3. CRITERIA FOR SPATIAL DIFFERENTIATION

3.1 European Spatial Policy and Spatial Differentiation

The development of a European spatial development perspective is an on-going process where fundamental goals are made tangible step-by-step. This process is not merely a mechanical activity, involving the inference of objectives at various levels from more fundamental goals, but rather an on-going political process. Formulating the seven criteria for the differentiation of the European territory has been part of making fundamental aims tangible. The next stage, producing indicators corresponding to those criteria, implies subjecting them to the discourse process involving policy makers and researchers.

In this section the policy options of the ESDP are reviewed and the findings emerging from the work with the indicators are assessed according to their policy relevance.

3.1.1 The ESDP and criteria for spatial differentiation

The three fundamental goals of European spatial development policy are

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

The social and economic aims of spatial development need to be reconciled with the ecological and cultural functions to contribute to sustainable, and at larger scale, balanced territorial development. The ambition of the EU to progress from an economic union to an environmental and a social union sets it developmental priorities. Reconciling the objectives of development, balance and protection must not lead to weakening economically strong regions and increasing the dependency of less favoured regions. Unguided development would very likely favour an increase of regional disparities while an overemphasis on protection or assistance implies risk of stagnation.

The ESDP presents three policy guidelines for the spatial development of the union:

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

These basic statements are further broken down into 11 issues, each of which ends with a set of policy options, totalling 60 in number. All the policy aims and options share a common characteristic: they represent ways of opening up the European territory and, consequently, reflect various dimensions of spatial integration.

The policy options of the ESDP also reflect the current stage of the integration progress. Two-thirds of them deal with policy guidelines concerning the polycentric model, urban-rural partnership and parity of access; they are concerned primarily with economic matters, and thus the aim of economic union. Increasing social cohesion might be an indirect effect of this endeavour for spatial integration, but it is explicitly spelled out in only one of the policy options. One-third of the policy options deals explicitly with environmental matters, indicating that the path proceeds from economic integration via environmental policy to social integration.

When viewed according to the three dimensions of development, balance and protection, the policy options of the ESDP are well integrated. Nearly all of them include developmental aspects in combination with balance or protection. Hardly any of the policy options discussed represents a one-dimensional view. What they might lack in analytical cogency – being of a complex nature - they gain in political acceptability.

In order to establish a more solid comparative evaluation of territorial strengths, weaknesses, opportunities and threats, better knowledge is needed of spatially relevant criteria. The application of criteria means the attempt to apply common principles or standards for territorial differentiation in all Member States. Such criteria, both individually and in combination, are
necessary in order to develop different typologies of areas and to assess spatial impacts of long term European scenarios.

On the basis of selected criteria, it can be established whether different areas of Europe enjoy, with respect to the three fundamental goals of the ESDP, a relatively stronger or weaker outlook for spatial development. As these criteria present aspects of a relational character, the territorial representations of various criteria will vary over time, providing the basis for encompassing the dynamics of change in Europe.

**Box 14. Seven criteria for the differentiation of the European territory**

**Geographical position:** Geographical position is the relative location of an area within a continental, transnational or regional context. It can, for instance, be applied to measure levels of accessibility of an area from a given set of other areas. Obviously, physical geographic features, especially mountains and seas, play an important role in determining accessibility. In a European context geographical position is also associated with specific climatic conditions, such as the harsh Nordic climate or the occurrence of long periods of drought in the South.

**Spatial integration:** Spatial integration expresses the opportunities for and level of (economic, cultural) interaction within and between areas and may reflect willingness to cooperate. It also indicates, for example, levels of connectivity between transport systems of different geographical scales. Spatial integration is positively influenced by the presence of efficient administrative bodies, physical and functional complementarity between areas and the absence of cultural and political controversies.

**Economic strength:** Economic strength in a spatial context expresses the relative (international, national and regional) economic situation of a city, town or area, the ability to sustain or improve its position and the intensity of spin-off effects. A sustainable high level of economic strength would involve at least above-average economic output and/or above-average per capita income, below-average rate of unemployment, a productive and profitable, modern and diversified sectoral structure and (a potential for) intensive trade relations with other (world) regions.

**Natural assets:** This criterion concerns characteristics of ecosystems and other natural areas - their relative importance, sensitivity, size or rarity. It can supply a basis for the assessment of related functions of different natural assets across Europe and the habitat of different species. It may also supply the basis for a certain division of tasks regarding the development of specific types of nature.

**Cultural assets:** This criterion concerns characteristics of landscapes and ancient and modern cultural structures and groups of buildings - their relative importance, sensitivity, size or rarity. Historical city centres, for example, include a large number of cultural assets that may be threatened by various pressures. Other historical assets may provide tourist development opportunities. However, indicators to assess the quality, importance and future development of natural and cultural assets are still undeveloped.

**Land-use pressure:** Land-use pressure may reflect higher probability for conflicts of interests between different types of land use or different land users, or can indicate problems arising from over-demand or under-demand for land in certain areas. For instance, in a highly dynamic area, such as an urban region, housing and economic functions compete for available space. Under-demand for land, on the other hand, can be associated with a higher probability for abandonment or desertification of areas.

**Social integration:** Social integration expresses the level of interaction between different social groups, which may be distinguished by age, income, education, habitat, language, culture or nationality. In a spatial context, social problems such as social segregation or exclusion - often associated with high unemployment - reduce social cohesion within and between (especially urban) areas, which in turn reduces economic opportunities.

In the first official draft (Noordwijk) of the ESDP, a list of seven criteria for the differentiation of the European territory was defined (Box 14). These criteria form the basis for the further work with indicators within Theme 1 of the Study Programme.

**3.1.2 Policy relevance of the indicators**

In this section some of the results of the seven working groups are related to the policy options of the ESDP. In order to treat this subject in an integrated manner - underlining the importance of interconnections between criteria – the presentation is structured to follow the proposed path of European integration. While
safeguarding regional diversity, the EU is supposed to gradually develop from an Economic Union into an Environmental Union and a Social Union.

