

Question 4:

## LEISURE, TOURISM AND COMMUTER MOBILITY

**How are mobility and the development of regional structures connected?  
What solutions are there to fast growing leisure, tourism and commuter mobility?**



Nicole Ackermann, Helmut Hiess, Claire Simon,  
Christoph Schreyer, Andrea Weninger, Mario  
Zambrini

Vienna, Zurich, Milano, Grenoble 22 March 2006

---

## TABLE OF CONTENTS

<b>1 Introduction .....</b>	<b>4</b>
<b>2 The connection between transport system, mobility and the development of regional structures.....</b>	<b>5</b>
2.1 Work plan and methods.....	5
2.2 Results.....	8
2.2.1 Accessibility as key indicator .....	8
2.2.1.1 The Alpine region in Europe.....	9
2.2.1.2 Accessibility within the Alps .....	9
2.2.1.3 Long term accessibility development .....	13
2.2.2 Theoretical approaches and empirical evidence .....	16
2.2.2.1 Economic approaches.....	18
2.2.2.2 Land use and spatial structure.....	24
2.2.2.3 Summary State of Theory .....	27
2.2.3 The case of the Alps.....	28
2.2.4 State of Practice .....	31
2.2.4.1 Impact Assessment (SEA, EIA).....	31
2.2.4.2 Ex-post analysis .....	33
2.2.4.3 Location requirements of companies.....	37
2.2.4.4 Regional rankings .....	39
2.2.4.5 Summary State of Practice.....	39
2.2.5 Spatial and transport policy instruments.....	40
2.2.5.1 Strategies, Plans, Overall Concepts.....	40
2.2.5.2 Legal instruments: laws, ordinances.....	42
2.2.5.3 Summary Policy Instruments .....	43
2.3 Synthesis and Conclusions .....	43
2.4 Recommendations.....	45
<b>3 Best Practice Examples .....</b>	<b>48</b>
3.1 Working Programme and methods.....	48
3.2 Synthesis of investigation .....	53
3.3 What kind of projects can be successful?.....	55
<b>4 Relations to other questions of the project, description of synergy potentials .....</b>	<b>57</b>
4.1 The connection between transport system, mobility and the development of regional structures .....	57
4.1.1 Question 1: Regional value added.....	57

4.1.2 Question 2: Governance capacity .....	57
4.1.3 Question 3: Protected areas .....	58
4.1.4 Question 5: New forms of decision making.....	58
4.1.5 Question 6: Impact and further development of policies and instruments .....	58
4.2 Best Practice Examples .....	59
4.2.1 Question 1: Regional value added.....	59
4.2.2 Question 2: Governance capacity and Question 5: New forms of decision making .....	59
4.2.3 Question 3: Protected areas .....	59
<b>5 New or open questions.....</b>	<b>60</b>
5.1 The connection between transport system, mobility and the development of regional structures .....	60
5.2 Best Practice Examples .....	61
<b>6 References.....</b>	<b>62</b>
<b>Annex 1: List of Publications filled in the Online database.....</b>	<b>64</b>
<b>Annex 2: List of the Best Practice Examples filled in the Online database... </b>	<b>66</b>
<b>Annex 3: List of the original material concerning the publications and Best Practice Examples deposited on the Online Platform for Documents .....</b>	<b>69</b>
<b>Annex 4: Original Material concerning the Publications and Best Practice Examples (Hard Copies) .....</b>	<b>71</b>
<b>Annex 5: Definitions of key Terms of the Question 4 (Reassessed and completed glossary) .....</b>	<b>72</b>
<b>Annex 6: List of potential future Members of the Network 'enterprise Alps'75</b>	
<b>Annex 7: List of ongoing research projects on the question 4 filled in the form of the ISCAR-database .....</b>	<b>77</b>
<b>Annex 8: National Report Italy .....</b>	<b>77</b>
<b>Annex 9: National Report Switzerland.....</b>	<b>77</b>

## 1 INTRODUCTION

Transportation is estimated as one of the key issues in the Alps. Transport infrastructure has strong impacts on spatial structures. Goods and passenger transport in and across the Alps play an important role in regional and national economy. Transportation is a key aspect of alpine tourism. Transport causes air and noise pollution and leads to negative impacts on environment and human beings. Therefore transport policy is one of the hot spots of the Alpine Convention.

At the moment, discussions on alpine traffic are dominated by transit traffic issues, although internal traffic represents a higher percentage of total alpine traffic: whereas the traffic volume (vehicle-kilometres) of transit traffic is only 8%, tourism and leisure traffic covers 20% and inner alpine traffic 72% of the total Alpine traffic volume. Therefore, leisure and tourism mobility as well as commuter mobility should be further discussed.

Future in the Alps intends to find solutions for the negative economic, ecological and social impacts of the permanently increasing traffic volume and focuses on good practice examples for regional mobility concepts.

**Question 4 contains two tasks:**

**a) Task 1: To highlight the connection between mobility and the development of regional structures**

Future in the Alps is to gather and process current knowledge on the subject of mobility in the Alps, focusing on the question of how mobility and the development of regional structures in the alpine region are connected: good accessibility is not always a decisive factor for prospering regions. What is the contribution of accessibility to regional welfare? Under which circumstances are other local factors more important? Answering this question could bring up new arguments for the discussion about transport infrastructure projects in the Alps. Task 1 is to collate existing knowledge throughout the Alps.

**b) Task 2: To raise the awareness of key players and the general public for sustainable mobility solutions**

Future in the Alps is to gather examples of good practice within and outside the Alps involving leisure, tourism and commuter mobility. What do successful formulas for 'a slower pace' look like? How can key players and the general public be made more

aware of sustainable mobility solutions? The project aims to use this knowledge to bring about changes in behaviour among key players in politics and administration, planners and the general public, and to contribute towards improving the significance of sustainable forms of mobility in the Alps. The examples will be processed and published throughout the Alps.

## 2 THE CONNECTION BETWEEN TRANSPORT SYSTEM, MOBILITY AND THE DEVELOPMENT OF REGIONAL STRUCTURES

### 2.1 WORK PLAN AND METHODS

The connection of mobility and regional development is an issue of general interest. Theoretical approaches and empirical studies are not focused on landscape types like the Alps. Therefore we started to look through the literature of the last five years as regards the topic in general and we tried to find out if some results for the case of the Alpine regions can be conducted.

In the beginning it is necessary to clarify some basic definitions.

- mobility means the behavioural aspects of the user of the transport system,
- transport system contains infrastructural and organisational aspects of transport,
- Accessibility is an indicator which combines the transport system with the mobility opportunities.

The meaning and the usage of the terms are not always exactly the same in literature. For example the terms transport system and accessibility are often used synonymously. Another clarification regards the meaning of connection, relation or interrelation. As regards the connections between mobility / transport system / accessibility and regional development it can be distinguished between (IASON, 2004):

- Direct effects = effects on behavioural mobility choice (route choice, mode choice, departure time choice and destination choice).
- Direct network effects = effects on behavioural mobility choice of network users, who are not users of the network part to which the measure applies.
- Indirect effects = effects outside the transport market as the result of transport initiatives including the changes in output, employment and residential population

---

at particular locations implied by the choices above.

- Indirect network effects = effects on the transport network of choices made in those other markets (land and property markets, the labor market, product market and the capital market), as a result of generalised cost brought about by a transport policy.

The indirect effects are also known as “wider economic”, “feed back”, “spin off” or “induced by” effects of transport policies.

Our work is focused on the indirect effects of the transport system which highlight the effects of the transport system on regional development. We tackled the task from three different viewpoints:

- (1) Theoretical and empirical results of research.

Here we tried to report the state of the art and the ongoing discussion.

We analysed the literature of the last five years and looked at specific older studies referred to frequently in the recent works. We did not restrict the search for studies to the Alpine space. On the one hand most of the studies are not dedicated to special types of space and on the other hand most of the results are transferable between different types of space. We found some studies which highlight the relation of transport system and regional development in the Alpine space but no research results are available which compare this relation between Alpine / mountain areas and other areas.

- (2) The implemented policy and consultancy instruments dealing with this connection.

Here we tried to report the state of practice.

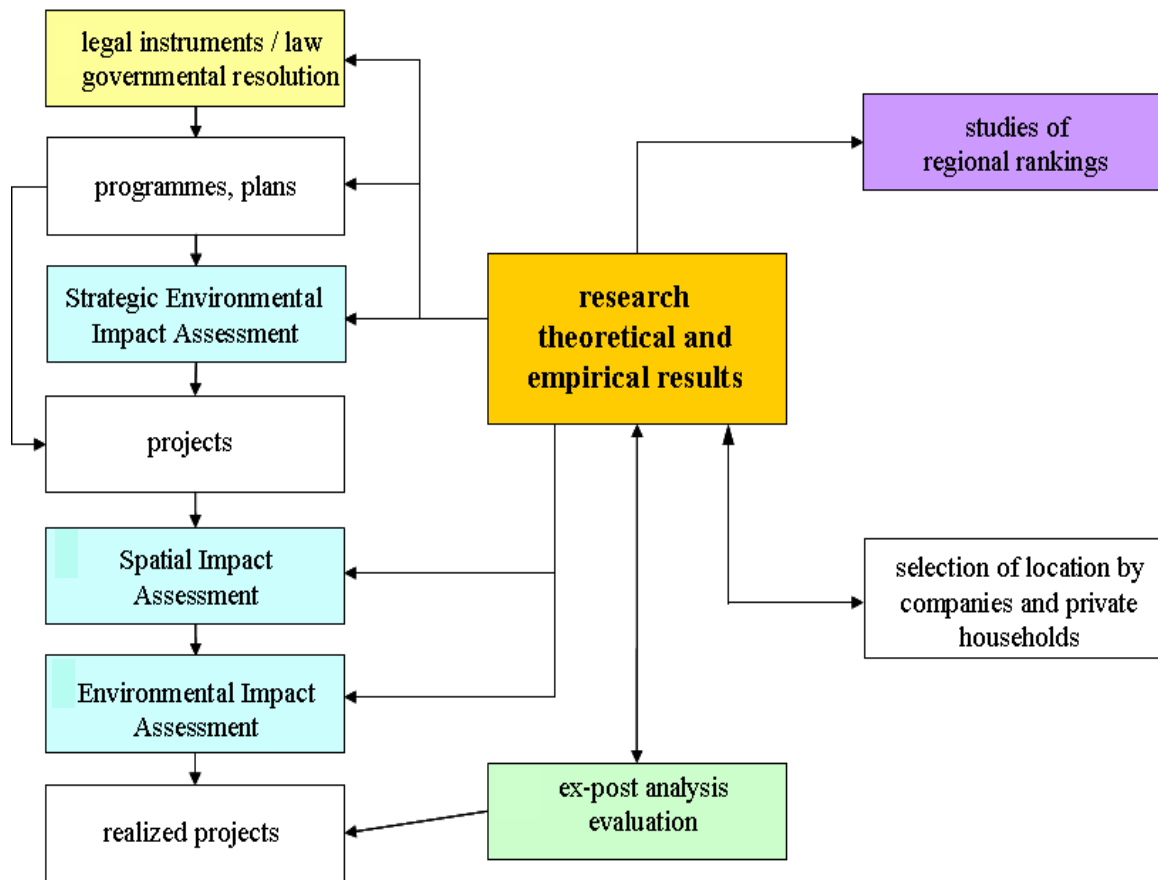
We looked at the state of practice of impact assessment tools, available studies on location requirements of companies and regional rankings of bench markings. In particular to regional rankings and location studies there is no free access because most of this material is carried out on behalf of private clients.

- (3) Spatial and transport policy instruments

Here we tried to provide the state of practice and selected “good practice”.

We looked at forced legal instruments, strategies, plans and overall concepts on the European and national level. It was not possible to evaluate strategies, plans and concepts on the regional level because of time and budget constraints. Good practice has to provide binding statements to the connection between transport system and spatial development.

Figure 1: Sources and documents for the interaction between mobility, transport system and regional structures



## 2.2 RESULTS

In the last ten years we recognized an intensive research on the relation between transport system, mobility and regional development. On the one hand in the 4<sup>th</sup> and 5<sup>th</sup> research programme of the European Union some projects dealt with this question with a focus on the impacts of the TEN (Trans European Network) on cohesion goals and the possible contribution to economic growth. On the other hand the impacts of transport infrastructure on cultural landscape, peripheral rural areas and alpine regions became a matter of interest. All these studies highlight the complexity of the interrelation between spatial and regional development and transport infrastructure. In contrary to the scientific and expert discussion the interrelation between infrastructure development and regional competitiveness is used as killer argument in public debates on new infrastructure projects. Infrastructure investments are simply justified by the hint to the growing competition of locations even if there are negative environmental impacts (exhaust gases, greenhouse effect, noise pollution) and undesirable mode shifts from railway or waterway to road transport. In the following chapters we try to provide arguments between the simplicity of killer arguments and the complexity of the scientific debate.

### 2.2.1 Accessibility as key indicator

Accessibility is a key indicator for the relation between transport system, mobility and spatial structure. The spatial structure of a region determines the distribution of activities in space. Activities take place at locations. The transport system makes the locations accessible. Locations with high accessibility are more attractive than less accessible ones. This is the basic transportation feed back cycle. Therefore accessibility is seen as an important indicator describing regional development potentials. Accessibility indicators mostly are expressed by population or economic potential (accessible inhabitants, workplaces or regional gross domestic product within a certain time). There are various options to define and calculate accessibility. Normally the purpose of the research determines the accessibility indicator selected. Therefore it is important always to look at the definition of accessibility and the calculation schemes used.

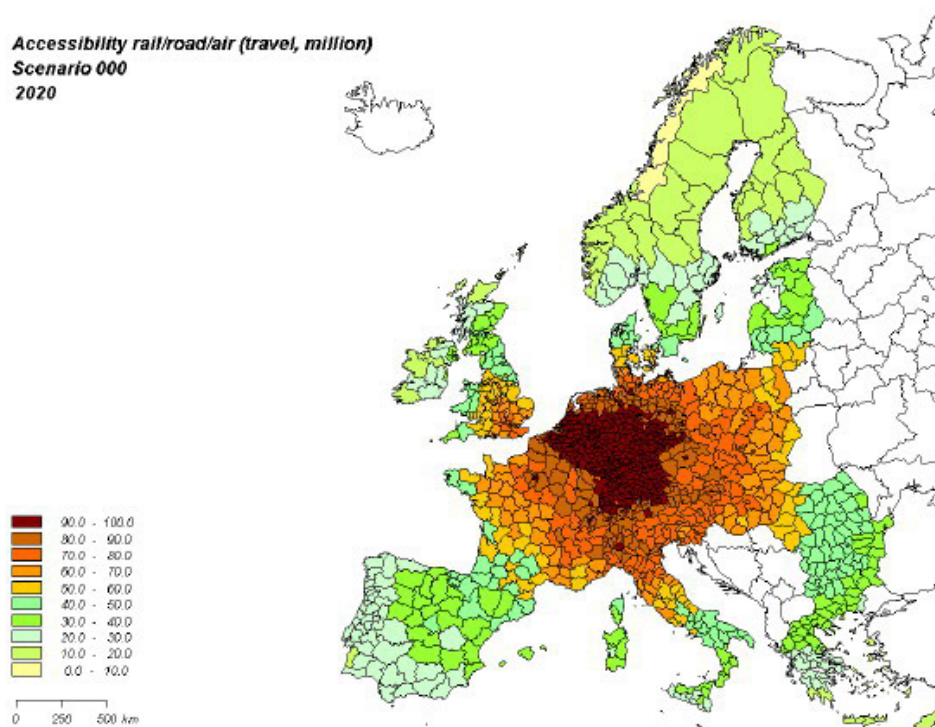
Before looking at the state of the art of theory and the state of practice we present the latest studies on accessibility in Europe and in the Alpine regions in particular.



### 2.2.1.1 The Alpine region in Europe

In the IASON-Project (Integrated Assessment of Spatial Economic and Network Effects of Transport Projects and Policies) the status of accessibility in Europe is shown.

Figure 2: Accessibility Rail / Road, Reference Scenario 2020



Source: IASON, 2004

Figure 2 shows the familiar pattern of the highly accessible European core. The Alpine regions belong to this core. In this respect most of the Alpine regions are not peripheral in Europe.

### 2.2.1.2 Accessibility within the Alps

The project REGALP analysed the accessibility within the Alpine region in 1995 and 2020 (inclusive the TEN<sup>1</sup> / TINA<sup>2</sup> infrastructure projects). REGALP shows a wide disparity of accessibility within the Alpine regions. In general, accessibility is higher in the Alpine border regions than in the inner parts of the Alps.

