TERMS OF REFERENCE

ESPON project 2.1.4:
TERRITORIAL TRENDS OF ENERGY SERVICES AND NETWORKS AND TERRITORIAL IMPACT OF EU POLICY

(2002-2004)

(o) Political challenges for the ESPON projects

The Second Report on Economic and Social Cohesion, published in January 2001, presented for the first time a third territorial dimension of cohesion (besides economic and social cohesion), which calls for a better co-ordination of territorially relevant decisions. Stressing the persistence of territorial disparities within the Union, the report stated the need for a cohesion policy not limited to the less developed areas as well as the need to promote a more balanced and more sustainable development of the European territory.

The Second Cohesion Report represents in this respect a follow up of the European Spatial Development Perspective (ESDP), adopted at ministerial level in May 1999, calling for a better balance and polycentric development of the European territory.

The projects launched under the ESPON programme shall follow an integrated approach and, seen together, cover a wide range of issues, such as:

- Identifying the **decisive factors relevant for a more polycentric European territory**; accessibility of a wide range of services in the context of enlargement; integration of wider transnational spaces; promotion of dynamic urban growth centres; linking peripheral and disadvantaged areas with those centres; etc.
- Developing **territorial indicators and typologies** capable of identifying and measuring development trends as well as monitoring the political aim of a better balanced and polycentric EU territory.
- Developing **tools supporting diagnoses of principal structural difficulties as well as potentialities**, such as disparities within cities and regenerating deprived urban areas; structural adjustment and diversification of rural areas; strategic alliances between neighbouring cities at transnational, national and regional scale; new partnerships between rural and urban areas; potential support from infrastructure networks in the field of transport, telecommunications, energy; etc.
- Investigating **territorial impacts of sectoral and structural policies** in order to enhance synergy and well-co-ordinated decisions relevant for territorial development within policy fields such as Structural Funds, agriculture, transport, environment, research and development; developing methods for measuring the territorial impact of sectoral and structural policies; etc.

- Developing **integrated tools in support of a balanced and polycentric territorial development**; approaches to enhance the potential of cities as drivers of regional development, new tools for integrated urban-rural development and planning, etc.

With the results of all the ESPON projects, the Commission and the Member States expect in particular to have at their disposal: **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 of their respective intensity; a number of **territorial indicators and typologies assisting in the setting of European priorities** for a balanced and polycentric enlarged European territory; some **integrated tools and appropriate instruments** (databases, indicators, methodologies for territorial impact analysis and systematic spatial analyses) to improve the spatial co-ordination of sectoral policies.

In this respect, the ESPON projects will serve as a strong scientific basis for the propositions of the Commission in the Third Report on Cohesion, at the end of 2003, in view of the reform of post-2007 Structural Funds.

i) Relation to the ESPON 2006 programme

The priorities describing the work-programme of the ESPON 2006 Programme are structured in four strands:

1. **Thematic projects** on the major spatial developments against the background of typologies of regions, and the situation of cities.
2. **Policy impact projects** on the spatial impact of Community sectoral policies and Member States' spatial development policy on types of regions, with a focus on the institutional inter-linkages between governmental levels and the instrumental dimension of policies
3. **Co-ordinating and territorial cross-thematic projects** represent a key component of the programme. These projects evaluate the results of the other projects towards integrated results such as indicator systems and data, typologies of territories, spatial development scenarios. The cross section projects help to thematically co-ordinate the whole programme and add value to the results and to fill gaps, which are unavoidable when different themes are dealt with in different projects.
4. **Scientific briefing and networking** in order to explore the synergies between the national and EU sources for research and research capacities.

This project belongs to the first strand and therefore holds a key position for the elaboration of the whole programme by the preparation of the common ground for the investigation of the basic outline of spatial structure in Europe. Therefore, strong co-ordination is requested with the all other projects, in particular with the other projects in the same strand and with the coordinating projects under priority three.

