

Effects of transport infrastructure and transportation costs on the development of European regions

Outline of a qualitative assessment tool

a study for IPTS, Sevilla

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1 Starting point

1.1 The issue

Limited financial resources, environmental problems, technological developments and persisting differences in the development between different European regions require a reconsideration of priorities in European transport policy. Doubts are growing whether maximising infrastructure and minimising costs is in all cases the best that can be done for (economic) development.

The rather simple conventional hypotheses – which are used as justification for multi-billion European investments in transport infrastructure – can be shortly summarised as follows:

- Better infrastructure brings economic development
- Lower transport costs foster economic development
- Higher transport costs increase disadvantages for peripheral regions
- Improving inter-regional links is most important for peripheral European regions

Practical examples and theoretical considerations have raised increasing doubts whether this is always the case. In a number of cases better accessibility in terms of time and costs had even adverse effects on local development. Critics mainly raise three points of concern:

1. The objectives of growth and cohesion may not always be attained by these approaches
→ a differentiated approach to specific regional conditions is necessary
2. Other objectives may suffer from these policies
→ a broader assessment framework is required
3. Structural changes may call for other priorities
→ a differentiated analysis of change impacts is unavoidable

In this situation more differentiated assessment methodologies seem to be necessary for looking at the specific regional impacts of transport policy strategies. However, until now available research on these issues is very limited. Better and cheaper links can work in both directions: they can lead to challenge and enrichment of a region if it is strong and attractive enough to compete, sudden improvement of links however can also lead to a depletion if the area is weak and complementary strategies are missing.

1.2 The study

The basic idea of this preliminary study undertaken on behalf of IPTS, was to develop a broad framework for a rough assessment of the medium term impact of changes in accessibility patterns on the development at local and regional levels. The general objectives of the study were:

- to understand the importance of different aspects of transport for regional development in different kinds of regions on the background of considerable changes in economic structure, European and global markets, society, and technology.
- to develop a framework for a preliminary assessment of the impact of European Transport Policy measures, mainly Infrastructure investment and internalisation of external costs on the relative development of different kinds of regions and on the cohesion of the EU.
- to test the framework and to deepen the understanding of the relationship between transport policy and regional development in two case studies
- to gain an overview on the probable impact of a considerable raise of transport costs and of changes in infrastructure policy on the development in different kinds of European Regions

Relevant contributions could be given to the first three objectives. However, given the complexity of the issue and the difficulty of access to relevant data, in the frame of this preliminary study it was not yet possible to make a generic assessment of CTP impacts on different kinds of regions. The basic approach of the methodology developed here seems to be valid and useful. However, given the lack of important data in a standardised form, it is necessary to gather additional information e.g. by questionnaires to regional experts in order to be able to make more precise statements than very general guesses. Further research and testing will be needed to overcome remaining difficulties of the methodology, to make it more operational and to provide standardised data sets as a starting point for quick rough appraisals.

2 State of the art

Especially since the early nineties a scientific debate has developed questioning the simple hypothesis that an improvement of transport infrastructures generally improves economic development.

Two important European documents published in 1999 reflect these sceptical arguments up to a certain degree:

- the European Spatial Development Perspective (ESDP) – which has been elaborated by the member governments and not by the Commission who has no competencies in spatial planning – emphasises on one hand the importance of ensuring a good accessibility all over Europe. In this context the concept points out that well developed links between the larger well connected centres and their hinterland are most important in order to ensure a balanced spatial development, and that while building up the Trans European Networks complementary measures are necessary to strengthen these secondary links. On the other hand, the concept emphasises that an improvement of accessibility by itself does not yet lead to economic development in peripheral or until now less accessible areas. In order to ensure that improved accessibility of less competitive areas does not only bring advantages to the stronger centres, integrated strategies are deemed to be necessary. Moreover, the concept emphasises the growing importance of a good telecommunication infrastructure and of access to information and know-how.
- The “ Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union” (1999) states that between regions in Europe there are still considerable differences in transport infrastructure. However, it also points out that good infrastructure is important but neither a guarantee nor a precondition for economic development. Ireland is quoted as an interesting example. Differences in telecommunication infrastructure are less important than in transport infrastructure and tend to diminish more quickly.

Especially in the context of the planning and the ex-ante evaluation of the Trans European Networks since 1995, more and more arguments have emerged against the widely believed simple assumption that more infrastructure brings more development. Different theoretical perspectives as well as empirical results show that the relationship between infrastructure and development is rather complex (useful overviews over the critical arguments are given by Hey et al. 1996 and Vickerman 1999). Generally, scientists today tend to admit that general statements about the relationship between transport and economic development are not possible today (e.g. SACTRA 1999, Plassard 1995). Case studies in specific circumstances seem to be possible, but an accepted evaluation methodology is missing.

The most important arguments challenging conventional hypotheses are the following:

- The envisaged TEN network increases the differences in accessibility. This is especially valid for HST (Spiekerman/Wegener 1994, 1998, Vickerman 1997, Lutter 1993)

- Most easy to be financed are those links which promise most traffic – and which reinforce the already privileged regions (e.g. Vickerman 1999)
- TENS improve the competitiveness of Europe as a whole, however they do not necessarily improve cohesion (Vickerman 1999).
- Differences in accessibility have rather different impacts on various sectors. Their consequences will therefore not be the same for different regional structures (Hey et al 1996).
- A general indicator of accessibility makes no sense since different aspects of accessibility (destinations, time required, frequency, costs, comfort/handling) do not have the same importance for different groups of users (cf. the discussion in Reggiani 1998, Vickerman 1999)
- Improvements of accessibility can expose weaker structures (production, labour market, trade) in peripheral areas to a destructive competition with much stronger competitors (Krugman/Venables 1990, Brücker 1995, Hey et al. 1996; EU-Commission 1999).
- cost reductions through transport infrastructure improvement are marginal for most industries, other measures would be much more cost-effective (Hey et al 1992, 1996, Gleich et al 1993, ...)
- the concentration on hardware is inadequate, often software or semi-software would be much more important (Vickerman et al. 1999)
- the present structural change leads to considerable changes in the use of transport services. Telecommunication must be considered in the same framework.
- Different regional economic structures lead to different transport intensities (see data in the ESDP, EU-Commission 1999)
- The very different values in different countries show that despite increasing transport volume there are large leeways for policies that aim at decreasing transport intensities (Hey et al. 1992, 1996, Schleicher-Tappeser et al. 1998, Banister et al 1999)

There is a growing consensus that approaches are needed which allow for much more sectoral and spatial differentiation.

An important effort to investigate the relationship between Transport and the Economy has been carried out by the Standing Advisory Committee on Trunk Road Assessment (SACTRA) of the UK Department of the Environment, Transport and the Regions (DETR) (SACTRA 1997 and 1999). The report states that the small number of empirical investigations that exist do not prove unequivocally a causal relationship between infrastructure investments and economic development. On the other hand, the report sees a large margin for a reduction of transport intensity. It recommends to each regional case in its specific context and to clearly distinguish long-term from short term effects. The study makes use of a strictly economic approach and recommends to make important efforts to quantify all kinds of external costs, productivity differences between regions and market distortions caused by subsidies or by monopolies.

