

Territorial Trends of the management of the natural heritage

ESPON project 1.3.2

2002/021/JVOG/IHO/9M5234

Territorial trends of the management of the natural heritage

ESPON project 1.3.2

2002/021/JVOG/IHO/9M5234

Utrecht, October 2002

Contents

| | | |
|--------|---|----|
| 1. | Introduction | 1 |
| 2. | Appreciation of the project | 3 |
| 2.1. | Sustainable development | 3 |
| 2.2. | Central question of the project | 3 |
| 2.3. | Strategy of the layers | 4 |
| 2.4. | The impact of different scales | 4 |
| 2.5. | Consequences for our methodology | 5 |
| 3. | Methodology | 7 |
| 3.1. | General | 7 |
| 3.2. | Focussing the activities | 8 |
| 3.3. | Natural Heritage (WP1) | 9 |
| 3.3.1. | General introduction Natural Heritage (WP1) | 9 |
| 3.3.2. | Activities stage 1-4 Natural Heritage (WP 1) | 10 |
| 3.4. | Management (policy & planning) (Work Package 2) | 11 |
| 3.4.1. | General introduction Magement (WP 2) | 11 |
| 3.4.2. | Activities stage 1-4 Management (WP 2) | 13 |
| 3.5. | Territorial trends (Work Package 3) | 15 |
| 3.5.1. | General introduction Territorial trends (WP 3) | 15 |
| 3.5.2. | Activities stage 1 – 4 Territorial trends (WP 3) | 16 |
| 3.6. | Scenarios and case studies (Work Package 4) | 18 |
| 3.6.1. | General introduction Scenarios and case studies (WP 4) | 18 |
| 3.6.2. | The scenarios (WP 4) | 18 |
| 3.6.3. | The case studies (WP 4) | 19 |
| 3.7. | GIS | 19 |
| 3.7.1. | General introduction | 19 |
| 3.7.2. | Methodology | 20 |
| 3.7.3. | Database | 20 |
| 3.7.4. | Analyses and interpretation | 21 |
| 3.7.5. | Output | 22 |
| 3.8. | Products | 22 |
| 3.9. | Reports and Scheme | 26 |
| 4. | Project organisation and Cost | 30 |
| 4.1. | Project structure and responsibilities | 30 |
| 4.2. | Project structure | 30 |
| 4.3. | Responsibilities of the project organisation | 31 |
| 4.3.1. | Project management | 31 |
| 4.3.2. | Work package leaders | 31 |
| 4.3.3. | Core group | 31 |
| 4.3.4. | National Contact Points | 31 |
| 4.4. | Summaries of the core group members | 32 |
| 4.5. | Overview of the team | 34 |
| 4.5.1. | Supporting partners | 35 |
| 4.6. | Allocation of budget | 35 |
| 4.7. | Financial management | 35 |
| 5. | Information regarding selection and exclusion | 36 |
| 5.1. | Professional/Business Certification: Precise identification of the tenderer | 36 |
| 5.2. | Social Security Certification | 37 |

| | | |
|--------|--|-----|
| 5.3. | Tax Certification | 37 |
| 5.4. | Certification of Liquidity | 37 |
| 5.5. | Financial Capacity | 37 |
| 5.6. | Professional and Technical capacity | 37 |
| 5.6.1. | Average staff numbers over 3 years | 38 |
| 5.6.2. | Technical and IT Equipment | 38 |
| 5.6.3. | Knowledge of languages | 38 |
| 5.6.4. | Reliable project organisation, Financial Management | 38 |
| 5.7. | Absence of Conflict of Interest | 39 |
| 6. | Annexe 1 Profiles Organisations | 40 |
| 6.1.1. | EURONET | 40 |
| 6.1.2. | Royal Haskoning, Utrecht, Netherlands | 40 |
| 6.2. | European Centre for Nature Conservation (ECNC), Tilburg, Netherlands | 42 |
| 6.3. | Land Use Consultants, United Kingdom | 44 |
| 6.4. | Enviplan, Athens, Greece | 47 |
| 6.5. | Momentum 21, Sofia, Bulgaria | 47 |
| 6.6. | Territoires, Sites et Cités, Lille, France | 48 |
| 6.7. | Taller de Ideas, Madrid, Spain | 49 |
| 6.8. | School of the built environment, Heriot-Watt University, Edinburgh, United Kingdom | 49 |
| 6.9. | Accademia Italiana di Scienze Forestali, Florence, Italy (AISF) | 50 |
| 6.10. | Eastern Norway Research Institute (ENRI) | 51 |
| 6.11. | POLIS – dipartimento di Storia e Progetto dell’Architettura, del Territorio e del Paesaggio | 53 |
| 7. | Annexe 2 Relevant Project experience of the proposed team | 55 |
| 7.1. | Euronet | 55 |
| 7.2. | Royal Haskoning | 57 |
| 7.3. | European Centre for Nature Conservation | 61 |
| 7.4. | Land Use Consultants | 62 |
| 7.5. | Momentum 21 | 66 |
| 7.6. | Territoires Sites et Cités | 66 |
| 7.7. | Enviplan | 69 |
| 7.8. | Taller de Ideas | 71 |
| 7.9. | Accademia Italiana di Scienze Forestale (AISF) | 72 |
| 7.10. | POLIS – dipartimento di Storia e Progetto dell’Architettura, del Territorio e del Paesaggio | 73 |
| 8. | Annexe 3 Curriculum Vitae of the proposed team members | 74 |
| 8.1. | Royal Haskoning | 74 |
| 8.1.1. | Jan Vogelij | 74 |
| 8.1.2. | Geske Barendregt | 78 |
| 8.1.3. | Arjen de Vries | 81 |
| 8.1.4. | Charlotte Nauta | 85 |
| 8.2. | ECNC | 90 |
| 8.2.1. | Ben Delbaere | 90 |
| 8.2.2. | Peter Nowicki | 92 |
| 8.2.3. | Agnes Bruszik | 93 |
| 8.3. | Land Use Consultants | 93 |
| 8.3.1. | Jon Grantham BA (HONS) MRTPI | 94 |
| 8.3.2. | Charlotte Goodwin | 98 |
| 8.4. | Momentum 21 | 100 |
| 8.4.1. | Maya Konstantinova | 100 |

| | | |
|---------|--|-----|
| 8.5. | Territoires, Sites et Cités | 103 |
| 8.5.1. | Dominique Lancrenon | 103 |
| 8.5.2. | Hélène Liber | 105 |
| 8.5.3. | Claude Debrock | 106 |
| 8.5.4. | Philippe Bouvard | 107 |
| 8.5.5. | Sophie Grand | 108 |
| 8.6. | Enviplan | 109 |
| 8.6.1. | George Tsekouras | 109 |
| 8.6.2. | Tina Tsoutsou | 123 |
| 8.7. | Taller de Ideas | 129 |
| 8.7.1. | Alfonso Vegara | 130 |
| 8.7.2. | Waikien Ng | 139 |
| 8.8. | School of Planning and Housing, Heriot Watt University | 142 |
| 8.8.1. | Cliff Hague | 142 |
| 8.9. | Accademia Italiana di Scienze Forestale (AISF) | 143 |
| 8.9.1. | Federico Maetzke | 144 |
| 8.10. | Eastern Norway Research Institute (ENRI) | 145 |
| 8.10.1. | Hans Olav Bråtå | 145 |
| 8.11. | POLIS – dipartimento di Storia e Progetto dell'Architettura, del Territorio e del Paesaggio | 149 |
| 8.11.1. | Francesca Mazzino | 149 |
| 9. | Annexe 4 Information regarding exclusion and selection criteria | 151 |



1. Introduction

Hereby we submit the Euronet (Royal Haskoning) and ECNC proposal for the ESPON project 1.3.2. After our prequalification we prepared the methodology and organisation of the project offering best chances to meet the specific project goals within the framework of the political challenges of the ESPON project as a whole.

