Measured & Perceived Sustainability

Interreg IIIB Project, Alpine Space Programme, EU

Alpine municipalities under scrutiny. Are the Alpine municipalities developing in a sustainable manner? How to measure sustainable development? Are there municipalities within the Alpine arc which have reached a similar level of development or have similar prospects for the future even if they are separated by a distance of several hundred kilometres?

March 2008

These are the questions that DIAMONT project module WP8 set out to investigate. For this task we gathered economic, social and environmental measurements that might map regional development and linked them. On top of that we wanted to find out the individual perception of sustainability among local decision makers. Why? Because it is the individual attitude, the perceived sustainability, so to speak, that eventually tips the balance towards setting or not setting initiatives that encourage sustainable development. At least this was the basic assumption of the EURAC research team in Bolzano which had been charged with WP8.

Work Package 8 (WP8): Selection and review of data for application throughout the Alpine Space

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Key objective: Identifying regions of comparable development within the Alpine space, taking into account economic, social and environmental aspects. The search was based on quantitative data (gathered, for instance from censuses or GIS[1] data sets) as well as qualitative data (from a comprehensive survey of mayors)

Duration: December 2005 to March 2008

Project director Ulrike Tappeiner in conversation about the insights yielded by the survey and the conclusions that can be drawn from the collected information...

Professor Tappeiner, WP8 stands for Work Package 8, i.e. one of several project modules within the DIAMONT research project. What is DIAMONT essentially about?

DIAMONT stands for "**D**ata **I**nfrastructure for the **A**lps – **M**ountain **O**rientated **N**etwork **T**echnology". It is about scientifically capturing and linking data on the state of development and the future potential of regions within the Alpine space, predominantly in terms of sustainability. DIAMONT is carrying out basic research and advising the Permanent Secretariat of the Alpine Convention on the development of a pan-Alpine monitoring and information system and on selecting suitable indicators and relevant data for sustainable regional development. The Alpine Convention is an international agreement between the eight Alpine states and the EU and aims at safeguarding the sustainable development of one of the most sensitive regions in Europe.

Within this context, what was the special task of WP8, i.e. your job?

We were charged with identifying those municipalities within the Alpine arc which present a similar level of development and comparable potential. We were able to build on the results of preceding work packages, i.e. WP5 to WP7. WP 5 had pointed out cultural differences within the Alpine space, WP6 had captured the experts' view on the most urgent problems for current and future developments in the Alps, and WP7 had yielded indicators for mapping the basic themes of sustainable regional development within the Alpine space. Our task would be to use these criteria to investigate individual Alpine regions in terms of their current state and their potential for sustainable development and compare them with each other. On the basis of our results, succeeding work packages – WP9 to WP11 – would select test regions and try out instruments and strategies for sustainable development on the ground and document them. The main results of all this work would then be made available to the Permanent Secretariat of the Alpine Convention for supporting sustainable development.

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[1] GIS = short for a computer-aided GeoInformationSystem „consisting of hardware, software, data and applications. It can be used to digitally capture spatial data and edit, store, reorganize, model and analyse then as well as present them alphanumerically or in diagram format." (Lit.: R. Bill 1994)
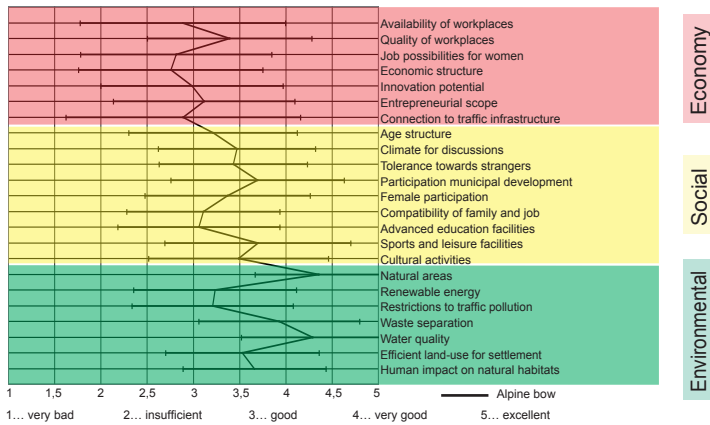
Fig. 1: Assessment of status quo of municipality by aspect of sustainability – average and standard deviation on all Alpine municipalities, n= 1325