In the context of the general debate on globalisation, an important discussion has developed on the question of how economic activities are linked to specific locations. Hey and Schleicher-Tappeser (1998) show in a review of different theoretical approaches that macroeconomic ones tend to predict an increasing loss of influence of local, regional and national decision makers on economic developments while microeconomic, and especially sociological approaches show a wide variety of opportunities to develop economic structures with strong local roots¹. A useful matrix has been developed by Storper (1995) which distinguishes between different types of production systems characterised by their degree of territorialisation and the intensity of international flows. Until recently the transport policy discussion has been widely dominated by macroeconomic approaches. The use of approaches stemming from regional economics which emphasise the importance of regional innovation milieus, industrial districts and regional networks, leads to a different view: the issue of material transport appears as strategically much less important than the exchange of know-how and the access to innovation-relevant information. The importance of physical accessibility and infrastructure investments therefore need to be reconsidered. In this spirit Burmeister and Colletis-Wahl (1999) come to the conclusion that transport infrastructures have to be considered as general resources for the circulation activities of regional producers. Starting from a similar approach Schleicher-Tappeser et al. (1998) have developed a systematology of possible strategies for reducing freight transport intensity of the economy. In their analysis they come to the conclusion that different efficient policies in this direction are conceivable and economically advantageous – the difficulties that they encounter are basically of political nature since they would imply an accelerated change towards a service economy and old, still mighty industries would have to make unwanted efforts in order to adapt. Therefore it seems most important to be able to analyse more precisely the impacts of envisaged policies for different sectors and groups of stakeholders.

Most attempts to build models of these interrelationships in order to make forecasts or to test the impact of different policies, are essentially based on traditional economic approaches. An overview of the different kinds and families of models is given by DSC 1999. Most models use accessibility indicators as a central element. The discussion on accessibility indicators in the last years (for an overview see Vickermann 1999 or Reggiani 1998) has shown that a single indicator is of very limited use since different aspects of accessibility are of different interest for different user groups. This has important implications for modelling since differentiated indicators are difficult to obtain and to handle.

One of the most differentiated approaches has been developed in the European SASI project (Wegener 1998). A large database of economic and infrastructure data is used for calculating accessibilities and subsequently modelling economic and transport flow developments. Compared to the requirements emerging from the general discussion, handicaps of this approach seem to be the following:

¹ An important collection of theoretical and empirical studies in this sense can be found in the journal "Entrepreneurship and Regional Development"

- sectoral differentiation is limited,
- different regional development patterns or phenomena like industrial districts cannot be considered,
- the political decision making systems are not included in the model
- development is only measured in economic terms, environmental, social or cultural aspects are not included
- changing transport requirements can only be incorporated in a very general manner, telecommunication as an alternative to transport is not included in the model

The European project TENASSESS is developing a larger model of another kind, considering also political decision making processes. STREAMS is a large but rather conventional forecasting project. The POSSUM project has followed quite a different, more qualitative approach developing scenarios with a special back-casting methodology without formulating an explicit model. A central element of the POSSUM approach – which will be adopted in this paper – is the concept of policy packages: different policy measures are combined to a package that allows for an integrated approach to a problem and avoids unwanted side-effects or unbalanced impacts for different groups of stakeholders.

Comparing the existing approaches with the objectives set for this study, two important limitations appear:

1. trying to establish overall quantitative models, the resulting tools are very complex and not designed for providing easily usable assessment tools
2. they are focusing on economic issues and ignoring important aspects of regional development.

However, analysing more in detail these approaches and looking at the data sets developed in these contexts, will be very useful for further developing a simple methodology.

3 Challenges for a simple assessment methodology

3.1 A broader framework for assessing regional development

At the end of this decade in which a large consensus has been reached about the necessity of a sustainable development reconciling economic, environmental, social and cultural dimensions, regional development cannot be defined exclusively in economic terms. A larger framework for assessing success in regional development than those usually adopted in transport research has to be found. The present study proposes to use a framework with ten dimensions developed in the INSURED project, a DG XII research project on “Instruments for Sustainable Regional Development” (Schleicher-Tappeser et al 1999).

3.2 Structural change will considerably influence the transport system

The accelerated structural change will have increased and substantial impacts on the transport sector which have not yet been fully acknowledged:

- Tendentially a declining importance of material flows in the advanced service economies caused by a growing importance of flows of mere information changes the role of the transport sector and urges to consider where and how “information transport “ is evolving
- The full impact of information technology is not behind us but just ahead, especially networking technologies will bring about major structural changes
- Acceleration in production processes, material flows, innovation and information processing is strongly transforming the structure of transport demands
- Globalisation or rather continentalisation leads to the creation of European wide markets, logistics and information systems and triggers on the other side an increased interest in specific local and regional structures, habits and markets.

Different branches are concerned by these changes in very different ways. The impact of these changes will therefore strongly depend on the specific structure and the development strategies of a region.

3.3 ICT change the role of material transport

Information and communication technologies deeply change the role of material in our economies, lead to a decreasing importance of spatial distances in many businesses, lead to a reorganisation of the production process, offer new opportunities for completely new ways of organising transport chains and lead to considerable gains in effectivity and cost reduction.

4 Outline of a model and assessment procedures

4.1 Basic ideas

The foregoing considerations lead to three basic requirements for an assessment of transport policies in the context of regional development:

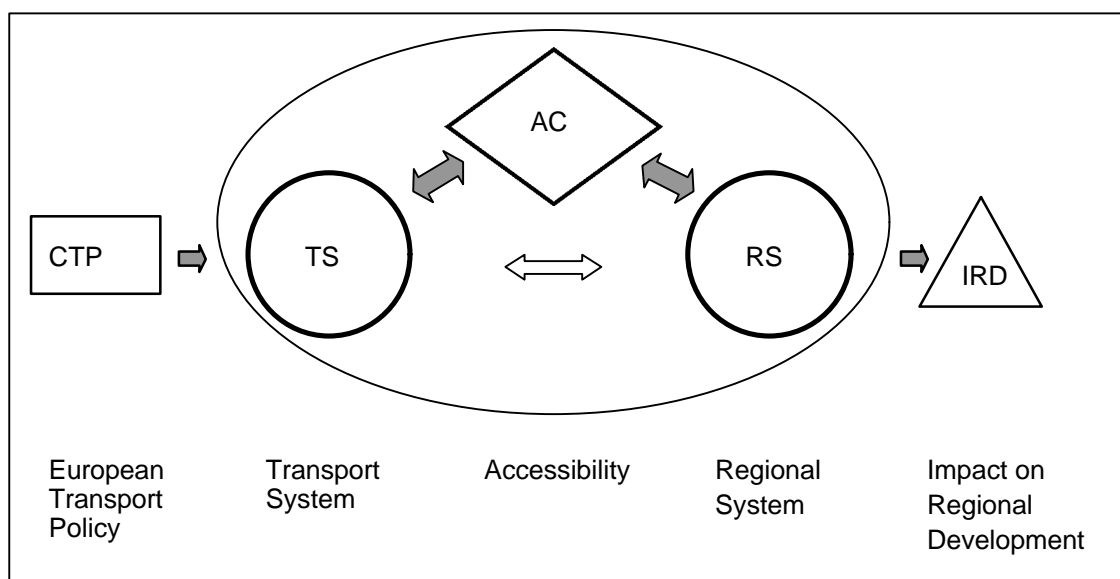
- Consider structural differences of the regions
- Consider different development strategies of the regions
- Consider changing transport needs

Starting from these requirements and considering the more detailed and quantitative approaches already developed by other projects, the following basic ideas have been used as a starting point for a comprehensive but simple assessment approach

- Use a broad framework of objectives for assessment
- Consider passenger, freight *and* information transport
- Analyse specific transport needs of sectors and population groups
- Don't try do calculate all, use qualitative expert estimates
- Use policy packages for dealing with complex systems
- Use scenarios for dealing with uncertain developments

4.2 Outline of the model

The model for analysing the impact of European Transport Policies on Regional Development is composed of three elements. The assessment has an input and an output.