The results of the seven working groups are reviewed according to their relative area of significance: under Economic Union are the criteria of Geographical Position, Spatial Integration and Economic Strength are discussed; Natural Assets, Cultural Assets and Land-use Pressure are then presented under the heading Environment Union, with the sequence ending with a review of Social Integration under the heading Social Union.

**Economic Union**

The characteristics of the global economy include:

- the increasing importance of intangible international flows of financial assets, information, decision making and networking,
- the internationalisation of enterprises through market outlets, localisation of production and possession of capital, and
- the polycentric division of the system, based on a tripartite model involving USA, Europe, Japan and others.

The spatial situation of Europe is often considered unbalanced, characterised as it is by a developed and densely urbanised centre area, where most of its wealth and innovation is generated, while relative poverty prevails in many peripheral regions. Increasing congestion in the centre and declining population in the peripheries are expected future consequences if current development trends continue. The spatial imbalance seems to threaten sustained economic growth. A closer look at the European territory, however, reveals a more complex and diversified pattern. Development gaps within the centre, or within the peripheries, may be larger than those which exist between the centre and the peripheries.

The opening of frontiers and monetary homogeneity will widen the choice of areas suitable for localisation and consequently increase the dynamics of markets. In the competition for higher productivity, the European space is likely to experience two directions of development. Growth of the innovative sector and the consolidation of large business groups, spurred not least by their interconnections with the financial sector, is likely to encourage further concentration. Simultaneously, integration and interconnection make territorial polycentrism and the development of outlying areas a competitive option. Thus, the whole of the European territory could play an important role in taking advantage of the opportunities offered.

The development of new communication networks and information technologies can undermine traditional hierarchies by loosening the formerly tight connections between physical and functional patterns. Advanced communication services are, at least theoretically, supposed to shape a new space of flows, where geographically distant centres are in fact closely connected in a time-focused relational structure. It is the nodes linking them that channel all types of flows, including people, energy, materials and information, increasingly independently of geography.

Distance and proximity between places, therefore, must be redefined. In developed areas, distance to networks, in terms of time and cost of access, and the utility these networks provide - i.e. their capacity to generate and disseminate added-value activities within the network – is rapidly becoming the predominant factor. Geographical position in the traditional sense, the relative advantage of location in a hierarchical settlement structure, is losing importance in favour of something that could be called network connectivity and network density.

Interest in the spatial organisation of society has been supplemented by concern for the social organisation of space. Politics and culture rather than geometry and distance are guiding the new geography, re-defining the significance of geographical position, accessibility and spatial integration. Former determinants of accessibility and communication, such as physical barriers, are being replaced by the ability of individuals and social organisations to adapt to social and cultural barriers.

Spatial integration is a new concept with strong political significance but various meanings. It may be seen, for example, as a means
of identifying functional territorial units, which might be promoted as efficient spaces to live and work, or as a means to improve overall cohesion across the European territory. Even though there is little explicit mention of spatial integration in European documents, the allied concept of territorial cohesion is increasingly used in documents drawn up at a supranational level, the most prominent example being the Council of Europe. However, it should be acknowledged that until now the concept of spatial integration, whether on a European scale or at a lower level, has seldom been examined in detail.

Geographical position
In the ESDP the issue of geographical position is addressed specifically in the policy options concerning accessibility. In addition, geographical position naturally plays a significant role in connection with the policy guidelines of polycentric development, urban-rural partnership and diffusion of innovation and knowledge. The discussion concerning core versus periphery underpins much spatial policy debate in the EU.

The working group for geographical position elaborated a set of reference indicators concerning accessibility at the European scale, producing maps e.g. on distance to the centre of gravity of population in Europe, showing cultural spheres according to language, or indicating accessibility by road, rail and by air to population and GDP. The economic relevance of these indicators is obvious: population indicates markets and GDP represents purchasing power and business opportunities. In addition, so-called specialised indicators on accessibility were elaborated, which treat significant policy issues such as main transportation corridors and centres of gravity. Maps were produced concerning national space inequalities related to the road networks and accessibility for trucks.

The working group concluded that a set of reference indicators of geographical position - related to relevant EU policies - should be adopted. This set was to include geographical, physical, cultural and accessibility indicators. The results of the survey of accessibility indicators can be used to divide the regions of the EU into centres and peripheries (although actually this division is more of a continuum), for comparing the divisions resulting from using different indicators, and for evaluating the likely impacts of various policy measures on differences in accessibility between central and peripheral regions.

In recent years the role of transnational policies has grown in importance in the EU. Changes in competitive conditions set new requirements for infrastructure capacity and accessibility. Competitive advantage is increasingly dependent upon on man-made and not natural resources, emphasising the significance, for instance, of factors such as fast passenger transport and information transmission. Even if these challenges are a result of global influences, the possibility of finding solutions is strongly influenced by local conditions, e.g., the possibility of strengthening the “resources” of a certain region or centre by improving its accessibility.

According to the ESDP, the trans-European networks (TEN) are to link landlocked and peripheral areas with the central areas of the EU. Analysis of accessibility indicators, however, supports the view that the TEN may widen rather than narrow the differences in accessibility between central and peripheral regions in Europe. Gains in the rail accessibility of peripheral regions may well be beneficial to their economic development, but these gains can be overshadowed by larger gains in rail accessibility for regions in the European core.

A European transport policy truly committed to cohesion would have to significantly shift its focus to transport links within and between the peripheral regions, not in addition to, but at the expense of transport investments in the European core. As the relative position of peripheral regions varies according to the mode of transport concerned, it is important to pay special attention to solutions which improve intermodal accessibility.

The data required for the calculation of the indicators of geographical position should be made available and updated in the databases of Eurostat. This is straightforward in the case of the geographical, physical and cultural indicators, as these are not likely to change over time. In the case of the accessibility indicators, both area data and network data are required: Network data include the pan-European road,
rail and airline networks. For reasons of standardisation, this information needs to be provided and made available to the research community.

