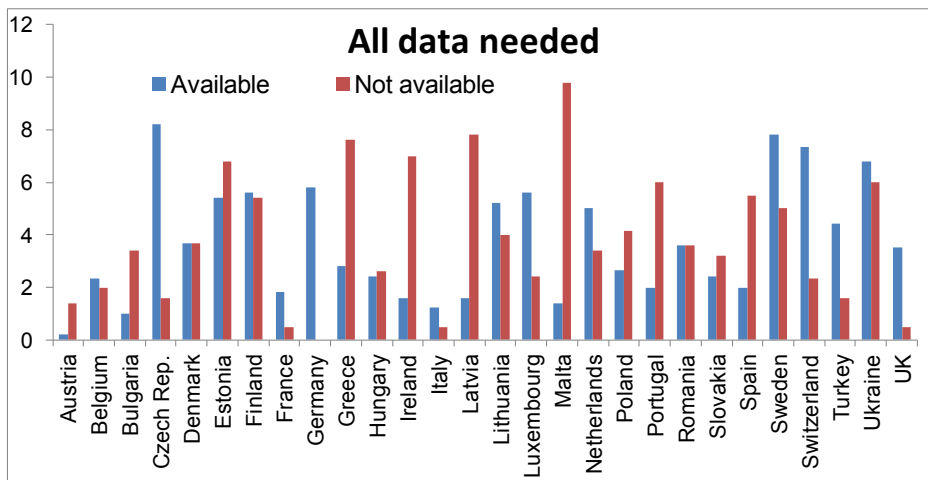


Figure 12. The relative demand for data needed to make environmental decisions that was available, and unavailable, in local administrations across Europe.

Consultation too was quite variable in extent for the countries surveyed (Figure 13). However, relatively little variation between administrations within countries gave confidence in the index.

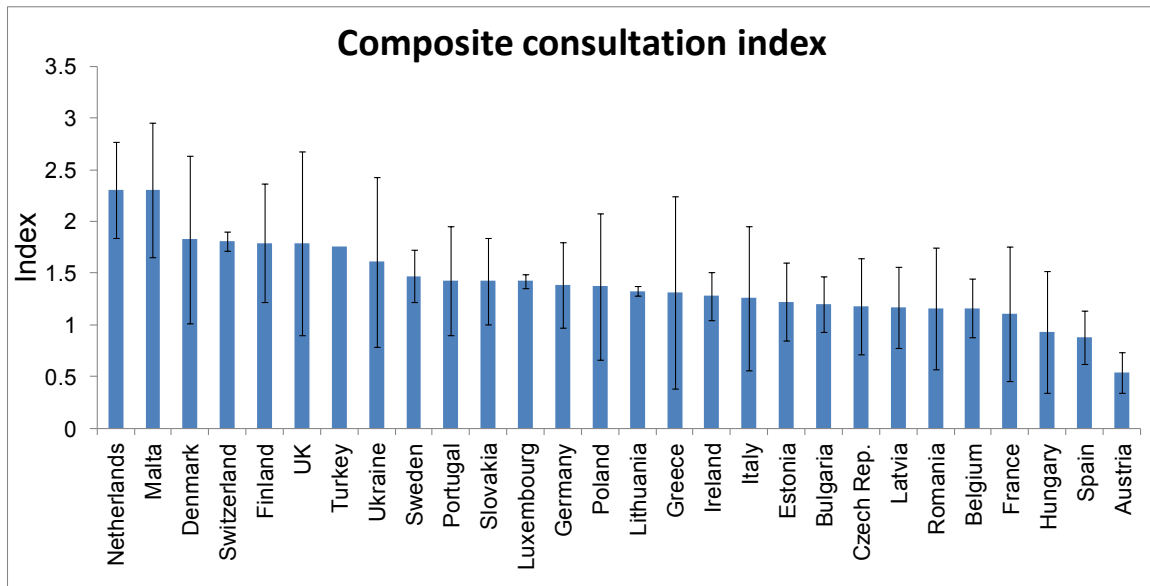
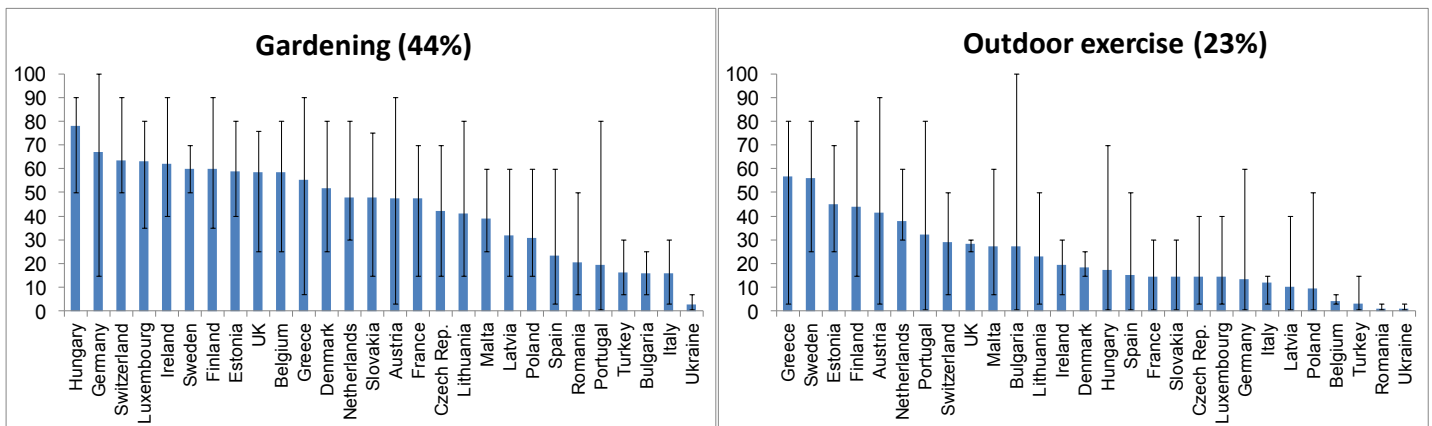