Input and output

- The Input: CTP, the European Transport Policy: two policy packages which describe changes compared with the present CTP.
- The Output: IRD, Impact on Regional Development: appraisal of the changes of the qualities of the regional system in terms of the INSURED framework

The model elements

1. TS, the Transport System: The whole complex of hard- and software that produces accessibility: Infrastructure, Transport equipment, Transport companies, Transport Policy.
2. AC, Accessibility: Distinction of freight, passenger and information transport, different groups of users, service qualities and distance categories
3. RS, The regional system: General description of the regional structure, appraisal of the qualities of the regional system in terms of the INSURED framework

The linkages

The main chain of impacts leading from the input to the output is the following:

CTP → TS: The European Transport Policy influences the Transport System which is relevant for a specific region. (The impact of infrastructure programmes will be rather slow, whereas tax and regulatory policies may have immediate consequences on cost and company structures.)

TS → AC: Changes in the Transport System modify the accessibility patterns. (Primary effects will be rather immediate, secondary effects will be experienced through changes in the regional system, see below).

AC → RS: Changes in Accessibility influence the Regional System (there may be short-term and rather long-term effects)

RS → IRD: The changes in the Regional System are the output

However, there are also secondary links to be considered:

RS → AC The regional system strongly determines transport distances to main destinations (individuals: shopping opportunities, services, working places, schools; organisations: suppliers, customers, business related services) Change of most of these spatial structures (especially settlement patterns) tends to be rather slow.

RS → TS The regional system strongly shapes the transport system: regional policy priorities, regional development models, property and management structures, behavioural patterns, settlement structures, spatial patterns of production, economic structure, income level etc.

Also a simple assessment would need to include some iterative process that allows to consider first the primary and in a second round the secondary links.

The impacts of a CTP policy package can only be understood by establishing a model for a specific region. For the purposes of a rather simple assessment tool the analysis of each element may be limited to some easily identifiable aspects. However, many of these aspects may not be quantifiable by publicly available data. Therefore, not only the estimation of the impacts but also the description of the elements themselves will have to rely strongly on qualitative information.

5 Concretising the model and its use

5.1 The Input: CTP, the Common Transport Policy

The assessment tool to be constructed is designed to assess impacts of hypothetical CTP policy changes on regional development. The input to the model therefore does not consist of a complete description of CTP but only of the policy packages to be assessed. In the POSSUM project a methodology for packaging policies has been developed which could be useful for developing such packages in a wider context. On the other hand, the assessment methodology developed here would be a very valuable tool in the process of policy packaging. However, in this context it is the assessment and not the whole process of policy packaging that is of interest.

5.2 TS, the Transport System

The transport system translates the immediate impact of policy packages into changes in accessibility. Large parts of transport research contribute to the understanding of this relationship from different perspectives. The present model tries to minimise the necessary information input.

The transport system contains all elements which are of importance for the delivery of transport services to the region concerned. These include European, national and especially regional structures, hardware, management and organisation, structure of transport business, transport policy, especially at the regional level.

Data available from EUROSTAT at the regional level include available infrastructure, transport flow statistics, modal split and corresponding trends. However, very often these data are not complete. It would be very useful to examine to which extent more specific data from European Projects such as SASI or TENASSESS can be useful for this purpose. Here, the aim is to construct a much more simple methodology which is able to use permanently updated data. Mainly a deeper analysis of the calculation methods and the indicators used in these projects could perhaps lead to an improved basic data set for the description of the regional transport system in its context. However, a limited number of more qualitative aspects – such as the structure of the regional transport business and the political decision making system– needs to be covered by asking regional experts. The relevant transport system is unique for each region, but it always includes also the national and the European levels.

The assessment of the impacts of the policy packages on the transport system is not possible on a merely quantitative basis, it must take into account complex interrelationships. External experts can only make rough guesses. Regional experts would be in a better position to do this, either in the form of a questionnaire or preferably in a workshop. The time factor is an important aspect. Therefore the impacts shall be formulated in the form of scenarios (e.g. for 2006 and 2012).

5.3 AC, Accessibility

Accessibility is the product of the transport system. From a users point of view it is (mainly) the accessibility that is interesting, not the modes or technologies used by the transport system to provide this accessibility (In this context other aspects of transport means, such as the role of the car as a status symbol, are not considered).

Accessibility, as a supply output of the transport system in the context of the region has a series of qualities that may be of different importance to users in certain circumstances:

- the goods to be transported: passengers, freight, information
- the distances to main interregional and intraregional destinations
- the frequency or time flexibility of the relations
- the travel time needed
- the cost
- access conditions (age, drivers license, handicaps)
- comfort respectively handling

Such a detailed, mode-independent description of mobility offers seems useful in order to provide a neutral platform for comparisons with the demand side.

These elements, however already contain some assumptions concerning relevant destinations. In the literature different approaches can be found to this problem. For inter-regional relations the study proposes to take some standardised Europe-related measures. For intra-regional relations more detailed information on the spatial structure of the service supply is deemed to be necessary. This is an issue for the next element of the model.

The growing literature on accessibility offers general considerations but only limited practical help in assessing multidimensional accessibility from the supply and from the demand side.

Usually, data concerning accessibility are not available in this detail. As an alternative more qualitative indications can be gathered by asking guesses to local experts. But already combining the most interesting dimensions for the supply side description results in a considerable amount of data needed.

Looking then at the demand side on the basis of a description of the regional system (see below) combining the supply characteristics with the present and future needs of different user groups in different kinds of activities, leads to a very large amount of required data. Using expert interviews and questionnaires, only a limited amount of guesses with reasonable quality can be obtained. This was one of the main difficulties in designing an operational assessment tool. Compromises have to be found in formulating questionnaires and selecting experts.

5.4 RS, the Regional System

The regional system includes all the characteristics of a region that describe its present situation in view of the development objectives and those which condition its further development. The 10 INSURED/ SQM aspects are used as a framework for providing a quick approach to such a description. The description of the regional context includes three perspectives:

1. Regional situation and trends
2. Comparison with EU average
3. Regional development strategy

All three perspectives are described by using the 10 INSURED / SQM aspects. For the first and the second point basic regional data can be gained from EUROSTAT as an input to the appraisal of most of the aspects. However, especially concerning the environment the data available at a regional level are astonishingly limited and insufficient even for a rough overview. Detailed investigations also have shown that for many regions data which should in principle be available are effectively missing. Therefore, for a more than very general analysis, it is necessary to complement these data with Swot appraisals by regional experts.

Looking at accessibility from the demand side, different categories of users and different purposes have to be distinguished. A first distinction can be made between two broad categories of users: organisations and individuals. Some general requirements can be formulated for supplying accessibility to these two categories. For identifying the specific accessibility needs of a region at present and their probable change in the years to come, more detailed distinctions have to be made concerning user groups among organisations (industry branches, size, rural/ urban location) and individuals (age, rural/ urban location, income, profession). Moreover, the main transport destinations/sources of these user groups have to be identified and the development of the spatial patterns of these destinations has to be estimated where it is not a specific characteristic of a branch (e.g. for shopping, commuting, education, business services etc.).

Having identified the most important user groups in a specific region and having identified their specific accessibility demand and its probable development in the years to come, an assessment of the impact of changes in accessibility supply on the single user groups can be made

5.5 The Output: IRD, the Impact on Regional Development

The final step of the assessment consists in appraising the impact of these changes on overall regional development in terms of the 10 components of the INSURED/SQM framework. A SWOT analysis of each component allows to consider different aspects and user groups and thus gives a differentiated but well-structured picture.

5.6 Consequences

The proposed method has to rely on much more qualitative and non standardised information than originally intended. This is due to three interrelated problems in data gathering:

- a number of very relevant information is not accessible through usual statistical categories
- many interesting statistics are not available at the regional level in a standardised European format.
- the existing regional statistics are often very incomplete

This resulting limitations for the definition of a standardised and easily updateable database for the assessment not only makes the analysis of a single region more difficult but also limits the possibilities of quick European comparisons.