To enable researchers to calculate indicators in a comparable way, a manual for their calculation should be prepared. The manual should contain the exact definition of each reference indicator and, in the case of accessibility indicators, a precise and operational specification of how the indicator is to be calculated, including the necessary model parameters, a test data set and the correct results to be obtained as well as a sample of the software code needed to produce those results. As in the case of the integrated database, all software should be in the public domain to ensure easy exchange and dissemination.

In addition, further research is needed. Little research has been done on political, economic and cultural barriers. More needs to be known about different forms of accessibility indicators or accessibility indicators for different types of actors and users. A second area of research should explore new concepts of accessibility indicators that have not yet been made operational, such as indicators taking account of telecommunications or indicators that are not scalar values but multi-valued distributions. Finally, a third area of research should develop advanced ways of visualising geographical position and time-space maps.

Spatial Integration
As it is practically an all-encompassing concern, the question of spatial integration is addressed by almost all the 60 policy options of the ESDP. The whole idea of the Economic Union is to open up all parts of the European territory for development.

The working group on spatial integration elaborated indicators showing flows and barriers, spatial homogeneity and discontinuity, as well as spatial co-operation. Maps were produced showing e.g. wealth differences between neighbouring regions in 1989 and 1996 and spatial co-operation activities within the INTERREG programme. Despite the fact that the selected indicators do not reveal any obvious pattern of spatial integration, some observations can be made. There is a general trend towards reducing international disparities and barriers within the EU and towards the development of more integrated spaces at different geographical levels. Different types of borders may produce different patterns according to the scale used for investigation, type of interactions, indicators selected and method of measurement, for instance.

Persistent contrasts between regions in the same country can be observed, while the effect of national borders appears to have weakened. This can be seen as positive from a European point of view, but not necessarily so from a national perspective. The conclusion is that enhanced spatial integration does not always produce overall positive effects. Choices must be made, since strengthening integration at one level/area/domain may result in slowing integration (or increasing differentiation) at another level/area/domain. Balanced spatial integration, in a sense similar to the balanced polycentric urban development promoted by the ESDP, could be a desirable aim.

It is necessary, however, to go beyond the conventional image of a generally positive but vague notion of spatial integration and take into account all of its aspects and implications. Obviously, much work remains to be done in conceptualising the field more fully, in particular through involving a range of different actors in the discussion. The potential consequences of spatial integration should also be explored in more depth, and should include an investigation of threats that it might imply when adequate co-operation has not been ensured.

The availability of reliable and homogenous sources of information transcending national borders is a basic prerequisite for analysis of European spatial integration. Work so far has shown that one cannot rely on traditional data. SPESP work has also shown that the NUTS divisions do not always provide the most appropriate basis for assessment of spatial integration. It would, therefore, be interesting to consider what other functional territorial units could be appropriate for further analysis. Studies of cross-border areas are helpful in providing a better understanding of the integration processes, as these areas appear to be the real experimental laboratories of integration. The considerable financial resources allocated to cross-border programmes within the frame-
work of European policies underlines the significance of the issue.

**Economic strength**

The issue of balanced competitiveness and development underpins the spatial guidelines of the ESDP: a polycentric and balanced spatial development and urban-rural partnership as well as parity of access to infrastructure and knowledge. Almost all of the policy options of the ESDP focus on economic strength and economic and social cohesion, often coupled with wise management of the environment.

The group working on economic strength elaborated so-called classical single indicators, and, in addition, indicators expressing globalisation and rootedness, modernisation versus diversification and competitiveness. Maps were produced on, e.g. labour markets, innovation and competitiveness according to cause-and-effect variables. Similar regions were grouped into clusters and the settlement structure of the EU territory was classified.

To enhance the study’s value for spatial planning the causes and effects of competitiveness were related to settlement structure and this was further broken down into core and peripheral regions. Within the core, urbanised areas perform better than agglomerations when actual competitiveness is evaluated against potential competitiveness. This can be explained by their geographical location between the hinterland, on the one hand, and the agglomerations and urbanised regions with centres, on the other, leading to positive spill-over effects. The results suggest that there is a relationship between different types of neighbouring regions and that national clusters exist.

The analyses of economic strength have confirmed the existence of a centre-periphery divide within the EU, albeit some regions were performing better than expected when the effect factors of competitiveness were analysed. Policy-makers should identify the weakest causal factor in a balanced range of factors affecting economic performance and strengthen it as a basis for further development.

Research on the modernisation indicators supports the view that single policies aimed, for instance, at increasing expenditure on R&D in weaker regions, need to be accompanied by a broader policy framework given the interrelationship between the different causes of modernisation and their effects. A range of complementary policies should be considered for spatial development rather than relying on one policy to enhance competitiveness.

National trends strongly influence the development of regions. The type and level of governance operating in each member state can influence the direction of economic potential and the success of policy implementation. Considering the importance of governance in order to develop urban-rural relationships and polycentric urban structures, it is understandable that the role of agglomerations, urbanised areas and rural areas differs in the core and on the periphery of the EU.

In the most recent Structural Funds programming period, priorities were changed from an emphasis on the intervention of public sector supply of facilities to more emphasis on building R&D skills alongside the stimulation of demand and promotion of innovation through partnerships. Policies following this direction would help the development of a polycentric model of spatial development and encourage the spread of economic strength outside the capital regions.

While a broad core-periphery divide was clearly evident throughout the study, certain regions were identified as out-performing others despite starting with the same baseline potential. From a macroeconomic point of view, it would be interesting to pursue these findings by conducting case studies on those regions focusing on a number of factors. Research is needed on institutional frameworks, the role of urban-rural relations in determining the regions’ economic performance, the benefits of a polycentric model for less-well-performing regions, the dimension of core and periphery in the EU, and the question of territorial rootedness of production and service systems in the frame of the increasing globalisation and the enlargement of the EU.

It was clear from this study that more, and more suitable, data need to be provided and regularly updated for indicators of economic strength. This data should be widely available at a minimum of NUTS 2 level for all indicators and regions. As much of the information
may already be available through research organisations in individual Member States, it could be useful to establish new working networks between Eurostat and data facilitators.