<sup>1</sup> TEN ... Trans European Network

<sup>2</sup> TINA ... Transport Infrastructure Needs Assessment

Table 1: 3 hours accessibility in 1995: the top and the last five regions

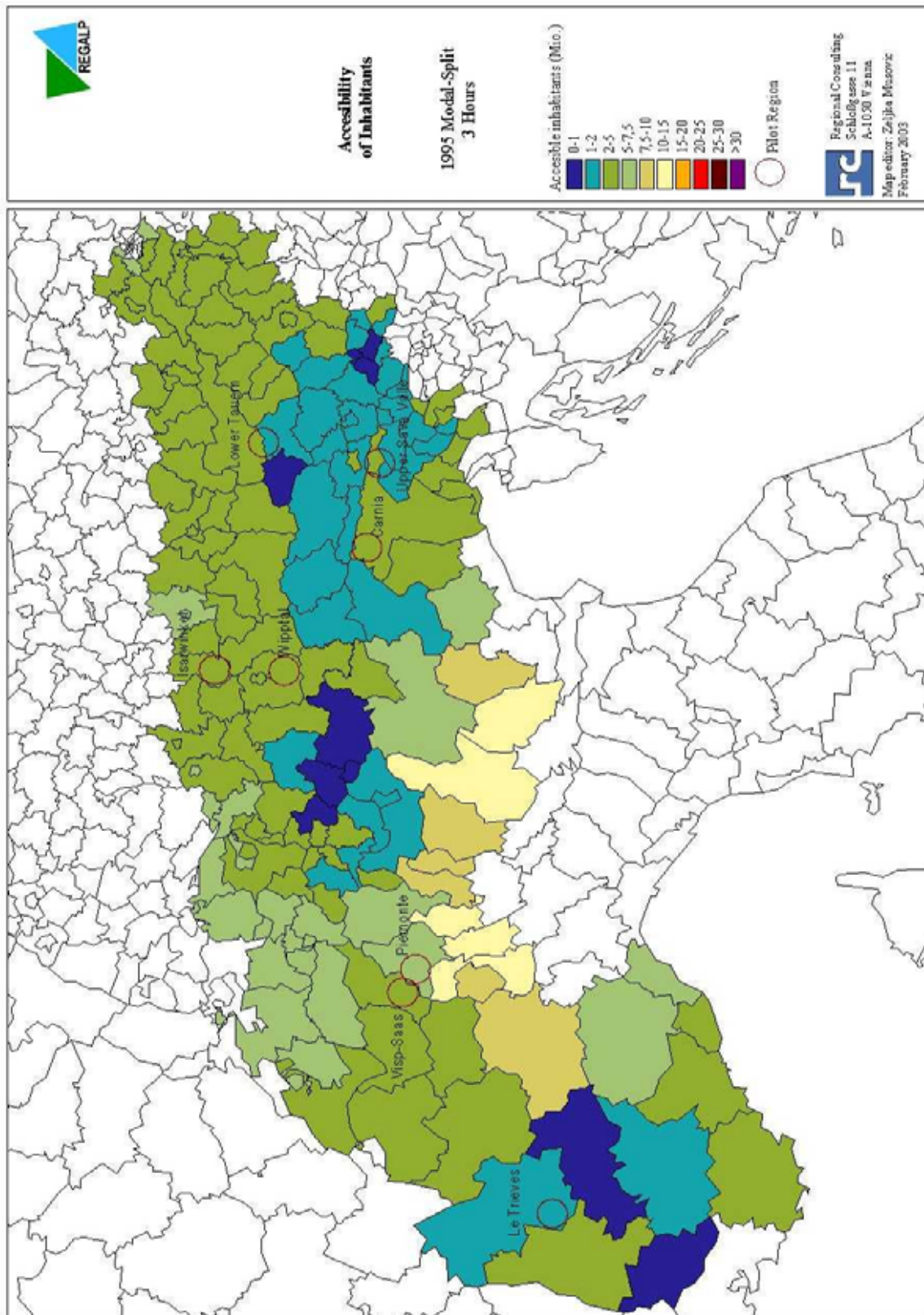
Administrative Unit	Inhabits Accessible in Mio. <sup>1)</sup>	Index
Novara	11,23	100
Brescia	11,04	98,4
Verona	11,00	98,0
Vercelli	10,93	97,3
Varese	10,82	96,4
Ravne na Karoškem	0,55	0,9
Vaucluse	0,47	0,7
Inn	0,40	0,5
Hautes Alpes	0,36	0,3
Val Müstair	0,12	0,1

Source: REGALP, 2003

- 1) Accessibility is defined as accessible inhabitants within a travel time of three hours. Following the law of LILL (1989) the frequency of trips depends on distance (travel time). The number of trips decreases along increasing travel time. To model this relation an impediment function has been used derived from empirical studies. All modes of traffic (car, train, and plane) have been taken into account.

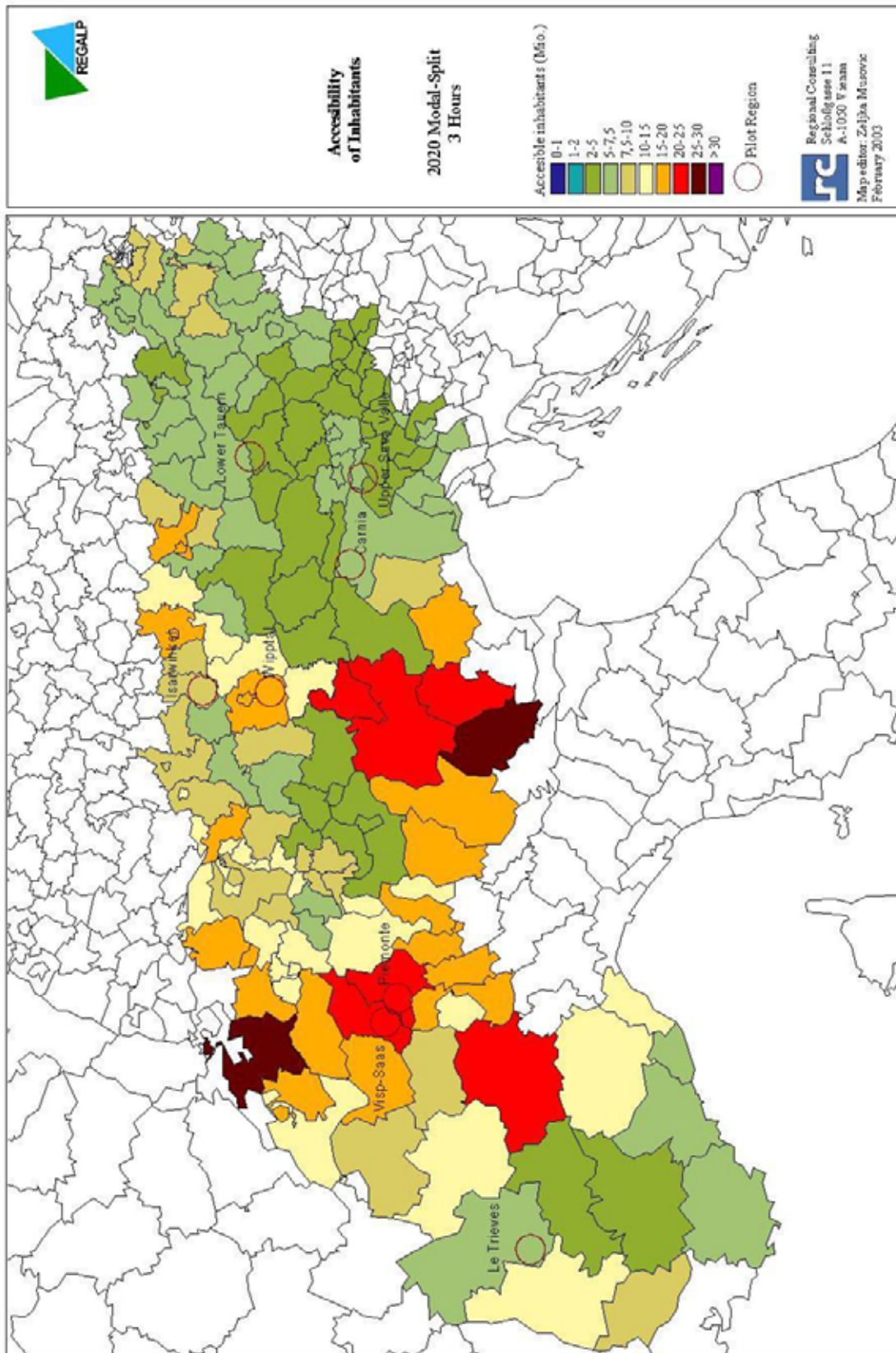
Between 1995 and 2020 accessibility will increase significantly, especially if the high speed railway projects along the Brenner, Lötschberg-Simplon, Gotthard-axis, Mt. Cenis and San Bernardino corridors are realised. The average 3 hours accessibility in the Alps rises from 3,7 Mio. inhabitants to 9 Mio. inhabitants. Due to the high speed railway projects, accessibility will mainly increase around the nodes of high speed corridors.

Figure 3: 3 hours accessibility 1995 (classification of groups comparable to 2020)



Source: REGALP 2003

Figure 4: 3 hours accessibility 2020



Source: REGALP 2003

### 2.2.1.3 Long term accessibility development

HIESS et al analysed the long term development of accessibility in Austria from 1830 to 2020. The accessibility is defined and calculated similarly to the REGALP projects. The main results are as follows:

- The average accessibility is 30 times higher today than 1830 (referring to accessible inhabitants within 3 hours travel time).
- The average accessibility will increase due to the TEN/TINA and cheaper flight fares in the same amount from 1995 to 2020 as from 1830 to 1995.
- The growing accessibility corresponds with increasing disparities between regions in absolute terms while decreasing in relative terms.

Important for the rural areas is the fact that motorisation and local road network support cohesion effects while the railway system and high speed networks favour the regions with existing high accessibility. Due to the concentration on European Networks the disparities will increase again in the next years.

Table 2: Relation of accessibility between best and worst accessibility region

Accessibility	1830	1910	1955	1995	2020
3 hours	56,4 <sup>1)</sup>	104,7 <sup>1)</sup>	80,5 <sup>1)</sup>	5,4 <sup>1)</sup>	7,1 <sup>1)</sup>

1) The accessibility of the best region is 56,4 times higher than in the worst region.

Source: HIESS et al: Verkehr und Kulturlandschaft, Wien, 1999

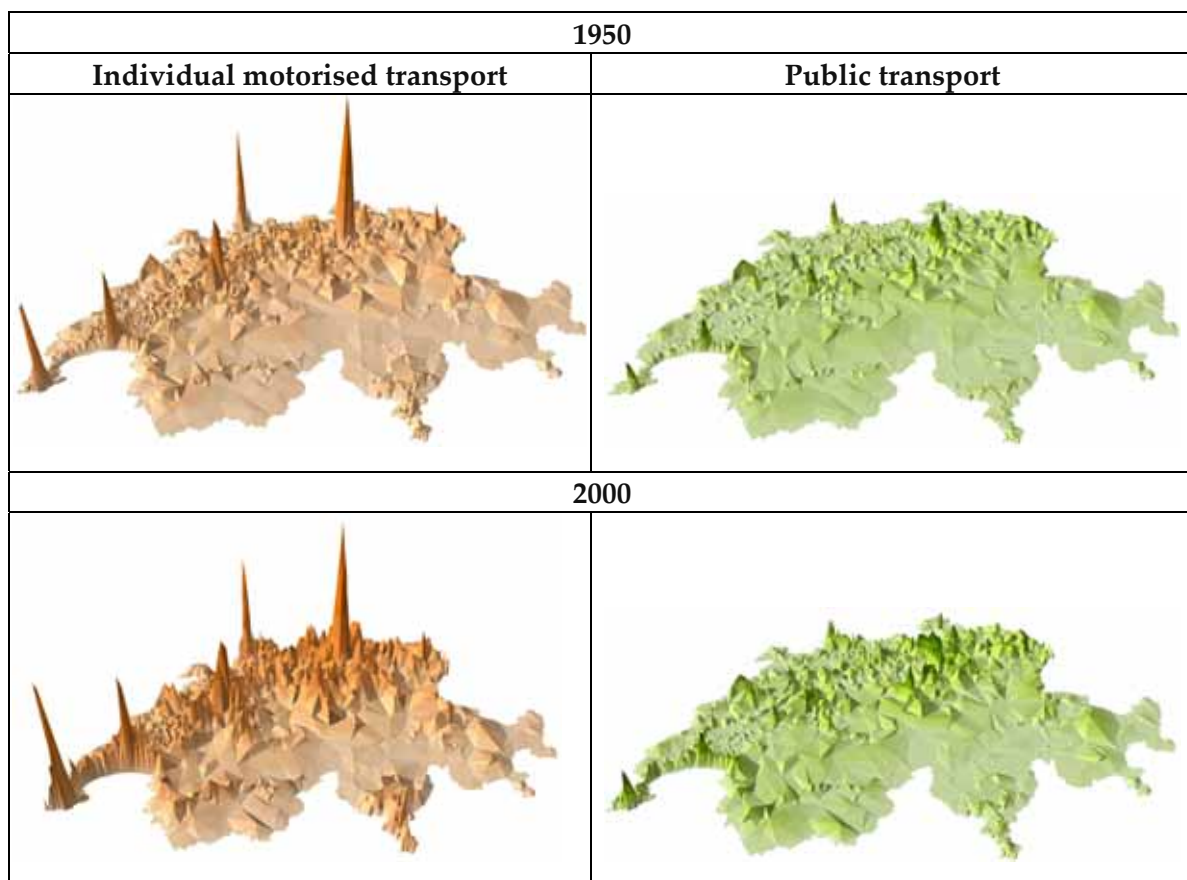
FRÖHLICH et al. (2005) analysed the development of accessibility patterns in Switzerland during the last 50 years. [Accessibility is defined as accessible inhabitants calculated with a time-distance loading factor. The same empirical sources are used as in the REGALP-model but public transport and passenger car accessibility is calculated separately.]

The accessibility of Swiss municipalities has changed substantially in the last 50 years due to the extension of the road network, improvements of the public transport system and population growth.

The extension of the motorway network combined with the population growth after 1950 results in a significant increase of accessibility. Although population numbers of large cities decreased, negative effects on accessibility were compensated by an increase of travel speeds as well as by growing population numbers in the agglomeration of larger cities. The period between 1960 and 1970 shows the biggest increase of accessibility of individual motorised transport due to the finalisation of

major motorway sections and the improvement of vehicle technology (+4,5%). In public transport the introduction of synchronised timetables in the 80ies led to the highest increase of accessibility (+2,1%). The ratio between motorised individual transport accessibility and public transport accessibility remained constant at around 1,3–1,4, meaning that motorised individual traffic accessibility is around 30-40% higher than public transport accessibility. The following figure gives an overview on development of accessibility in Switzerland between 1950 and 2000:

Figure 5: Accessibility for motorised individual transport and public transport 1950 and 2000



Source: FRÖHLICH et al. 2005

Compared to a topographic map of Switzerland the figure shows that accessibility of both, motorised individual transport and public transport increased mainly in the agglomeration of the larger cities and along the roads and railway links between them. In alpine areas only minor accessibility increases could be achieved. Mainly larger tourist destinations like Zermatt and St. Moritz profited from this development. Accessibility is significantly lower in alpine areas compared to the cities, agglomeration and the midland.

The following figures show the changes of accessibility of individual motorised transport between 1950 and 2000. The dark areas show high accessibility gains whereas the light grey areas show smaller increases of accessibility compared to the average development:

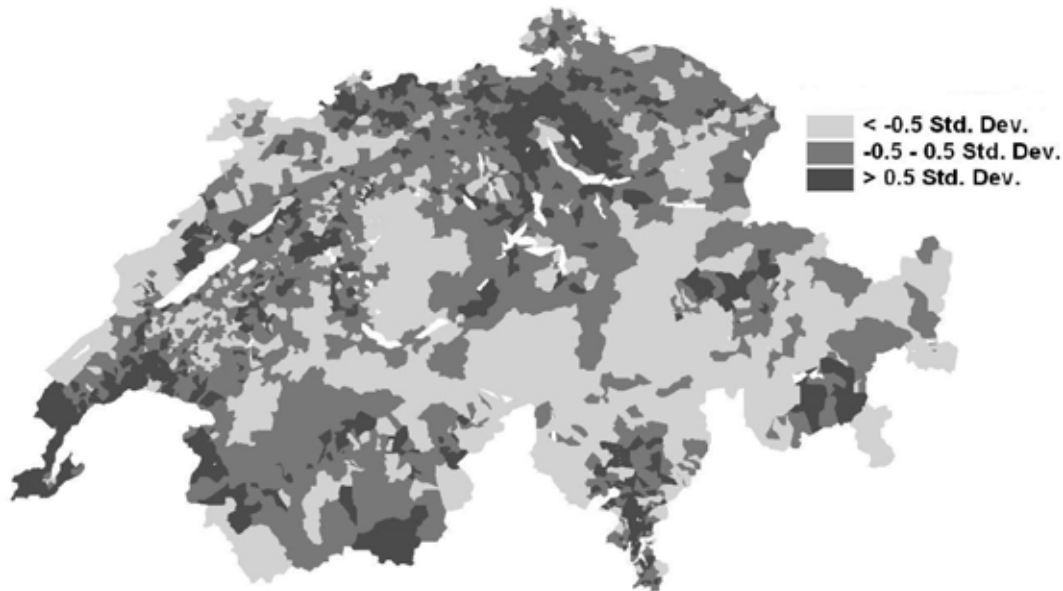
Figure 6: Ratio of accessibility of motorised individual transport between 1950 and 2000



Source: FRÖHLICH et al. 2005

For public transport similar calculations were made. The picture below shows that in the Alps mostly large tourist destinations profit the most of increased public transport accessibility.