The standardised qualitative inquiries envisaged to overcome these problems, require a careful reduction of the information input needed and adequately designed questionnaires or workshop facilitation procedures. Inputs and appraisals for several steps can be combined in a time-saving manner. Adequate formats of presenting available standardised information to local experts have to be developed.

In the framework of the preliminary study not all steps of the assessment have been designed in detail and fully tested.

6 The SQM analysis grid

6.1 The background of SQM

The SQM – Sustainable Quality Management ® system has its origins in the European research project INSURED (Instruments for Sustainable Regional Development). INSURED has developed a general approach to sustainable regional development and an assessment grid for regional development processes on the basis of a broad review of the discussions on Sustainable and Regional Development and on 25 case studies in five European regions (see Schleicher-Tappeser et al.1999). SQM is a further development of this approach that has been tested successfully in a series of European projects. It includes a conceptual framework, methods and procedures as well as supporting software.

SQM-Framework	Methods	Software
<ul style="list-style-type: none"> • Sustainable Regional Development as a dynamic process: • ORIENTATION: 10 Components of Sustainability • SOCIAL POTENTIAL: 16 Regional Key Factors • DYNAMICS: 6 Basic Transformation Levers 	<ul style="list-style-type: none"> • combining SQM-framework, SWOT analysis and synthesis procedures in participative processes • qualitative analysis of situations • strategy and programme development • multi-level support and evaluation • experience exchange • training 	<p>SQM-tools: support for</p> <ul style="list-style-type: none"> • assessment of situations • definition of objectives • development of strategies • formulation of programmes • project and programme appraisal and evaluation <p>SQM-experience</p> <ul style="list-style-type: none"> • database for structured access to best practices and training purposes • stock of analysed experiences from five European regions

The SQM approach starts from the idea that the challenge of the general concept of sustainable development lies in the integrated consideration of different dimensions of development and emphasises that SD must always be reinterpreted in specific contexts in order to become operational. Strategic priorities and specific objectives must be set by local/regional actors within national or European frameworks. The SQM system provides tools for managing sustainable development processes, mainly based on structured qualitative assessments.

6.2 The SQM analysis grid

A core element of the SQM system is an analysis grid that includes

- 10 components that give the ORIENTATION towards Sustainable Development
- 16 key factors that indicate the REGIONAL SOCIAL POTENTIAL
- 6 strategies that form the basic transformation levers for inducing development DYNAMICS

The first group of this grid giving the ORIENTATION towards Sustainable Regional Development will be used within the methodology proposed here. It includes the following components.

Sustainable Development ORIENTATION

development dimensions

- O1. Environmental
- O2. Economic
- O3. Socio-cultural

equity dimensions

- O4. Inter-personal equity
- O5. Spatial equity
- O6. Inter-temporal equity

systemic principles

- O7. Diversity
- O8. Subsidiarity
- O9. Networking and partnership
- O10. Participation

7 Using standardised data for rough estimates

7.1 Data needs

A set of data that allows to shortly describe the present situation and tendencies in a region would be most useful. Typical indicators should be chosen that give a rough picture concerning each of the components of the SQM analysis grid. For a series of these aspects useful quantitative indicators have not yet been developed, standard statistics do not cover all relevant dimensions of development.

7.2 Data sources

In order to develop a tool that is easy to use throughout Europe, it would be helpful to rely on standardised data that are available for all regions. The competent source for such data is the EUROSTAT database REGIO. It contains time-series of an important variety of data, mainly at the level of NUTS 3. However closer enquiry shows that the most data sets are rather incomplete. Data must be purchased from EUROSTAT. Experimenting with different alternatives and testing their availability would require to have at hand the complete collection of data, in the framework of the present study it was not possible to purchase the whole database.

7.3 Defining rough indicators for the 10 orientators

An original set of indicators chosen from the REGIO catalogue seemed to cover rather well a part of the ten orientators, actual availability of data then showed that in practice not all was possible. Section 10.2 shows a first attempt that might be improved considerably on the basis of the REGIO database. Environmental data however are widely missing. There is no unique source for environmental data at the NUTS 3 level.

8 Making use of local experts

The knowledge and the experience of local experts is considered to be essential for the method proposed here, for three different purposes:

- Standard available data are incomplete and often inadequate to describe the actual situation and trends. Additional information is needed. Digging into available literature at the regional and national level would require efforts which are beyond the scope of the envisaged methodology especially when comparability is required. Structured questions to local experts can provide a substitute.
- Standardised quantitative information will never be sufficient to understand the regional system and the transport system which are relevant for a specific region. Qualitative information concerning interaction patterns in the decision-making systems, descriptions of regional development strategies, or qualified interpretation of trends are essential information that can only be provided by local experts. A consequent structuring of this information is essential for efficient handling of the tool. For this purpose, a conceptual framework is needed that can be understood all over Europe.
- The most important task of local experts will be to give their qualified estimate of the response of the regional and the transport system to specific policy packages. The assessment should be supported by providing data concerning the systems concerned. And it must be validated using the qualitative model that has been established previously. Facilitated workshops would be an important tool for this validation procedure.

Local experts can be approached by questionnaires, interviews and workshops. In practice, a combination of different approaches will be useful.

9 Selection of policy packages to be used in a pilot test

Within the general context of this study a large number of different interesting policy packages could be imagined. In order to select a meaningful pair of packages, a number of hypotheses has been formulated on the basis of the POSSUM and INSURED projects and a growing amount of empirical and theoretical literature pointing in this direction (e.g. Vickerman):

- intraregional relations are essential for a dynamic regional development, compared to the heavy investments in interregional links they have often been neglected.
- structural change towards a less material intensive economy and towards less long-range physical transports can be encouraged without compromising economic development opportunities. IT technologies can play an important role in this context if adequately used.
- Considerable differences between regions and between urban and rural areas limit the adequacy of European wide uniform approaches. Differentiated taxation systems taking advantage of new technologies could be useful in taking account of these differences.

On this background the following two – rather simple – packages are proposed:

policy package 1

- EU funding for IT and transport infrastructure 2000-2006 in the same extent as in recent years – no major changes
- Harmonisation of transport related taxes. Raise of the average tax level by 10%. Probably this raise will be compensated by efficiency gains in the transport system made possible by a harmonised system

policy package 2

- Shift in EU infrastructure funding towards intraregional links, rail, water and information transport, maintaining the present funding volume in physical and information transport.
- Territorialisation of taxation, average tax increase of 40%. All transport related taxes are replaced by one single tax which depends on the following parameters: distance; environmental impact; time of day/ season; area concerned. Within certain margins, regional or local authorities have the competence to decide about these parameters. Raising this tax may be realised through IT-based (road-) pricing systems.

10 Case studies

10.1 The approach

A full test of the assessment methodology has not been possible within this preliminary study, but a series of elements has been tested.

Two regions have been selected for the case studies: Andalusia and Tuscany. They are different in structure and centrality but both interesting in terms of structural funds infrastructure policy. Moreover they offered easy access to available data and experts – an opportunity which may be fully exploited in a continuation of the research.

Data have been extracted from the EUROSTAT REGIO Database in order to provide basic data for the description of the Transport System TS and for the Regional System RS concerning the selected regions themselves, comparable regions and the whole EU. Unfortunately EU12 and EU15 data were missing in most cases. Non plausible data (e.g. concerning transport intensity in Andalusia) could not all be explained and corrected.

A combined questionnaire has been prepared in order to provide estimates concerning Accessibility (model element AC) and the Regional System (model element RS) in view of the transport needs of organisations :

- Trends and cost sensitivity in transport volume, transport frequency/flexibility, travel time, comfort/handling for the whole region
- regional economic structure
- regional development policies
- Characterisation of selected sectors in terms of innovation, competitiveness, market and sourcing strategies.
- Trends and cost sensitivity data as above for selected sectors and activities

A pre-test of this questionnaire has been carried out with a very limited number of high-ranking experts. This allowed to test the approach but not to cover all important sectors.