ii) Thematic scope and context

In general the project should consider all kinds of energy supply, electricity, oil coal, and gas and, renewable energies (wind, water, tides solar) and the modes of transport from pipeline, shipping to cable. For the sources electricity the access to networks is also an important question. As the ESDP underlines, TEN measures in the energy sector influence spatial organisation through two main mechanisms: the production and transmission, e.i. the flows of energy influencing land use and the distribution of energy and consumption technologies influencing the organisation of the territory via induced changes in consumers' behaviour. For electricity, oil and gas trans-European networks, the routing of lines their potential capacities and the actual energy flows or establishment of power plants, for example, fundamentally impact on local planning. This may raise difficulties linked to complex ratification procedures, varied technical and ecological constraints and reluctance on the part of the population. In addition, gas supply networks require important local storage capacities, usually in underground tanks whose location follows geological criteria, which limits the available options for spatial development. Particularly promising, from a spatial development perspective, are renewable energies (they represent on average 6% of the total EU consumption). On the one hand, they help to reduce the environmental impact of the energy sector. On the other, they favour power system decentralisation and locally applicable solutions more or less independent of the distribution network, thereby reinforcing the flexibility of the system and the economic power supply to remote areas.

Dynamic territorial development depends on an optimal combination of available services. The possibility of making use of the resources available in a city or a larger territory depends as well as on the ability to communicate and exchange services with other locations. The range of services, which interlink areas, cities and the European continent to the world markets, comprises services related to transport, energy and telecommunications. For an area or a city the provision of these services has a major impact on its attractiveness for new investments and constitutes an important location parameter/factor.

Communication and exchange between cities and territories takes place via infrastructure networks where resources, goods, humans and information are exchanged. Access to those networks is increasingly becoming a crucial factor for territorial development. The ESDP highlighted the close relation between the aim of a balanced territory and polycentric development and the policy orientations developing infrastructure networks.

Energy policy could better take into account of some territorial factors, which allow a more balanced development in Europe. Therefore it is important to develop appropriate tools for the observation of the territorial effects of the energy policies, which would be able to focus on the specific demands of the EU.

The functioning of networks very much depends on connectivity and access points. Co-ordinated access is of particular importance where access is related to very large

investments. For energy networks the availability of access and the capacities to different networks are also important determinants for location decisions.

The diversity within the European territory concerning the options for supply of energy and the potential within different parts of the territory (e.g. for low density areas, ultra peripheral regions, coastal zones, inlands, mountain areas, transnational co-operation areas) are important issues in this respect.

The impact of the measures of liberalisation of energy markets on territories suffering from particular geographic handicaps should be considered at this respect.

The importance of energy networks for economic development is substantial, be it the expansion of local companies, multinational corporations or international direct investments. The spatial structure of the territory is an important aspect as well. Therefore, further investigation is needed of the different types and the geographical location of foreign direct investments. Such an investigation will as well provide an improved knowledge on the internal strategic decisions of multinational corporations, for example on the location of headquarters, administration, production facilities, "greenfield" investments and acquisitions, which sometimes have a decisive influence on the regional job mix. It should make the location parameters of the future more clear, including the relative importance of accessibility to energy networks.

The process of European integration is followed by a growing number of acquisitions and mergers, leading to restructuring of companies and regional economies. How these decisions could influence territorial development and the European political visions of better balance and polycentrism should also be discussed. Critical will be the observation of the territorial effects of the European integration process at a European and transnational scale with particular reference to the candidate countries.

The diverse territory of Europe as well as the present spatial structure (with consideration of the polycentric development) indicates the problem of minimum supply of (public and private) infrastructure capable of providing the basic services required in all regions and to maintain the "service of general interest", This supply is necessary in order to prevent the final decline of and migration from remote and other areas with specific weaknesses, often exposed to extreme geographical conditions. However, a basic supply of services represents only the first and minimum step towards the provision of higher degrees of infrastructure.

The Communication from the Commission "Services of general interest in Europe" (COM 2000/580) investigates the effects of market liberalisation in the telecommunications, transport and energy sectors. The projects cited clearly indicate regionally and locally deviating effects. The interactions between different infrastructure networks, and the objectives of economic efficiency, consumer protection and economic, social and territorial cohesion should be taken into particular account.