The methodology concentrates on the balance that should be established in European policies and tools between on the one hand the spatial developments as induced by the search for prosperity and on the other hand the safeguarding of values of natural heritage.

Accordingly in the composition of our team we balanced the expertises of spatial development, natural heritage and policy preparation and planning (management). The Euronet network of consultancies covers a wide expertise and experience in spatial development and policy preparation/planning and the environment. The European Centre for Nature Conservation covers a wide experience in natural heritage and its management.

We extended our team as it was prequalified with the POLIS institute of the Genova University of Italy that was prequalified as well for this project - and the Norwegian Eastern Norway Research institute that also joined our team.

Further enforcement of our team is established by assuring us from the support of the planning association of Slovenia, Hungary, Czech Republic and Poland.

This will especially be useful when information is needed from these countries and draft results and conclusions must be checked with their experiences.

So on top of the Euronet offices in Hungary and Bulgaria and the ECNC-office in Hungary, our coverage of Central Europe has been substantially widened.

In this tender document we focus on the approach and the organisation of the project. Evidence to support our qualifications and our non-exclusion is included in the annexes.



2. Appreciation of the project

2.1. Sustainable development

Starting points of this project are the three components of sustainable development:

- the economic and social cohesion,
- the conservation of natural resources and cultural heritage and
- a more balanced competitiveness in the European territory.

The assets of natural heritage and especially biodiversity are largely recognised in EU-policies. These values should, together with cultural heritage be safeguarded in future Europe. Care should be taken that conservation and protection do not result in mere defensive policies. A similar care applies for the objective of economic and social cohesion that aims at reducing differences in gross domestic (or regional) production. The result should not be that equal level of prosperity, levels out the diversity in characteristics.

Therefore there is a search for creative management and new forms of development that assure synergy, integration and co-existence on basis of regional and local qualities. Safeguarding and enhancement of the natural heritage is supported by two major factors. First, the European Union policies heavily promote the objective of sustainable development in general and of an ecological network (Natura 2000). Our project 1.3.2. contributes to translate that objective into practical actions and tools. Second, the rising public awareness on the values of our natural heritage. This is seen in for instance the shift of modern economic activities towards more or less footloose locations, service oriented activities go along with the appreciation of environmental qualities: to produce in a clean, healthy, quiet and visual attractive environment. These required qualities are more or less similar to that of attractive residential areas.

2.2. Central question of the project

Project 1.3.2. focuses on the territorial trends in the management of the natural heritage. Clearly, better co-ordination of territorially relevant decisions is called for in order to meet the ESDP objectives. In our view, the central question of the project is:

What is the influence of the management of natural heritage on spatial developments?

The policy question behind it can be formulated as:

How can the ESDP-objectives of polycentricity and sustainable development be met or supported through the management (and planning) of the natural heritage.

This poses the question of the links between spatial development planning and safeguarding the natural heritage.

Those links can be considered in the EEA-chain of Driving forces, Pressures, States, Impacts and Responses (DPSIR).

This causal chain is a useful model in a well defined theoretical concept. Spatial developments, policies and planning however, should be analysed and addressed in an integrative way. The complexity of factors involved in spatial development processes does not fit in one chain of causal relations: a driving force in the one sector may be a response in the other sector.

2.3. Strategy of the layers

In response to these basic questions, our extensive experience with the so called "strategy of layers" in regional spatial planning is very relevant.

This planning strategy is based on the distinction of layers in which different mechanisms and speeds of development are identified:

1. The layer of geomorphology:

The geomorphologic features and soil types resulting from very long term physical processes (mountain ranges, coastal areas, wetlands, river basins, archipelagos). This layers includes the hydrological system and the main ecological structure. These large entities that are as such natural values, offer conditions that evoke, influence or restrict the possibilities for spatial developments.

2. The layer of occupancy:

Land use of different types and the human settlements are together with the networks of infrastructure to be analysed in this layer. Human activities in combination with the geomorphology result in different landscape types with specific natural and cultural values.

2.4. The impact of different scales

Policies, planning and management affect the existing situation mostly in the layer of occupation including infrastructural projects.

Next to the protection of natural heritage as located in the large geomorphologic determined entities (first layer) the safeguarding of natural values also has an impact on developments in society (occupation layer). That is because relatively small scale developments influence and modify the quality of the environment in an incremental way (in the layer of occupation), for instance by sub-urbanisation, pollution, fragmentation, light and noise etc. Even the positive shift to environmentally cleaner production sites may work out as a danger: too much development pressure will be a threat to the local environment, similar to the effect of large scale tourism.

The link between spatial planning and the safeguarding of natural heritage should be considered at different scales:

- the European scale (large infrastructure networks, occupation patterns and major natural entities as mountain ranges, coastal areas et cetera)
- the regional/local development processes (fragmentation of natural areas, urban sprawl).

On the large scale territorial decisions influence the location of development pressures.

The policy of enlargement will most probably result in enforced development pressures in the Central European countries. The more precise location of those increased pressures will largely be influenced by decisions on new infrastructure. New development axes may result and urbanisation will speed up along those axes.

Regarding the safeguarding of natural heritage, these decisions should not only be based on the direct economic interests of local societies but also be fuelled and heavily influenced by knowledge about (potential) values of the geomorphology for the development of new natural values. This requires integrated regional planning that focuses on strategic locations to enhance ecological coherence.

On the smaller scale the incremental processes resulting in diminishing of natural qualities should be monitored and managed in order to prepare policies and projects in response to the trends.

Both scales will be addressed in this project. The project especially focuses on the preparation of sets of indicators that enable to monitor and steer these processes.

2.5. Consequences for our methodology

Our proposed working programme and organisation are based on the consideration that a real balance is required, in which the assumption is that natural heritage is considered as an equal force. Biodiversity based on an ecological structure that is coherent on a large scale is a value with its own merits.

Therefore the project is organised in a way that distinguishes the natural heritage, the spatial trends and the management as three separate work packages.

That means that not only the value of nature for mankind or citizens can be considered, but also more or less absolute values and possibly, potential values.

The separate work packages are parallel elaborated and, within each stage, integrative sessions are organised. That means that during the work process moments of divergence are followed by moments of convergence.