Figure 7: Ratio of accessibility of public transport between 1950 and 2000



Source: FRÖHLICH et al. 2005

### 2.2.2 Theoretical approaches and empirical evidence

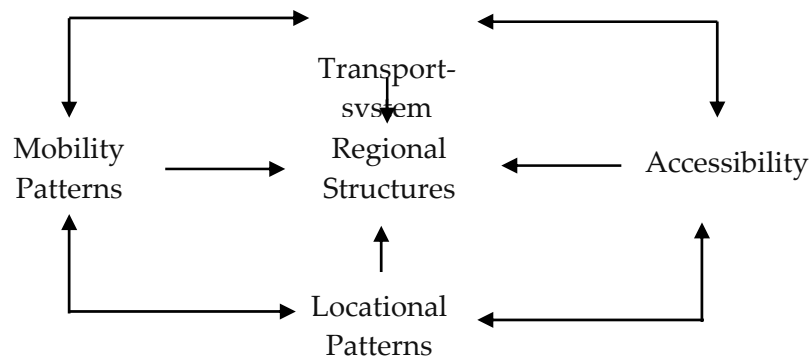
Human development takes place in space and time. It all started with walking and carrying. “Progress” has always meant an increase of opportunities and a pushing back of the frontiers for human activities. The creation of new opportunities in time and space has short term impacts on mobility behaviour by allowing different choices of transport modes and routes and long term impacts on spatial patterns by a reallocation of housing, production and reproduction facilities.

These changes of spatial patterns affect not only the spatial structure and the economic performance, but also produce, like a feed back loop, new requirements to the infrastructure itself. The societal reactions to enhancement of level of services, or by technological inventions and innovations, again create new opportunities and revisions of spatial and mobility patterns.

The interaction between mobility, transport system and regional structures is illustrated in Fig. 2 in a very simplified model:

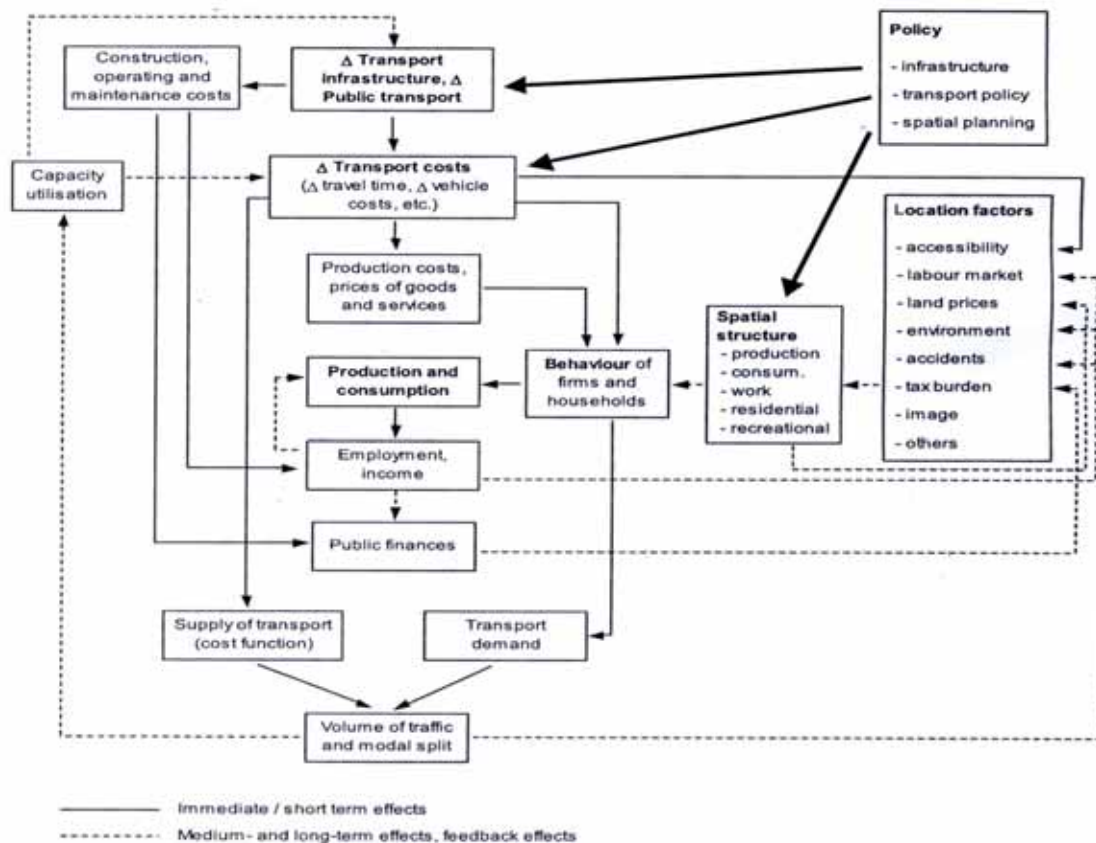


Figure 8: Interaction between mobility, transport system and regional structures



A more sophisticated illustration of the various interactions between transport system and regional structures is shown in Fig. 6. Figure 6 emphasises the complexity of the systemic relations and interactions.

Figure 9: Transport – Economy Outcome Model in Detail



Source: ECOPLAN, Büro Widmer: Wirkungsketten Verkehr Wirtschaft (Interaction between transport and the economy), Forschungsauftrag SVI 1999/310, Schlussbericht, Altdorf und Frauenfeld, 2004

### 2.2.2.1 Economic approaches

Most theoretical approaches try to explain the impacts of transport infrastructure changes on the regional socio-economic development. Two general approaches are applied in current research to measure these effects. ECOPLAN (2004) identifies:

- The aim of the **macroeconomic approach** is to estimate the influence of transport infrastructure on economic development (e. g. of GDP) using statistical, mainly econometric, procedures without resorting to a comparison of costs and benefits.
- The aim of the **microeconomic approach** is to uncover the individual economic effects of improved transport provision. A comparison is made between construction and operation costs of the transport infrastructure and the benefits for the transport market. These are based on the effects on individual road users, firms and households (cost-benefit analysis). Such analyses allow the extrapolation of a net effect for the entire economy.

Within the macroeconomic general approaches a broad spectrum of theoretical approaches originating from different scientific disciplines and intellectual traditions exists. These approaches presently coexist, even though they are partially in contradiction (LINNECKER, 1997):

- **National growth approaches** model multiplier effects of public investment in which public investment has either positive or negative (crowding-out) influence on private investment, here the effects of transport infrastructure investment on private investment and productivity. In general only national economies are studied and regional effects are ignored. Pioneered by ASCHAUER (1989; 1993) such studies use time-series analyses and growth model structures to link public infrastructure expenditures to movements in private sector productivity. An increase in public investment raises the marginal product of private capital and provides an incentive for a higher rate of private capital accumulation and labour productivity growth. Critics of these approaches argue that there may be better infrastructure strategies than new construction and that policy measures aimed at increasing private investment directly rather than via public investment will have greater impact on national competitiveness.
- **Regional growth approaches** rest on the neo-classical growth model which states that regional growth in GDP per capita is a function of regional endowment factors including public capital such as transport infrastructure, and that, based on the assumption of diminishing returns to capital, regions with similar factors should experience converging per-capita incomes over time. The suggestion is that, as long as transport infrastructure is unevenly distributed among regions, transport

infrastructure investments in regions with poor infrastructure endowment will accelerate the convergence process, whereas once the level of infrastructure provision becomes uniform across regions, they cease to be important. Critics of regional growth models built on the central assumption of diminishing returns to capital argue that they cannot distinguish between this and other possible mechanisms generating convergence such as migration of labour from poor to rich regions or technological flows from rich to poor regions.

- **Production function approaches** model economic activity in a function of production factors. The classical production factors are capital, labour and land. In modern production function approaches infrastructure is added as a public input used by firms within the region (JOCHIMSEN, 1966; BUHR, 1975). The assumption behind this expanded production function is that regions with higher levels of infrastructure provision will have higher output levels and that in regions with cheap and abundant transport infrastructure more transport-intensive goods will be produced. The main problem of regional production functions is that their econometric estimation tends to confound rather than clarify the complex causal relationships and substitution effects between production factors. This holds equally for production function approaches including measures of regional transport infrastructure endowment. In addition the latter suffer from the fact that they disregard the network quality of transport infrastructure, e.g. treat a kilometre of motorway or railway the same everywhere, irrespective of where they lead to.
- **Accessibility approaches** attempt to respond to the latter criticism by substituting more complex accessibility indicators for the simple infrastructure endowment in the regional production function. Accessibility indicators can be any of the indicators discussed in SCHÜRMAN et al. (1997), but in most cases are some form of population or economic potential. In that respect they are the operationalisation of the concept of 'economic potential' which is based on the assumption that regions with better access to markets have a higher probability of being economically successful. Pioneering examples of empirical potential studies for Europe are KEEBLE et al. (1982; 1988). Today approaches relying only on accessibility or potential measures have been replaced by the hybrid approaches where accessibility is but one of several factors of regional economic growth. Also accessibility indicators used have become much more diversified by type, industry and mode (see SCHÜRMAN et al., 1997).
- **Regional input-output** approaches model interregional and inter-industry linkages using the LEONTIEF (1966) multiregional input-output framework. These models estimate inter-industry/interregional trade flows as a function of transport cost and

a fixed matrix of technical inter-industry input-output coefficients. Final demand in each region is exogenous. Regional supply, however, is elastic, so the models can be used to forecast regional economic development.

- **Trade integration approaches** model interregional trade flows as a function of interregional transport and regional product prices. PESCHEL (1981) and BRÖCKER and PESCHEL (1988) estimated a trade model for several European countries as a doubly-constrained spatial interaction model with fixed supply and demand in each region in order to assess the impact of the economic integration of Europe in terms of reduced tariff barriers and border delays between European countries. Their model could have been used to forecast the impacts of transport infrastructure improvements on interregional trade flows. If the origin constraint of fixed regional supply were relaxed, the model could have been used also for predicting regional economic development. KRUGMANN (1991) and KRUGMANN and VENABLES (1995) extended this simple model of trade flows by the introduction of economies of scale and labour mobility (New Geographic Economy).

In our opinion in particular the approach of the New Geographic Economy (KRUGMANN 1991) is a fruitful one because it can explain the development of regional disparities and distributional effects in relation to the development of the transport system.

ECOPLAN / WIDMER see “the advantage of the macroeconomic approach in the fact that the growth-induced effects on employment, income and rents (land prices) can be derived via the estimated GDP effects. Where it falls short is in relation to proving causality, e.g. whether changes in the transport infrastructure are responsible for changes in economic growth” (ECOPLAN / WIDMER, 2004). However, this approach is well suited for long time and large scale ex-post analysis of the connection between transport system and regional development.

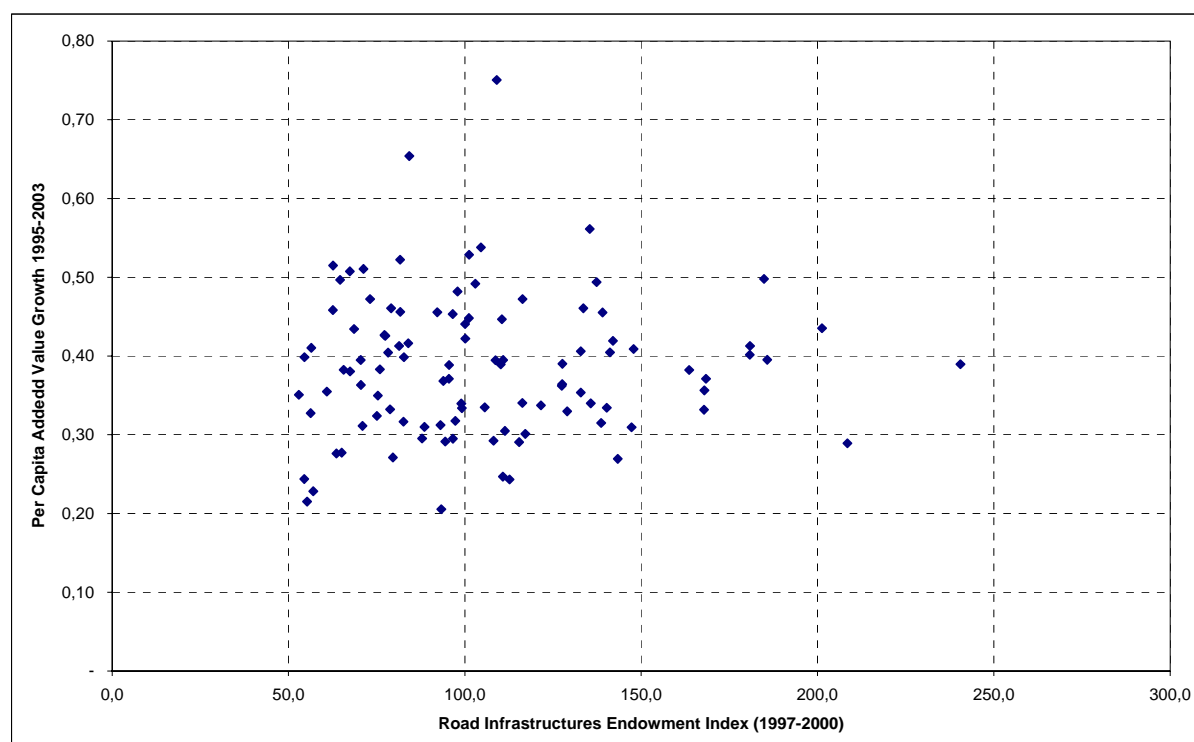
“The microeconomic approach, on the other hand, enables individual effects to be identified. On the benefit side, this concerns savings in relation to time and transport costs, which generally represent the main benefits, and major construction, operation and maintenance expenses on the cost side. In addition, this approach may reveal other effects, for example in relation to accidents and the environment (damage due to noise and air pollution). However, it is not sure whether this approach covers all the effects of transport infrastructure or whether it omits other induced effects, in particular, additional positive or negative growth effects, known in the literature as “wider economic effects”” (ECOPLAN / WIDMER 2004). The microeconomic approach is

reflected in the Cost-benefit-analysis as standard assessment tool for infrastructure projects. In this case the impacts of transport systems on regional development are assessed ex ante. However, the microeconomic approach fails to recognize distributional effects and to explain regional disparities.

While there is reasonable evidence based on empirical studies that there is a positive relation between accessibility and economic performance, there is little evidence of links between accessibility and regional development.

Fig. 10 for example shows that no correlation between road infrastructure endowment and per capita added value growth in Italian regions can be found:

Figure 10: Connection between Road Infrastructure Endowment and Added Value Growth / Capita

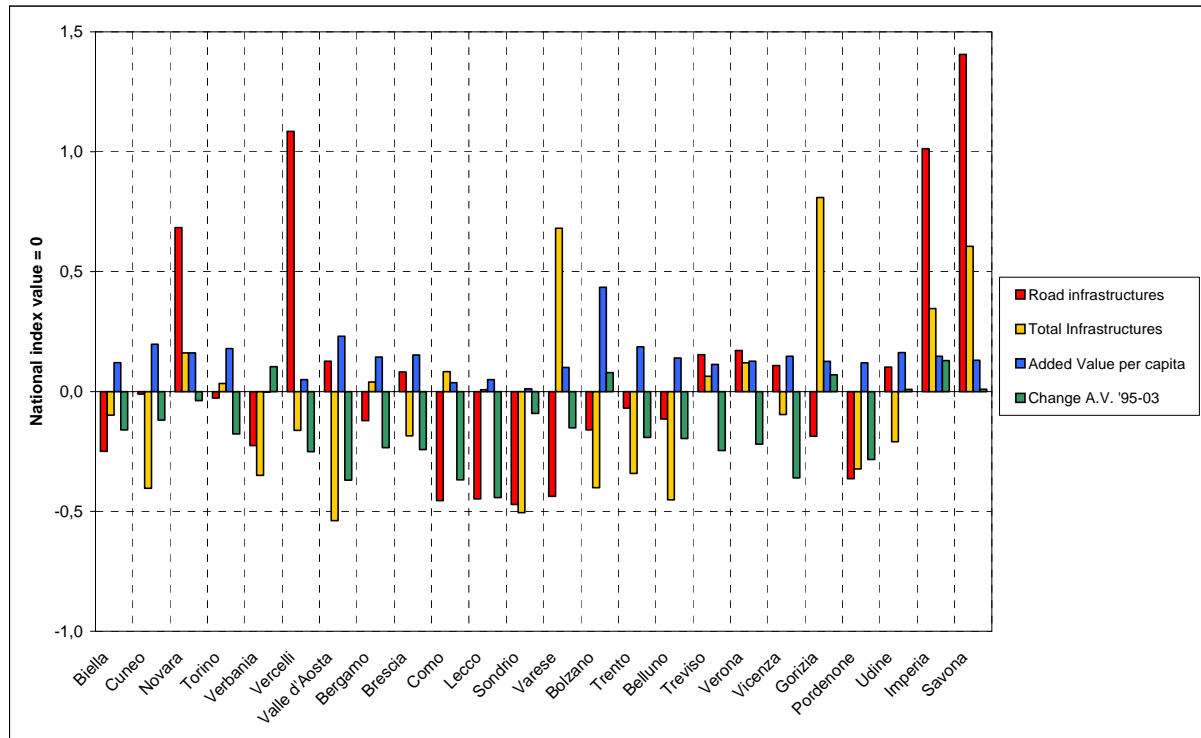


Source: ZAMBRINI M.: Connection of Accessibility and Regional Development, National Report Italy, 2005

The figure represents the connection between the infrastructural facilities of Italian regions (indicator relating to the 1997-2000 road infrastructures) and the increase in per capita revenue recorded, in the same regions, between 1995 and 2003 (elaboration of the 2001-2003 data from the Istituto Guglielmo Tagliacarne). The absence of any noteworthy correlation is also confirmed in connection with other indicators, whether infrastructural or economic.