Fig. 2: Assessment of importance for political work – Alpine-wide average and standard deviation, n = 1325

You were not content to just link existing data sets and quantitative results, i.e. numbers, from previous studies. You wanted to base the evaluation of the individual municipalities also on qualitative data gained in a survey of the 5887 mayors within the Alpine space …

Yes, because regional development is only in part determined by those framework conditions that can be represented by objectively measurable data such as statistics or satellite images. Statistic data are not enough to identify regions with similar strengths and weaknesses. Just as important is the individual perception of local decision makers. How these perceive their municipalities, the opportunities for sustainable development and development needs within their sphere of responsibility, all this also determines which steps are taken and which aren't.

What were the results of this survey?

The survey was carried out online. The response rate averaged 22 percent. This is satisfactory and ensured the survey was representative. The mayors were asked to assess their municipality on the basis of 24 sustainability indicators on economic, social and environmental aspects. The mayors rated the environment best for their municipalities, with three environmental themes doing particularly well: supply of near-natural areas, water quality and waste separation. Within the social sphere, the participation of the population in the development of the municipality and the provision of sports and leisure facilities were rated as "good". In contrast, the economy received only "medium" ratings on average.

These are mean values, but is it not just as important to find out how individual mayors rated individual indicators…

That's right, which is why we also calculated the spread. Interestingly, it is supported by the results from the arithmetic mean: agreement across the Alpine arc was greatest on environmental issues, while economic issues and some social issues showed up the biggest differences
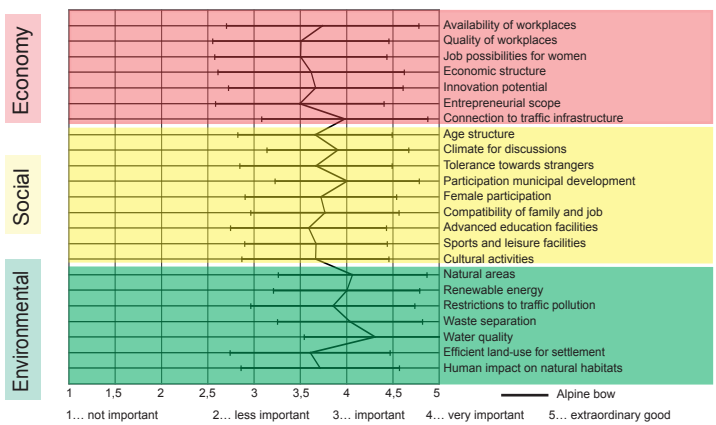
in individual perception. We found the widest spread with regard to job situation and transport links.

All this relates to the assessment of the current state of development, but what are the sustainable development issues that the mayors are most concerned about for their municipalities?

When we analysed this aspect of the questionnaire we first noticed that the ranking of the issues according to their importance did not differ as strongly as the assessment of the status quo. All the same, differences did emerge: Slovene municipal administrators, for instance, attach a higher significance to economic issues than do the mayors of German Alpine municipalities, for whom social and leisure aspects tend to take centre stage. Across the board, however, environmental themes rank highly and within these the supply of near-natural areas and safeguarding water quality received high priority, followed by social concerns and one economic issue, i.e. the link to a supra-regional transport network. All other economic themes rank below this one for the local representatives.

The answers stem from seven different states. Did this show in the survey results?

Not really, neither the differences in the assessment of the current state of development nor the differences within the hierarchy of values can be tied in with national boundaries. Using a simple variance analysis, we were able to show that the differences between individual municipalities within one national state were more significant than the variances between states.