With regard to the growing importance of some EU Member States as transit countries in an enlarged European Union, the identification of principles and the elaboration of political recommendations based on a polycentric development model gains in importance. This project shall be conducted in co-ordination with ESPON action 2.1.1.. The conceptual work done within this project on the measurement of impacts should be taken into account.

iii) General objectives

a) To develop methods for the territorial policy impact assessment of sectoral policies;
b) To contribute to the identification of the existing spatial structure of the EU territory, in particular the degree and diversity of physical and functional polycentrism at different geographical scales, and to gain concrete and applicable information on the EU wide effects of spatially relevant development trends and their underlying determinants. Therefore, the project should be sustained by empirical, statistical and/or data analysis;
c) To define concepts and to find appropriate territorial indicators, typologies and instruments as well as new methodologies to consider territorial information linked to polycentrism, to detect territories (preferably below NUTS 2) most negatively and positively affected by the identified trends with special reference to regions in terms of accessibility, polycentric development, environment, urban areas, territorial impact assessment; particular attention will be paid to areas exposed to extreme geographical positions and natural handicaps such as mountain areas, islands, ultra-peripheral regions;
d) To show the influence of sector policies on spatial development at relevant scales;
e) To show the interplay between the EU and sub-EU spatial policies and best examples for implementation;
f) To find appropriate instruments to improve the spatial co-ordination of EU sector policies and the ESDP;
g) To develop possible orientations for policy responses, taking the diversity of the European territory into account, and considering institutional, instrumental and procedural aspects;
h) To consider the provisions made and to provide input for the achievement of the horizontal projects under priority 3, such as tools for diagnosis and observation and long term scenarios, as well as evaluation and assessment procedures.

In the efforts to meet these objectives the project shall make best use of existing research and relevant studies.

iv) Primary research issues envisaged

The research questions cover issues related to the basic supply of different energy sources within the EU territory as well as territorial trends of denergy infrastructure and energy networks, including related services.

Energy networks include networks and installations for oil, gas and electricity as well as renewable energy sources, in particular solar, wind and hydroelectric energy. The

concepts on effects of networks should be addressed in close co-operation with project 1.2.1 and 1.2.2.

- Identification, gathering of existing and proposal of territorial indicators and data and map-making methods to measure and display (1) the basic supply of energy infrastructure and networks, including related services, (2) the trends and impacts of the development of energy infrastructure and networks, including related services.
- Operationalisation of the policy options developed in the ESDP relevant for a territorial impact analysis of the energy policy, and development of a methodology for impact analysis at EU scale;
- Conceptualisation and elaboration of a territorial impact analysis for energy policy;
- The most important features of the present infrastructure networks and supply of services with regard to territorial issues, i.e. the spatial pattern of supply and demand of different energy sources;
- Specific typologies and territorial patterns in energy infrastructure and networks, including related services (referring to the typologies used in particular by the ongoing ESPON project 1.1.1 on polycentrism and with regard to typologies of regions within other ESPON projects);
- The most relevant energy supply and services of general interests, referring to migration and regional development potential, which influence the development of territories and regions lagging behind, as well as territories and regions with peripheral locations or specific features (structurally weak areas, islands and mountain areas);
- The territorial trends in energy supply, in particular in relation to sustainable flows of sustainable energy provision within Europe;
- The importance of energy supply as a location parameter for investments and the economic development of cities and regions;
- The correlation between trends in energy supply and a polycentric development model, including identification of an operational benchmarking system that could be applicable with regard to the data and indicators available;
- A further operationalisation and territorial diversification of the policy aims and options adopted in the ESDP, including an adaptation to the territorial diversities within an enlarged EU.

v) Expected results and timetable

One of the main objectives of the ESPON 2006 Programme is to focus on research with policy relevance and to contribute to the development of relevant policies. Therefore, the deliverables of the research project should be highly operational and coordinated in time, as far as possible, to fit into the relevant political agenda. The following timetable and specification of output is reflecting this objective:

March 2003 (first interim report):

a) Proposal on indicators and necessary data after a precise analysis of the availability and comparability of data at Community level. For these analyses, the results of the study

programme and the results of the ESPON projects in course, in particular under priority 3.1, should be taken into account. This task should also define the appropriate geographical level and technology required for data collection, taking into account the availability of the data. A first detailed and comprehensive list of main statistical and geographical data to be collected from Eurostat, the EEA and National Statistical Institutes and National Mapping Agencies;
b) First outline on concepts and the methodology of the impact analysis and the structure of the description of the EU energy policy (mainly energy internal market, security of energy supply and implementation of TransEuropeanNetworks – Energy (TEN-E))

August 2003 (second interim report):

c) Working report on interim results of the research undertaken so far giving an outline analysis /diagnosis (including databases, indicators and maps) of (points 2 &3 terms of reference):