In each of the work packages data and causal relations within the two layers will be analysed. Although their causal relation may be different in different layers - for the selection of useful - indicators multiple use is an important criterion.

| | Natural heritage | Management | Territorial trends |
|---------------|------------------|------------------|--------------------|
| geomorphology | DPSIR indicators | DPSIR indicators | DPSIR |
| occupancy | DPSIR indicators | DPSIR indicators | DPSIR |

We expect that this work process will support a real balance between equal values: the value of progress and prosperity and the natural values.

The same applies for data. Simple available data that allow to compose various indicators in the DPSIR model are preferable.

3. Methodology

3.1. General

This project focuses on three strands:

1. Natural heritage

This includes the various definitions of values in protected areas, national parks, landscapes, ecological systems and the development of those areas. Also measures to protect and safeguard those values are included.

2. Management (policy & planning)

This includes all types of interventions influencing the natural values. Relevant spatial planning policies on EU, national and regional levels are also included.

3. Territorial trends

This considers the spatial developments related to developments in the natural areas and the policy responses on those developments.

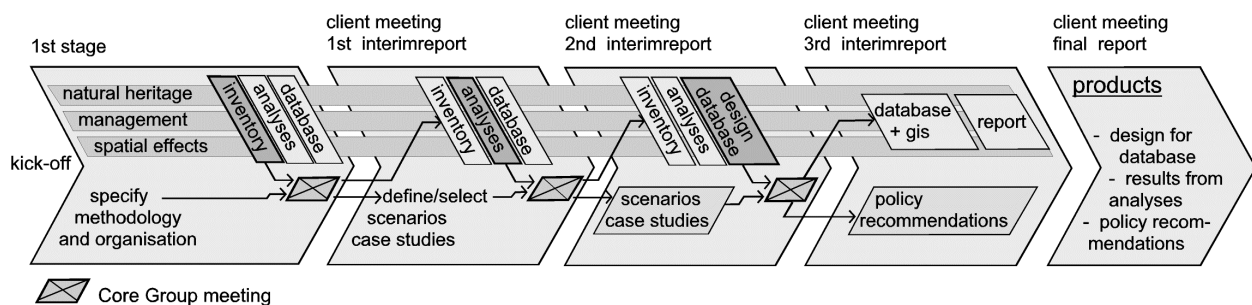
The patterns of landscape, infrastructure and urban network on different scales are included.

For each strand the following aspects will be elaborated:

- Goals
- Indicators
- Database/data

Next to these three strands, the provisional outcomes will be compared with scenarios and case studies.

- In the last stages of the work process scenarios of possible future developments are developed and those are more specifically compared with actual situations in case study areas. This information will be supportive to test the assumptions as well as the effectivity of policy responses.
- GIS
Data are collected and analysed. Separate tools are made for map production and the various GIS-analysis: GIS techniques used for the tools include overlay-principles, distance and distribution models, vicinity analysis, mapping time changes etc. The outcomes of the work will be presented in texts and on maps.



The methodology in main lines can be described as follows. The three work packages are simultaneously executed during the four stages of the projects. During those stages the emphasis of activities shifts from inventory oriented, via analysis towards data base design oriented activities. The scenarios and case studies are identified in the second stage and executed in the third one. In each stage convergence is organised in core group sessions. Policy recommendations will result from each of those core group sessions. The integrated approach character requires at the one hand to distinguish different activities at the other hand some overlap helps to co-ordinate and further integrates results.

3.2. Focussing the activities

In order to focus the activities, strong orientation on the central questions helps to select relevant indicators. Central questions like "What is the influence of the management of natural heritage on spatial developments?" and "How can the objectives of balance and polycentricity be met and supported through the management of the natural heritage?" should be brought to an answer by this project.

Aiming at a clear, goal oriented approach these central questions are elaborated hereunder in order to identify relevant causal relations in the DPSIR model.

The central questions are therefore to be subdivided into sub questions related to assumptions. The assumptions will be elaborated at the start of the projects and will be tested during the project.

Sub question 1. What is the influence of natural heritage on the process of occupation?

More specific:

- 1a. on the process of settling of human activities (the European level)?
 - The natural heritage related to large geomorphologic features influences the spatial distribution of settlements (the pattern)
- 1b. on the process of urban expansion and urban sprawl (the regional level)?
 - Urban expansion and sprawl decrease the total size of the open space (as potential areas for natural heritage)
 - Urban expansion and sprawl diminishes biodiversity through decrease of size of areas (insufficient ecological mass for specific species)

Sub question 2: What is the relation between natural heritage and new infrastructure?

- Development pressure concentrates in highly accessible areas
- Fragmentation through infrastructure interrupts the coherence of ecological systems

Sub question 3: What is the influence of policies on the safe guarding and enhancement of the natural heritage and on the provision of new natural areas.

- Unification of Europe decreases the peripherality of natural areas related to former national boundaries
- Investment budgets increase while the natural heritage still decreases (quality and quantity)
- Lack of policy co-ordination and project integration leads to ineffectivity of investments.

Next to these sub questions – which refer to the different scales and layers of chapter 2 – more specific questions can be formulated at the start of the project. For instance:

What is the influence of spatial developments on the quality of soil and water?

- Large industrial development influences those qualities negatively
- Modern requirements for new residential areas may have a positive influence
- Inner city developments also may have a positive influence

What is the influence of spatial developments on the quantity of water?

- Increase of sealed surfaces leads to dehydration
- Fast run offs increase erosion.

The activities in the different strands are elaborated hereunder.

3.3. Natural Heritage (WP1)

3.3.1. *General introduction Natural Heritage (WP1)*

Since the current project deals with the management of the natural heritage and the territorial trends therein, the component of 'natural heritage' as dealt with in this work package is crucial. Natural heritage is defined here in line with the term biodiversity, as defined by the UN Convention on Biological Diversity, extended with landscape components. For the current project natural heritage will comprise species diversity, ecosystem diversity and landscape diversity, including the related components of land cover, water and soil. Given the territorial aspects, the primary focus will be on those aspects related to species and habitat distribution, areas of high natural value (protected areas, important areas, threatened areas, sensitive areas, etc) and their relationship with management issues.

The activities that are part of this work package will follow the overall four-stage approach. In an initial step of data collection, it will be important to assess the availability of current pan-European data sets - covering components of natural heritage - and their characteristics.

Secondly, based on clearly specified objectives to be pursued by the project, indicators will need to be identified and selected using pre-defined criteria. These indicators will form the backbone of the further analysis in the project, in that they will be used for the assessment of the impact of management on the natural heritage and territorial trends of this management. Given the known poor status of Europe-wide data on natural heritage, the current project will primarily be of importance in identifying methodological possibilities and bottlenecks for analysing territorial trends of the management of natural heritage. It will show how data collection and processing needs to be improved in order to give an accurate picture.

The commendations and maps that will come of the project in terms of natural heritage will therefore be twofold: 1) recommendations regarding methodology, data quality, and indicators, and 2) broad recommendations regarding management (notably policy) at the European and regional scale.

Especially the regional component will be important, because most territorial policies are implemented on this level. ECNC has a strong position in the fields described above. Given its international character and network, it has a good overview and direct access to many European data sets and indicators on natural heritage. Also, as an interface between science and policy, ECNC has expert knowledge on and good relationships with international biodiversity-related policies in Europe.