You said it already: the qualitative survey is only one aspect on which you based your comparison of Alpine regions. Quantitative data is the other. Can you elaborate on that?

First of all: the search for data turned out to be more problematic than we had thought. We aimed for as wide a collection of data material as possible to describe all major aspects of the three pillars of sustainability – economy, society and environment – adequately. These

are predominantly data from national statistics such as censuses and agricultural surveys, but also GIS data sets, e.g. on land cover. However, the data from the different nation states had been gathered in different years. In Germany, for instance, the last census had taken place in 1987. The relevant data were too old for a pan-Alpine comparison because the other Alpine states involved had carried out their most recent surveys around the year 2000. Moreover, many data that concern the municipal level are not stored centrally or are not available for pan-European studies. In a very time-consuming operation, therefore, many values had to be requested from the national statistics offices, put together and harmonized. Harmonization was also necessary because by no means all surveys were based on the same criteria.

What can you say about the results from comparing the quantitative data?

The pan-Alpine set of raw data was used to calculate 81 indicators for the municipal level. 41 of these were economic indicators, 26 social and 14 environmental indicators. They reflect a broad spectrum of aspects, from the labour market situation and the population trends to tourism, transport links and land use. All indicators were eventually brought together in the total assessment and the Alpine-wide comparison of municipalities. Together with the results of the survey of mayors, they form the basis for mapping comparable regions and on top of that they can be used for further studies of other details.

What kind of indicators did you use in your comparative studies?

Let us take the issue of distance to the nearest hospital. The spatial and temporal distance to a hospital is an important indicator of medical provision but also of the recuperation context. The shorter the distance to the hospital, the more familiar the surroundings are for the patient and the more frequent the visits from friends and relatives. Such psycho-social factors are essential for the healing process, in addition, of course, to the quality of medical provision. Even more important is access to a hospital in certain medical emergencies. Just think of heart attacks or strokes. In such cases every minute counts for the survival of the patient.

And what are the results for this specific aspect?

Around 90% of all Alpine municipalities are situated within a radius of less than 25 minutes or less than 20km from the nearest hospital. Liechtenstein has the shortest access times, followed by Germany and Switzerland. In Slovenia the distances are greatest and about 20% of all municipalities are 30 and more minutes away from a hospital. Just as telling for an analysis of decentralized medical provision is the relation between the distribution of the population and the access times (Fig. 3): more than 97% of the entire Alpine population can drive to a hospital within 25 minutes. In Switzerland 96% of the people can even reach a hospital within 15 minutes. Our

final analyses, however, took other aspects into account as well, such as the availability of an air ambulance or the equipment available at the emergency service stations.

That was just one aspect. Can you illustrate the results of your work with another example?

Let me mention an aspect that is close to my professional heart: the density of universities. As a rule, students are quite mobile, and do not necessarily prefer the academic training on offer in their vicinity. There is however a statistical link between the distance to the nearest university and the number of graduates: the shorter the spatial and temporal distance to a university, the higher the proportion of graduates in the total population. This cannot just be explained by the wider range of employment opportunities for graduates in the vicinity of university towns. The distribution of higher education establishments across the Alpine space shows up regions with comparatively long access routes. These are usually remote areas in the hinterland of the main valleys, often in border regions of individual nation states. In the French Alps in particular, higher education establishments are predominantly situated on the Alpine rim and thus far away from Alpine core regions. Switzerland, on the other hand, shows quite a homogenous distribution. Nearly all Swiss municipalities are less than 60km away from the nearest university.
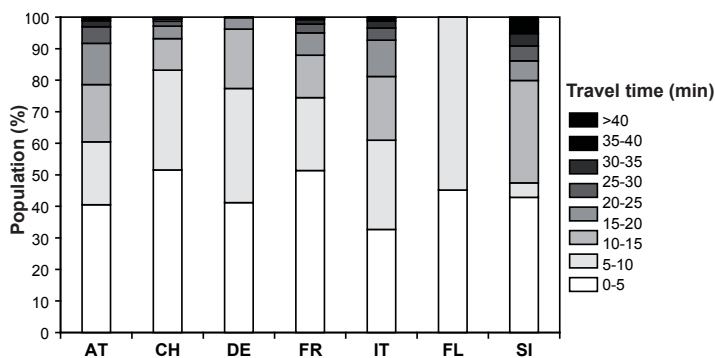