- the energy sector in an enlarged Europe (27 countries) as well as the neighbouring countries (mainly Norway and Switzerland), and the energy policy at Community and national level,
- a description of the regional situation in terms of energy supply (this would notably cover the level of energy consumption per head, as well as the type of energy consumed , i.e. its composition)
- if at all possible, the distinction between private and business use of energy should be made; where this is possible it would be of interest to consider how far the economic structure of the local economy accounts for differences in the level of energy consumption
- regional variations in the price of energy should be assessed, as a possible indicator of differences in the supply capacity of energy. Beyond this it is of interest to assess how far regions are able to increase their overall energy supply with the existing infrastructure, and where this would entail significant additional investment (and hence cost). This would indicate to some extent limits to a region's ability to attract heavy industry.
- the existing territorial imbalances and regional disparities in energy services and networks on the basis of available territorial indicators, including Europe-wide maps showing the existing spatial structure of different energy infrastructure networks and services, as far as possible related to the degree of polycentrism, areas facing problems of lagging behind and the accessibility to different parts and types of territories within Europe
- provisional results on the spatial effects at EU level and in Member States in terms of the economic relocation and other spatial criteria (significance of energy networks as location parameter for mobile investments);

d) Development of the database, indicators and map-making considering the progress of the other research projects;
e) A second revised and extended list of further indicators to be collected mainly from Eurostat, the EEA and National Statistical Institutes and National Mapping Agencies; by summer 2003 (the latest);

f) Presentation of the methods for the territorial impact assessment (strong co-ordination with impact studies required) and a first preliminary assessment of_

- the progressive liberalisation of energy markets in Member States for its impact on territories suffering from particular geographic handicaps, notably through increased price differentiation across territories, but also supply capacities. It should be considered whether disadvantaged areas can be seen to suffer more relative to similar areas where there has been no liberalisation.
- the impact of the TEN for energy supply should similarly be considered for its territorial impact.

g) Definition of appropriate indicators, typologies and instruments to detect regions and territories most negatively and positively affected by the identified trends with special reference to accessibility, polycentric development, environment, urban areas, structurally weak areas, and new methodologies to consider territorial information;
h) Presentation of hypothesis on the territorial effects of relevant measures of the investigated policy;

August 2004 (third interim report):

i) Application of the methodology, analysis of the hypothesis previously developed;
j) Presentation of a comprehensive working report on results of the research undertaken giving an analysis /diagnosis (including databases, indicators and maps) of (complete report on points 2, 3, 4):

- the energy sector in an enlarged Europe (27 countries) as well as the neighbouring countries (mainly Norway and Switzerland), taking into account Community and national policies,
- how far the economic structure of the local economy accounts for differences in the level of energy consumption
- regional variations in the price of energy as a possible indicator of differences in the supply capacity of energy
- the existing territorial imbalances and regional disparities in energy services and networks and as well as
- results on the spatial effects at EU level and in Member States in terms of the economic relocation and other spatial criteria;

k) Conclusions and recommendations on the improvement of sector policies and instruments considering territorial governance (point 5 and 6 of terms of reference);
l) Conclusions and recommendations on the institutional aspects of the spatial co-ordination of EU and national sector policies.

December 2004 (final report):

m) Improvement of the methodology and the analysis taking into account the results of the third interim reports of the other projects in particular with regard to the candidate countries;
n) Comprehensive presentation of territorial impacts related to an enlarged European Union (27 countries) as well as the neighbouring countries (mainly Norway and Switzerland);

o) Formulation of conclusions and recommendations of possible thematic policy adjustments regarding sector policies in order to avoid unintended spatial effects in relation to the ESDP and the future structural Funds and cohesion policy;
p) Definition of institutional settings and instruments, which could support a better co-ordination and coherence of sector policies towards spatial concerns considering territorial governance;
q) Presentation of new territorial indicators and EU databases including candidate and possibly neighbouring countries;
r) Formulation of the further research necessary in the policy field.

vi) Rationale and structure

The following text has the role of shaping the mind on thinking of developing a proposal for undertaking the ESPON action 2.1.4. The text is not meant to be exhaustive, but only to provide guidance for the contractor.

1. Elaboration of an appropriate methodology for the impact analysis/assessment of the energy policy

The methodology should also allow indicating different level policy in order to identify the relevant actors for as better territorially co-ordinated policy.