Environmental Union
As the importance of relative position decreases as a determining factor for economical success, the meaning of specific properties of places can increase. Locations may gain importance due to natural and cultural assets, especially where environments providing good connections and a good quality of life are sought. In order to attract valuable activities, places with basic accessibility conditions can compete in terms of environmental advantages.

The assets of nature and culture have a significance for everyday life that reaches far beyond their meanings as defined by scientists and scholars. They represent a sense of continuity, wrapped in aesthetic feelings and ethical understanding, which by far transcends the opportunities offered by the modern image industry, and are fundamental for human existence and social integration.

The concept of environmental assets differs fundamentally from communication assets as well as from economic assets. Assets are normally viewed as inputs in a perpetually expanding development process, the logic of which does not necessarily apply to the limited extent of the material world. The number of species, the carrying capacity of ecosystems, the number of artefacts or sites, as well as their possible overlaps with land-use considerations, are all subject to unconditional limits.

In contrast to the material world of actual items, human interpretations of nature and the cultural heritage know no limits. Even though today the factual legacy of our ancestors is often said to be shrinking, it provides us with an apparently perpetually expanding source of meanings. As images have gained in importance at the cost of factual items, the commercial utility of environmental assets is not necessarily decreasing at the same pace as the number of tangible items. Artefacts and natural phenomena may even increase in value in proportion to their rarity.

Ancestral heritage is a central, but relatively unproblematic, element in the world of stable, traditional societies. In the world of early modern Europe, the heritage of Greco-Roman antiquity came to be the spark and focus of Renaissance humanism. In subsequent centuries, ancient monuments were utilised in the nation building of kings and sovereigns. This activity developed into a classification and listing activity, carried out by national boards of antiquity and resulting in comparatively large-scale conservation measures, often accelerated by rapid development.

Today the concept of heritage as historical monuments and piecemeal conservation has become practically meaningless. The notion of heritage has been expanded to include everything from single items to large collections of artefacts, even a variety of types of landscape. The time scale has also been broadened, and now circumscribes everything from palaeontology to the study of modernism. Although practically anything can be ascribed a value as heritage, everything cannot be conserved. Therefore, the current challenge is to find administrative and commercial solutions for the integration of conservation into development.

Under the present era of global economy, land-use restructuring and pressures on land, are becoming ever more important concerns. The increasing urgency of ensuring sustainable growth together with the protection of natural and cultural assets is leading to new forms of regulation and planning of land use. There is a need to improve the integration of sectoral policies while at the same time ensuring them a wide focus. Current land-use structure exerts pressure on distant as well as local resources and thereby on future land use.

Natural assets
Environmental protection issues are well represented among the policy options of the ESDP. A variety of options address directly the question of “Preservation and development of natural heritage” and “Water resource management”. In addition, urban environment infrastructure, wise management of urban ecosystems and reduction of excessive settlement pressure on coastal regions are included. The section on rural areas also includes policy options with environmental relevance. Among accessibility options, the introduction of terri-
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Tourist impact assessments is mentioned. Under the heading of infrastructure use, increasing use of environmentally compatible means of transport is mentioned. This means that one-third of the ESPD policy options have direct relevance for the natural environment. Nearly all of them are of an integrated character, implying development alongside protection.

The working group on Natural assets produced maps of the European territory showing pressure on environment, emissions of pollutant gases, valuable coastal areas, ecosystem diversity, natural hazards and designated protected areas. Work on indicators at a European level has unveiled the deficiencies of presently available data banks, as well as the need for validation of the results and further development of interpretative models. The regional scale applied, which was based on administrative borders, limits severely possibilities of adequately reflecting the state of nature.

For the future, promotion of international programmes and experience of natural resource management is considered advisable. The area of intervention by environmental management programmes should be determined by the extent of the ecological problem or by the natural characteristics of the area. A number of programmes promoting sustainable rural development can scarcely be conceived as inter-regional programmes if they covering territories with homogenous cultural, economic or environmental characteristics.

Within the strategy of strengthening population structure in rural areas, ecological aspects must play a fundamental role. The vast network of small and medium-sized population centres must be involved in environmental research and training aimed at strengthening the creation of small infrastructures in selected locations. The development of tourism that is both “soft” and environmentally compatible is a good option. Areas which can sustain intense and prolonged exploitation must be clearly differentiated from others that are sensitive, fragile or endangered. It is evident that designating an area as a natural protection site affords new opportunities for economic development, in particular tourism. Nevertheless, efforts must be made to promote activities related to environmental conservation, improvement, and management that will open new economic opportunities for territories affected by protection.

Environmental factors should play an important role when it comes to decisions regarding the location of renewable energy source centres (wind-based energy, small hydroelectric power plants). Pressure on the environment must be taken into consideration when evaluating the territorial impact of large infrastructures and assessments should include indirect effects as well as the direct impact from the construction of new infrastructures. Use of evaluations is the foundation for determining the degree of protection necessary, suitable restrictions on development and the compensation measures necessary to guarantee the well-being of human populations. This idea is reflected in the conception of European ecological networks, as proposed by Natura 2000, including the necessary links between sites and protected areas of regional, national, transnational and EU-wide importance.

Forests have a central role in the European environment as green lungs that help to reduce CO₂ emissions and thus the greenhouse effect. They also protect the soil as the basis of life for human beings, fauna and flora, by reducing erosion, soil destruction, and overuse of open spaces. A clear stand must be taken in favour of promoting alternative uses for those spaces whose soils have suffered more intense degradation, aiming at the recovery of their natural character and fertility. The characteristics of the European wooded masses at a continental level could be improved.

High incidence of natural hazards can compromise development and threaten the objectives of territorial convergence and balance in Europe. Evaluation of the territorial incidence of potential natural hazards in Europe needs to be given more impetus so that the limitations they set to development and the preventive measures needed can be estimated, together with their economic repercussions.