Figure 13. A composite index in which high values denote frequent consultation with many organisations and low values rare consultation with few organisations.

Local authorities also produced estimates of the prevalence in their communities of households engaging in different countryside stakeholder activities (Figure 14). There was very considerable variation between countries in the estimates for every activity. Averaged estimates across countries were that 44% of rural households engaged in gardening, compared with 20% in farming, 15% in gathering wild fruits, fungi and invertebrates, 10% in fishing, 8% in hunting and 6% in forestry. Although on average only 6% were thought to go on excursions to watch wildlife, 11% were thought to feed birds at home. The smallest proportion of households (4%) was thought to have members riding horses, but 23% were estimated to use the countryside for other exercise activities. These estimates are averages based on ranges of numbers, and thus likely to be very approximate.



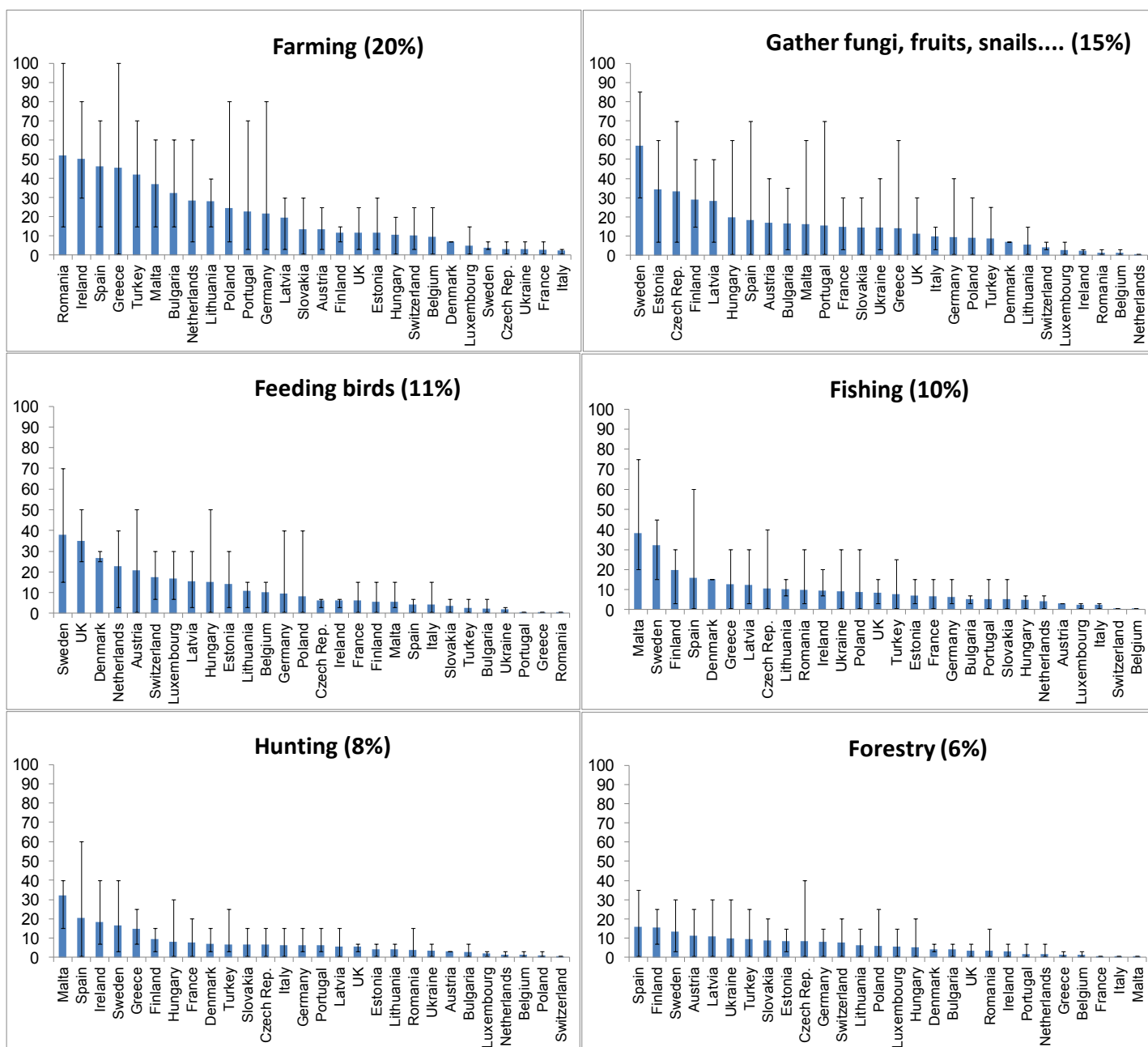


Figure 14. Histograms show the average % of local households estimated by LAU2s to have participants in activities dependant on land or species (bars are range of values).

CONCLUSIONS

Was the survey effective?

Internet tools (e.g. www.surveymonkey.com) now exist for answering up to 10 simple survey questions and, being automated, can accommodate very many respondents. However, the survey had many more questions, which needed careful translation at local level. For this sophisticated survey, the use of Microsoft Excel workbooks and Access database provided a powerful tool, simplifying translation (although cells for translated text must be large enough for all languages) and enabling automated data extraction.

The network of Country Coordinator system pioneered by the European Sustainable Use Specialist Group of IUCN/SSC in the UNWIRE survey (www.gemconbio.eu) again proved its worth for expert translation and extraction of necessary information, both at national level and also in linking with local communities and managers of wild resources on land and in water.

High quality data with strong variability gives good opportunities to detect relationships between governance variables and environmental impacts. With precise questions that sought objective responses (e.g. on whether or not particular practises occurred), a comparison of range bars and average values in Figures 11 and 13 showed relatively little variation between local authorities within countries compared with differences between countries. European Environment Agency and Eurostats share Environmental Topic Centres with responsibility for using information as surveyed in this study. EEA advice and their collated data were especially helpful (Chapter 6). However, estimates of participation in stakeholder activities (Figure 14) were subjective and varied much within countries. Will the Eurostat topic centre on Natural Resources note the prevalence of environmental decision-taking by managers of land and species (Figure 4), and choose to help improve data on these stakeholders?

Which decisions needs informing and how?

The number of decisions made at EU level as Directives, and as regulations by policymakers at national and sub-national levels, are necessarily relatively few compared to the decisions made by local stakeholders in the use of land, water and species, simply because local stakeholders are far more abundant. However, the very wide influence at high level, in setting constraints and incentives for those at local level who affect the land and species, makes it crucially important that those policymakers are well informed. This is recognised by the many projects and initiatives aimed at assisting policy-makers, including the new International Panel on Biodiversity and Ecosystem Services (IPBES).