At present some assessment methods and models are available (see point vii existing access points, for some examples). The aim of this study should be to draw these existing assessment methods together (addressing their weaknesses) into a tightly focused, operational assessment tool, oriented towards the needs of decision-makers.

The methodology should take account of the spatial concepts developed under priority 1 and 3 and, in particular, of methodologies for territorial impact developed under ongoing priority 2 projects. The methodology should also allow indicating different level policy in order to identify the relevant actors for a better territorially coordinated policy.

2. Presentation of energy policy with reference to the territorial dimensions and the governmental level responsible

The energy policy measures to be considered in the framework of this project are, mainly, liberalisation measures and implementation of the energy internal market, measures aimed to reinforce security of energy supply and the implementation of TEN-E)

At first the project should provide a short description of the present situation and future trends of energy policy and TEN-E in the EU , particularly in terms of spatial disparities and imbalances within the EU territory, taking into account the variables mentioned below.

The structured presentation of the EU energy policy should allow identifying the relevant parameters for the territorial impact assessment for all three dimensions, the policy

(contents and strategies), polity (institutions, organisations) and politics (processes) regarding particularly spatial disparities and imbalance of the EU territory on the background of the typologies developed in the projects under the ESPON priority 1 and 3.

3. Data, spatial concepts and indicators

3.1. Spatial concepts

3.1.1. Territorial typologies

Typologies of regions with regard to energy networks and services in order to investigate the effects of the energy policies

3.1.2. Relation to other important territorial typologies

Territorial and regional disparities, contributions of energy policy to the European Spatial Development Perspective: The project should provide an in-depth analysis of territorial and regional disparities in energy infrastructure. Further the contribution of energy policy to the following spatial planning objectives laid down in the ESDP (not exhaustive, the project under measure 3.1. will provide further spatial typologies) should be examined.

3.1.3. Polycentric development and energy supply

The project should consider how far the energy infrastructure and TEN-E supports the current spatial pattern. This question also includes to investigate who far, in principle, energy infrastructure determines spatial development. Rural areas should be treated as a special case in the next point.

3.1.4. Indigenous Development, Diverse and Productive Rural Areas

The project should provide an analysis of the use of the potential for renewable energy in urban and rural areas, taking into account local and regional conditions, in particular the cultural and natural heritage.

As the ESDP states, in the rural areas of the EU there is a considerable potential for renewable energy: solar energy; wind energy; hydroelectric power and tidal energy; energy from biomass; and even from urban waste near large towns and cities (methane production). This opens up interesting prospects for economic diversification and environmentally friendly generation of energy. This potential should be activated for the efficient use of resources. A further step would be the supply of excess energy to larger energy networks.

3.1.5. Basic energy supply and security of energy supply

The availability of stable and reliable energy supplies, at competitive prices represents preconditions for the economic development of cities and territories. The variety of services and their cost is considered an important framework condition for territorial development.

Regional variations in the energy prices should be assessed, as a possible indicator of differences in the supply capacity of energy.

The degree of international interconnection of the EU, for gas, as well as electricity, should be analysed in the framework of the current process of integration of energy markets.

The development and organisation of secure energy corridors linking EU countries and third countries are particularly significant in this context. The potential offered by the land bridge between the candidate countries and the eastern European countries should be also considered (as the Russian Federation and those bordering the Black Sea) and the Middle and Far East, especially through the development of new trading corridors.
The assessment should be closely co-ordinate activities with project 1.2.1, 1.2.2 and 2.1.1.

3.1.6. Sustainable territorial development and energy provision

In the energy sector inter-modality is very important, in particular for energy production based on crude oil. From crude oil to petrol and heating oil and further on to the main consumers in industry and domestic households, a number of modes of transport are used. This particular sector could be included in considerations on inter-modality.

The potential of sustainable energy has started to be exploited on a large scale in some Member States. The substitution of fossil fuels with renewable sources has to continue in order for the EU to meet objectives for emissions set at global level. Therefore, it is important to investigate the potentials in different regions and parts of Europe for renewable energy supply, in particular by using an indicator for wind efficiency at different locations. Current programmes aimed at increasing energy saving and greater efficiency in the use of energy should be also considered. Concerning natural gas supply, the expansion of physical networks represents new possibilities for substitution of more environmental damaging energy sources. Natural gas seems also destined to play a key role in a process of integration of energy markets. This development has a clear territorial dimension, where knowledge about existing and potential parts of the European territory for natural gas provision should be visualised. As well, the possible substitution to natural gas by local enterprises and public service providers could improve the attractiveness of a city or a region for new investment.