Water must be appraised not only as a resource for the development of human activities, but also as a key environmental element, one essential for the development of numerous natural processes. Water conservation concerns the entire European territory and not only wetlands. A balance must be reached between an-
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thropogenic water consumption (by households, agriculture, industry, and tourism) and the ecological needs of the ecosystems. This aspect should be included in both sectoral policies, as well as in those regarding rural development.

The creation of co-operation and experience-exchange networks, making available specific expertise derived from their different geographic locations, should be promoted in areas with similar characteristics. This would be especially useful for protected areas, environmentally sensitive areas or areas of high biodiversity, such as coastlands, mountain areas and wetlands. Administrations at different levels, as well as the civil society and scientific communities, need to be involved in order to create an awareness of the importance, threats, opportunities, and tendencies of these areas.

Important questions to be investigated as soon as possible are the effects, for instance, of more extensive use of economic instruments, the possible implications that the start up of the Natura 2000 network will have, and the role of protection agencies at a national, regional, and local level.

The work on environmental indicators for the European territory brought to light some very significant deficiencies in the state of databases. To obtain more complete data that could help to improve indicators, close collaboration with the European organisations involved is necessary. Current endeavours by the EEA to create a harmonised system of environmental indicators for Europe must be supported, as they will form the basis for elaborated monitoring systems. Additional effort is needed, however, to co-ordinate and make the various monitoring systems presently in use compatible.

Validation of the results indicated by the indicators needs to be undertaken, as this is the only way in which a system can be assured of reliability. Once the indicators are defined from a scientific point of view, and results are obtained, these results must be held up against territorial reality in order to progress still further and develop interpretative models. Models of territorial characterisation constructed by combining indicators should enable the analysis of complex aspects or concepts for which a single indicator or a single data source is insufficient.

In order to advance, the possibility of applying the complete system of ESDP indicators to several pilot areas in Europe presents an intriguing prospect. Obviously, a much more detailed definition is necessary for territorial diagnosis. NUTS 5 would be the most suitable level for investigation. For each pilot area, an integrated diagnosis could be elaborated and reliable conclusions then drawn on this basis, indicating both the dependability of the system of indicators, as well as revealing the differentiation of European territories.

Cultural Assets

Creative management of cultural landscape and heritage is addressed in eight of the policy options of the ESDP, indicating the substantial emphasis placed on Europe’s cultural legacy. All of these options are of a complex nature, including development, enhancement, improvement, creative redesign and promotion.

The working group on cultural assets has followed the division introduced by the ESDP and treated cultural landscape and built heritage separately. The group working on cultural landscape produced maps indicating the significance of cultural landscape, as well as its diversity and degree of endangerment. The group working on built heritage has elaborated a set of five maps, culminating in a map indicating the sustainability of use of cultural heritage.

Since 1993, the UNESCO World Heritage List has included cultural landscapes of outstanding universal value, but other protected area systems are needed at the European and national level. The European Landscape Convention currently under preparation serves as an adequate means on the continental level. Many conventions already cover the built heritage. Rigorous protection measures, however, can only cover a very limited part of the cultural heritage.

In spatial planning, the rating of cultural landscapes has increased considerably at the EU level. If this is taken as a standard, spatial planning in the Member States still has considerable work to do in order to put the objectives into concrete terms with higher formal obliga-
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In connection with the conservation and development of cultural landscapes, spatial planning should aim at taking on an interdisciplinary co-ordinating and moderating function. One primary task would be to harmonise economic concerns, sectoral plans of agriculture and the resource-protecting plans of nature conservationists. Attention should be paid to the relationships between built heritage conservation and, for example, housing policies and urban regeneration policies.

It is necessary that standard routines of environmental impact assessment and strategies at all spatial levels also include the cultural heritage and landscape aesthetics. Land consolidation, which has long been applied solely with the aim of improving agricultural efficiency, could be further adapted to encompass other objectives, including landscape conservation. Also the implementation of primary infrastructure for tourism development could be encouraged.

Both direct and indirect actions can affect the management of cultural heritage. Direct actions include the purchase of land or monuments by public agencies or NGOs, whereby the desired form of management and co-ordination is secured. EU policies under the ERDF Structural Funds and agricultural support measures belong to the indirect actions, contributing to and influencing the management of certain cultural landscape types. In all actions taken by the various DGs, the effects on cultural landscapes should be considered. A considerable influence on the shaping of large parts of our rural cultural landscape can be attributed to the LEADER programme and the future agricultural policy.

Positive environmental effects may be expected from the Commission’s proposal to introduce decentralised environmental policies applied on a regional level and based on the principle of subsidiarity.

Locally produced products - promoted by a labelling system with the aim of facilitating consumer choice and promoting consumer confidence – possess a strong regional identity. The indigenous knowledge of farmers and artisans, should be recognised at local or regional level, from which its cultural significance is formed. All actions in this context give the cultural landscapes their regional identity and intrinsic value. In addition, most measures only work when accepted by and done in cooperation with local residents.

Cultural heritage protection, planning and management should be integrated in other aspects of sectoral planning, such as economic or traffic development, and treated with a mixed-instrument tool case by professionals from different fields.

Data availability for proper evaluation and monitoring of cultural assets on a European level is absolutely insufficient. Quite a number of geographical landscape classification and evaluation methodologies on different spatial scales have been developed at the national level. This data needs to be gathered, compared and evaluated in order to provide an appropriate and sound monitoring system. Moreover, many ad hoc studies exist on the sustainable use of built cultural heritage, both at the local and regional level. Information on their approaches should be co-ordinated and integrated.

One basic condition for either conserving or developing cultural heritage that is especially relevant for cultural landscape is its registration. As a single register for cultural landscapes has not yet been established at the EU level, stocktaking has to be done using a standardised classification system. A European-wide cultural landscape typology system is needed, which could then form the baseline for subsequent grading of cultural landscapes. A European-wide inventory of the built cultural heritage is also lacking. A beginning has been made within the study programme but further work is still necessary.