Fig. 3: Average distance to the nearest hospital

And another example: our study was also looking at age overhang within municipalities, calculated as the ratio of over 65s to 15-64 year olds. We found overaging mainly in the southern part of the French Alps and in Italy, except for South Tyrol. In Switzerland, Austria, Germany and Slovenia, however, this problem is less pressing. Possible reasons for this phenomenon could be the migration of young people to economically more favoured areas, but also the appeal of certain regions for retired people.
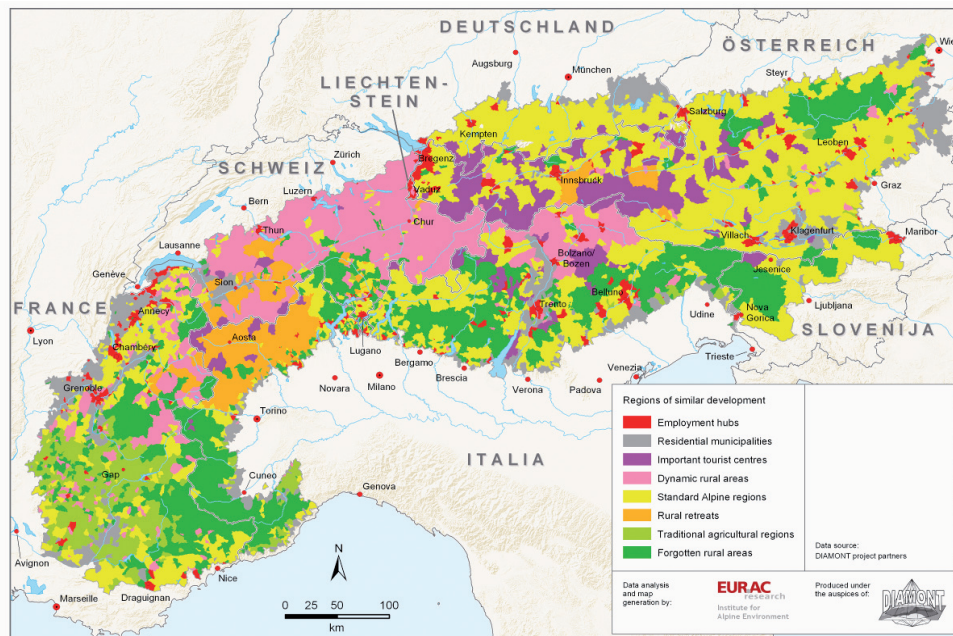
Employment hubs

Employment hubs show a high positive commuter balance, i.e. a large number of employed persons commute into this hub on a daily basis. These centres have a good transport infrastructure and large built-up areas. Business parks, industrial facilities and shopping centres offer a good supply of jobs.

Residential municipalities

Typical residential and dormitory municipalities are found in the vicinity of large employment hubs. Transport infrastructure is better than average, daily commuting into the employment hubs is possible without great loss of time.

Important tourist centres

A typical tourist centre has very well developed accommodation facilities; the employment situation is better than average because of an abundance of jobs in the service sector. In spatial terms these are rural municipalities with a functioning agricultural sector and an intact cultural landscape as a result.

Dynamic rural areas

Such an area is characterized by a rural location and a dynamic labour market. Employment, particularly for women, has improved significantly, not least as a result of positive developments in tourism. Moreover, agriculture is still intact in such areas, with only very few farms or plots being abandoned. Some cause for concern is the above average emigration of employed persons. Employment of older people is also particularly high in these areas.