3.1.7. Productivity and location parameters

The productivity of enterprises is, in particular, often heavily dependent on costs related to the transportation of inputs to and outputs from the production process. This dependency is supposed to increase as market places become more global. For the service sector this dependency on transportation seems to be lower in general. The project should address the importance of energy supply (in different forms) for the location of new activity and investments.

3.2. Data, indicators and mapping

3.2.1. Indicators and data

Taking into account the existing indicators for energy networks and the methodology of the territorial impact assessment developed (see non-exhaustive list below) the collection of further statistical and geographical data and the integration of existing and new databases[1] will doubtlessly be required.

Data gathering should occur at the lowest territorial level possible (ideally, NUTS III level or below,).

Comparability of data is a further important aspect that needs to be considered. Given the potentially wide range of data sources that will be used, which may even differ between regions or countries, for the same indicator, considerable attention will have to be paid to the comparability of these data. Where comparability is judged insufficient, adjustments will have to made. Adjustments or estimates should be clearly indicated and documented, allowing the reader to follow the logic applied in the adjustments.

The energy flows with regard to different sources (oil gas, electricity) should be addressed.

On the basis of these data, the study should provide a first analysis/diagnosis of the energy sector in Europe as well as the quantification of the existing territorial imbalances and regional disparities in related infrastructure. It should cover the 15 Member States as well as the 12 candidate countries (EU-27) and the neighbouring countries (mainly Norway and Switzerland).

Only a limited set of regionalised data is available from EUROSTAT:

- Nuclear Power Stations: geo-location, capacity, type, production
- Electricity generating stations and transformation network: geo-locations

[1] Where harmonised (Eurostat) data sources do not provide the data for the indicators at the appropriate geographical level, the consultant will have to examine national and possibly regional data sources to try to complete the data sets. The collection of this data should be done in co-ordination with data collection provided by the Transnational project groups of ESPON under priority 4.

- Total annual electricity production; hydro, nuclear, thermal sub-totals, NUTS2 (inc. CECs) to 1997
- Total annual electricity consumption by sector; transport, industry, domestic, service sector, NUTS2 (inc. CECs) to 1997
- Terminals and refineries – oil and gas: geo-locations

3.2.2. Mapping

The cartographic presentation of the structure of networks, the consequences and territorial impact of new infrastructures could be highlighted by dynamic mapping ('hyper-maps') and by exploiting cartographic methods particularly adapted to the various potential addressees (elected representatives, planners, general public).

Mapping should address different territorial typologies.

4. Quantification and analysis of the effects of the energy policy on the balanced and sustainable development of the territory

4.1. Quantification of the effects of the energy policy

Based on the indicators elaborated above, the task of the study is to examine the effects of the energy policy on overall regional and territorial development. The project should evaluate and quantify the effects of energy policy on spatial typologies provided from other projects under ESPON priorities 1 and 3 also using the following indicators (at NUTS III level not exhaustive list)[2]

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4.1.1. Demographic indicators

- migration trends
- population changes, population groups
- population density
- trends linked to urban poles

4.1.2. Regional economic strength

- Attractiveness (number of created SMEs, etc.)
- GDP
- Growth rate of labour productivity

4.1.3. Labour market, training and education

- (Un)employment rate and trends
- Level of training and education

[2] Access is shown by the Data Navigators prepared under priority 4.1 of the ESPON programme

4.2. Setting the link to spatial concepts

A more complex task is to analyse the effects of the energy policy within the typology of regions developed by other ESPON projects in particular describing the territorial trends in different thematic fields such as accessibility and polycentrism. Are counter-weighting processes visible, how far are on-going polarising territorial trends supported or is a more complex picture visible?

4.3. Location decisions and basic supply

Apart from the points addressed under the specific research questions the following points are supposed to deepen the understanding of feasible approaches. Co-ordination will be inevitable with ESPON project 1.2.1..

4.4 Location decisions of private companies and infrastructure

The study of energy services and network infrastructures in relation to territorial development is highly interesting and relevant for policy development towards territorial cohesion. It will require the identification of sustainable indicators to identify actual and potential location parameters in relation to energy supply, in other words to "local attractiveness", and the relation with actual investment patterns, in order to test hypotheses about the relation between energy networks and service provision, and investment location decisions.