3.3.2. *Activities stage 1-4 Natural Heritage (WP 1)*

Stage 1: This stage will include most of the WP1 activities and will include the following steps:

- Initial WP1 meeting with all project partners (in combination with the project kick-off meeting);
- Definition of terms and precise formulation of the project's goals and objectives related to natural heritage, including hypothesis and relationship with territorial trends;
- Inventory of indicators and indicator initiatives related to natural heritage, also in relationship to territorial contexts;
- Inventory of European international databases covering aspects of natural heritage and assess their availability for use in the project (from organisations such as EEA, Eurostat, UNEP-WCMC, EC JRC, etc);
- In case of geographical and/or topical gaps in data availability, make inventory of complementary national/regional databases;
- On the basis of the objectives, the available indicators, the DPSIR framework and the available databases a proposal for a selection of indicators for use by the project will be prepared with the aim to reach consensus within the project consortium;
- Based on the selected indicators, data flows and data requests will be prepared as an input into other components of the project;
- Drafting of first interim report that includes a description of the outcome of the steps taken, concepts and methodology, as well as initial recommendations towards policy and data management, taking into account the territorial dimension.

Stage 2: This stage will largely focus on implementing the methodology as set out in stage 1, based on combination with other work packages. As regards WP1 it will include:

- Support to database development and GIS;
- Expert input regarding the description of the existing spatial structure of natural heritage;
- Expert input regarding implementation of the methodology and application of the indicators within the context of territories and territorial trends;
- Expert input regarding the definition and selection of Environmentally Sensitive Areas;
- Input in second interim report as regards natural heritage;

Stage 3: In this stage the findings of stage 1 and 2 will be related to policy instruments for natural heritage and their relevance for and interaction with territorial trends, with a focus on the following activities:

- Cross-linking the policy requirements with the selected indicators and databases so as to ensure proper policy feedback and relevance;
- Expert input into scenario development and interpretation;
- Expert input into case study design and implementation;
- Interpretation of results on relation between natural heritage and spatial development;
- Interpretation of draft maps produced;
- Analysis of possibilities for monitoring of (territorial) trends based on the methodology devised;
- Input in third interim report, especially as regards natural heritage and recommendations.

Stage 4: In this stage all findings of the previous stages will be brought together and presented. Steps regarding WP1 include:

- Input into evaluation of policy effectiveness and efficiency, while taking into account the interregional and territorial dimensions of natural heritage management;
- Evaluation of application of indicators as tested in this project;
- Input in final report, especially as regards natural heritage and recommendations, which will include recommendations on the territorial dimension of natural heritage management.

3.4. Management (policy & planning) (Work Package 2)

3.4.1. *General introduction Magement (WP 2)*

For any analysis that seeks to investigate the manner and the effects of planning policy and management of natural heritage, it is imperative that a large amount of data and information of high quantitative and qualitative value should be obtained and evaluated.

A prerequisite of this is therefore the achievement of a consensus regarding specific definitions, such as what constitutes natural heritage, matters of scale (complexity and physical extent), type, condition, legal status, etc.

Another important input is associated with trans national spaces and relationships between urban and natural areas; for the purposes of this project – apart from the legal status of areas which may be considered as natural heritage – international and trans-border relationships and agreements should also be taken into account.

The latter is of particular importance considering that besides the main interest of investigation, which is the EU territory, the project also seeks to investigate and provide recommendations for the state of affairs in the EU enlargement area (accession countries), as well as other countries that are part of the European territory.

A third major area of concern which directly influences the nature and effectiveness of planning policy and management issues involves the indicators used for monitoring the state of constituent parts of the natural heritage and the effectiveness of policy.

It is therefore expected that considerable variations will exist depending on typologies (existing ones), or those to be established by the project). Any attempt to evaluate the condition of the natural heritage and effectiveness of management should, inevitably, tackle the very important issue of comparability as well as major issues relating to the level of desegregation of typologies, in order that comparisons are feasible for the purpose of policy analysis.

There will, however, be cases where comparability does not exist, simply because of the specific or unique nature of some natural heritage components of a certain member state or another country of the European territory.

Such cases should nonetheless be recorded and the manner and effectiveness of their management characteristics described.

Therefore both cases, which fit in existing and proposed typologies, as well as those, which need special treatment, should also be accommodated by the GIS. Their monitoring needs should also be catered for in the future by widely accepted methods in order to facilitate evaluation and policy intervention procedures.

Although the typologies of natural heritage are largely the result of the type and geographical extent of the surface area of the resource, in policy formulation and management the typologies vary according to 3 factors. These should be identified, evaluated and should include at least the following.

The first factor concerns how management copes with the type of pressures involved; the second one affects location (i.e. EU, accession or rest of European territory), its relationship to the polycentric pattern, if it involves national space or transnational space; and the third one is related to whether the resource in question is governed by simple legal and administrative status or whether it is part of a larger system or lacks any management or policy status at all, or even whether there is a monitoring and evaluation system applied designed to gauge its physical condition and socio-economic performance (the latter includes overall effectiveness of management).

It is expected that a plethora of factors have influenced the effectiveness of the management of natural heritage areas, and will continue to do so.

Well-known pressures on those areas, such as agricultural activities, mineral extraction, energy production and transportation, transport networks and infrastructure, water management, tourism and recreation as well as pollution of all forms, including aesthetic, greatly affect natural heritage and the management interventions required. Needless to say, to this list of pressures – particularly because of the severe climatic conditions experienced in recent years – should be added the effects of natural calamities. Here the relation to the project team elaborating ESPON priority 1.3.1. will be sought.

The analysis of planning policy and management should therefore focus on the subject, the objectives set for every case investigated, and the manner in which it is managed.

Under the subject, the investigation should include the range of the constituent parts (biotic and a-biotic elements, socio economic characteristics and spatial patterns). The objectives of the management system include the identification of cases of special emphasis, where applicable (e.g. high bio-diversity, resource exploitation).

The manner of management refers to the content and structure of the management system (e.g. level and type of agencies involved and management issues), as well as the statutory and technical means and human and monetary resources used. Here the International Manual on Planning Practice offers useful starting points.

Finally, issues of efficiency and effectiveness are also considered to be very important components of this investigation.

All concerns associated with questions of planning policy and recommendations for interventions would be based on all the above-mentioned stages of analysis and evaluation, paying particular attention to specific cases of problematic typologies and good practice with high efficiency results.

Matters of spatial distribution and multi-relationship cases associated with existing polycentric formations and the development of potential ones would be highlighted.

3.4.2. *Activities stage 1-4 Management (WP 2)*

For any analysis that seeks to investigate the manner and the effects of planning policy and management of natural heritage, it is imperative that a large amount of data and information of high quantitative and qualitative value should be obtained and evaluated.

A prerequisite of this is therefore the achievement of a consensus regarding specific definitions, such as what constitutes natural heritage, matters of scale (complexity and physical extent), type, condition, legal status, etc.

Another important input is associated with transnational spaces and relationships between urban and natural areas; for the purposes of this project – apart from the legal status of areas which may be considered as natural heritage – international and trans-border relationships and agreements should also be taken into account.