In particular many alpine provinces rank above the average per capita revenue rates, but below the average infrastructural facility indices:

Figure 11: Infrastructure facilities and Added Value per capita of Italian regions totally or partially part of the alpine area <sup>1)</sup>



1) The recorded performance of Italian regions whose territory falls partially or wholly within the alpine area shows no noteworthy connection between revenue and infrastructure indicators. The bars represent the position of each region as compared to the national average (equal to 0) with regard to road infrastructures, total infrastructures (communications, education, health, etc), 2003 per capita revenue and the variation between per capital revenue between 1995 and 2003. (elaboration of the 2001 – 2003 data from the Istituto Guglielmo Tagliacarne)

Source: ZAMBRINI M.: Connection of Accessibility and Regional Development, National Report Italy, 2005

An ECMT report has acknowledged “Strategic infrastructures are necessary conditions for economic development” though “are not by themselves sufficient for that purpose” (ECMT, 1975). Another important reason is that distributional effects have to be considered in addition to the impact on economy in general. This concerns distribution among individual regions – for example central regions compared to peripheral regions – as well as within certain economic groups – for example among users of the transport infrastructure or among property owners. ECOPLAN / WIDMER state that whether a region benefits from improved transport links mainly depends on:

- other location factors (land prices, supply of workers and employment opportunities, educational opportunities etc.)

- intensity of competition on the local economy
- transport intensity of the local economy.

The distributional effects in relation to jobs, migration and competitiveness are often underestimated. In particular weak peripheral regions or social groups can be influenced negatively by the development of the transport system. Due to the special topography and the connected accessibility problems we assume a high importance of distributional effects for the Alpine regions.

Furthermore the expansion of the transport system changes the absolute and relative relation of accessibility between regions. A long term study on accessibility from 1830 to 2020 in Austria (HIESS et al.) shows that absolute disparities between regions with high and low accessibility are increasing while relatively the disparities are decreasing.

Table 3: Accessibility disparities in Austria between regions with highest and lowest accessibility

		1910	1995	2020
Accessible inhabitants within 3 hours	absolute	2,748.721	4,475.774	16,433.916
	relative	104,7 <sup>1)</sup>	5,4 <sup>1)</sup>	7,1 <sup>1)</sup>

1) The accessibility of the best region is .... times higher than in the worst region

Source: HIESS et al.: Verkehr und Kulturlandschaft. Wien. 1999

The better accessible regions profit more in absolute figures by the extension of the transport system, in particular if the extension is dominated by transnational relations.

This phenomenon has been confirmed recently in the results of the project IASON within the 5<sup>th</sup> research programme of the EU.

Aim of the IASON-project was to develop an integrated assessment of spatial, economic and network effects of transport projects and policies. In particular the TEN and TINA infrastructure program had been assessed as regards their welfare effects.

One topic was the evaluation of transport policies on the cohesion effects. The following general conclusions had been made (IASON, 2004):

- In general network policies, e.g. transport infrastructure improvements, coincide with the cohesion objective, e.g. have a tendency to favour poorer peripheral regions – in relative terms. However, in absolute terms usually the richer and more central regions gain more.
- In summary it can be concluded that many transport policies of the past had in a sense an ambiguous impact with regard to spatial distribution: though they have

contributed to cohesion, when measured in relative terms, they at the same time have also contributed to widening absolute disparities between central and peripheral regions in Europe.

These results have been confirmed again 2005 by TSCHOPP, FRÖHLICH and AXHAUSEN, who analysed the development of regional accessibility patterns within a 50-year period in Switzerland. They have demonstrated that the accessibility gap between urban regions and rural-alpine regions has accentuated within the last 50 years. Alpine regions benefit only in a limited way from the overall increased accessibility in Switzerland (TSCHOPP, FRÖHLICH, AXHAUSEN, 2005).

It can be assumed that investments in local networks equalize the opportunities between regions, while investments in transnational networks favour regions with existing good accessibility and strong economic performance.

#### 2.2.2.2 Land use and spatial structure

While there is a large body of literature concerning the economic impacts of accessibility growth, studies dealing with the impacts on land use, population development, settlement structure, tourism, agricultural cultivation or other cultural landscape indicators are very rare.

Similar to economic approaches we can distinguish between

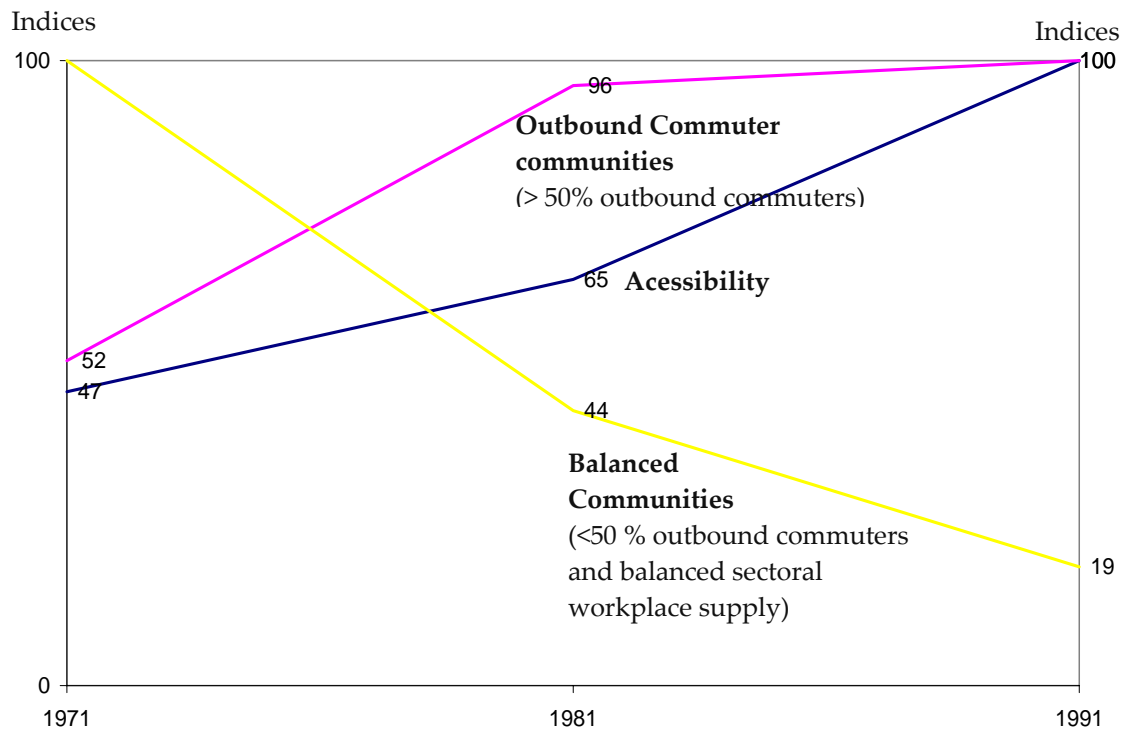
- large scale ex post analysis,
- small scale ex ante forecasts or ex post analysis.

Only few studies evaluate the relations between accessibility and spatial or landscape indicators. But it seems that there are similar patterns compared to the relationship between accessibility and economic performance. The development of infrastructure correlates to spatial and landscape indicators like full time farmers, extensification of land use or tourism in general, while no evidence for positive correlations could be found on the regional level. On the regional level HIESS et al (1999) found out positive correlation coefficients only between accessibility and detached family houses and migration. This means that distributional effects of immigration and sprawl seem to be related to growing accessibility.

Regarding the Alpine region HIESS et al looked at the relation between the development of the so called BÄTZING community types (BÄTZING, 1993) and accessibility in the Austrian part of the Alps.



Figure 12: Development of accessibility and BÄTZING community types in the Austrian Alpine region



Source: HIESS et al: Verkehr und Kulturlandschaft, Wien, 1999

Parallel to the increasing accessibility the number of balanced communities shrank while the number of commuter communities grew. Relevant spatial structural changes on the small scale community and regional level seem to accompany the growing accessibility. Against the background of the shift of workplaces from the industrial to the service sector the employees are concentrated in the central locations and the rural environs change to residential areas in between farmland and natural resorts.

TSCHOPP / FRÖHLICH / AXHAUSEN (2005) analysed the interrelation between transport system, tourism and spatial structure in alpine areas of Switzerland. Spatial structure has been characterized by population, population development and employment (2<sup>nd</sup> and 3<sup>rd</sup> sector). Tourism has been characterised by touristy facilities (capacities of cable cars and chair lifts). The authors found

- a positive correlation between accessibility development and population and employment development,
- a correlation above average in touristy areas but
- no correlation between accessibility and touristy facilities (transportation capacity of ski-lifts and cable cars).

These results indicate again that accessibility might be one of the factors for population and employment development but not the only one and not in general. As regards tourism development it is not clear whether the touristy possibilities are the cause for accessibility improvement or a better accessibility is a precondition for touristy development.

On the small scale level the connection between transport system and land use had been subject of modelling efforts in the 1970ies, when urban models were developed to offer a comprehensive and dynamic spatial and traffic forecast. But these early models failed in handling the complexity of the interactions in a proper way. Instead of comprehensive spatial models transport models were developed to simulate the impacts of predicted changes in settlement structures or planned infrastructural changes. No feed back loop between spatial structure, transport system and mobility was taken into account. But the empirical mobility research of the last thirty years indicates a connection between reduction of travel time by development of the transport system and changes in the travel and spatial behaviour of firms and households, which lead to overall constant travel time budgets accompanied by increasing trip distances. The visible structural effects of local bypasses or highway junctions near settlements, in particular the sprawl effects (detached family houses, shopping centres) emphasise this hypothesis of constant travel time budgets on the long run. This so called induced traffic is subject of recent discussions in transport research disciplines. In some ex ante-assessments of infrastructure projects the induced traffic is integrated in the traffic forecast. One method is to keep travel time constant by generating new trips consuming the savings of travel time created by the infrastructure project. An additional step deals with the assumption that new infrastructure projects generate a more dynamic spatial development in the regions directly connected to the infrastructure project. But no rules or robust numerical assessment tools are available dealing with these effects at the moment.

---

### 2.2.2.3 Summary State of Theory

The theoretical state of the art can be summarised as follows:

- The development of transport systems has positive growth effects and individual benefits on households and firms in general.
- The distributional effects in relation to jobs, migration and competitiveness are often underestimated. In particular weak peripheral regions or social groups can be influenced negatively by the development of the transport system.
- The empirical evidence on the macroeconomic level falls short in relation to proving causality because it is not possible to distinguish between transport infrastructure and other mechanism generating the same effect.
- The empirical evidence on the microeconomic level suffers by the same problems. Ex post case studies mostly prove little direct evidence of effects caused by changes in transport infrastructure or fail to prove causality.
- There is empirical evidence that the development of infrastructure affects the spatial structure in general, but the evidence is little as regards correlation on the regional level.
- The correlation between motorised accessibility and sprawl and the strong decline of accessibility disparities in the period of mass-motorisation and road network expansion lead to the conclusion that the improvement of inner regional accessibility can contribute to a stabilisation of population and prevent increasing out-migration to the central locations in the peripheral rural areas. In the Alps this phenomenon is overlapped by the establishment of decentralised touristy offers combined with the creation of new workplaces in peripheral areas.
- On the other hand it is common sense that on the very local level infrastructure investments influence the land use patterns. By-passes or highway junctions attract companies looking for locations with no areal limits and good road access.

However, there seems to be a broad consensus as regards the relation between transport system and regional development on a supra regional and on the inner regional or local level. On the regional level as regards the distributional effects between regions no simple answers can be derived from theoretical and empirical studies. Each situation has to be assessed specifically due to the unique circumstances at a certain point of time and in the light of the specific policy aims.

Another approach is not to look at the specific policy or project level. With respect to a

---

long term perspective the development of accessibility can be interpreted as a function of fundamental technological revolutions, which determine the interrelation between transport system and spatial development over long periods. In this case the spatial structures are adapted step by step to the establishment of the new transport system.

The implementation of these system changes lasts for long periods. The behavioural reactions of households and companies over time vary and sometimes change from one generation to the next (for example migration).

The last 150 years had been characterised by at least two fundamental “transportation infrastructure revolutions”: railways and motor vehicles (cars, ships, planes).

All these systems increased the spatial accessibility, but with different distributional effects. While railway, ship and plane favour a centralised node oriented development (increasing relative disparities) cars support a more equalized and decentralised development. Within each system the distributional effects depend on how much of the investment is spent on supraregional high speed, high capacity infrastructure or on inner regional, local infrastructure and feeder systems.

A next phase is appearing on the horizon by the extension of high speed rail networks, the further cost reduction of air transport and the development of the trans-European road network. This phase will increase the relative disparities again. The hypothesis is that the Alps will gain neither special advantages nor disadvantages by this development. From the point of view of the Alps there seems to be no need for new supra regional projects as regards regional development. This statement does not imply that there might be no other good reasons for infrastructure investments like environmental goals for new railway corridors through the Alps. However, long term research is needed, in particular to evaluate the distributional effects of transport system development.

### 2.2.3 The case of the Alps

The research project REGALP carried out conclusions on the interrelation between accessibility – regional development and cultural landscape (REGALP, 2004):

- (1) Lowest accessibilities in the Alps can be found in service and tourism as well as in agriculture-dominated areas. These areas can be found on high sea level. The decline of agriculture is lower than in other regional development trends.
- (2) The highest accessibilities can be found in industrial areas, which can be found on low sea level.
- (3) High accessibilities can be also observed in the balanced development trend. These

areas can be described by a strong decline of agriculture; nevertheless agriculture still plays an important role.

- (4) High accessibility and economic prosperity do not necessarily have to be connected. The areas with the highest accessibilities in the Alps are not those with the highest economic prosperity. More than 50% of the communities of the balanced development trend are characterised by economic stagnation or even crisis.
- (5) On the other hand, the economically strongest areas in the Alps only show average accessibility. These areas with average accessibility have the highest growth of population and migration, of working places and of in and out commuters as well as of residential buildings.
- (6) The second pole of economic strength in the Alps, the tourism-dominated development trend, is characterised by very low accessibilities.
- (7) Another interesting finding: the areas with the highest accessibilities – located in the Italian Alps between Torino and Verona – are characterised by a decline of inbound commuters between 1981 and 1991. So the hypotheses could be: if a weak region is well connected to strong neighbouring regions, the high accessibility level can lead to further losses of inner regional potentials (work places, companies, added value).
- (8) It turns out that accessibility is an important location-factor, but it is not the one and only. There are prospering areas with very low accessibility and there are very weak areas with very high accessibilities, as the example of the Italian Alps shows.

For the future development of the interrelation in the triangle accessibility – regional development – cultural landscape change the following estimations have been made by REGALP:

**Areas with high accessibility and strong economic performance are those with the highest potentials for future development.**

In the Alps these areas are:

- Austria: the Salzburg region, the Lower Inn Valley, the Innsbruck region, the Rhine Valley in Vorarlberg
- Germany: the Rosenheim region
- Switzerland: the Luzern region, the region east of Lausanne, the Rhone Valley in the Valais, the Ticino region

- France: the Chambéry – Grenoble region
- Italy: the Aosta Valley, the whole alpine border region from Como to Brescia, central parts of Alto Adige and the Trentino
- Slovenia: .

**Areas with low accessibility and weak economic performance are those where future crises seem to be very probable.**

In the Alps these areas are

- Austria: the whole south eastern parts of Austria (main parts of Styria and Carinthia, the regional centres excluded), Eastern Tyrol, the Upper Inn Valley and the Lech Valley
- Germany:
- Switzerland: the southern parts of the Engadin, Hinterrhein and Vorderrhein
- France: the rural areas of the whole Alpes Provencales and Alpes Maritimes
- Italy: the Valtellino and the Val Venosta, side valleys of the Val Pusteria
- Slovenia: the Mežiška Valley, the Soča Valley.