Furthermore, international direct investments form and influence local labour markets to a considerable degree. Strategic decisions in multinational corporations on the location of headquarters, R&D facilities and green-field production sites influence heavily the regional and urban job mix. Acquisitions and mergers leading to restructuring of companies can have crucial effects on regional economies.

The influence of international direct investment on regional and urban development should involve two types of approaches in relation to infrastructure:

- The type and mass of foreign direct investments located in cities and regions of Europe.
- The geography of investments of selected "cutting-edge" multinational companies, including the strategic reasoning behind them.

4.5. Basic supply for energy services

With reference to accessibility, any minimum requirements for infrastructure should be detected and as far as possible related to a typology of regions. The correlation between the kind of economic activity and spatial development potential on the one hand, and the endowment of certain types of infrastructure should be further investigated. A close co-ordination with ESPON action 1.2.1 on transport should be undertaken.

4.6. Self reliant regions – sustainable regions

Finally it would be interesting to investigate which regions can sustain themselves by sustainable energy supply (Wind, water, tide). Is it possible to identify types of regions which have the potential to stay without external energy supply. Before answering this question the appropriate level for such an analysis has to be defined (NUTS 2 1, 0).

5. Orientations for policy recommendations

The identification of principles and the elaboration by this project of recommendations for policy development gains importance with regard to the increasing role of some EU Member States as transit countries in an enlarging European Union.

All relevant policy options of the ESDP should be addressed based on the findings of the project in order to derive recommendations that take the diversity of needs and potentials in different parts of the European territory and at different spatial scales into account in order to achieve a better balanced spatial development of the EU territory

Furthermore, consequences of the findings for the orientation of structural policies should be drawn referring to the development potential of different types of regions, taking into account the existing basic supply energy services and networks.

The results should also address the assessment of how energy policies underpin regional development and improve territorial cohesion. In addition, reference should be made to the current transnational areas under Interreg III B.

Contributions should also be made to the integration in Structural Funds Policy as well as co-ordination and coherence with other territorially relevant policies.

Territorial impact: in order to ensure synergy between Community and national programmes, it would be desirable to incorporate impact analyses into the various regional development programmes. These analyses could form part of a strategic spatial development planning at national, regional or local level, and of strategies within Structural Funds programmes. Guidelines on how to implement Territorial Impact Assessment of energy policy at regional level (spatial planning, institutions, practitioners, etc.) should be considered. Particular attention should be paid to issues arising from the principle of subsidiarity.

Finally it should be discuss how sustainable energy supply can be better integrate into a spatial policy approaches.

An approach of close co-ordination with ESPON projects 1.2.1, 1.2.2 and 2.1.1 are requested in order to facilitate cross-coordination.

vii) Existing access points

The access points listed below can serve the purpose of providing the tenderer useful information for preparing a proposal. The list is by no means meant to be exhaustive, but only serves as information that can be helpful in tracing additional useful background information.

- Eurostat can provide European data concerning energy. Minimum data level required will be the NUTS 3 level, but more detailed analysis will require NUTS 4 and 5 levels.

- Other ESPON projects are also compiling basic socio-economic data.

- The Commission's White Paper "European transport policy for 2010: time to decide" and background documents for the "Revision of the Trans-European Transport Networks "TEN-T" Guidelines" provide interesting access points for the investigation of the questions raised, in particular on energy networks. The same is the case concerning the Commission's TINA programme dealing with transport infrastructures in candidate countries.

- The study on "The role of energy" prepared for the second economic and social cohesion report is also a valuable source of information to be taken into account.

- The Communication from the Commission "Services of general interest in Europe" (COM 2000/580) already offers a good starting point in the definition of indicators and measures.

- Interreg IIC and IIB projects, also dealing with energy infrastructure, can provide some experience at transnational scale.

- Finally, studies of the International Agency for Energy of the OECD.

In addition, an ESPON Data Navigator creating an overview, a handbook, giving information on principal data sources, contact points, etc is under elaboration. The Data Navigator is expected to cover all countries in an enlarged European Union as well as neighbouring countries. The Data Navigator is (as a preliminary version) online at the official ESPON Web site (www.espon.lu).