As far as heritage cities, cultural sites and monuments are concerned, further studies of issues such as the carrying capacity of cultural assets are urgently needed. Three case studies have shown that, on a local level, these issues play a crucial role in the management and conservation of the cultural heritage. It should conceivably be possible to obtain the required information, at least for problem areas, on a municipal (or even lower) level. Subsequently, more work is needed to analyse the inter-relationships between the cities and their built...
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heritage and the surrounding hinterland and its cultural landscapes.

Land-use pressure
The ESDP refers to the need for policies based on common European principles to regulate land-use pressure. The issue of land-use pressure addresses all the policy options of the ESDP that deal with environmental matters concerning nature and culture. In addition, land-use pressure concerns many of the options dealing with an intensified use of land, and change of land use in general. Ensuring proper land-use is, in essence, a question of striking a balance between various degrees and kinds of utilisation. It is necessary to raise the question of what ambitions for shaping policy on the European level are realistic, given the differences between Member States and the nature of the challenges.

The working group on land-use pressure has produced maps concerning indicators of agricultural intensification and abandonment, of land-use pressure due to urban expansion and economic growth as well as of pollution of drinking water. The study was the first one to analyse land-use pressure at the European level. In examining land-use pressure affecting non-urban areas, one of the most relevant dimensions is exploring changes in land use caused by rural development processes themselves. This includes agricultural industrialisation and increases of scale in certain areas, as well as less intensive and marginal use in other areas.

One of the most significant forms of land-use pressure is urbanisation. Although the general trend is found in all Member States, the stage of urbanisation differs from one region to another. Southern European countries are still to some extent in the industrialisation and urbanisation phase, while post-industrial cities are mushrooming in other regions, including parts of Germany, the UK, Italy and France. Urban sprawl has led to lower urban population densities, higher requirements for infrastructure, and the permanent conversion of land from other uses to built-up areas.

Areas under high pressure are found in Ireland, in Greece, on the west coast of France, the east coast of Spain and in parts of Germany and the Netherlands. These regions generally combine high GDP growth with well-developed infrastructure. The presence of semi-natural areas on the coasts, with intensive agriculture and/or tourism, can explain the high values observed in Greece, Spain and France. High-pressure regions are also found in Central European forest areas and in regions with river outlets and estuaries, wetlands and lakes.

Nitrogen concentration in deep groundwater is highest in regions with intensive agriculture, i.e. the Netherlands, Belgium, Luxembourg, Denmark, Germany and France. In other parts of Europe these levels are quite low and are assumed not to be a threat to drinking water quality.

The various examples of land-use pressure throughout Europe do show some common pressures (urbanisation, industrial or agricultural intensification), although other factors are highly country-specific. A general set of indicators will probably never be adequate enough to cover the needs of individual regions while at the same being applicable at European level.

Just how land-use pressure should be measured is anything but obvious. Similar pressures from human activity can result in different outcomes on the land. And furthermore, similar changes in land-use may be regarded as positive in one region and negative in another. There is also a question of geographical scale: changes may be viewed negatively at the local level and positively at a national or European level, or vice versa.

High land-use pressure is a challenge both in regions with urban growth and in regions with intensive agriculture, but in different ways. Low land-use pressure may also be a challenge in cases where abandonment is a threat. Policies thus need to be based mainly on the character and seriousness of the local/regional pressure and the consequences of this pressure for the economy, ecology, environment and health.

There is a strong link between the geographical scale and the kind of issues raised. Most data and indicators can be found on the regional level, while most spatial planning challenges and solutions are found at the local level. In future work, the question of scale needs more attention. Land-use pressure often occurs on a
local or regional level, for instance around ex-
anding cities, and the areas affected can vary
from very limited local ones to large regions.
Just as the causes and effects of land-use pres-
sure differ widely throughout Europe, so do the
reactions to it, as visible in local, regional and
national policies, vary considerably.

Social Union
A fundamental aim of the EU, social cohesion
can be promoted by social integration or coun-
teracted by social exclusion. At European
level, social integration can be encouraged by a
fair distribution of economic growth, as well as
economic and spatial integration, which dis-
mantle barriers to labour markets and thereby
provide expanding opportunities for individu-
als to earn a livelihood and make a profes-
sional career. In addition, parity of access to
communications and basic welfare functions,
such as education and public services, en-
hances the well-being of individuals. In politi-
cal terms, the possibility of exercising democ-
ratic rights and influencing the context of one’s
personal life is important.

Social well-being, however, transcends a sim-
ple relationship between citizens and public
authorities. Welfare functions provided for by
public or private services do not replace the
need for the personal experience of belonging
to family, neighbourhood, an ethnic or reli-
gious community or non-governmental organi-
sation. This means that a Social Union should
not only provide its citizens with equal rights
of its citizens, basic democratic and economic
freedoms, and formal welfare institutions, but
also take responsibility for social well-being in
a broad sense of the word.

Generally speaking, traditional forms of social
cohesion, i.e. the family and religion, are dete-
riorating in the wake of development. The sig-
nificance of the nuclear family as an integrat-
ing force is challenged by the influence of
individualistic experience and claims of the
labour market. Religion has been extensively
pushed into the private realm, losing its mean-
ing as an integrative factor of public under-
standing. The rapidly expanding industry of
images, including music, fashion, sports, tour-
ism and drugs - creates life styles en masse, but
simultaneously subjects these markets to per-
petual segmentation, counteracting communality.

Since World War II, there has been steady ex-
pansion of the European welfare state. During
the most recent decade, Europe has undergone
significant structural changes, including the
globalisation of the economy and financial
constraints on public expenditure, which have
affected the systems for welfare delivery both
directly and indirectly.

In some countries welfare delivery by the state
plays a significant role; in others the family has
a predominant role. Countries which built up
well-developed welfare institutions are now
challenged when today’s less robust family
faces cutbacks in the public welfare service
upon which it depends. Countries with a strong
tradition of informal provision of social wel-
fare are also under constant pressure due to
persistent labour market demands, for instance
for mobility or female labour-market participa-
tion. Such forces strongly affect traditional
networks of social security and the traditional
functions of the family institution.