No additional information concerning the Transport System (TS) has been gathered by questionnaires or systematic literature evaluation.

Using these elements, rough guesses showed that this approach may deliver useful results. A full systematic appraisal at the different steps has not yet been carried out. As the basic framework is in place, this would have been possible with the help of three days of facilitated expert workshops, replacing missing data by expert estimates. However, this was beyond the scope of the preliminary study and would not meet the hopes for an easy to use instrument. Prior improvement of standardised inputs for the single steps seems to be possible and helpful.

10.2 Standard data

10.2.1 Standard data concerning the Transport System TS

The following table shows some standard data gathered from the EUROSTAT REGIO database / Yearbook 1997.

table 1: The Transport System: some standard indicators from the EUROSTAT REGIO Database

time period	table	label	European Union (15)	Baden-Württemberg	Comunidad de Madrid	Andalucía	Lombardia	Toscana
VII.1 Transport networks 1994		Railways total (km)	158849	3985	633	2251	1566	1406
VII.1 Transport networks 1994		Railways - Lines with double and more than double	:	:	427	307	578	729
VII.1 Transport networks 1994		Railways - Electrified lines (km)	:	1975	499	1181	1212	878
VII.1 Transport networks 1994		Inland waterways – canals (km)	:	-	-	-	-	-
VII.1 Transport networks 1994		Inland waterways – rivers (km)	:	422	-	-	-	-
VII.1 Transport networks 1994		Roads - Motorways (km)	44114	1020	470	1137	543	414
VIII.2 Causes of death 1993		Motor vehicle traffic accidents	:	1034	517	1023	1442	521
VIII.5 Electricity consumption and vehicle		Private cars /1000 inhabitants	423	519	427	289	564	575
Main indicators		Area km2	3191120	35751	7995	87268	23872	22993
Main indicators		Population density 1994 inhabitants/km2	116	287	626	81	373	153
Main indicators		GDP per inhabitant PPS/SPA 1994 EUR15=100	100	126	95	57	131	110

The transport infrastructure in the two case study regions can be characterised more precisely by table 2. It appears that the motorway infrastructure in Andalusia is above European averages, whereas rail is not very developed. However, total rail length has increased by 11% in Andalusia between 1990 and 1994.

table 2

1994	private cars / 1000 inhab	total rail km	double rail km	motorway km	double rail / 1000 inhab	motorway / 1000 inhab	total rail / 1000 / km2	double rail / 1000 km2	motorway / 1000 km2
Andalusia	289	2251	307	1137	0,04	0,16	26	4	13
Tuscany	575	1406	729	414	0,21	0,12	61	32	18
EU15	423	158849		44114	-	0,12	50	-	14

10.2.2 Standard data concerning the Regional System RS

On the following pages some standard data gathered from the EUROSTAT REGIO database / Yearbook 1997 have been listed, sorted by their relevance for the 10 SQM orientators towards Sustainable Regional Development. They give only a rough static picture. A discussion of these data and their dynamics follows the table.

table 3: The Regional System: some standard indicators from the EUROSTAT REGIO Database

time period	table	label	European Union (15 countries)	Baden-Württemberg	Comunidad de Madrid	Andalucia	Lombardia	Toscana
O1 Environment								
1994a0	V.1 Land use 1994	Total area (1000 ha)	324019	3575	803	8732	2386	2299
1994a0	V.1 Land use 1994	Wooded area (1000 ha)	:	:	188	2652	494	889
1994a0	V.1 Land use 1994	Utilized agricultural area (1000 ha)	:	1483	389	4866	1196	1062
1994a0	V.2 Areas harvested and yields 1994	All wheats (100 kg/ha)	54	60	23	18	58	38
1994a0	V.2 Areas harvested and yields 1994	Sugar beet (100 kg/ha)	512	557	40	333	604	419
O2 Economy								
	Main indicators	Employment agriculture 1996 total=100	5.1	2.5	1.0	11.3	2.9	3.5
	Main indicators	Employment industry 1996 total=100	29.8	42.3	26.0	22.3	42.4	34.7
	Main indicators	Employment services 1996 total=100	65.1	55.2	73.0	66.5	54.7	61.8
	Main indicators	GDP per inhabitant PPS/SPA 1994 EUR15=100	100	126	95	57	131	110
O3 Socio-Culture								
	Main indicators	Area km2	3191120	35751	7995	87268	23872	22993
	Main indicators	Population density 1994 inhabitants/km2	116	287	626	81	373	153
	Main indicators	Population change 1974-1984 %	:	0.0	1.6	0.9	0.2	0.2
	Main indicators	Population change 1984-1994 %	0.3	1.0	0.4	0.6	0.0	-0.2
	Main indicators	Population age <25 1.1.1994 %	31.6	29.1	34.3	38.8	27.4	24.7
	Main indicators	Population age >=65 1.1.1994 %	15.2	14.4	12.9	12.4	15.4	20.3
	Main indicators	Birth rate 1994 %	1.1	1.1	1.0	1.2	0.8	0.7
	Main indicators	Activity rate Total 1996 %	55.3	59.5	51.5	47.4	51.3	48.4
	Main indicators	Dependency rate 1996 %	1.2	1.0	1.3	1.6	1.3	1.3
	Main indicators	Unemployment rate Total 04/1996 %	10.9	5.5	20.6	32.4	6.3	8.5
	VIII.1 Health - personnel and facilities 1993	Doctors /1000 inhabitants	:	3.2	5.2	3.6	2.0	1.7
	VIII.1 Health - personnel and facilities 1993	Hospital beds per 1000 inhabitants	:	6.7	4.3	3.1	7.0	6.2
	VIII.2 Causes of death 1993	Suicide	:	1715	134	559	778	328

time period	table	label	European Union (15 countries)	Baden-Württemberg	Comunidad de Madrid	Andalucia	Lombardia	Toscana
	VIII.3 Education	Number of pupils and students - total (1000)	72976	1753	1183	1685	1292	463
	VIII.3 Education	Number of pupils in primary education (1000)	23875	465	289	523	380	134
	VIII.3 Education	Number of students in lower secondary education (1000)	18026	623	218	387	261	39
	VIII.3 Education	Number of students in upper secondary education (1000)	19316	398	405	531	398	160
	VIII.3 Education	Number of students in vocational education (1000)	11211	326	134	195	292	117
	VIII.3 Education	Number of students in higher education - total (1000)	11759	267	271	244	253	130
O4 Equity between individuals								
	Main indicators	Activity rate men 1996 %	66.0	70.5	65.9	61.5	64.6	60.0
	Main indicators	Activity rate women 1996 %	45.3	49.3	38.5	34.3	39.1	37.9
	Main indicators	Unemployment rate men 04/1996 %	9.7	5.6	16.4	27.2	4.2	5.3
	Main indicators	Unemployment rate women 04/1996 %	12.4	5.4	27.0	41.0	9.3	13.2
	VIII.3 Education	Number of students in higher education - females (1000)	5956	107	142	127	:	:
O6 Equity between generations								
	IV.1 R + D expenditure 1994	Expenditure in % GDP	:	:	2.0	0.5	1.3	1.0
	IV.2 R + D Personnel 1994	Percentage of R&D personnel in the active population	:	:	1.9	0.4	1.0	0.8
	IV.3 European patent applications	Number of patent applications per million active persons	:	649	33	3	202	68
	IV.3 European patent applications	Number of patent applications per million active persons	203	583	41	4	184	66
	Main indicators	Population change 1974-1984 %	:	0.0	1.6	0.9	0.2	0.2
	Main indicators	Population change 1984-1994 %	0.3	1.0	0.4	0.6	0.0	-0.2
	Main indicators	Population age <25 1.1.1994 %	31.6	29.1	34.3	38.8	27.4	24.7
	Main indicators	Population age >=65 1.1.1994 %	15.2	14.4	12.9	12.4	15.4	20.3
	Main indicators	Birth rate 1994 %	1.1	1.1	1.0	1.2	0.8	0.7