The latter is of particular importance considering that besides the main interest of investigation, which is the EU territory, the project also seeks to investigate and provide recommendations for the state of affairs in the EU enlargement area (accession countries), as well as other countries that are part of the European territory.

A third major area of concern which directly influences the nature and effectiveness of planning policy and management issues involves the indicators used for monitoring the state of constituent parts of the natural heritage and the effectiveness of policy.

It is therefore expected that considerable variations will exist depending on typologies (existing ones), or those to be established by the project). Any attempt to evaluate the condition of the natural heritage and effectiveness of management should, inevitably, tackle the very important issue of comparability as well as major issues relating to the level of desegregation of typologies, in order that comparisons are feasible for the purpose of policy analysis.

There will, however, be cases where comparability does not exist, simply because of the specific or unique nature of some natural heritage components of a certain member state or another country of the European territory.

Such cases should nonetheless be recorded and the manner and effectiveness of their management characteristics described.

Therefore, both cases, which fit in existing and proposed typologies, as well as those, which need special treatment, should also be accommodated by the GIS. Their monitoring needs should also be catered for in the future by widely accepted methods in order to facilitate evaluation and policy intervention procedures.

Although the typologies of natural heritage are largely the result of the type and geographical extent of the surface area of the resource, in policy formulation and management the typologies vary according to 3 factors. These should be identified, evaluated and should include at least the following.

The first factor concerns how management copes with the type of pressures involved; the second one affects location (i.e. EU, accession or rest of European territory), its relationship to the polycentric pattern, if it involves national space or transnational space; and the third one is related to whether the resource in question is governed by simple legal and administrative status or whether it is part of a larger system or

lacks any management or policy status at all, or even whether there is a monitoring and evaluation system applied designed to gauge its physical condition and socio-economic performance (the latter includes overall effectiveness of management).

It is expected that a plethora of factors have influenced the effectiveness of the management of natural heritage areas, and will continue to do so.

Well-known pressures on those areas, such as agricultural activities, mineral extraction, energy production and transportation, transport networks and infrastructure, water management, tourism and recreation as well as pollution of all forms, including aesthetic, greatly affect natural heritage and the management interventions required. Needless to say, to this list of pressures – particularly because of the severe climatic conditions experienced in recent years – should be added the effects of natural calamities.

The analysis of planning policy and management should therefore focus on the subject (three-dimensional environment), the objectives set for every case investigated, and the manner in which it is managed.

Under the subject, the investigation should include the range of the constituent parts (biotic and abiotic elements, socio-economic characteristics and spatial patterns). The objectives of the management system include the identification of cases of special emphasis, where applicable (e.g. high biodiversity, resource exploitation).

The manner of management refers to the content and structure of the management system (e.g. level and type of agencies involved and management issues), as well as the methods, the statutory and the technical means and human and monetary resources used.

Finally, issues of efficiency and effectiveness are also considered to be very important components of this investigation.

Effective policy and management of an ever-increasing geographical area, characterised by dynamic developments and regional disparities and a tremendous range of natural heritage features, dictates the use of indicators that can guarantee a high degree of comparability.

Given the need for the use of clear and objective monitoring of the E.U. to gauge overall performance and effectiveness, the utilisation of simple and composite indicators is inevitably an integral part of the planning and management system regarding natural heritage.

Matters of spatial distribution and multi-relationship cases associated with existing polycentric formations and the development of potential ones would be highlighted.

All concerns associated with questions of planning policy and recommendations for interventions would be based on all the above-mentioned stages of analysis and evaluation, paying particular attention to specific cases of problematic typologies and good practice with high efficiency results. Their interpretation in operational steps organised in 4 stages is as follows:

STAGE 1

- Initial meeting with the rest of the work package leaders and agreements on internal inputs and basic definitions and constraints
- Mobilisation of network for information selection and analysis of major goals and policies for natural heritage at 4 levels:
 - E.U. (central)
 - Member states
 - Accession countries
 - Others in European territory

- Identification of inter-sectoral (e.g. transport / recreation...) influences and intra-level relationships (e.g. E.U. / accession country)
- Degree of integration and effects of international agreements and conventions
- Involvement and nature of policy formulation and management actors
- Identification of gaps and major conflict areas in policy and implementation
- Preliminary supply to the database system
- Input to the first interim report

STAGE 2

- Initial meeting with the rest of the WORK PACKAGE leaders
- Correlation of the typology of natural characteristics to the planning policy and management features
- Formulation and classification of management typologies
- Evaluation of specific cases regarding the political measures relating to them and their impact
- Evaluation of technical methods used in monitoring and overall management
- First assessment of the degree of compatibility in approach and effectiveness
- Preliminary observations
- Development of comparability uniqueness matrix (in goals, methodologies, indicators, intervention means)
- Input to the second interim report

STAGE 3

- Consultation of WORK PACKAGE and ESPON representatives for the alleviation of data and information gaps and deficits and homogenisation of methodology
- Comparability uniqueness matrix enrichment and optimisation
- Identification of sustainable management cases and problematic / unsustainable cases
- Isolation of cases with unique physical and intensive pressure characteristics
- Input to GIS and other analysis and presentation methods
- Long and short term recommendations on content, methodology, supplementary statutory requirements and appropriate management structures
- Input to the third interim report

STAGE 4

- Proposal for areas with potential for polycentric development, according to existing or new patterns
- Sets of monitoring performance indicators
- Desegregated policy responses per typology and scale in the E.U.
- Specific recommendations for the alignment and homogenisation of methods, tools and planning and implementation policy for the sum total of European territory
- Recommendations on the streamlining of E.U. Directives and Regulations with respect to natural heritage definitions and management
- Final short-, mid- and long-term recommendations in the field of monitoring and conflict resolution, stemming from the undesirable effects of specific activities, singly or in combination
- Input to the final report.

3.5. Territorial trends (Work Package 3)

3.5.1. *General introduction Territorial trends (WP 3)*

Spatial development results from different driving forces: economic, demographic and ecological developments. With spatial policy and management on different levels governments try to stimulate, modify or stop certain developments.

Urban expansion has always been limited by national boundaries of which some are natural borderlines. Urban expansion-patterns are influenced by mountainous areas, or disrupted in the coastal zones in confrontation with the sea. The impacts of the influence of administrative borders on spatial developments are also large. The border between East- and West Germany for example, disrupted urban patterns and gave rise to natural development in the border area.

The interplay between driving forces on the one hand, and limiting factors on the other hand results in the actual spatial patterns. Different decisive criteria are important in their influence on spatial development. They come from different sectors, different 'layers' and work on different scales.

With the expansion of the European Union the driving forces play on a larger territory. EU policies also explicitly seeks to change the pattern and the territorial qualities:

- development of a balanced and polycentric urban system and a new urban-rural relationship;
- securing parity of access to infrastructure and knowledge; and
- sustainable development, prudent management and protection of nature and cultural heritage.

The research framework

In order to make an inventory of territorial trends investigation is needed of:

- The physical situation: its biotic and a-biotic manifestations
- The driving forces: the interventions in the physical situation.

On each of these categories, indicators must be defined to cover the subject and to identify and measure development trends. Territorial trends are outcomes from the whole of all societal processes. It has a wide scope, some resulting from analyses in the other work packages are input to analyse spatial impacts.