Social Integration
The problems of conceptualising on-going
processes of social disintegration and exclu-
sion, and difficulties in integrating the social
dimension into spatial policies, are reflected in
the ESDP. Among its 60 policy options only
one explicitly addresses the question of social
integration, stating that promoting integrated
urban development strategies is needed to fight
social exclusion. As the scale of this option
suits the urban neighbourhood level, it was not
easily addressed by the working group for the
criterion Social Integration.

Due to the lack of harmonised data at the
European level, the working group had to limit
itself to issues of demography, economic struc-
ture and labour market. From a social integra-
tion point of view an interesting question is the
interrelationship between activity rate (the
share of working-age people who are economi-
cally active), gender, wealth and unemploy-
ment. The activity rate is affected by societal
role models, general values attached to em-
ployment, retirement policy and the duration of
education. A high activity rate does not neces-
sarily indicate voluntary choice, but can be the
result of economic coercion, in which case it
indicate both social inclusion and also exclusion
- as it could interfere with the regeneration of
family and other social structures. In this respect, the activity rate of women is especially indicative, showing a clear culturally based pattern.

In the Nordic countries and the United Kingdom, activity rate is high, while it is dropping in Middle Europe and Ireland. In Spain, Italy and Greece it is even lower. Within the countries we can identify high activity rates in regions where the service sector is very important, especially in relation to tourism, and in urban regions. The high activity rate in all of former East Germany is striking. A comparatively low GDP in combination with a high activity rate may point to underlying economic necessity shoring up labour market participation. This is the situation in e.g. Finland, the UK and Eastern Germany.

A general correlation can be seen between high unemployment rates and low activity rates. Finland and Eastern Germany are exceptions, with high unemployment and comparatively high activity rates at the same time. A satisfactory analysis of this would, however, require further assessment of the nature of unemployment (cyclical or structural) and activity rate (economically or culturally determined).

Social science and national agencies monitoring social integration are strongly focused on formal welfare systems, labour market functions, gender equity, as well as training and education of the labour force. Processes connected to the informal dimensions of social integration, such as the integrating functions of civic society, religion and family, are more difficult to monitor and often disregarded or overlooked. The market prioritises exchangeable commodities, not relations of a character that cannot be priced or completely quantified.

Tackling the issue from a European spatial planning point of view opens a broad variety of possibilities for continuation of the work. The theoretical concept, i.e. what is meant by social integration and exclusion at different levels of spatial analysis and planning and in the context of different societal structures, must be developed. Furthermore, methodological tools and procedures for quantitative and qualitative description and assessment of the phenomenon must also be elaborated.

Concerning methodology, the present stage of the work reveals very clearly a lack of appropriate data. Analysis of what is available, however, reveals considerable non-harmonised, national data. The next steps should be to clarify the possibilities of harmonising existing national data for national and regional levels. Furthermore, methods of generating proper quantitative and qualitative regional information should be elaborated. This could be done by using qualitative expert assessments of the European regions concerning social integration and exclusion settings, in addition to using questionnaires and the expertise found in the existing network of National Focal Points in order to achieve a new standard of data availability, reaching beyond the existing data resources of Eurostat.

Work carried out so far thus suggests there is a lack of conceptual basis, viable data and documented empirical experience on social relations and processes at the European level. It also indicates that the idea of a Social Union of Europe still lags behind the Union’s economic and environmental aims.

**Interrelated indicators**

To obtain a more integrated perspective on the seven criteria, experiments with quantitative data analyses were conducted. A common data file was set up, consisting of up to eight indicators per working group. Bi- and multivariate correlation analyses, comparisons of means and factor, cluster and regression analyses were carried out to analyse the spatial differentiation of the EU territory that emerges from the indicators developed by the working groups.

Several of the indicators correlate with each other. Concerning geographic position and natural assets, for example, a strong positive correlation exists between the accessibility of regions (especially by air) and the prevalence of emissions. This finding points to the significance of a number of policy options elaborated in the ESDP: the need for strengthening the position (i.e. accessibility) of regions outside the core and promoting a polycentric development, on the one hand, and the need for expanding transport networks (especially the rail network, strengthening intermodal nodes) and shifting transport from road to rail, on the other hand. When geographic position and economic
strength/social integration are examined, it becomes clear that regions which are economically strong and productive (in terms of GDP per employee) also tend to be highly accessible. Again, the need for promoting less favoured regions by improving their connections, not only to transport but also to communication networks, is clear. Highly accessible regions display a significantly lower unemployment rate than do less accessible regions. This relationship must not, however, be generalised too far: the incidence of poorly accessible regions with very low unemployment rates underlines the necessity of adapting policy measures to regional characteristics and exploiting local resources and potentials.

Concerning economic strength and social integration the strong correlation between GDP per employee and female labour market activity decreases with increasing economic productivity. This points to the necessity of incorporating the gender aspect into further analyses and the conceptualisation of policy measures.

The relationship between indicators for economic strength and cultural assets can serve as proof of the stimulating effects of tourism on regional labour markets. However, it also points out the concurrent threat in terms of pressure on cultural landscapes, bio-diversity, environment, and the need for regulation and promotion of sustainable tourism. Other indicators of these two criteria point to the relevance of another set of policy aims: R&D activities are concentrated in urban areas. The ESDP identifies parity of access to infrastructure and knowledge as a policy aim, and introduces various policy aims directed at achieving a more balanced diffusion of innovation and knowledge. Although in the past a remarkable number of institutions in less-favoured regions have been funded by the EU, the regional distribution of funds has increasingly reflected the geographic distribution of top research and technology institutions, concentrating in highly developed urban regions with strong economies.

3.2 Indicators

An important part of the SPESP is the task of developing a set of indicators reflecting the chosen criteria. In order to do so, two requirements were set: firstly, one or more quantitative and qualitative indicators for each criterion were needed. These indicators should have discriminatory power with respect to differentiation between areas, explanatory power with respect to predicting area development, and policy relevance for the objectives of the ESDP. Secondly, there was a need for methods for combined assessment. Developed on the basis of the chosen indicators, the elaborated set of indicators should enable complex studies on the interrelations of criteria.