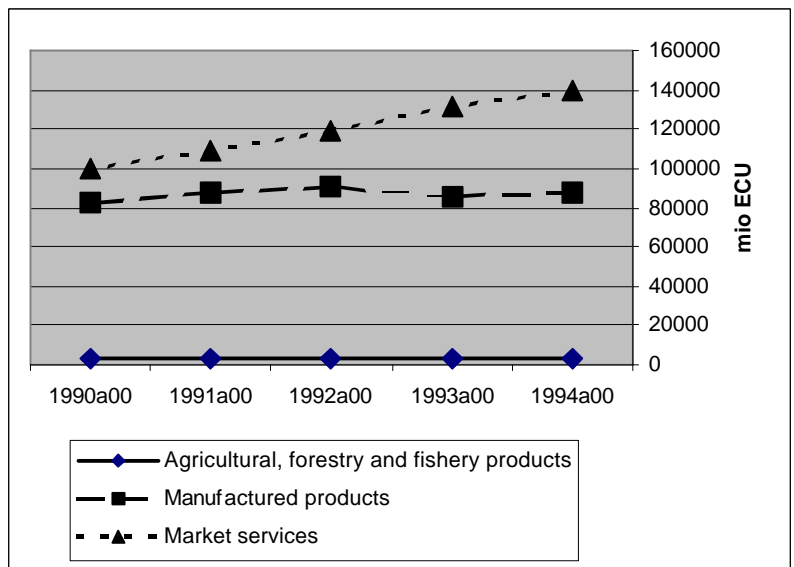
O1 Environment

Data concerning the environment are nearly non-existent in the REGIO database. The land use and agricultural yield data given in the table show that Andalusia is a very important agricultural producer, but that agricultural intensity is clearly lower than in the European average.

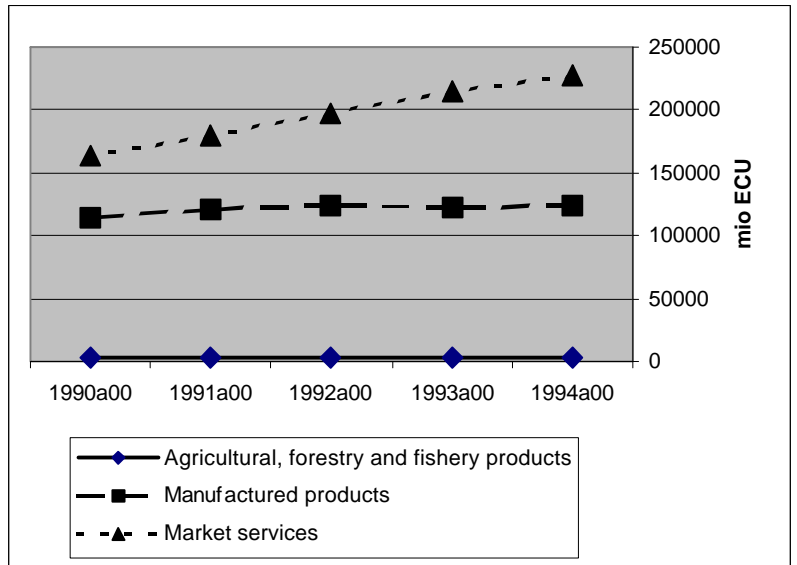
O2 Economy

The share of agriculture in employment in Andalusia is more than two times as high than in the European average, whereas in Tuscany it lies below the average. Tuscany's industry employment in turn is well above the average. Services are more important in Andalusia than in Tuscany. The evolution in GDP between 1990 and 1996 in both regions is well below the European average (EU15: +30%; Andalusia +16%; Tuscany +11%), GDP per capita has evolved in similar ratios. However the evolution of the sectors has been different. The following figures show that in both regions industry has declined during this period whereas more central European regions were more successful.