The natural situation will mainly be analysed in the work package Natural Heritage. Investigations on the infrastructure-network will take place for road-, rail- and water transport networks: on indicators like mesh and density. Occupation will be measured in terms of land use, land cover and density. For both policy and management as well as the driving forces for spatial development indicators in the economical, ecological and social sectors are relevant.

A goal of European policy is to manage and stimulate natural and cultural diversity. To adequately investigate the spatial trends and to obtain information, which enables to formulate adequate spatial policy recommendations, investigations on two levels are needed:

- 'large (natural) areas': to investigate the system on spatial development trends
- 'regional / local': to investigate the developments, which lead to qualitative changes of areas, like for example suburbanisation and pollution.

3.5.2. *Activities stage 1 – 4 Territorial trends (WP 3)*

Stage 1

Main objective of this stage is to set up the investigation framework on the one hand, and tune with the other work packages on the other hand.

The following activities will take place for this work package in this stage:

- Initial work package meetings with all project members (in combination with the kick-off meeting);
- Definition of terms and precise formulation of the project's goals and objectives related to territorial trends, including hypothesis and relationship with natural heritage;
- Inventory of indicators and indicator initiatives related to territorial trends, also in relationship to natural heritage contexts;
- Inventory of European and international databases covering aspects of territorial trends and assess their availability for use in the project;
- In case of geographical and / or topical gaps in data availability, make inventory of complementary national / regional databases;
- On the basis of the objectives, the available indicators, the DPSIR framework and the available databases a proposal for a selection of indicators for use by the project will be prepared with the aim to reach consensus within the project consortium;
- Based on the selected indicators, data flows and data requests will be prepared as an input into other components of the project;
- Drafting of first interim report that includes a description of the outcome of the steps taken, concepts and methodology, as well as initial recommendations towards policy and data management, taking into account the natural heritage dimension.

Stage 2

This stage will largely focus on implementing the methodology as set out in stage 1, based on a combination with other work packages. For the work package Territorial trends it will include:

- Support to database development and GIS;
- Expert input regarding the description of the existing spatial structure (actual situation, infrastructure-network and occupation) and driving forces;
- Expert input regarding implementation of the methodology and application of the indicators within the context of natural heritage;
- Input in second interim report as regards territorial trends.

Stage 3

In this stage the findings of stage 1 and 2 will be related to policy instruments for spatial development and their relevance for and interaction with territorial trends, with a focus on the following activities:

- Cross-linking to policy requirements with the selected indicators and databases so as to ensure proper policy feedback and relevance;
- Expert input into scenario development and interpretation;
- Expert input into case study design and implementation;
- Interpretation of results on relation between spatial development and natural heritage;
- Interpretation of draft maps produced;
- Analysis of possibilities for monitoring of (natural heritage) trends based on the methodology devised;
- Input in third interim report, especially as regards territorial trends and recommendations.

Stage 4

In this stage all findings of the previous stages will be brought together and presented. For this work package it includes:

- Input into evaluation of policy effectiveness and efficiency;
- Evaluation of application of indicators as tested in this project;
- Input in final report, especially as regards territorial trends and recommendations.

3.6. Scenarios and case studies (Work Package 4)

3.6.1. *General introduction Scenarios and case studies (WP 4)*

At this stage, the database is near to completion and the research is building appropriate tools to use it efficiently (identifying relevant criteria, selecting the different indicators for monitoring and policy making).

The scenarios and case studies aim at setting guidelines and recommendations for future territorial and sectoral policies and at testing the effectivity and feasibility of the tools.

3.6.2. *The scenarios (WP 4)*

Two scenarios will be developed at EU level, in relation with the database analysis conclusions and with case studies.

One will show the evolution on the basis of the current trends; Taking into consideration the database and analysis conclusions (including those from other ESPON projects in relation to this survey for example: urban- rural relations, agricultural perspective development...) this scenario will highlight the driving forces and the pressures as well as the effective impacts and responses of the implemented policies. The main objective of such a scenario is to evaluate as much as possible the risks for natural heritage if today's "consumption" of it continues, considering that actions are implemented to reduce humans ecological foot print.

The second scenario will present the evolution under sustainable development conditions. We are aware of the diversity of the cultural heritage of the communities forming of the EU and take into consideration their interpretation of "sustainability" considering their urban and/or rural structure. Case- studies are in this respect essential.

This scenario will be evaluated according to the SWOT model related to main criteria such as economic, social, natural and cultural heritage.

This scenario will need to highlight how a different approach in the use of natural resources can contribute to ensuring development and reducing disparities between regions, without jeopardising natural heritage. The evaluation of the scenario will include concerns such as renewal energy, capacity of water regeneration...

Local initiative and creativity has to be encouraged in respect of the local resources. Sustainability could be explored in relation to organisations of governance and citizen participation, giving tools for local development in the largest context, opening wider goals, long time schedule, more and diversified partnerships for investments.

The scenarios building process rests on an integrated approach addressing simultaneously natural heritage issues and spatial development ambitions related to demography and economy.

In order to ensure this integrated approach, the scenario building process rests on at least 2 Core-group workshops.

Gathering around one table, all the multidisciplinary skills that offers our team, such workshops allow to address and cross the issues in all fields, at the European scale, highlighting the different geographical areas, landscapes and natural resources which would require special attention.

The work will produce cartographic documents (on GIS) at a European scale; they will show schematically the mains issues of each scenario.

3.6.3. *The case studies (WP 4)*

The case studies will have two roles: on the one hand, they will allow to test, at a regional level, the database that would have been built and help select the most accurate indicators. On the other hand, they will feed the research on the scenarios.

These cases will be chosen on criteria such as the repartition on different bio-geographical regions, the intensity of urbanisation sprawl, the theme of tourism and leisure, the context of post-industrialisation and pollution of soil and water. Another major criterion is the data availability. The areas selected will also fit with the geographic origin of the different members of our team and their contacts (namely in the countries that should enter the EU in 2004), in order to take advantage of the diversity of nationalities and cultures which constitute this group, and their accurate and deep knowledge on specific areas linked with their professional experiences on those territories.

Case study can either overlook 10 cases developing roughly their specificity or concentrate on only 4 or 5 cases for which will be undertaken research more in depth.

The case studies are most valuable since they interest the linkage with territory. It is therefore, important that selection and methodology are decided early in the process, in the course of database building.

The activities will take place in stage 3, first preparatory activities start in stage 2.

In stage 4 all findings of the previous stages will be brought together and presented. For this work package it includes:

- Input into evaluation of policy effectiveness and efficiency;
- Evaluation of application of indicators as tested in this project;
- Input in final report.

3.7. GIS

3.7.1. *General introduction*

For an optimal use of the world's limited resources, timely, reliable and concise information is crucial. Adequate (timely, reliable and concise) information is essential for this project. Through techniques such as remote sensing (RS), data can be collected fast and with large volumes at large scales, all referenced geographically. Geographical information systems (GIS) allow for integration

of all the spatial data, and for analyses and mapping. The big advantage of displaying data in a spatial manner instead of only as tables is that it allows for new ways of looking at and analysing data. It possibly reveals geographic relationships that might previously be hidden, thereby gaining new insights on the input data.