Thus the elaboration of indicators, in accordance with given criteria, implies a device for monitoring changes, which can be valuable for territorial differentiation. As this endeavour was a first tentative attempt to elaborate a device for monitoring spatial development at the European level, it understandably needs further theoretical deepening and calls for the European-wide adjustment and harmonisation of data. Despite the present shortcomings, it represents a promising germ for a European regional monitoring and forecasting system.

The context of the Study Programme is the spatial approach. The concept of space indicates an abstraction where any actual location can be ascribed any characteristics in relation to other locations concerned. In this sense it differs from the concept of place, which refers to any defined, geographical location with unique characteristics. Most of the studies of the seven working groups are spatial in the sense that the regions of the 15 Member States are treated in an abstract and relational way, according to defined aspects. The activity of conceptualising one’s location and relative position within the spatial structure of Europe as a whole could be referred to as spatial positioning.

The common denominator of all the studies concerning indicators is productivity. In accordance with the aim of making sustainable development operational, inputs and outputs should be considered simultaneously. The concept of productivity as a ratio expressing effectiveness, focuses on the relationship between the output of goods, services and other possible values and the input of resources used to produce them. These resources are factors of production (land, labour, capital). Putting the focus on productivity, instead of production, brings the aim of sustainable development
brings the work closer to an operational definition. Production growth can be reached by improved productivity, where a prudent management of resources safeguards the equal and sustained options of future generations. In a long-term perspective, rising productivity is the core of economic growth and competitiveness.

The notion of assets focuses on the developmental aspect of European integration. In research carried out by the working groups, most of the indicators presented actually correspond to the needs for input/output models. This should come as no surprise, since due to the importance of land as a fundamental resource any spatial consideration or territorial differentiation must by necessity consider variations in productivity, due to yield, relative position or any other utility, and the value of a location, territory or piece of land. The studies of the working groups indicate that solutions can be found to make the fundamental aim of sustainable development operational.

The elaboration of criteria for spatial differentiation represents an attempt to proceed further towards accomplishing the central aims of the ESDP and to provide tools for making the concept of sustainable development operational. If further developed and regularly applied, the criteria presented on European spatial development could contribute to the prudent management of the territory of the EU and provide a basis for spatial policies and future studies.

3.2.1 Geographical position

Generally speaking, geographical, physical and cultural indicators measure features related to location, but not the impact of location as such. This, however, can be achieved by using accessibility indicators. Dimensions of accessibility include origins, destinations, impedance, constraints, barriers, transport modes, spatial scale, equity and dynamics. Accessibility indicators describe the location of an area with respect to opportunities, activities or assets existing in other areas and in the area itself, where that area may be a region, a city or a corridor. Complex accessibility indicators distinguish between destinations in the city or region itself and destinations in other cities and regions.

For policy-oriented analysis, a manageable set of generally accepted, robust and feasible indicators is required. A two-level approach could be applied. On the one hand, there is a limited set of reference indicators of geographical position, which are readily available and well established. On the other hand, a more open list of specialised indicators can be compiled. Both options are tentative and do not preclude the later inclusion of other indicators still to be developed.

As reference indicators, various measures of geographic position were chosen, including geographical latitude and longitude, mean elevation over sea level, length of seashores, mean annual sunshine, major language, accessibility by road to population, by rail to population and by air to GDP. In terms of accessibility, the potential of an area is calculated as the total population of the destinations in other areas that can be reached from the area, discounted by a negative function of the effort to reach them. Accessibility to population is an indicator of the size of market areas for suppliers of goods and services, while accessibility to GDP is an indicator of the size of market areas for suppliers of high-level business services.

All specialised indicators are accessibility indicators. The list of these indicators is more open-ended than the list of reference indicators, because future research and advanced possibilities of data organisation and computation will open up new approaches to measuring geographical position. The selection of issues includes average transport speed by area or by country and average regional accessibility of each country, main rail and road interconnections, minimum travel-time accessibility from the Ruhr to cities of large economic basins that are separated by natural obstacles and travel-time accessibility for trucks from Rotterdam.

Within the working group debate arose concerning the potential use of accessibility indicators in decision-making, and subsequent work proceeded in two complementary directions. The outcome of the first was to produce regional indicators for basic geographical characteristics and for the measurement of global accessibility, expressed in the form of potentials linked to population or to GDP, and calculated on the basis of various transportation systems. The maps produced were linked to population figures and emphasized the contrasts between the core and the periphery of
Figure 6. Orthodromic distance to the centre of gravity of population in Europe

Explanatory Note:
Geographical indicators are used here to calculate orthodromic distances between points. The points are the centroids of the NUTS 3 regions. In the example the centroids are the central points of the most important cities in the regions. Orthodromic distance to the centre of gravity of population weighted by population is the simplest way to show peripherality. The indicators are standardised to the European average (EU=100).
Explanatory Note:
The indicators are of the potential type and were calculated for the centroids, i.e. the locations of the major cities in the NUTS 3 regions. The population of the destination regions was disaggregated using 10 x 10 km raster cells. Barrier effects were considered only in the form of average waiting times at non-EU borders. The indicators are standardised to the European average (EU=100).
Explanatory Note:
The indicators are of the potential type and were calculated for the centroids, i.e. the locations of the major cities in the NUTS-3 regions. The population of the destination regions was disaggregated using 10 x 10 km raster cells. Barrier effects were considered only in the form of average waiting times at non-EU borders. The indicators are standardised to the European average (EU=100).
Explanatory Note:
The indicators are of the potential type and were calculated for the centroids, i.e. the locations of the major cities in the NUTS 3 regions. The population and GDP of the destination regions were disaggregated using 10 x 10 km raster cells. Barrier effects were considered only in the form of average waiting times at non-EU borders. The indicators are standardised to the European average (EU=100).