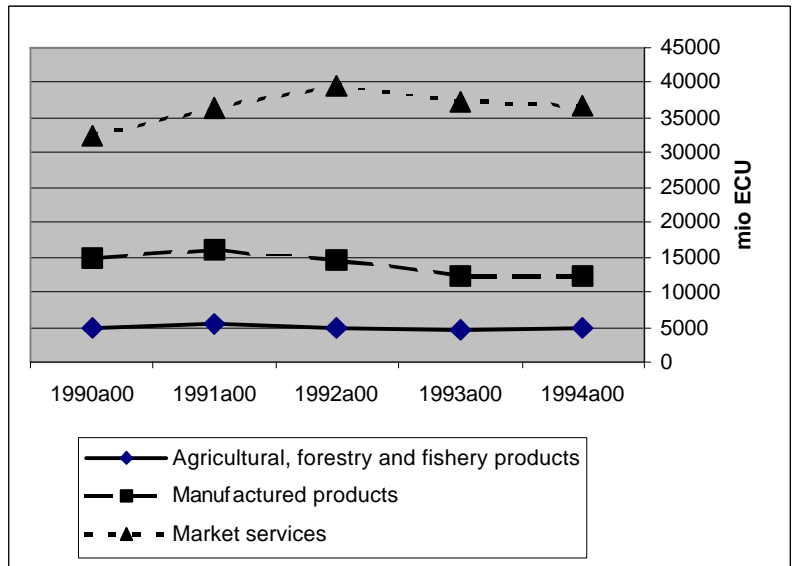
Baden-Württemberg



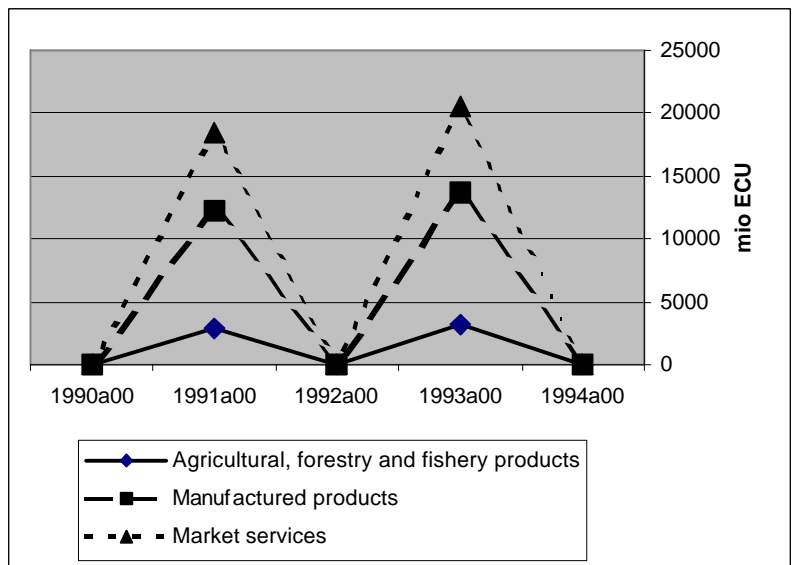
Nordrhein-Westfalen



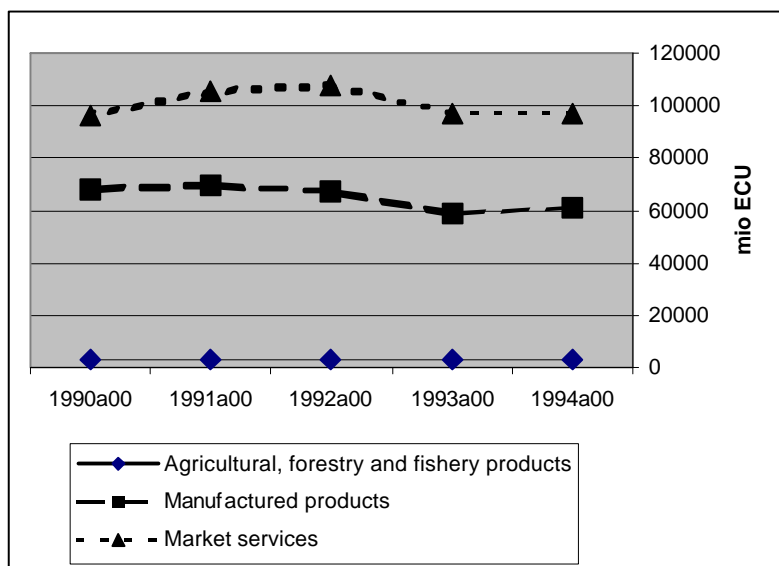
Andalucia



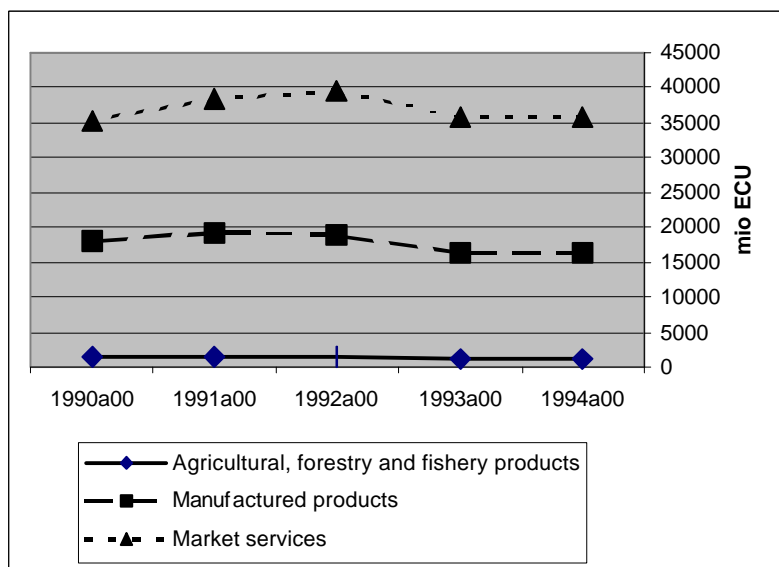
Ireland



Lombardia



Toscana



Structural changes which are relevant for transport issues are not very clearly reflected in the REGIO data. For the rather short (and economically turbulent) period 1990-94 the following changes are the most important:

- Andalusia: textiles and clothing –15%, paper and printing –22%, building and construction –28%, Recovery, repair, trade, lodging and catering services + 16%, Other market services +17%
- Tuscany (90-95): non-metallic minerals –31%, chemical products –22, textiles & clothing –11%, paper & printing –19%, building –13%, Recovery, repair, trade, lodging and catering services –6%, other market services +14%.

Irritating are the figures for the development 1990-1996 of the flow of goods:

- Intraregional / road: Andalusia –54%, Lombardia +91%, Tuscany +24%
- Interregional / road: Andalusia –30%, Lombardia +47%, Tuscany +14%

There may be a systematic statistical error: for Spanish regions the interregional transport intensity has suddenly dropped considerably below EU averages.

O3 Socio-Culture

Population change has not been considerable over the last 20 years in the regions considered (1990-96: +3% Andalucia, -1% Tuscany, +7% in EU12). There are still strong differences in the age structure (1994):

- under 25 years: EU15 31,6% Andalucia 38,8%; Tuscany 24,7%
- over 65 years: EU15 15,2 % Andalucia 12,4%; Tuscany 20,3 %

The birth rate is still rather different (EU15 1,1%; Andalucia 1,2%; Tuscany 0,7% in 1994). A considerable outward migration persists in Andalucia. An important reason is unemployment. Unemployment in Andalucia was for times as high compared to Tuscany and three times compared to the EU15. As a consequence, the dependency rate (persons depending from one employed person) was 1,6 (Tuscany 1,3; EU15 1,2). Under these circumstances, car ownership has its limits.

Numbers of doctors and hospital beds per inhabitant are less than half in Andalucia compared to Tuscany. The spatial density of these services is about one quarter, which means that in the average, trips to reach these services are much longer in Andalucia compared to Tuscany.

O4 Equity between individuals

The figures in table 3 speak for themselves.

Interesting in this context are some considerations concerning the social distribution of mobility. table 2 showed that there are considerable differences between the regions in car density and in the railway network. The bus density in 1990 is indicated in table 4 and has not considerably changed since:

table 4

1990	buses / 1000 inhabitants
EU12	1,51
Baden-Württemberg	0,94
Comunidad de Madrid	1,66
Andalucia	0,88
Midi-Pyrénées	1,11
Lombardia	1,11
Toscana	1,45

It appears that the average motorised mobility / accessibility in Andalucia is considerably lower than in the European average: car density, bus density and railway network density are much lower than in the European average, road infrastructure,

however, seems to be at European levels. This discrepancy will mainly be a disadvantage for persons without access to a car and increase social inequities.

O5 Equity between regions

The figures concerning the differences in GDP (EU 100, Tuscany 110; Andalusia 57) and in unemployment (EU 10,9; Tuscany 8,5; Andalusia 32,4) in table 3 illustrate most clearly the necessity to strive for a more equitable development between European regions.

O6 Equity between generations

For the development of the age structure see O3.

The total number of students corresponds well to the number of young people in the different regions. However, there are important differences in the composition: vocational education is relatively low in Andalusia. Higher education is very important in Tuscany. High numbers of students require a well developed system of public transport.

table 5 students and pupils as percentage of total population

1995	BaWü	Madrid	Andalusia	Lombardia	Toscana
primary	4,6%	5,8%	7,4%	4,3%	3,9%
lower secondary	6,1%	4,4%	5,5%	3,0%	1,1%
upper sec.	3,9%	8,2%	7,5%	4,5%	4,6%
vocational ed.	3,2%	2,7%	2,8%	3,3%	3,4%
higher ed.	2,6%	5,5%	3,5%	2,9%	3,7%
total	20,4%	26,5%	26,6%	18,0%	16,7%
population <25y	29.1%	34.3%	38.8%	27.4%	24.7%

O7 Diversity

no adequate indicators using standard statistics have been developed yet

O8 Subsidiarity

no adequate indicators using standard statistics have been developed yet

O9 Networking and Partnership

no adequate indicators using standard statistics have been developed yet

O10 Participation

no adequate indicators using standard statistics have been developed yet

10.3 Andalusia

Expert appraisals

Only one questionnaire has been filled in by a high-ranking expert of the regional transport administration.

Transport volumes and frequencies for organisations are expected to grow considerably both in interregional and intraregional relations. Cost sensitivity is estimated to be medium. It is expected that travel times will decrease on all relations, willingness to pay for shorter travel times is high. The importance of improved comfort and handling is growing. Concerning regional development policy priorities, high importance is put on reducing travel times and travel costs for freight and passenger transport, reducing travel volumes and distances is not a priority. Improvement of information transport has an astonishingly low priority although the service sector is important and expanding.

For the tourism sector, deemed to be highly competitive at a European level, transport volume and frequency increases are forecasted in all kinds of activities, cost sensitivity of volumes varies depending on the activities concerned, there is willingness to pay for better time flexibility. Despite general trends of decreasing travel times, a further reduction in passenger transport (interregional and intraregional) and in interregional freight transport is considered to be important for the development of the sector.

10.4 Tuscany

Expert appraisals

Three questionnaires have been answered by high-ranking experts with a long experience at present positioned in the regional government (transport and regional development administration) and a municipal transport company. The non negligible divergence in the answers corresponds to the fact that they reported to have had difficulties in responding to such unusual questions. An introductory workshop for discussion these questions could have lead to better validated results.

