42TH CONGRESS OF THE
EUROPEAN REGIONAL SCIENCE ASSOCIATION (ERSA)

Dortmund, August 27th – 31st, 2002

Managing and monitoring sustainable regional development in alpine regions

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Abstract

Alpine landscape always has been affected by human economic activities. Traffic economy, tourism economy and industrial structure dominated by small and medium-sized enterprises have been the drivers of economy development as well as of changes in the alpine landscape throughout the last century. There have been tremendous influences of economic activities on special areas but also on the alpine landscape in general.

For years, numerous regions have been subjected to a strong structural change. Globalisation leads to an acceleration of this structural change. Also, globalisation leads to a fast transition of companies, branches and economies. The regions try to influence the negative effects of this structural change in various ways. The results of their efforts are very different. Some regions manage to improve their economic situation whereas others get worse. It is an open question, which structural and procedural factors are responsible for these differences.

So, the question arises how regions are going to organise and manage their sustainable development in the long run. Therefore, appropriate management tools have to be designed. If we knew, what kind strategies regions should apply and how they should change their strategies in the light of the growing influence of globalisation, we could be able to develop tools for future regional development, that could take the demands of sustainability better into account.

To get a framework for this purpose, the paper is divided into three main parts: firstly, considerations are made on the concept of sustainable development and its meaning for touristic regions in the alpine space. Secondly, we will have a closer look on the state of the art regarding indicator systems for sustainable regional and tourism development. In the third sections we conclude the prerequisites we find for the development of a toolbox for regions, to monitor and manage their own regional and tourism development tracking towards sustainability.

KEYWORDS: Sustainable regional development, sustainable tourism development, tourism, monitoring, indicator system, regional governance

1 Introduction

Self-sustaining ecologies, societies and economies in the alpine regions are essential for cultural and landscape preservation as well as ongoing development. Particular attention must be paid here to regional economy development and the role of *tourism*. In many alpine regions *tourism* is a very important factor to the local people and local economies, and may even be the only source of primary income from outside the region. It can be assumed that the importance of tourism for economic development in the alpine regions will *increase further* in future.

As shown by developments so far, mass tourism and the associated infrastructures profoundly influence the alpine environment and landscape. This can *affect seriously natural capital resources* in such regions, not only the *ecology* itself, but also the local culture and social structures.

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In many cases, tourism is *non-sustainable* in this connection, because natural and social capital resources are often depleted more rapidly than the rate of economic gain through tourism – either by individual companies or the region as a whole. The basic question raised in this paper is therefore:

> *"How can sustainable tourism – contributing to sustainable regional or local development – be attained in the alpine regions. And how can this process be initiated, monitored and managed?"*

The following research aspects arise thereby:

Monitoring concept: How can sustainable tourism in the alpine regions be monitored? How can the relevant targets and criteria be defined? And how can the respective indicator systems be put together from the static and dynamic points of view?

Tourism and regional development: How have the alpine regions developed so far economically, ecologically, socio-culturally and institutionally? What role does tourism play thereby within the regional production and innovation systems as well as outwardly? What differences exist in this connection between various types of region and forms of tourism?

Operationalising and assessment of sustainable tourism: How have tourism regions developed from the sustainability point of view? To what extent has economic capital been generated? What is the relation between such gain or loss and changes in other sustainability aspects (natural and social)? In which areas do complementary development processes exist, and where are the main conflicts?

Ecological restrictions and critical loads: To what extent are negative ecological changes experienced, particularly landscape changes. How are they assessed, and at what point do they lead to a decline in tourism (day visitors and overnight stays)?

Evaluation of measures and decision-making processes: Which political measures and entrepreneurial decisions were taken in the past for controlling regional tourism and development? What effects did such measures have on sustainability?

Management and control processes: What are the interrelationships between conditions, measures and developments? Which strategies and implementation measures have proved most successful for different kinds of region? How must regional and touristic development and learning processes be structured to promote sustainable development?

To clear up an explanation order for these research questions, we first shall have a look on the meaning of the sustainability concept in the framework of touristic regions in the alpine space (module 2). Then we reassemble the state of the art concerning monitoring and indicator systems for sustainable regional and tourism development (module 3). At last, we shall define the prerequisites for an active region to manage and monitor its own development towards sustainability and outline a set of tools to be used for this purpose.

2 Sustainable Development and Tourism

2.1 The background of the discussion

Since the publication of the Brundtland report (WCED 1987) and the UN conference on environment and development 1992 in Rio de Janeiro, there have been countless attempts to generalize and implement the concept of a sustainable development at a regional or municipal level (Keating 1993).[1]

A generally accepted definition in the political area is found in the 'Brundtland report': Sustainable development is defined as a *development which makes it possible for the people living today to satisfy their needs without derogating the possibilities for development of future generations* (WCED 1987). As a lowest common denominator this definition is however very hard to realise. But in every respect, there is scope of the decision which needs are the most important ones and which developments limit the chances of the future generation.