**Areas with weak economic performance cannot be improved just by enhancing their accessibility through transport infrastructure projects.**

Some typical areas with high 3h accessibility 2020 and more or less weak regional development sub-trends:

- Austria: side valleys of the Wipptal
- Germany:
- Switzerland: the Emmental – Brienz region, the Val Muestair, Goms, higher parts of the Rhone Valley in the Valais
- France:
- Italy: the whole south western part of the Italian Alps (Cottic and Ligurian Alps) with the Valle di Lanzo, Valle del Po, Valle Varaita, Valle Maira, Valle Stura; furthermore the Valle d'Ossola and the higher parts around the Como and Garda lakes,
- Slovenia: .

---

**Areas with strong economic performance will not necessarily suffer because of low accessibility in the future.**

Some typical areas with low 3h accessibility 2020 and more or less strong regional development sub-trends:

- Austria: the central Carinthian region, the Lower Inn Valley, the central Upper Austria region around Steyr
- Germany:
- Switzerland:
- France: the local and regional centres of the whole Alpes Provencales and Alpes Maritimes
- Italy: the example of Sondrio
- Slovenia: -

## 2.2.4 State of Practice

The relation between transport system and regional development is reflected in practical tools used in decision making procedures.

### 2.2.4.1 Impact Assessment (SEA, EIA)

The relation between transport systems and regional development is subject of impact assessment tools used for transport policy decision support, in particular Strategic Environmental Impact Assessments (SEA) and Environmental Impact Assessments (EIA). Traditionally the impacts of new projects, which are part of an existing network, have to be appraised. Cost-benefit analysis or cost-effectiveness-analysis are widely applied in today's practice to assess these impacts. The key factors representing economic effects are time savings for the user of the infrastructure investments. Spatial effects are rarely taken into account. Sometimes indirect effects are integrated by methods to assess the so called induced traffic; this is traffic which is newly generated by the transport investment. The integration of induced traffic in the forecast models is implicitly based on the assumption that spatial structures and mobility patterns are changed by transport infrastructure investments.

Sometimes other indirect effects concerning the relation of transport system and regional development are part of assessment procedures. In the traffic forecast models a simple feed back loop is integrated to deal with the assumption that a new infrastructure project accelerates the development of housing and industrial locations in the catchment areas of infrastructure extensions. Additional population and

workplaces are predicted and influence the traffic forecasts. But the integration of these impacts is focused on the project area and does not care about the distributional effects in the whole system. In this case the regions with new infrastructure elements always win additional inhabitants and workplaces but the possible loser regions stay invisible.

To recognise the distributional effects, networks, project bundles or transport policy bundles have to be evaluated. But at the moment there is a lack of approved methods and rules of assessment which could guide the ex ante evaluation of transport policies.

Switzerland developed an methodological approach to integrate different impacts caused by transport investments.

The Federal Roads Office (ASTRA) has introduced an indicator system for the sustainable development of road infrastructure which also addresses different aspects of accessibility and regional development (Indicator system NISTRA: Nachhaltigkeitsindikatoren für Strasseninfrastrukturprojekte, see ASTRA 2003).

The following indicators are directly connected with the question of accessibility and regional development:

- U14 (landscape and habitats)
  - Habitat fragmentation outside of settlement areas (in km, quantitative assessment)
  - View of place and landscape (qualitative assessment)
- W21 (accessibility and advantage of location)
  - Changes in travel time (qualitative assessment)
- W22 (independency/ individuality)
  - Population weighted travel time between regional centres (qualitative assessment)
- W23 (economic development)
  - Advantages and disadvantages of improved accessibility (qualitative description)
- G11 (basic supply with public and private transport services and infrastructures):
  - Population weighted travel time to the next regional centre (for rural areas)



- G12 (accessibility)
  - Attractiveness of human powered mobility (pedestrian and bike), qualitative assessment
  - Attractiveness of public transport, qualitative assessment

The different overall and sub-goals are concretised in an indicator system. This indicator system is located in an area of conflict between completeness and simplicity, between a possibly precise compilation of data and possibly reasonable expenditures to acquire the necessary data. The enumeration gives an overview of the indicator system. In order to aggregate indicators for specific infrastructure projects, an extended utility value analysis is developed which analyses the quantifiable data with the help of a cost benefit analysis and integrates also qualitative indicators.

The sustainability indicator system is an interesting approach to analyse effects and impacts of new transport infrastructure in an integral way. It has already been applied and tested in different projects. However this assessment system is a neutral instrument and the appraisal of the impacts is up to the user.

#### 2.2.4.2 Ex-post analysis

A very useful tool in order to assess impacts of (new) transport infrastructure on spatial development is an ex-post analysis. In several countries ex-post analysis of transport infrastructure can be found. The Swiss Federal Office of Spatial Development initiated in collaboration with further federal offices (Transport, Roads, Environment, etc.) a research programme with several case studies (ARE 2003). The main reason for this research programme is the obvious gap between ex-ante forecasting and planning of spatial impacts during the project phase of new transport infrastructure and the lack of in depth analysis of the actual spatial impacts of infrastructure schemes. The research programme has the following objectives:

- developing a method for analysing the actual impact of transport infrastructures,
- developing case studies in order to draw conclusions for the future from developments in the past and to test the methods developed (altogether four case studies are planned resp. published: S-Bahn Zürich, Piano di Magadino, Vereina-Tunnel, tunnel de la Vue-des-Alpes).
- developing and implementing a monitoring system, i.e. the regular observation of the spatial impact of transport infrastructure projects.

The case study on the spatial impacts of the Vereina tunnel (Canton Grisons) which connects Klosters with the Lower Engadine is of special interest because it is located in an Alpine area and leads to a substantial improvement of accessibility of the Engadine region, especially the Lower Engadine. Travel times from Zurich to Lower Engadine are reduced from around 4 hours to around 2 hours 40 minutes.

The case study suggests an indicator system in order to assess spatial impacts of transport infrastructures.

Table 4: Indicator system for the assessment of spatial impacts of transport infrastructure in rural and Alpine areas (ARE 2006)

Domain	Indicator	regional level	
		regional	local
Transport			
1. Accessibility / Competitiveness Public Transport	• travel time (absolute) for motorised individual transport from (a) cantonal centre (b) next agglomeration (c) main target markets for tourism	X	
	• number of transfers for travellers of the main tourism target markets	X	
2. Development modal split road and rail (competitiveness rail transport)	• Modal Split passenger transport	X	
	• Modal Split freight transport	X	
Economy			
3. Situation labour market key sectors / industries	• number of employees tourism and hotel and restaurant industry	X	
	• number of overnight stays	X	
4. Situation labour market in general	• number of employees	X	X
	• full time equivalents	X	X
	• number of employees with medium and higher qualification	X	
5. Added value and contention of key sectors/industries compared to other touristic regions	• average duration of stay in hotels and other sorts of lodging	X	
	• new touristic offers with supra-regional importance	X	
6. Downstream effects	• number of employees of locally oriented industries	X	
	• sales of regional agricultural products within the region	X	

7. Willingness to invest	<ul style="list-style-type: none"> <li>private investments</li> </ul>		X
8. Labour market interrelations	<ul style="list-style-type: none"> <li>number of in- and outbound commuters</li> </ul>	X	
Space / Settlements / Environment			
9. Number of inhabitants in rural areas	<ul style="list-style-type: none"> <li>Number of inhabitants of rural communities</li> </ul>	X	X
10. Decentralised concentration of settlements	<ul style="list-style-type: none"> <li>Number of inhabitants in regional centres</li> </ul>		X
11. Encroachment in historically settlement structures	<ul style="list-style-type: none"> <li>rebuilding and demolition in community centres</li> </ul>		X
12. Habitation structures	<ul style="list-style-type: none"> <li>share of second homes</li> </ul>	X	X
13. Impacts in nature and Landscape	<ul style="list-style-type: none"> <li>major construction projects (roads, touristy infrastructure and installations)</li> </ul>		
14. Construction activities outside of regular construction zones	<ul style="list-style-type: none"> <li>number of sanctioned buildings outside construction and settlement zones</li> </ul>	X	X

Based on the indicator system above, spatial impacts of the railway tunnel which also includes a rolling highway for passenger cars and trucks were analysed. The following main findings were drawn:

#### Impacts on traffic and transport:

- Accessibility: absolute accessibility improved significantly but peripheral location of the Lower Engadine remains unchanged
- Passenger transport: increase of public rail transport but no reduction in motorised individual transport. Modal Split improved in favour of the railway.
- Freight/Goods transport: no impacts on road freight transport volumes but significant improvement of rail freight transport. However, no modal split shift from road to rail could be detected. Again, modal split shift towards rail freight transport.
- Pressure on additional road infrastructure construction: the pressure on road infrastructure has not increased, the new railway tunnel has not induced additional road construction projects.

---

#### Impacts on economy:

- Tourism: market potentials of day trip visitors were utilised better than before. Attractive services and USPs however are an important precondition. Also positive impacts can be detected for overnight stays, especially on weekends. Both, summer and winter tourism profited from the new tunnel. Positive impacts on employment in the hotel and restaurant industry are detectable.
- Investor/actor behaviour in tourism: so far no or only very small impacts on new investments in the tourism sector obvious.
- Other sectors (not tourism): no sustainable and lasting impact on the regional construction industry. The Lower Engadine has still no relevance for supra-regional economic activities outside the tourism sector. The improvement in accessibility does not seem to be a sufficient improvement for the industry location. As a consequence no new labour markets have been created so far. The internally oriented industry got no detectable stimulus. It is still unclear if tourism induced multiplier effects are big enough to have positive impacts on other industry sectors in this region.
- The comparison with a region in a comparable peripheral location shows that the development in the key market tourism is more dynamic in the Engadine than in the Surselva region (with comparable accessibility before the construction of the tunnel).

#### Impacts on environment and settlement structures:

- Environment: There are no lasting impacts on nature and landscape measurable. Improvements with respect to transport related air pollution occurred mainly due to technical improvement on the vehicle side and not due to significant modal shifts from road to rail.
- Development of settlements: demand for second homes, vacation or holiday homes has not increased due to the railway tunnel. Neither impacts on construction and land prices as well as on historic structures in the centres of towns and villages have been registered.

The key messages of the ex-post analysis can be summarised as follows:

- Accessibility is of great importance for peripheral rural (and Alpine) areas.

However, improvement of accessibility alone is not sufficient to stimulate even the key industry tourism. The basic requirement for positive economic impacts is the presence of attractive offers and services in tourism with nationwide reputation. New infrastructure therefore – at least in the case study of the Vereina tunnel – seems to be a necessary but not sufficient precondition for a positive economic development in the region.

- The new railway infrastructure brought no improvement for industry sectors which are not directly connected with tourism. Multiplier effects are – at least 5 to 6 years after the opening of the tunnel – not visible.
- Even a considerable improvement of accessibility is not sufficient if the next economic centre (regional or supra-regional) doesn't come noticeably into reach.
- The authors state that the results of the case study are transferable to other Alpine regions. Outside the tourism sector new labour markets only can be developed if the next regional centre in commuting distance comes into reach by the improvement of new transport infrastructure.

### 2.2.4.3 Location requirements of companies

There is a large number of studies which try to find out the location requirements of companies. The results of these studies are another source to gain insights to the relation between transport system and regional development. Most of the studies are carried out by means of detailed questionnaires or interviews. The results underline that a sample of various location factors is responsible for location choice and that the priorities vary with the type of activity.

Table 5: List of location factors (example)

Cost Aspects	Investment costs	Size cost
		Building cost
	Operations costs	Labour cost
		Electricity cost
		Gas Cost
		Water Cost
		Real Estate Lease / Rental Cost
		Telecommunication Cost
		Corporate Tax
	Incentives	Capital Grants
		Tax Incentives

Quality Aspects	Business Environment	Stable political situation Healthy economic situation Presence of multinational companies Cooperation possibilities with universities Attitude of authorities towards foreign investors Image
	Human Resources	Stable social climate Labour productivity Availability of skilled employees Availability of experienced managers Legal restrictions on shift work Foreign language skills
	Environmental issues	Environmental legislation and control Complexity and timing of permit procedures
Market Proximity and Communication Aspects		Market proximity
		Highways
		Railways
		International Airport
		Seaport
		Advanced telecommunication Services

Source: PRICE WATERHOUSE: Location Requirements of Internationally Operating Companies, Summary Results, 1998.

All the surveys show that transport and mobility are some factors among a lot of others.

Transport infrastructure is important for distribution projects (in particular highways) and headquarters projects (in particular international airports). Generally less important seem to be railway and sea port infrastructure.

However, transport infrastructure is one of the location factors directly influencing the investments of companies.

---

#### 2.2.4.4 Regional rankings

Due to the global and European integration and the fall of trade barriers, the competition of regions for companies has grown. To support companies in their search of new locations some consulting companies offer bench markings of regions. Based on the compilation of different location factors regional rankings are carried out. These bench markings are another source for the assessment of the real importance of transport infrastructure on regional development.

The following location factors are used normally (EMPIRICA 1993):

- Availability of labour force
- Labour costs
- Research facilities
- Transport system / market accessibility
- Industrial sector performance
- Service sector performance
- Living standard and environmental quality (exhaust gas emissions, supply with hospitals, supply with hotels)

Mostly the location factors are measured with a set of different indicators. Again the transport system is only one of several factors influencing the ranking of regions, but it is one. This indicates that there is a positive relation between transport infrastructure supply and locational development.

#### 2.2.4.5 Summary State of Practice

The state of practice is reflected in impact assessment tools, site selection of companies and regional rankings. In the daily routine all these tools indicate a positive correlation between good or better accessibility and regional development. Distributional effects are not taken into account. Against this background the development of the transport system produces only winner regions. Theoretical state of the art and state of practice do not fit together.

## 2.2.5 Spatial and transport policy instruments

The Question Team analysed national and regional transport and spatial development plans as well as several transport plans and spatial development programmes of federal states (like Kantone, Bundesländer, Regione and Région) for references to the connection of mobility and regional development. A second step was the identification of this connection in national and federal laws.

Indications for the connection of mobility and regional development can often be found in political aims, but binding measures or actions are very rare.

In almost every binding or non-binding concept, programme or law the following aims can be cited:

- sparing and economical land use for settlement and traffic infrastructure
- avoidance of traffic and shift of private motorised traffic to public means of transport
- environmental-friendly transport
- regional and municipal co-operation
- protection of nature and environment
- improvement of accessibility
- improvement of economy
- establishment of social infrastructure at central locations with a public transport connection
- enforcement of public transport

This list of aims can be extended in any way. It is also clear that these aims can differ among themselves.

### 2.2.5.1 Strategies, Plans, Overall Concepts

Spatial planning and spatial development is not the European Union's business. But other European policies, like the transport policy, have impacts on the regional development. The European Union supports the establishment of the Trans European Network, being aware of the fact that the general network policies have the tendency to favour rich and central regions more than poor regions (ESDP, 1999). The economical differences between the members of the EU were reduced in the last



decades, but at the same time a regional process of concentration of economic activities was enforced. For example INTERREG and LEADER projects try to support regional innovations and self-reliance, but this could not compensate the general development in rural and / or poor areas completely.

In some transport policy plans the impacts on regional structures were analysed, for example in the German Transport Plan (Bundesverkehrswegeplan). In this plan an analysis and estimation of spatial impacts on national level and in comparison to the regional level was done: reduction of transport costs, changes of accessibility and regional impacts on employment were researched. These impacts are the higher appraised the lower the regional economic wealth is.

In the Austrian National Transport Plan (Generalverkehrsplan Österreich) there is no investigation of impacts on regional development or economy, but the improvement of regional accessibility is an important argument to justify infrastructure investments.

The Overall Masterplan Transport for Switzerland does not address the topic accessibility and regional development directly, but formulates several basic principles which depict the underlying assumptions regarding the effects of infrastructure investments and regional development:

- Mobility supports economic development.
- Assure accessibility of rural areas in order to support rural areas and their economies.
- Development of settlement within their boundaries.
- A basic supply with public transport for all parts of the country.
- Improvement of accessibility of tourist centres and of connections to neighbouring regions.

The Overall Masterplan Transport is specified in sectoral plans for road and rail / public transport. In the Sectoral Plan Rail / Public Transport criteria are defined for the basic supply of rural areas and touristy centres which are more than 28 km away from the basic network.

The Italian General Transportation and Logistic Plan approved 2001 focuses on 'further increasing accessibility to peripheral areas through the creation of an infrastructure network, support for demand and better quality of service'. The transport system is seen as an important instrument for 'overcoming the gaps, existing between various areas throughout Italy'.

In general it can be said, that on the national level transport infrastructure is used as an

instrument to improve accessibility as precondition for economic growth or the decline of regional disparities. The possibility that the extension of infrastructure could increase regional disparities or does not help to close the economic gaps between regions is not taken into account.