Standard Alpine regions

Such regions have no outstanding features and in all aspects return average values for the Alps. Typical characteristics include low tourist intensity, a decline of agriculture and a negative commuter balance. Balanced migration and birth rates, however, prevent excessive overaging in these areas.

Rural retreats

Characteristic for this cluster are good transport links, which the residents use to commute even further to work while retaining the centre of their life in the rural hinterland. In recent decades, agriculture has largely retreated from such areas, resulting in large natural spaces with little fragmentation and a highly diverse landscape.

Traditional agricultural regions

Typical for such a region are severe overaging and a poor transport infrastructure. Unlike in the cluster "Rural retreat", agriculture is not retreating to any great extent from these areas but farms are run extensively. Overall, this results in a rich traditional landscape. The poor employment situation in the service and tourist sectors in this region might also contribute to the lower rate of abandoned farms.

Forgotten rural areas

This cluster is dominated by distinct overaging and a particularly sharp decline in farming. A major reason for this is the poor transport infrastructure in such an area.

Labour Market Centres in the Alps - case studies of the impact of different spatial planning policies: Bruneck (Italy) and Jesenice (Slovenia)

With all this heterogeneity, did you also find similarities between individual municipalities or even cross-border regions with similar levels of development or comparable development prospects?

Indeed we did, and this was one of our research objectives: to identify regions with similar development structures, even across borders. For the entire Alpine arc and using the 81 indicators, we were able to delineate a total of eight different clusters that characterize the different regions. Municipalities of a cluster share a similar development but differ in essential aspects from municipalities of other clusters. These findings plus comprehensive data and many details will be made available to the public in a big atlas of the Alps due out in April 2008 and in other forms. Opposite is a map of the eight cross-border regions, taken from the volume "Mapping the Alps".

Which leaves the question as to what use the findings will be put to next?

As I said, we will first publish them in a beautifully made, newly designed atlas. You could call this an attempt at heightening the awareness of sustainable development and promoting it from below, starting from the needs of the region. More generally, let me return to what I mentioned at the beginning. Our findings will serve the Permanent Secretariat of the Alpine Convention to support sustainable regional development. Our study shows that quite varied concepts are needed, tailored to individual regions, to keep sustainable development going and/or to get it going in the first place. The point is finding the right answers that take into account specificities, special needs but also regional strengths. Science has laid the groundwork, now it is up to politics on all levels to take it from here.
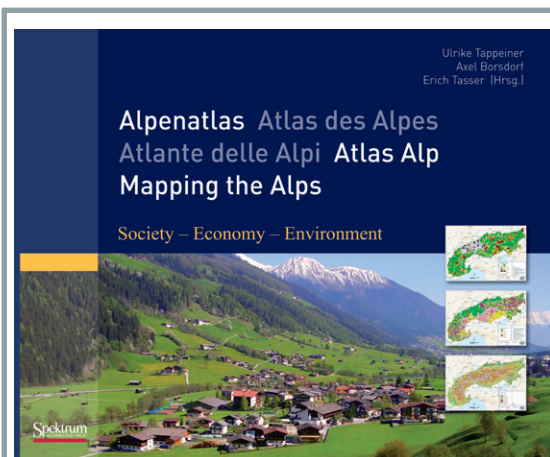
The Alps are the largest and most important mountain region in Europe and the cause of many debates: transit traffic, climate change, tourist development and the impact of a global market economy, to name but a few. However, supranational data and comparative maps based on them have not been available so far. The team of editors, together with well-known experts and stakeholders from the individual nation states, have taken on the task of providing a solid basis for research, political decision making and the economy. This has led to the production of the first atlas of the Alps – with over a 100 pan-Alpine maps on social, economic and environmental issues in an appealing layout with added interpretation.