3.7.2. Methodology

It is proposed to structure the data processing, analysis and dissemination as a flexible information system. This approach ensures that quality checks are carried out and that policy making is true information that can be traced. The system allows that in case of large multi-disciplinary projects such as the current one, data and hence information can be processed and made available. It will involve large volumes of data of different spatial time scales, from different sources and disciplines. Also a number of tools and procedures will be included in order to evaluate and visualise the impact of different strategies. Figure 1 gives an overview of the different components of such an information system:

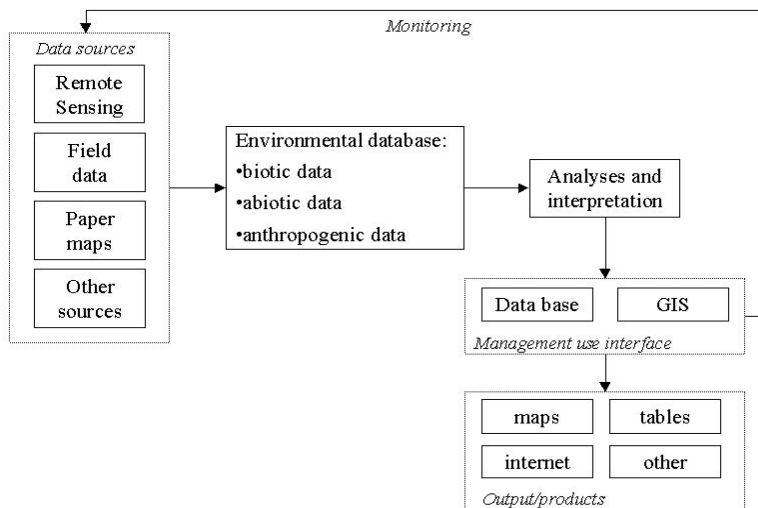


Figure: Scheme of an Information System

3.7.3. Database

- The database tools will be modular, normalised and will be accompanied with full documentation at the end of the project.
- The database design will take into account the different data types, facts, policy, predictions and results of analyses.
- Availability and processing of data:
 - precise analysis of the availability and comparability of data at Community level, including territorial indicators and the facilities needed for mapmaking
 - analysis of results and data of other ESPON projects, in particular the projects under priority 3.1

- to determine the appropriate geographical level and technology required for data collection, using the availability of data as an important criterion.
- The basic data will be available as European data sets. Phase 1 of the project includes an extensive inventory of data. Also the highest feasible scale produced will very much depend on the availability of data. Examples of data sources are given in the following table:

| | |
|-------------------------|-------------------------------|
| Basic indicators | 3.7.3.1.0.1.1.1.1. Sources |
| Landcover/landuse | Corine Land Cover |
| Biodiversity | Species distribution map, DTM |
| Soils | Soil map |

- For the case studies more detailed data and information will be necessary. Through local contacts and other sources such data will be collected. A wealth of information in hard copy form might also be available to support and supplement the digital data. Other sources of relevant data might include data available at different ministries and other organisations.
- Spatial data will be processed and analysed using the ESRI GIS software, while point data will be stored and assessed using a MICROSOFT ACCESS application.

Data base design

For optimal management of the data it is essential to take into account a number of steps:

- Define objectives and needs
First step for optimal data management is the inventory of the project objectives (short term and long term) and the subsequent needs for data. This will form the base for an information plan in which the producers and consumers of data are clearly identified. In the plan also time constraints, data quality and quantity are addressed
- Design
A functional design of the necessary hardware, software and expertise is also based on the information plan. Very often a modular approach is suggested so that the information infrastructure can be extended according to the needs of the project. Here it has to be taken into account that purchasing hardware and software is the easy part of the job but that implementation of the system in the organization will be more difficult
- Meta information system
After screening and classification of base data, intermediate results and end results the information will be stored in a meta information system. A meta information system can be considered as a database of databases. It will provide an index on the available information, its origin, quality, restriction in re-use etc. Without a good meta data base the accessibility of the data archive will be minimal.
- Back up system
Re-use of data starts with a good back up procedure and system. The main function of a back up system is insurance of data availability. However all available data in the project will have to be archived in such a way that it can be traced back easily.

3.7.4. Analyses and interpretation

GIS with the link with the database is the main tool to study and visualise the territorial trends of the management of the natural heritage for current and future developments. In order to support analyses, interpretation and dissemination of the following topics, GIS tools will be developed:

- Identification and selection of ecologically sensitive areas
- Derivation of the chosen indicators
- Identification of regions with risks and potentials
- To access maps of specific geographic region and theme

GIS techniques used for the tools include overlay-principles, distance and distribution models, vicinity analysis, mapping time changes etc. The analysis tools will be programmed as macros on standard GIS-software. Royal Haskoning uses all ESRI software, Microsoft Excel and Statistical Software. Other GIS packages are also possible.

3.7.5. *Output*

An important requirement is the capability to present the different information in a consistent format for visualisation and dissemination. As most information has a spatial content and can therefore be displayed as maps, the use of a GIS as a key component of the management tool seemed therefore very logic. In combination with a database the tool provides for analyses and processing of both point- and spatial data. Because of its open and transparent structure the tool can be extended further and additional tools can be build, depending on management issues. GIS can link two kinds of map information. First of all the spatial information that describes the location and shape of geographic features and secondly the spatial relationships to other features. Secondly the descriptive or attribute information about the geographic features. The information in the tabular database can be accessed through the map, or maps can be created based on information in the tabular database. The following table gives the deliverables as expected from the project with respect to the database and GIS.

3.8. Products

The deliverables of this project are directly related to the GOALS of the ESPON project.

General goals of the ESPON-project:

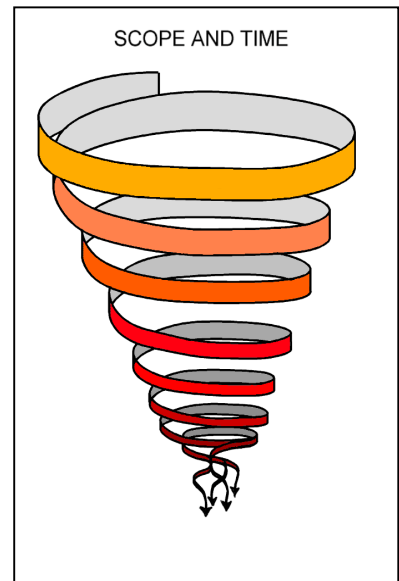
- a diagnosis of the principal territorial trends at EU scale as well as the difficulties and potentialities within the European territory as a whole;
- a cartographic picture of the major territorial disparities and their respective intensity;
- a number of territorial indicators and typologies assisting a setting of European priorities for a balanced and polycentric enlarged European territory;
- some integrated tools and appropriate instruments to improve the spatial co-ordination of sector policies.