On the regional level several transport and regional plans do exist which take into account the interrelation between transport, mobility, settlement structure, economic development and environmental problems. But this interrelation is addressed on the level of goals. A consistent policy including sectoral instruments is missing.

### 2.2.5.2 Legal instruments: laws, ordinances

In some laws, for example in Austria, there are relatively clear statements to the connection between regional development (housing) and the transport system:

- Land use regulation law in Tyrol: Shopping centres have to be built at special sites which have an adequate connection to roads and to the public transport system. What exactly adequate means, is not defined.
- Development Concept of the Federal State of Salzburg: The following aims are defined: Settlement 'could' be forced close to the public transport system by incentives or subvention by financial aid of housing (Wohnbauförderung) – but this aim is not binding.
- In the laws of financial aid for housing (law of Wohnbauförderung) there is no connection between housing subsidies and the existence of public transport nearby. In Carinthia and in Salzburg the existence of public transport close-by is assumed for houses with more than two apartments but there is no definition what close-to or rather adequate distance means.
- Shopping centre regulation laws of the Austrian Bundesländer (more than 800 m<sup>2</sup> sales area): The criteria for the approval of shopping centres take into account spatial, environmental and transportation impacts.
- In Tyrol additional regulations for guiding the locations of retail with sales areas between 400 and 800 m<sup>2</sup> have been implemented recently.

In all other Austrian land use laws there are no direct measures that can coordinate or manage the regional development and the transport system.

In Switzerland the preconditions of the basic supply of public transport (number of inhabitants of community, number of passengers per course) are regulated in the ordinance concerning compensation payments, loans and financial aids according to the Federal Railway Law. The minimal number of inhabitants as stated in the federal ordinance is 100 people; however, cantons can define their own minimal standards.

---

The Canton Berne for example defines in the regional transport law of the Canton Bern, if a specific number of inhabitants is acceded, a basic supply with public transport services is mandatory (4 course pairs a day).

### 2.2.5.3 Summary Policy Instruments

The interrelation between transport system, regional development, spatial structure and environmental quality is addressed in many plans and concepts. Especially regions and communities in alpine areas are well aware of the intrinsic conflict between improved transport infrastructure and thus better accessibility and negative impacts in terms of pollution (air, noise), sprawl and fragmentation of the landscape. But this interrelation is reflected mostly on the level of non-binding goals in non-binding plans, while there are only few instruments to enforce an integrated policy.

## 2.3 SYNTHESIS AND CONCLUSIONS

There is a broad agreement among experts about a positive relation of transport systems and economic development. This general assumption based on empirical studies has been transferred to the regional level as well, although there is less evidence. Distributional effects and external costs of infrastructural or organisational changes of the transport system are often not taken into account sufficiently and there is no consensus among researches and policy makers on this issue.

However, the more recent theories as the geographic economy (KRUGMANN, 1991) emphasize the distributional effects of transport systems in order to explain regional disparities. Empirical studies show that high accessibility does not guarantee prosperity and economical development while low accessibility does not necessarily hinder development. Results of some recent studies however suggest that at least key industry sectors like the tourism industry profit from improved accessibility.

Despite this uncertainty, the state of assessment practice of transport projects is to focus on the positive effects in the catchment areas of projects (SEA, EIA, ex-post analysis, cost benefit-analysis). Network effects are evaluated rarely and there is no unambiguous set of rules for assessment of these effects available. The quality of the transport system and the accessibility of markets is one location factor among others which lead companies in their investment location decision making and which are used for rankings of regions as location for companies.

Although accessibility and transport infrastructure is not always a high priority factor, policy makers focus on this issue. This might be due to the fact that infrastructure is one of the major instruments of the public sector.

In opposite to the general effects of transport systems on regional development, the

---

local effects on spatial structures are more visible:

- infrastructure produces locations for companies and households,
- in the age of individual motorisation local effects are suburbanisation and sprawl,
- the improvement of inner regional connections can help to stabilise at least population in peripheral rural areas and support the establishment of decentralised touristy offers.

However, in a long term perspective, technological characteristics of the transport system determine spatial development in a sustainable way. Railway, air traffic and ship favour centralised node oriented spatial structures while mass-motorisation, cheap oil prices and road network expansion support more equalised, decentralised structures and increase the opportunities for rural and peripheral regions. Within each system investments in inner regional, local and feeder systems favour the peripheral rural areas while supra regional, high speed, or high capacity infrastructure strengthen the nodes and increase the disparities.

In general in national and regional transport plans transport infrastructure is seen as precondition for economic growth or decreasing regional disparities. Although the interrelation between transport systems and spatial structures (sprawl, modal shift to cars, environmental problems) is widely accepted and addressed in many regional and transport concepts, only few binding instruments for an active management of this interrelation are existing.

These reported effects and the lack of instruments are common for all spatial structures and not restricted to specific regions.

As regards the Alpine regions the special landscape conditions distinguish this region from others. The various natural barriers lead to specific small scale differences in accessibility. The environmental resources emphasize the external effects of transport infrastructure more than in other regions. In this light we summarize the general findings for the Alpine regions as follows:

- As regards accessibility the Alpine regions in general benefit from their location in the centre of Europe. The European Transport Policy will not change this situation in the next two decades fundamentally.
- Within the Alpine region wide disparities do exist. In the next decades the fundamental regional distribution of accessibility will remain, but few nodal areas will benefit by the development of high speed rail systems in a special way.
- The next phase of infrastructure and transport cost development will favour the nodal areas and strengthen the regions with already existing high accessibility.

Only few alpine regions will profit from this development.

- Against this background most of the supra regional TEN / TINA-projects are not a matter of priority for the alpine regions as regards regional development. The emphasis should be put to the inner regional connections, feeder systems or links to the nodal points and the development of the existing infrastructure in an environmentally and socially sustainable manner.
- On the local level more and stronger regulatory instruments of spatial and regional planning are needed for the guidance of the interrelation between transport system and spatial structure in a targeted way (for example prevention of shopping centres, sprawl, new settlements without public transport).

In this context transport and spatial policies in the Alps should focus on the distributional effects and the external costs of the transport system, reorganisation of public services to ensure just and reasonable accessibility.

## 2.4 RECOMMENDATIONS

The question 4 team offers the following recommendations as regards different aspects of the interrelation between mobility, infrastructure, regional development and environmental performance:

(1) As regards theories:

- We recommend to rely on the New Geographic Economy (KRUGMANN, 1991), which explicitly focuses on regional disparities.

(2) As regards public debate on new transport infrastructure projects in alpine areas with critical environmental impacts:

The problem is always how to respond to the killer argument “Improvement of regional performance by infrastructural development to survive in global competition of locations.” We recommend demanding for answers to the following questions:

- Is there a need for better accessibility by existing companies?
- If there is a need for better accessibility is it a matter of travel time, of capacity, of logistic requirements or other factors? Are improvements without new infrastructure possible?
- The improvement of accessibility is not only effective in one way. Regional

companies might get better access to other markets but this can also lead to more competition on the home market. Therefore an important question is: Might the improvement of accessibility lead to growing competition for the local companies? Is it possible, that existing small companies will be eliminated by more competition and that in consequence workplaces or services will not be provided in the region anymore?

- Is the new infrastructure able to attract new companies or new residents? Are there any studies, which can prove this? What are the experiences in comparable regions, which are endowed with such an infrastructure already?
- What are the opportunity costs of the infrastructure investment? How would the locals spend the money, if they could decide on it? Are there better options to spend such an amount of money?

In addition we recommend looking at successful regions without good accessibility and carrying out the success factors for the positive regional development in these regions.

In many cases the killer argument “global competition of regions” is responded by the killer argument “environmental devastation” by traffic. In general (greenhouse gas effect) and in particular cases (noise and exhaust gas pollution, traffic safety, floor space requirement, landscape fragmentation) this argument is justified. But in the case of peripheral regions some more aspects have to be taken into account: Cars, trucks and roads in some cases are important factors for the stabilisation of population and workplaces in the alpine regions and are strongly correlated to welfare growth in alpine regions in the last fifty years. This leads to the following questions:

- Does better accessibility contribute to prevent depopulation in peripheral rural areas, because they can commute in reasonable travel times?
- Does better accessibility help to establish or sustain tourism?
- Does better accessibility help to maintain land use (for example pastures, mountain farming) in alpine regions?
- Are there alternative options to new road infrastructure?

(3) As regards policy instruments:

- More and stronger binding regulatory instruments for spatial and regional

---

planning are needed for the guidance of transport system and spatial structure: prevention of shopping centres, sprawl, adjustment of settlements and public transport, reorganisation of public services.

(4) As regards research:

Additional efforts to clarify open questions or to develop functional instruments are needed:

- Long term research (for example case studies over the last forty / fifty years) on the impacts of the transport systems on regional development, comparison between regions inside and outside the Alps to distinguish landscape effects.
- Research on the impacts of transport systems on the spatial structure using not only economic indicators.
- Research on the different effects of accessibility: Why are some regions successful despite low accessibility? Why are some regions not successful despite high / good accessibility?
- Due to the fact of small scale differences in accessibility caused by the landscape barriers in the Alps the, question of distributional effects should be a special topic for the assessment of transport system investments.
- Development of a widely accepted set of rules for integrating indirect network effects in assessment tools.
- Development of regulatory frameworks and instruments to guide a pedestrian, bicycle and public transport oriented spatial development.

Additionally we recommend collecting good practice examples of regions with low accessibility and positive regional performance.

## 3 BEST PRACTICE EXAMPLES

### 3.1 WORKING PROGRAMME AND METHODS

Future in the Alps is to gather examples of good and best practice within and outside the Alps involving leisure, tourism and commuter mobility. The main questions are:

- What do successful formulas for a 'slower pace' look like?
- How can key players and the general public be made more aware of sustainable mobility solutions?

The project aims to use this knowledge to bring about changes in behaviour among key players in politics and administration, planners and the general public, and to contribute towards improving the significance of sustainable forms of mobility in the Alps.

The investigation was carried out according to the following principles: A Best Practice Example has to be

- successfully realised
- innovative
- effective regarding regional development or environmental impact
- implemented and
- sustainable

this means that Best Practice Examples should be able to 'survive' after an implementation phase. Examples which the question team considered as relevant but which the team did not include in the analysis were documented in the database in a short form.

The question team gathered information about 52 Best Practice Examples for tourism, leisure and commuter mobility in Austria, France, Germany, Italy, Slovenia and Switzerland.

How did we get detailed information about the Best and Good Practice Examples:

- (1) we collected our own knowledge about Best Practice Examples / projects
- (2) we contacted the National Contact Point Slovenia
- (3) we scanned known databases and existing evaluations of Best Practice Examples



about mobility projects (e.g. there are a lot of databases in the Internet, Alpenallianz, Tatenbank Austria)

- (4) we scanned the CIPRA-Competition-Database and compared them to all the other gathered information
- (5) we got additional information about projects from other question teams, mainly QT 1, after the last team meeting in October 2005

We searched mainly after literature, existing information on databases, but in certain cases it was necessary to gather information by interviews (e.g. Examples in France, Verkehrsplan Wienerwald,...).

The QT4 also discussed the problem that several French or Italian projects will probably not seem very new to people who live in Switzerland, Austria or Liechtenstein. We also took into consideration that e.g. in France most past policies have destroyed many alternative transportation systems and that the car occupies a proportion of the traffic maybe even higher than in other countries. To France or Italy these examples may be new and exemplary so we decided to gather also these examples in our Best Practice collection.

The examples can be divided into 10 categories:

- (1) enhancement or reconstruction of bus lines and railway lines
- (2) projects to raise public awareness (like projects that change people's behaviour and the modal split)
- (3) walking / hiking
- (4) public transport on demand (primarily in valleys or sparsely populated areas)
- (5) information / public relations / platforms / networks
- (6) environmental friendly vehicles
- (7) car sharing and hitchhiking
- (8) traffic regulation (f. e. bans on driving on mountain roads)
- (9) bicycle, skating
- (10) integrated mobility concepts that combine all other nine categories

Enhancement or reconstruction of bus lines and railway lines			
Discovery shuttle buses for all	France	tourism	X
		leisure	
		commuter	
Moving the future: Merano – Malles Venosta railway restoration	Italy	tourism	X
		leisure	X
		commuter	X
Idea of an Alpenrhein-Bahn	Switzerland, Austria, Liechtenstein	tourism	X
		leisure	X
		commuter	X
ÖV im Rhätischen Dreieck	Switzerland, Italy	tourism	X
		leisure	X
		commuter	X
Alpentäler-Bus	Switzerland	tourism	X
		leisure	
		commuter	
Tälerbus	Austria	tourism	X
		leisure	
		commuter	

Projects to raise public awareness			
INFICON AG Gesund und umweltfreundlich zur Arbeit Mobility Management	Liechtenstein	tourism	
		leisure	
		commuter	X
Verkehrsparen Wienerwald	Austria	tourism	
		leisure	X
		commuter	X

walking / hiking			
Piedibus – Parent’s self organisation for the children school pedestrian mobility	Italy	tourism	
		leisure	
		commuter	X
Wanderland Schweiz	Switzerland	tourism	X
		leisure	X
		commuter	
Pedestrian Trail between Italy and Switzerland	Italy, Switzerland	tourism	X
		leisure	
		commuter	

Public transport on demand			
Dorfomobil Klaus	Austria	tourism	
		leisure	X
		commuter	X
Transdrôme: an on demand transport service in the rural regions of the Drôme	France	tourism	
		leisure	X
		commuter	X
PubliCar	Switzerland	tourism	
		leisure	X
		commuter	X

Information / public relations / platforms / networks			
Paris – Mont Aiguille: a local initiative with national impact	France	tourism	X
		leisure	
		commuter	
Fahrtziel Natur	Germany	tourism	X
		leisure	
		commuter	
Alpen Online	Switzerland	tourism	X
		leisure	
		commuter	
GAST	Switzerland	tourism	X
		leisure	
		commuter	
SpediBeO	Switzerland	tourism	X
		leisure	
		commuter	
RailAway	Switzerland	tourism	X
		leisure	X
		commuter	
AlpenRetour	Switzerland	tourism	X
		leisure	
		commuter	
Encouraging soft mobility in mountainous areas	France	tourism	X
		leisure	X
		commuter	

Environmental-friendly vehicles			
NewRide	Switzerland	tourism	
		leisure	X
		commuter	X
Vel Ticino	Switzerland	tourism	X
		leisure	X
		commuter	

Car sharing and Hitchhiking			
Stop plus: a multimedia information platform on mobility and organised car sharing in a mountainous area	France	tourism	X
		leisure	X
		commuter	
Mobility CarSharing	Switzerland	tourism	X
		leisure	X
		commuter	
Alpes AutoPartage: a car sharing system in the French Alps	France	tourism	
		leisure	X
		commuter	

Traffic regulation			
Logarska dolina	Slovenia	tourism	X
		leisure	
		commuter	
Walking among clouds (A piedi fra le nuvole)	Italy	tourism	X
		leisure	
		commuter	
Umweltbonus Zillergrund	Austria	tourism	X
		leisure	
		commuter	
Sustainable Mobility Plan in Adamello Brenta Natural Park	Italy	tourism	X
		leisure	
		commuter	
Traffic regulation in the high valley of the Clarée	France	tourism	X
		leisure	
		commuter	
Sustainable Mobility Plan in Paneveggio Pale di San Martino Natural Park	Italy	tourism	X
		leisure	
		commuter	

Bicycle, skating and other forms of mobility			
Rent a bike	Switzerland	tourism	X
		leisure	X
		commuter	X
Skatingland Schweiz	Switzerland	tourism	X
		leisure	X
		commuter	
Paddelland Schweiz	Switzerland	tourism	X
		leisure	X
		commuter	
Bike'n bus	Italy	tourism	X
		leisure	
		commuter	
A simple and convenient bicycle service for mobility in the Grand Lyon agglomeration	France	tourism	
		leisure	X
		commuter	X

Plan in favour of two wheel vehicles in the département of Savoie	France	tourism	X
		leisure	X
		commuter	X
Switzerland rolls	Switzerland	tourism	
		leisure	X
		commuter	X
Veloland Regional	Switzerland	tourism	X
		leisure	X
		commuter	
Veloland Switzerland	Switzerland	tourism	X
		leisure	
		commuter	
Mountainbike-Land Schweiz	Switzerland	tourism	X
		leisure	X
		commuter	
The Chambéry Velostation: combining bicycles and public transportation	France	tourism	X
		leisure	X
		commuter	X
C'entro in bici – Bike sharing in many Italian cities	Italy	tourism	X
		leisure	X
		commuter	X
The Luberon by bike: promoting bicycle routes for leisure activities in the Luberon and the Forcalquier regions	France	tourism	X
		leisure	
		commuter	
Let's go to work and school by bike!	France	tourism	
		leisure	
		commuter	X
Bike Mobility Plan in Bolzano	Italy	tourism	
		leisure	X
		commuter	X

Integrated mobility concepts			
Velostation Burgdorf	Switzerland	tourism	
		leisure	X
		commuter	X
Lets Gets, laboratory for sustainable mobility (EU-Project MOBILALP)	France	tourism	X
		leisure	
		commuter	
Werfenweng, Bad Hofgastein	Austria	tourism	X
		leisure	X
		commuter	X

### 3.2 SYNTHESIS OF INVESTIGATION

The majority of the compiled Best Practice examples can be related to the categories 'bicycle mobility' and 'information, public relations, networks, platforms'. There are a

lot of projects that deal with tourism (38)<sup>3</sup> and / or leisure (29)<sup>3</sup> mobility, less that concern commuter transport (22)<sup>3</sup>. It is evident that mobility projects in tourism can be easier realised because mobility of tourists is temporally different, it can be combined with sporty activities and it often needs less financing. Projects in commuter transport deal mainly with mobility management in companies: a good example was added in the database (Inficon AG), where the main objective is the change of the modal split, healthier employees and less costs for parking space or transport. There are several other projects of mobility management, e.g. the Medienhaus Vorarlberg, Waldland and Stiegl in Austria but not added in the database.