Generally, transport volumes are expected to increase, with the exception of intra-regional freight. The cost sensitivity of transport volumes is not very strong. Travel times are expected to remain relatively stable, but willingness to pay more for reduced travel times increases. Also for improved comfort/ handling organisations are willing to pay increasingly more. Concerning development policies, improving information transport has a high priority, also reducing travel distances and volumes in passenger and freight transport is considered to be rather important.

Looking at some sectors it appears that increasing costs would have a stronger impact on interregional than on intraregional transport. A decrease in travel times is deemed to be important especially for intra-regional relationships.

10.5 Consequences of the case studies

The methodology points into a useful direction. Further improving and standardising quantitative data input, procedures and questionnaires for getting qualitative input to the regional model and formalising procedures for the actual assessment will lead to a methodology that provides answers with reasonable efforts.

The tested tools provided information concerning the elements of the model as follows:

	Transport System	Accessibility	Regional System
standard data (as tested)	only infrastructure	--	some basic data, insufficient
standard data (potential)	also transport business too limited, qualitative complements needed	some basic data possible, check achievements in SASI	more is possible additional qualitative information needed
questionnaire (as tested)	state and trends: -- response: --	state and trends: some indirect response: most important information, still limited	state and trends: some response: limited
questionnaire (potential)	state and trends: useful with second questionnaire response: be useful with second questionnaire	state and trends: could be improved response: could provide most important information additional workshops would be useful	state and trends: leave as it is, add structured interview response: satisfactory with more sectoral answers validate in workshop

Concerning standard information from statistical data more can be done by essentially two approaches:

- More sophisticated use of the REGIO database by combining data, because of limited funds only most pertinent data were purchased in the framework of this study
- Making more case studies with this method and evaluating sectoral studies in the literature will provide hints for gaining indirect information from data which at first sight seem less pertinent.
- Making better use of the detailed experiences in the large and complex quantitative modelling projects for identifying practicable indicators (e.g. for the competitiveness of branches, the spatial distribution of service supply, the distinction of user groups etc.)

The questionnaires can be improved by:

- Providing an input of standard data
- Allowing for more differentiated answers (5 instead of 3 choices)
- Combining questions and adding others

- use a separate questionnaire addressed to other experts for information concerning the transport system

Other means for communicating with regional experts should probably be added. Possibilities are:

- Illustrated information material for introducing the approach
- Structured workshops
- E-mail discussions with the help of a continuously improving online model

Until now only elements of the model have been gathered in the two case studies. To run an assessment of policy packages on this basis adequate questions and procedures have to be developed. An structured assessment workshop may be the adequate form to efficiently carry out this task. Differences in appraisals between the small number of answered questionnaires in Tuscany have shown that even high ranking experts felt uncomfortable uncertain and had different opinions. Offering an occasion for discussion seems to be essential.

11 Conclusions

In section 1.2 four objectives have been formulated for the present study:

1. to understand the importance of different aspects of transport for regional development in different kinds of regions on the background of considerable changes in economic structure, European and global markets, society, and technology.
2. to develop a framework for a preliminary assessment of the impact of European Transport Policy measures, mainly Infrastructure investment and internalisation of external costs on the relative development of different kinds of regions and on the cohesion of the EU.
3. to test the framework and to deepen the understanding of the relationship between transport policy and regional development in two case studies
4. to gain an overview on the probable impact of a considerable raise of transport costs and of changes in infrastructure policy on the development in different kinds of European Regions

The conclusions will be structured along these four objectives:

Understanding the importance of different aspects of transport for regional development

- The literature review has shown that regional development is increasingly understood as a very complex phenomenon in which different kinds transport play a multifaceted role. Different development models imply a different role of various kinds of transport.
- Present models and their overall concepts of accessibility do not reflect this complexity and have partly lead to misleading conclusions. Much more differentiation is needed concerning regional structures, regional development models, regional transport systems, user groups, different kinds of transport (including information transport) and time horizons.
- The present structural change deeply changes the roles of different kinds of transport. A differentiated understanding of these implications is missing – also because concepts for analysing them have not yet been developed.
- Information transport is increasingly substituting passenger and freight transport but also creates new transport needs by changing interaction patterns and increasing the reach. Attempts to assess impacts in bulk have widely failed: they depend on specific conditions and on the adopted development strategies. Adequate concepts and empirical research will be needed in order to identify different typical patterns. The approaches proposed in this study can be considered to be a step in this direction.

Developing a preliminary impact assessment framework for CTP measures

- Based on concepts stemming from different lines of thinking, a general framework for assessing the impact of European Transport policies has been developed in this study. It consists of a relatively simple regional model, descriptors for describing elements of this model and an assessment procedure for establishing the relationships between the elements with the help of regional experts.
- The descriptor sets, the access to standardised quantitative data, the procedures for qualitative appraisals and the methods for carrying out assessments need to be further improved.

Testing elements of the framework in two case studies

- The proposed model and assessment methodology point into the right direction. However, considerable improvements are necessary in order to reach the goal of a rather simple assessment tool that can be used by decision makers at European and regional levels.
- Limitations in completeness and reliability of generally available and regularly updated statistical information are more serious than initially expected. They can be partially compensated by combining data and “patterns” derived from case studies and more complex models.
- Questionnaires for collecting qualitative inputs to the regional models have been developed and tested. They do not yet cover all relevant issues but have shown the degree of precision and the amount of information that can be reached by this instrument in this context. Their contribution is essential and valuable. However, the standardised comparable quantitative database should be improved in order to limit the questions to the experts to basically qualitative issues and to improve the possibility of European comparisons. Sectoral questionnaires to sectoral experts should be used to obtain region-independent basic characteristics of important sectors that can be used as first guess and if necessary differentiated in regional case studies.
- The assessment procedure of policy packages with the help of a validated regional model has been outlined. A framework of precise assessment questions has still to be formulated based on more elaborated descriptors of the model. Given the complexity of regional systems, assessment workshops with regional experts should be carried out in the framework of regional case studies in order to explore the range of possible reactions and improve the assessment questions to be formulated.
- The analysis has shown considerable differences in regional structures, regional development models, transport issues and transport policies in the two regions. Some first hypotheses could already be formulated on this basis. However, a more systematic confrontation of statistical facts and qualitative appraisals concerning trends and needs together with the regional experts would be needed in order to allow for a meaningful discussion of hypotheses.

- The results obtained so far have serious shortcomings but show that with this approach it will be possible to address the issues outlined at the beginning of the study.
- After having tested some preliminary elements of the outlined assessment tool, we guess that the features of a well developed assessment tool of this kind could be the following:
 - A description of the model and procedure that is understandable for administrators at all levels
 - Easily updateable basic data for all regions in a publicly presentable form that follows the structure of the model. Standard interpretations (which improve with the number of case studies) of these data for each region in terms of strengths, weaknesses, opportunities and threats for regional development from a European perspective.
 - Questionnaires and evaluation software for including qualitative appraisals of regional experts into the regional model
 - Questionnaires, workshop guidelines and evaluation software for carrying out the impact assessment of hypothetical policy packages.
 - Carrying out a good regional case study on this basis could take about 10 working days for a researcher + 2 days for 6 regional experts. The result would not only be the test of CTP policy packages but also a validated regional model on these issues and possibly a shared view of the participating decision makers.
 - A typology of regions that allows a rough impact estimate for those regions where no case study with local experts has been carried out.

Assessing the probable impact of a raise of transport costs and of changes in infrastructure policy

- A typology of regions will be feasible only after having completed, formalised and tested the complete assessment framework.
- Two basic policy packages for testing basic alternatives in CTP have been proposed.
- An actual assessment of different CTP policies was not yet possible in the framework of this preliminary study.

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