The number of those environmental assessments (SEA+EIA) is variable across countries but averages about 2.5 per thousand km². That is an average of less than one per year at the lowest level of government administration (LAU2), although at any point in time an LAU2 may be handling more than one of these protracted processes. Local authorities also take some 3-20 informal decisions annually. However, larger numbers of decisions affecting biodiversity across larger areas are also made annually by private managers. Moreover, in making decisions about what to cultivate and how to manage crops of wildlife, decisions by private managers have 10,000-100,000 times the density of those made by local councils (Figure 4). Even though a decision by a council to develop an area may appear to have more long-term effect than a change in use of a field, that field may gradually have become the last local habitat patch for a particular species that will then take decades to re-colonise the area naturally. The monitoring of land-use, to guide conservation of habitat linkages and replace species opportunistically where linkages are broken, therefore seems at least as important as formal processes of environmental assessment and land-use planning.

These managers often have good knowledge of how crops and domesticated species respond to weather and hence changing climate, how to maintain soil quality and avoid hazards, with use of local knowledge declining as one moves up through government (Figure 5 and Chapter 4). Local stakeholders especially record information on habitats (Figure 7). However they require as much information as local authorities on wild species and habitats, and more on statutory requirements and benefits, for instance affecting the control of species for economic or social benefit (Figures 6-7 and Chapter 3).

The internet is not yet being used strongly across Europe as a source of information for environmental decision making, especially by local land-managers (Figures 5-7). At local level it

is government agencies and private consultancies which provide much of the information required, other than local knowledge. Thus, it is important for the TESS design to aim to deliver information to government agencies and consultancies at local level, as well as to local authorities and stakeholders. As farmers and hunters affect land with the highest density of decisions (Figure 4), it is encouraging that farmers are stakeholders who most frequently use the internet and hunters are prolific sources of local data.

It is encouraging that about half the countries in the European Union showed appreciable systematic recording and/or use of GIS by local authorities (Figure 11). Moreover, two thirds of countries could use maps in digital format for agri-environment payments. Thus, there is much evidence of good practice and conditions exist to expand good practice across countries across Europe using an appropriate TESS design.

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KEY TERMS

Keywords

Countryside Activities, Digital Enablement, Environmental Assessment, Geographic Information Systems, Governance Indicators, Information Flows, Land-use Decisions, Local Authorities, Local Consultation, Local Knowledge