The **objectives** of all compiled Best Practice Examples are nearly the same:

- reduce the use of private cars in tourism, leisure and commuter transport
- reduce emissions
- save natural resources
- change public awareness

All Best Practice Examples require a strong political and individual will. The basis of most Projects is self-organisation and voluntariness, f. e. the projects 'piedibus', 'Dorfmobil Klaus', 'Logarska dolina', 'Veloland Schweiz'. A lot of projects are run by individuals or associations. But there are also projects that were initiated and / or realised by big companies or the government, like 'Verkehrsparen Wienerwald' that was initiated by the government of Lower Austria, the project 'Transdrôme' that was initiated and realised by the Conseil Général of Drôme or the project 'PubliCar' by Postauto – the Swiss Post.

The projects are often a **huge effort** for municipalities, regions and associations. In particular **financing** is always difficult. There are only a few projects that were not funded by national, regional or EU-investment. The examples show clearly that mobility services are very expensive. If it was possible to make a profit, several companies would produce mobility services without asking. Voluntariness and public subsidies are needed and are definitely an impulse for making new efforts and for going on with these projects or with new projects.

The intensity and the quality of **participation** is often crucial for the duration and the quality of a project. Without the parent's voluntary participation f. e. the project 'piedibus' could never exist. Without commitment of inhabitants and key personalities

---

<sup>3</sup> Multiple nominations are possible

several projects could not be realised: f. e. 'the local initiative Paris – Mont Aguille'.

It is clear that the **simplicity** of a project defines also the transferability of the project. A lot of Best Practice Examples can be transferred to other regions or countries, like 'Alpentälerbus', 'Fahrtziel Natur', 'RailAway' or 'Veloland Schweiz'.

The **impacts of these examples** can be in general described as follows:

- better accessibility (new time tables of buses or railway, new bus lines, new railway)
- improved economy of vehicle use
- reduced emissions (but this can not always be quantified)
- reduction of spatial and social isolation
- contribution for better living conditions in isolated areas

But the **evaluations** of given projects do not say much about quantified impacts. There are some impacts that are qualitatively described, a lot of impacts can only be presumed by the project executive.

Referring to new transformation knowledge there is less evidence seen in the gathered Best Practice Examples. The interviews showed that the basic (political) conditions, the right people and of course luck is needed to realise an idea. The methods and measures used in the gathered projects are known and quite common.

### 3.3 WHAT KIND OF PROJECTS CAN BE SUCCESSFUL?

The success of a project can be defined as described in chapter 3.1. Sometimes it can also be useful to review failed projects to gain information about success. One of these projects is 'Carlos' a hitchhike entrainment system for passenger traffic as an alternative for motorised individual transport. The project was good, but not successful – under different framework conditions it could possibly have a future.

- Successful projects are as simple as possible.
- Successful projects have a low effort of maintenance.
- Successful projects have customised service.

These criteria facilitate self-organised projects, projects that are based upon

voluntariness and participation. In the Alpine region self-organisation is very important, also in aspects of mobility. The ongoing closure of railway and bus lines becomes a serious problem in general in rural regions and in particular in the Alpine regions. In the future an enhancement of public transport systems in rural and in the Alpine region will be very hard, in particular because of the lack of money. Self-organisation and innovative concepts must be found, not only for tourism mobility but mainly for commuter and leisure transport. The compiled Best Practice Examples provide an overview of what is possible.



## **4 RELATIONS TO OTHER QUESTIONS OF THE PROJECT, DESCRIPTION OF SYNERGY POTENTIALS**

### **4.1 THE CONNECTION BETWEEN TRANSPORT SYSTEM, MOBILITY AND THE DEVELOPMENT OF REGIONAL STRUCTURES**

#### **4.1.1 Question 1: Regional value added**

The interrelation to question 1 regards the requirements of regional product and service chains for transport infrastructure. It is not clear if good transport infrastructure and good accessibility is a precondition for the establishment and the sustainability of regional product and service chains, whether they support or hamper their establishment. Question 4-team presumes that transport infrastructure and accessibility has no or only little impact on regional product and service chains. However, it might depend on the branch of business, and case studies are needed.

#### **4.1.2 Question 2: Governance capacity**

Accessibility and mobility enable people to stay in remote sites, isolated villages and peripheral areas. The car-oriented mobility has been an important precondition for the growth, stabilisation of population, workplaces and welfare in many alpine regions. On the other hand car oriented mobility favours centralisation effects. In particular public and private services are shut down in small villages. The access of non motorised groups to these services evolves into a problem and the public life in the public space of the villages drops. The reorganisation of public and private services in peripheral villages is one of the great challenges for governance on the local and regional level.

Another contradiction should be addressed: to stabilise the population in peripheral mountain regions requires the accessibility of central areas with supply of workplaces and services. This means car-oriented commuter mobility, because public transport is not able to serve these areas adequately.

### 4.1.3 Question 3: Protected areas

The challenge is to find a balance between accessibility which enables people to stay in these areas and the protection of the environment.

### 4.1.4 Question 5: New forms of decision making

As regards the connection between transport systems, mobility and the development of regional structures new forms of decision making concern above all the integration of the public in the assessment procedures (EIA, SEA) of transport infrastructure projects. In particular the participation of communities, NGOs and directly affected people in Strategic Environmental Assessments is relevant, because fundamental decisions are on the agenda at this level. The quality of the participation procedures is essential for good governance.

### 4.1.5 Question 6: Impact and further development of policies and instruments

We recommend developing policy strategies as regards the contradiction between stabilisation of population and land use in peripheral mountains areas and sustainable mobility. It is obvious that people will only stay in peripheral areas, if they can reach workplaces and services. This requires car-oriented mobility, high investments in transport infrastructure and causes environmental damage. Public transport is no real alternative for these regions. A clarification even in policy strategies of NGOs is needed:

- Shall the stabilisation of population and land use have priority or
- shall the money for infrastructure investments in peripheral areas be saved, the migration of people to central areas be supported and wilderness be accepted.

We think that there is a need for discussion and the development of consistent policies to deal with this contradiction.

## 4.2 BEST PRACTICE EXAMPLES

### 4.2.1 Question 1: Regional value added

The compiled Best Practice Examples provide less indication about the influence of transport on regional economies. The connection of innovative, soft mobility concepts with the support of tourism and jobs in the tourism sector are only highlighted in integrated mobility concepts like f. e. Werfenweng. But vice versa it is possible that inner regional value-added chains can have an impact on regional transport performance. Regional product and service chains could substitute long trips for short trips or car trips for bike trips or walking.

### 4.2.2 Question 2: Governance capacity and Question 5: New forms of decision making

Voluntariness and self-organisation play a more and more important role in transport and mobility concerns. The communities in the rural and Alpine regions will be more challenged to raise their regional identities in order to claim and also to provide mobility facilities (question 2 and 5). Without participation a lot of projects would not even exist. Good governance is needed by the great number of partners involved in a project (f. e. The Luberon by bike, Sustainable 'Mobility Plan in Adamello Brenta Natural Park, Mobility Car Sharing, ...). New forms of decision making are required by the need of self organisation and voluntary contributions.

### 4.2.3 Question 3: Protected areas

The most obvious and concrete connections exist with question 3 (protected areas). Tourism mobility in protected areas must be managed very carefully. This includes traffic regulation in the summer or the winter season, on certain routes and at certain times, parking regulation and public relations as well as offers for public transport. There are some Good / Best Practices dealing with this issue available.

---

## 5 NEW OR OPEN QUESTIONS

### 5.1 THE CONNECTION BETWEEN TRANSPORT SYSTEM, MOBILITY AND THE DEVELOPMENT OF REGIONAL STRUCTURES

Additional efforts to clarify open questions or to develop functional instruments are needed:

- Long term research (for example case studies over the last forty / fifty years) on the impacts of the transport systems on regional development, comparison between regions inside and outside the Alps to distinguish landscape effects.
- Research on the impacts of transport systems on the spatial structure using not only economic indicators.
- Research on the different effects of accessibility: Why are some regions successful despite low accessibility? Why are some regions not successful despite high / good accessibility?
- Due to the fact of small scale differences in accessibility caused by the landscape barriers in the Alps the question of distributional effects should be a special topic for the assessment of transport system investments.
- Development of a widely accepted set of rules for integrating indirect network effects in assessment tools.
- Development of regulatory frameworks and instruments to guide a pedestrian, bicycle and public transport oriented spatial development.

Additionally we recommend collecting good practice examples of regions with low accessibility and positive regional performance.

## 5.2 BEST PRACTICE EXAMPLES

Additional efforts to clarify open questions concerning Best Practice Examples are needed:

- Evaluation of Best Practice Examples: How sustainable are the projects? Clarify the effectiveness of the projects. What are the main results concerning mobility (modal shift, changes in kilometric performance)?
- Precise know-how of investment, maintenance and operation costs as well as the funding: Can Best Practice Examples be multiplied as regards the need for public funding?
- Why aren't there any Best Practice Examples dealing with commuter transport? Are there regions inside or outside the Alps where f. e. the existing public transport system can be considered as good practice compared to other regions? Bench marking of public transport performance in Alpine regions or valleys might help to clarify this question.
- The impacts of regional product and service chains on transport performance: Can regional product and service chains save transport volume and contribute to modal shifts from car trips to environmental friendly modes (public transport, bike, walking)?

Vienna, Zürich, Milano, Grenoble, 22<sup>th</sup> March 2006

Question Team 4

Nicole Ackermann (Infras)

Helmut Hiess (Rosinak & Partner)

Christoph Schreyer (Infras)

Claire Simon (Cipra France)

Andrea Weninger (Rosinak & Partner)

Mario Zambrini (Ambiente Italia)

---

## 6 REFERENCES

- ARE / ASTRA (2005): Sachplan Schiene / ÖV (Vernehmlassungsentwurf), Bern.
- ARE / ASTRA (2002): Sachplan Schiene / ÖV (Vernehmlassungsentwurf), Bern.
- ARE (2003): Räumliche Auswirkungen der Verkehrsinfrastrukturen „Lernen aus der Vergangenheit“, Projektübersicht, Bundesamt für Raumentwicklung ARE, Bern
- ARE / ASTRA (2005): Sachplan Verkehr (Entwurf), Bern
- ARE (2006): Räumliche Auswirkungen des Vereinatunnels – eine ex-post Analyse, Zusammenfassung und Hauptbericht, Bern, Februar 2006
- ASCHAUER D. A. (1989): Is Public Expenditure Productive, *Journal of Monetary Economics*, 23 (2), pp. 177 – 200.
- ASCHAUER D. A. (1993): Public capital and economic growth. In: The Jerome Levy Economic Institute (ed): *Public Policy Brief*. Annandale-on-Hudson: Bord College, 9 – 30.
- BMVIT (2002): Generalverkehrsplan Österreich, Wien.
- BRÖCKER (2002): Indirect Effects of Transport Infrastructure Investments: Do they matter for CBA? Presented at the DEEI Conference, Transport Ministry of the Netherlands, Rotterdam.
- ECOPLAN, Büro Widmer (2004): Wirkungsketten Verkehr – Wirtschaft (Interactions between transport and the economy), Forschungsauftrag SV/1999/310 auf Antrag der Vereinigung Schweizerischer Verkehrsingenieure, Schlussbericht, Bern.
- EMPIRICA (1993): Produktionsstandorte in West- und Osteuropa – Ein Regionalführer für Investoren in EG, EFTA, Mittel- und Osteuropa, Bonn.
- EUROPEAN COMMISSION (1999): *European Spatial Development Perspective (ESDP). Towards Balanced and Sustainable Development of the Territory of the European Union.*
- EUROPEAN CONFERENCE OF MINISTERS OF TRANSPORT (ECMT) (1975): *Impact of Infrastructural Development*. 25<sup>th</sup> Round Table.
- FRÖHLICH PH., TSCHOPP M., AXHAUSEN K. W. (2005): Entwicklung der MIV und ÖV Erreichbarkeit in der Schweiz 1950 – 2000. In: *Beitrag zur Raumplanung und Raumforschung 310*, Institut für Verkehrsplanung und Transportsysteme (IVT), ETH

---

Zürich, Zürich.

FUJITA M., KRUGMANN P., VENABLES A. J. (1999): The spatial economy: Cities, regions and international trade, MIT Press, Cambridge.

HIESS H. et al (1999): Verkehr und Kulturlandschaft. Teilmodul des Projektes Infrastruktur und ihre Auswirkungen auf die Kulturlandschaftsentwicklung. Im Rahmen des Kulturlandschaftsforschungsprogramms des Bundesministeriums für Wissenschaft, Forschung und Verkehr. Wien.

JOCHIMSON R. (1966): Theorie der Infrastruktur. Grundlagen der marktwirtschaftlichen Entwicklung, Tübingen.

KEEBLE B., Owens P. L., Thompson C. (1982): Regional accessibility and economic potential in the European Community. *Regional Studies* 16, 419 – 432.

KRUGMANN P. (1991): Geography and Trade. London, MIT Press and Leuven University Press.

LEONTIEF W. (1966): Input-Output-Economics. Oxford University Press.

LINNEKER P. (1997): Transport Infrastructure and Regional Economic Development in Europe. A Review of Theoretical and Methodological Approaches. TRP 133 Sheffield. Department of Town and Regional Planning. University of Sheffield.

MARCIAL ECHENIQUE @ Partners Ltd. (1998): The EUNET Project: Socio-Economic and Spatial Impacts of Transport Improvements. <http://fpiv.meap.co.uk/EUNET.doc>.

PRICE WATERHOUSE (1994): Location Requirements of Internationally operating Companies, Summary Results, London.

REGIONAL CONSULTING (2003): Regional Development and Cultural Landscape Change: The Example of the Alps, Evaluating and Adjusting EU and National Policies to Manage a Balanced Change (REGALP), ANNEX of Workpackage 2 report, Accessibility Analysis of the Alps, Vienna.

TSCHOPP M., FRÖHLICH PH., AXHAUSEN K. W. (2005): Verkehrssystem, Touristenverhalten und Raumstruktur in alpinen Landschaften. Bericht zu Raumstruktur, lokaler und interregionaler Erreichbarkeit. NFP 48 „Landschaften und Lebensräume in den Alpen“. Zürich.