Goal of the project is to prepare a common ground for the investigation of the basic net of spatial structure in Europe. The objectives are:

- a balanced sustainable spatial development (ESDP: social and economic cohesion and the conservation of natural resources and cultural heritage);
- a contribution to the identification of the existing spatial structure, the degree and diversity of physical and functional polycentrism at different geographical scales, to gain concrete and applicable information;
- to define concepts and to find appropriate territorial indicators, typologies and instruments, and methodologies, to detect territories;
- to develop possible orientations for policy responses and institutional, instrumental and procedural aspects;
- to provide tools for diagnosis, observation, long term scenarios, evaluation and assessment procedures.

1. To develop a project plan or conceptual model which includes:

- 1.1. Definitions of the four themes:
 - land cover, land use, landscapes
 - ecosystem diversity
 - biodiversity
 - natural resources (water and soil)
 Definitions and identification of :
 - protected areas
 - environmentally sensitive areas
- 1.2. Inventory of (EU and national) policies in the field of natural heritage: goals, instruments, valid of, plan horizon
- 1.3. Definition of territorial imbalances and regional disparities between member states and candidate countries such as:
 - areas lagging behind
 - accessibility
 - polycentrism
 - territorial integration
- 1.4. Definition and decision making on the period for the evaluation. Trends or past evolution about for instance last 10 years. Data 1990 - 2000
 - evolution of the themes
- 1.5. Ex ante/impacts of enlargement
 - polluted areas in relation to nature
 - natural heritage in relation to a polycentric and balanced development
 - priorities at EU level
 - new natural areas



2. Indicators

Translation of the goals into indicators.

Indicators should be:

- representative
- unambiguous
- applicable to all EU-countries including enlargement countries

3. Database-design and Data

A database will be designed (in theory) for the data.

The database-design taking into account the different data-types:

- facts
- policy
- predictions
- analyses results

The database should be compatible with EU databases.

The data should be:

- relevant for indicators
- specifically selected for the goals



3.9. Reports and Scheme

In relation to the TOR and our methodology the project will result in the following products:

Report 1 – February 2003

Report 1 contains the results of the following steps.

Steps:

1. definitions and scope of the project, including hypothesis
2. working methods and project plan (WHAT)
3. inventory of and consensus on the indicators
 - Analysis of results and data of other ESPON projects, in particular the projects under priority 3.1
 - Precise analysis of the availability and comparability of data at Community level, including territorial indicators and the facilities needed for mapmaking
 - Definition of the appropriate geographical level and technology required for data collection, using the availability of data as an important criterion.
4. Database design on abstract level, giving attention to various types of data and data sources. The design will be compatible with the current EU databases. Objects will be described in UML , and all objects are normalised, because most modern GIS-software including ARCGIS 8 uses an object relational data structure.
5. inventory of main request for statistical and geographical data to be collected
 - Analysis of the available statistical and geographical data in Eurostat, the EEA, National Statistical Institutes and National Mapping Agencies.

Report 2 – September 2003

Report 2 contributes to the identification of the existing spatial structure, the degree and diversity of physical and functional polycentrism at different geographical scales, to gain concrete and applicable information. It also defines concepts and to find appropriate territorial indicators, typologies and instruments, and methodologies, to detect territories.

Steps:

1. the existing spatial structure of the natural heritage (land cover, land use, landscapes, ecosystem diversity, biodiversity and natural resources) and if possible related to settlement structure, areas facing problems of lagging behind and the accessibility to different parts and types of territories within Europe, the protected and environmentally sensitive areas
2. first results of analysis. Evaluation of concepts and methodology used and proposed for next steps.
3. technical structure of the database and input of data related to the four themes. Test and check of data and maps of all 27 countries
A more detailed database design, already filled with data. Tools on GIS analysis, printing and map making. Maps and tables containing the first derived indicator values and the results of analysis:
 - Spatial structure of the natural heritage of the four themes (four sets of maps for the EU) and major spatial trends
 - Themes in present situation
 - Past evolution of themes, if data are available



4. analysis to derive the ecologically sensitive areas
5. check results and add or replace better indicators
6. second revised and extended request for further indicators to be collected

Report 3 – January 2004

Report 3 focuses on the development of possible orientations for policy responses and institutional, instrumental and procedural aspects.

- development of 2 scenario's. For example high and low economic development.
- selection of case studies, consensus about selection
- preliminary results on the significance of natural heritage for spatial development regarding different types of regions
- development of appropriate tools for the processing of the new database, indicators and map-making. Maps and tables containing data on:
 - the ecologically sensitive areas in four themes
 - Territorial imbalances and regional disparities in natural heritage
 - Risks and potentials for identified types of regions
 - Interrelationships between the state of natural heritage and territorial features such as:
 - areas lagging behind
 - accessibility and polycentrism
 - territorial integration of candidate countries
 - Other relevant variables and indicators
- applicable systems for the monitoring and benchmarking of trends and territorial developments in the context of the EU and candidate countries, including tools on GIS analysis, and some additions on printing and mapmaking
- policy recommendations

Report 4 – September 2004

Policy responses in order to contribute to a balanced sustainable spatial development (ESDP: social and economic cohesion and the conservation of natural resources and cultural heritage). This report contains tools for diagnosis, observation, long term scenarios, evaluation and assessment procedures.

The following activities are part of this final stage in the project process:

- Presentation of the database and the mapping facilities developed. The database can be extended with new and future data on the same subjects. The database tools will be modular, Objects will be described in UML , and are normalised, because most modern GIS-software including ARCGIS 8 uses an object relational data structure. The database will be delivered with full documentation at the end of the project. Maps and tables will be used to support the presentation of the research results, including the possibilities for monitoring, and maps on the necessary data to present the state and pressure, restrictions and potential of the natural heritage in relation to a polycentric and balanced development of an enlarged European Union.
- Listing of further developments linked to the database and mapping facilities
- evaluation of the effectiveness and efficiency of policy, instruments, institutional and procedural aspects
- recommendations for the application of other instruments (for example territorial impact assessment)

Steps:

- preparation of executive summary
- presentation of proceedings



- presentation of database, maps and analysis facilities
- listing of further data requirements and ideas of territorial indicators, concept and typologies as well as on further developments linked to the database and mapping facilities and formulation of further research.

4. Project organisation and Cost

4.1. Project structure and responsibilities

The complexity of the project requires sound co-ordination and organisation of the activities of the large team. Also clear lines of responsibility and reporting will be set up and the project is closely managed. This will be achieved as follows:

- The overall leadership of Royal Haskoning will set out for each stage of the project a description of the tasks to be undertaken by each team member, the amount of time it is expected to take, the format of outputs generated, and the deadline by which they will be delivered.
- Regular progress reports will be requested, and meetings between the study team will be arranged at key stages in the study. We may also use video conferencing if it is deemed appropriate and possible.
- To support this arrangement, each sub-contractor will be asked to sign a contract with the project leader that they undertake to carry out the tasks assigned to them, to budget and on time, as agreed by the parties involved. These arrangements will only be altered by agreement in writing between the two parties. In the unlikely event that there is failure to fulfil the conditions of the contract, this may lead to their forfeiting the right to recover some or all of their costs incurred.

The over all project manager will be assisted by an assistant and the project secretary. The project secretariat is based in the EURONET / Royal Haskoning office in Utrecht.

4.2. Project structure

Figure: Project organisation ESPON 1.3.2