---

## ANNEX 1: LIST OF PUBLICATIONS FILLED IN THE ONLINE DATABASE

- (1) Entwicklung der MIV und ÖV Erreichbarkeit in der Schweiz 1950–2000 (2005)
- (2) Verkehrssystem, Touristenverhalten und Raumstruktur in alpinen Landschaften – Bericht zur Raumstruktur, lokaler und interregionaler Erreichbarkeit (2005)
- (3) Alps Mobility II (2005)
- (4) Verkehrssystem, Touristenverhalten und Raumstruktur in alpinen Landschaften – Feldbericht der Erhebung zum Touristenverhalten (2005)
- (5) PROPOLIS – Planning and Research of Policies for Land Use and Transport for Increasing Urban Sustainability (2004)
- (6) Nachhaltige Tourismusentwicklung in den Regionen der Alpen: Monitoringsystem und Managementmodell (2004)
- (7) REGALP – Regional Development and Cultural Landscape Change: The Example of the Alps (2004)
- (8) IASON – Integrated Appraisal of Spatial Economic and Network Effects of Transport Investments and Policies (2004)
- (9) Räumliche Auswirkungen der Zürcher S-Bahn – eine ex-post Analyse (2004)
- (10) Wirkungsketten Verkehr – Wirtschaft (2004)
- (11) Räumliche Auswirkungen des Verkehrssystems in der Magadino-Ebene – eine ex-post Analyse (2004)
- (12) Traffic and Transport Infrastructure as an Economic Factor – Opportunities and Risks at the Regional Level (2003)
- (13) Räumliche Auswirkungen der Verkehrsinfrastrukturen „Lernen aus der Vergangenheit“ (2003)
- (14) Final Report in Decoupling Transport Impacts and Economic Growth. Analysis of the Links between Transport and Economic Growth (2003)
- (15) Transport System Incidence on the Socioeconomic Development (2003)



- (16) NISTRA: Nachhaltigkeitsindikatoren für Straßeninfrastrukturprojekte – Ein Instrument zur Beurteilung von Straßeninfrastrukturprojekten unter Berücksichtigung der Nachhaltigkeitsziele (2003)
- (17) Grobbeurteilung innovativer Mobilitätsprojekte (2003)
- (18) SPRITE – Separating the Intensity of Transport from Economic Growth (2002)
- (19) The Infrastructure’s Endowment of Italian Provinces 1997–2000 (2001)
- (20) EUNET-SASI – Social Economic and Spatial Impacts of Transport Infrastructure Investments and Transport System Improvements (2000)
- (21) TRANSLAND – Integration of Transport and Land Use Planning (2000)
- (22) Regionales Mobilitätsmanagement – Möglichkeiten zur Umsetzung nachhaltiger Verkehrskonzepte auf regionaler Ebene (2000)
- (23) VIRGIL – Verifying and Strengthening Rural Access to Transport Services (2000)
- (24) Infrastruktur und ihre Auswirkungen auf die Kulturlandschaftsentwicklung (1999)
- (25) Sactra: Standing Advisory Committee for Trunk Road Assessment (1999)
- (26) Sustainable Development of Alpine Cultural Landscapes in the Austrian-Slovenian Border Region (1999)
- (27) SESAME – Derivation of the Relationship between Land Use, Behaviour Patterns and Travel Demand for Political and Investment Decisions (1999)
- (28) Nachhaltiger Verkehr – Planungs- und Prüfinstrumente (1998)
- (29) Freizeitverkehr aus Sicht der Tourismusorte (1997)
- (30) The Impact of Accessibility to the Road Network on the Economy of Peripheral Regions of the EU (1995)
- (31) SLOW – Nachhaltiges Wirtschaften, Verkehrsvermeidung und Entschleunigung, eine alternative Perspektive für Europa (1995)
- (32) Evaluating Transportation Land Use Impact (1995)
- (33) Road Construction and Economic Growth from a Southern European Perspective (1995)

## ANNEX 2: LIST OF THE BEST PRACTICE EXAMPLES FILLED IN THE ONLINE DATABASE

### **BEST PRACTICE (marked in the online database)**

- (1) “Moving the future”: Merano – Malles Venosta Railway Restoration
- (2) Tälerbus
- (3) Dorfmobil Klaus
- (4) Transdrôme: an „on demand“ transport service in the rural regions of the Drôme
- (5) PubliCar
- (6) Verkehrsparen Wienerwald
- (7) Piedibus – Parent’s self-organisation for the children school pedestrian mobility
- (8) Pedestrian Trail between Italy and Switzerland
- (9) Paris – Mont Aiguille: a local initiative with national impact
- (10) Alpen Online
- (11) SpediBeO
- (12) AlpenRetour
- (13) Velostation Burgdorf
- (14) Werfenweng, Bad Hofgastein
- (15) Sustainable mobility plan in Adamello Brenta Natural Park
- (16) Traffic Regulation in the high valley of the Clarée
- (17) Sustainable Mobility Plan in Paneveggio Pale di San Martino Natural Park
- (18) Veloland Schweiz
- (19) C’entro en bici – Bike sharing in many Italian cities
- (20) The Luberon by bike: promoting bicycle routes for leisure activities in the Luberon and the Forcalquier regions
- (21) Let’s go to work and to school by bike!

### **GOOD PRACTICE (not marked in the online database)**

- (22) Discovery Shuttle Buses for all, including handicapped persons
- (23) Alpenrhein Bahn
- (24) Öffentlicher Verkehr (ÖV) im Rhätischen Dreieck
- (25) Alpentäler-Bus
- (26) Wanderland Schweiz
- (27) Fahrtziel Natur
- (28) GAST
- (29) RailAway
- (30) Encouraging soft mobility in mountainous areas
- (31) NewRide
- (32) Vel Ticino
- (33) Les Gets, laboratory for sustainable mobility – European project MOBILALP – Interreg III B Alpine Space
- (34) Stop plus: a multimedia information platform on mobility and organised car sharing in a mountainous area
- (35) Mobility Car Sharing
- (36) Alpes AutoPartage: a car sharing system in the French Alps
- (37) Logarska Dolina
- (38) Walking among clouds (A piedi fra le nuvole)
- (39) Umweltbonus Zillergrund
- (40) Rent a bike
- (41) Skatingland Schweiz
- (42) Padelland Schweiz
- (43) Bike'n bus
- (44) A simple and convenient bicycle service for mobility in the Grand Lyon agglomeration
- (45) Plan in favour of two wheel vehicles in the département of Savoie
- (46) Schweiz rollt
- (47) Veloland regional

- (48) Mountainbikeland Schweiz
- (49) The Chambéry Velostation: combining bicycles and public transportation
- (50) Bike Mobility Plan Bolzano
- (51) Mobility Management INFICON AG (Gesund und umweltfreundlich zur Arbeit)

## ANNEX 3: LIST OF THE ORIGINAL MATERIAL CONCERNING THE PUBLICATIONS AND BEST PRACTICE EXAMPLES DEPOSITED ON THE ONLINE PLATFORM FOR DOCUMENTS

- (1) PROPOLIS – Planning and Research of Policies for Land Use and Transport for Increasing Urban Sustainability (2004)  
PDF-File: database
- (2) IASON – Integrated Appraisal of Spatial Economic and Network Effects of Transport Investments and Policies (2004)  
PDF-File: database
- (3) EUNET-SASI: Social Economic and Spatial Impacts of Transport Infrastructure Investments and Transport System Improvements (2000)  
3 PDF-Files: database
- (4) TRANSLAND – Integration of Transport and Land Use Planning (2000)  
PDF-File: database
- (5) ALPS MOBILITY II (2005)  
PDF-File of brochure Alps Mobility I: database  
More information about Alps Mobility II: <http://www.alpsmobility.net>
- (6) REGALP: Regional Development and Cultural Landscape Change – The Examples of the Alps (2004)  
PDF-File of project summary: database
- (7) Final Report on Decoupling Transport Impacts and Economic Growth. Analysis of the Links between Transport and Economic Growth (2003)  
PDF-File: database
- (8) Transport system incidence on the Socio-economic Development (2003)  
PDF-File: database
- (9) Evaluating Transportation Land Use Impact (1995)  
PDF-File: database
- (10) Verkehrssystem, Touristenverhalten und Raumstruktur in alpinen Landschaften – Feldbericht der Erhebung zum Touristenverhalten (2005)  
PDF-File: database
- (11) Entwicklung der MIV und ÖV Erreichbarkeit in der Schweiz 1950–2000 (2005)

- PDF-File: Database
- (12) Freizeitverkehr aus Sicht der Tourismusorte (1997)  
PDF-File: Database
- (13) Nachhaltiger Verkehr – Planungs- und Prüfinstrumente (1998)  
PDF-File: Database
- (14) Nachhaltige Tourismusentwicklung in den Regionen der Alpen:  
Monitoringsystem und Managementmodell (2004)  
PDF-File: Database
- (15) Verkehrssystem, Touristenverhalten und Raumstruktur in alpinen  
Landschaften – Bericht zu Raumstruktur, lokaler und interregionaler  
Erreichbarkeit (2005)  
PDF-File: Database
- (16) Räumliche Auswirkungen der Verkehrsinfrastrukturen „Lernen aus der  
Vergangenheit“ (2003)  
PDF-File: Database
- (17) Räumliche Auswirkungen der Zürcher S-Bahn – eine ex-post Analyse (2004)  
PDF-File: Database
- (18) Räumliche Auswirkungen des Verkehrssystems in der Magadino-Ebene – eine  
ex-post Analyse (2004)  
PDF-File: Database
- (19) NISTRA: Nachhaltigkeitsindikatoren für Straßeninfrastrukturprojekte – Ein  
Instrument zur Beurteilung von Straßeninfrastrukturprojekten unter  
Berücksichtigung der Nachhaltigkeitsziele (2003)  
PDF-File: Database
- (20) Grobbeurteilung innovativer Mobilitätsprojekte (2003)  
PDF-File: Database
- (21) Wirkungsketten Verkehr-Wirtschaft (2004)  
PDF-File: Database
- (22) Sacra (1999)  
PDF-File: database
- (23) ex-post analysis Vereina Tunnel (2006)  
PDF-File: database

## ANNEX 4: ORIGINAL MATERIAL CONCERNING THE PUBLICATIONS AND BEST PRACTICE EXAMPLES (HARD COPIES)

- (1) The Impact auf Accessibility to the Road Network on Economy of Peripheral Regions of the EU  
Hardcopy: Meril Hyman, 1995
- (2) SLOW: Nachhaltiges Wirtschaften, Verkehrsvermeidung & Entschleunigung, eine alternative Perspektive für Europa  
Hardcopy, ISBN 3-930731-01-0  
Stephan Brückl, Süddeutsches Institut für nachhaltiges Wirtschaften, 1995
- (3) Regionales Mobilitätsmanagement – Möglichkeiten zur Umsetzung nachhaltiger Verkehrskonzepte auf regionaler Ebene  
Hardcopy: Kanatschnig Dietmar, Fischbacher Christa, 2000
- (4) SPRITE – Separating the Intensity of Transport from Economic Growth  
Hardcopy: Institute of Transport Studies, University of Leeds, UK, 2002
- (5) SESAME – Derivation of the Relationship between Land Use, Behaviour Patterns and Travel Demand for Political Investment Decisions  
Hardcopy: Marie-Odile Gascon, 1999
- (6) VIRGIL – Verifying and Strengthening Rural Access to Transport Services  
Hardcopy: Peter Vansevenant, langzaam verkeer vzw, 2000
- (7) Traffic and Transport Infrastructure as an Economic Factor – Opportunities and Risks at the Regional Level  
Hardcopy: VCÖ Verkehrsclub Österreich, 2003
- (8) Infrastruktur und ihre Auswirkungen auf die Kulturlandschaftsentwicklung  
Hardcopy: Helmut Hiess, et al., 1999
- (9) Sustainable Development of Alpine Cultural Landscapes in the Austria-Slovenia Border Region  
Hardcopy: Helmut Hiess, 1999
- (10) Road Construction and Economic Growth from a Southern European Perspective  
Hardcopy: Gianni Silvestrini, 1995

- (11) The Infrastructure's Endowment of Italian Provinces 1997–2000 (2001),  
Hardcopy

## ANNEX 5: DEFINITIONS OF KEY TERMS OF THE QUESTION 4 (REASSESSED AND COMPLETED GLOSSARY)

Key term	Definition relevant for 'Future in the Alps'
<b>Accessibility</b>	(Q4) The possibility to be (physically) accessible depends on the availability and quality of transport infrastructure, transport means and transport services. Accessibility is usually measured by accessible inhabitants, workplaces, regional value within a certain travel time.
<b>Awareness raising</b>	(Q4) To enhance the conscious knowledge of one's feelings, motives, and desires related to a specific topic.
<b>NEW !!! Balanced Development</b>	Communities with no dominant economic sector and a lower percentage of commuters.
<b>Commuter mobility</b>	(Q4) Travel between one's home and place of work on a regular basis – including travel behaviour and spatial aspects
<b>NEW !!! Disparity</b>	The condition or fact of being unequal.
<b>NEW !!! External Costs</b>	Refer to a negative side-effect of an economic transaction, an act of exchange, consumption, or production. It is the opposite of an external benefit and is often called a "negative externality."
<b>Impacts</b>	(Q6) Marked effects or influences of plans, concepts, legal regulations, policies or other activities
<b>Implementation</b>	(Q1-6) A phase of the (transdisciplinary) project process. Implementation comprises not only a synthesis of the results compiled in a project, but also the effects of these results. Possible effects



	include new insights, an altered perception of a problem, or an influence upon decision-making.
<b>Innovation</b>	(Q1) Development and realisation of new products, methods or processes in support of sustainability
<b>Instruments (political)</b>	(Q6) Means of pursuing an aim, for example formal or legal documents, plans, concepts, subsidies etc.
<b>Interdisciplinarity</b>	<p>(Q1-6) Several disciplines work together on a problem by going beyond the borders of the individual disciplines. Concepts and methods of the multiple disciplines are combined and transferred between the disciplines.</p> <p>Interdisciplinarity means that, e.g., agricultural economists cooperate with landscape ecologists, biologists with sociologists and psychologists, landscape planners with communication scientists, etc.</p> <p>As opposed to that, the term 'multidisciplinarity' is used if several disciplines work on a problem side by side. It is a basic assumption that the quality of interdisciplinary cooperation depends on the competence of the disciplines involved.</p>
<b>Leisure mobility</b>	(Q4) Mobility in connection with free time, relaxation or enjoyment – including travel behaviour and spatial aspects
<b>Public participation</b>	(Q5) The involvement of the public (stakeholders, land owners, persons affected by a plan or a project as well as the general public) in planning, decision making, implementation and monitoring
<b>Regional (level)</b>	(Q1) Level below national level, the scale depends on the specific issue. It can be a mountain valley, an administrative unit etc. EU definition: national = NUTS I, regional = NUTS II (Bundesland), local = district or area such as Montafon, Nationalpark Hohe Tauern aso.
<b>Regional mobility concepts</b>	(Q4) Papers concerning aims, expected outcomes, procedures, measures and projects in connection with mobility at regional level

<b>Regional welfare</b>	(Q4) Actions or procedures designed to promote the basic physical and material well-being of people in a region, including the financial support given for this purpose
<b>Slowness</b>	(Q4) New and specific aspects mainly of touristy marketing promoting qualities like low speed, tranquillity, taking and having time
<b>NEW !!! Spatial Structure</b>	Distribution of land use, activities and functional relations
<b>Sustainable development</b>	(Q1-6) Brundtland-Definition 1987: 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' Thereby economic, social and ecological processes are interrelated, and should be considered equally by public and private stakeholders.
<b>Tourism mobility</b>	(Q4) Mobility in connection with the commercial organization and operation of holidays and visits to places of interest – including travel behaviour and spatial aspects
<b>NEW !!! Transport system</b>	Roads, railway, waterway and airway

## ANNEX 6: LIST OF POTENTIAL FUTURE MEMBERS OF THE NETWORK 'ENTERPRISE ALPS'

Postauto – Die Schweizerische Post

Helvetiastraße 17, Postfach, CH-3030 Berne; Switzerland, [www.postauto.ch](http://www.postauto.ch)

Mr. Rodi Hoz, ([hozr@post.ch](mailto:hozr@post.ch))

Phone: +41 31 338 19 52, Fax: +41 31 338 71 37

Consorzio per la promozione turistica delle Valchiavenna

Via C. Chiavennachi 11, 23022 Chiavenna, Italy

[Carlotta.consorzio@valchiavenna.com](mailto:Carlotta.consorzio@valchiavenna.com)

New Ride (promotion of electric powered bikes and scooters):Car rentals Avis, Hertz;

MIGROS Switzerland, Contact person of the project New Ride (University of Berne):

Heidi Hofmann, Interfakultäre Koordinationsstelle für allgemeine Ökologie,

University of Berne, Schanzeneckstraße 1, 3001 Berne, Switzerland

[hofmann@ikaoe.unibe.ch](mailto:hofmann@ikaoe.unibe.ch)

Alpes AutoPartage

Mr. Paul Cardilès, Mr. Daniel Faudry

14 Rue de la République, 38000 Grenoble, France

[contact@alpes-autopartage.fr](mailto:contact@alpes-autopartage.fr), phone +33 4 76 24 57 25

Stiftung Veloland Schweiz,

c/o Schweizer Tourismus-Verband,

Postfach 8275, Finkenhubelweg 11, CH-3001 Berne

phone: +41 31 307 47 40,

fax: +41 31 307 47 48,

[info@veloland.ch](mailto:info@veloland.ch)

contact: Mr. Peter Anrig, Mr. Martin Gutbub, Mrs. Andrea Ziemer Duncan

to contact also for the following projects: «Wanderland Schweiz», « Mountainbikeland Schweiz», «Skatingland Schweiz» and «Paddelland Schweiz»

Rail Away AG (associated company of SBB)

Zentralstraße 7, 6002 Luzern, Switzerland

Managing Director René Kramer

Fulvio Tura

Centroinbici

Ferrara, Italy

[centroinbici@libero.it](mailto:centroinbici@libero.it), phone +39 3355346340

## **ANNEX 7: LIST OF ONGOING RESEARCH PROJECTS ON THE QUESTION 4 FILLED IN THE FORM OF THE ISCAR-DATABASE**

Research concept 2004–2007 ‘Sustainable spatial development and mobility’: ARE (Federal Office for Spatial Development Switzerland) <http://www.are.admin.ch>

Alpine Space Programme, EU Community Initiative, <http://www.alpinespace.org>

Projects:      PUSEMOR  
                  MONITRAF  
                  ALPS MOBILITY II  
                  VIANOVA

## **ANNEX 8: NATIONAL REPORT ITALY**

see pdf-file

## **ANNEX 9: NATIONAL REPORT SWITZERLAND**

see pdf-file