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1 For synopsis of various definitions of „sustainability“ see Pearce et al. (1989), Stenholz (1996) or Wackernagel, Rees (1997)

At the same time shows this noncommittalism clearly the charm of the term sustainability. This is why it is used more and more and there is a risk that it will become a plastic word. It is used by numerous actors in various contexts with most different contents (Ninck 1997, according to the Germanist Pörksen).

In principle, you can say that in various scientifical, political and social debates there is on the basis of the Brundtland definition, more a less a common sense, concerning the term of sustainable development with regard to textual and strategical alignment. (Rossi & Berwert 1998). The sustainable development is usually regarded as a three lane system of objectives, which integrates the economic, ecological and social dimension of the development.

The complex pretense and the variety of possible criteria result in the implementation of the idea of sustainable development in a multitude of competing systems of objectives. The clear noncommittalism of the Brundtland-definition develops to a smorgasbord of strategies. Potential conflict of goals outcrop between ecological sustainability, economic development and social structural change. It is obvious, that there is no impartial right strategy of sustainable development. (Szereny 1999a). A way out of this dilemma is the reversal of the view. You can not derive the objectives of a sustainable development directly and top down from the definition but they have to be adapted to every single case with its own situation and problems (Thierstein & Walser 2000).

Several authors have a strictly different approach to the topic of the sustainable development. They think the concept of a sustainable development is equivalent to a widespread regulative idea according to Kant (Homan 1996) similar to the ideas of health, justice, liberty and beauty.

This idea does not support primarily the difference of sustainable and non-sustainable developments, activities, products or services. Its main focus is on the intensity of sustainability. Sustainable development is regarded as an open process of searching, learning and creating (Minsch et al. 1998, 19), which is based on the idea of equity. According to Thierstein & Walser (1996) this process is characterised by a dual strategy: on the one hand, sustainable development represents a long-term learning process endowing the senses. On the other hand, it requires concrete measures and projects and strong commitments in the every day life and business.

Therefore, does the realisation of the concept, so to say the management of a sustainable development, require specific procedural elements within the scope of decision systems and organisational structures. Among these there are various process features e.g. the abreast of different course of actions and problem solving structures (diversity and system diversity), participation, the cooperation in networks and the idea of subsidiarity. (Thierstein & Walser 2000).

The continuous evaluation of the implementation process becomes more important if the process comes to the centre, which is orientated on rather general and normative objectives. Such an evaluation supplements the indicators, which serve the monitoring of the progress of a region onto the way of sustainable development (Schubert et al. 2000).

2.2 The Dimensions of sustainability

The ecological view, in most cases with a focus on natural science, emphasis the preservation and intactness of ecological systems and their ability for further advancement and self-organisation. In the foreground there are criteria like the ecological carrying capacity (ecological footprint)[2] or the buffer capacity and the adaptability of eco-systems (cf. Munn 1989). From this view you can derive the paradigm of a *"strong sustainability"*;[3] which says that a reduction of natural assets is not compatible with a sustainable development. This means, that non-renewable resources should not be used at all if possible. Whereas the consumption of renewable resources should not exceed the regeneration of the resources in the same timeframe. A society performs in a sustainable way if the natural assets do neither decline in quantity nor quality although there is growth or development (cf. Rennings & Homeyer 1997, Minsch 1993, Pearce & Turner 1990).

The economic view however, argues with the paradigm of a *"weak sustainability"*: All economic activities (production, consumption, economic growth, etc) are based on the substitution of natural assets by

2 Vgl. Wackernagel, Rees (1997)

3 For the distinction of strong and weak sustainability cf. for international discussions: Daly 1992 or Victor, Hanna, Kubursi 1994; for the discussion in German: Rennings/Hohmeyer 1997, Hediger 1997; for tourism: Müller 2000)

economic assets. In a production process natural resources are being transformed into resources created by humans. For the living standard both are of importance, the natural assets and the created capital stock. The capital stock can – do not have to – enhance the benefits for today's and future generations. Both the natural and the created capital stock contribute to the welfare and quality of life. Supporter of a "weak sustainability" argue in a stern anthropocentric perspective. It says, that a society always performs in a sustainable way if the total capital stock does not decrease over the years.[4] Economic and ecological questions are supplemented in the concept of sustainability thanks to an explicit social angle. It includes on the one hand the material distribution justice. Apart from fulfilment of subsistence level it has the access to social resources as education, health and security, etc. (cf. Thierstein & Walser 2000). On the other hand the social dimension has possibilities of participation and development which can be summarised with the catchword "empowerment". After all, addresses the social dimension the population's identity with their culture and their living space.

2.3 The objectives of Sustainable Regional Development

The presentation of sustainable regional development comprises the spatial dimension explicitly into the approach. In scientific and political social discussions there are the different concepts with linked policy formulations. There is no general definition of sustainable regional development with resulting objectives and concrete action levels. As well in this case the various dimensions of sustainability are assessed differently (Baumgartner & Röhrer 1998).

Regional sustainability can be specified as a steady maintenance of real-asset values of ecological social and economic prerequisite of production and reproduction. The permanent operativeness implies the safeguarding of potentials of development for further generations in both respects, ecological and economic-social. This is linked with the best possible use of region internal and region external resources (Lucas 2000; Szerenyi 2000).

Nevertheless, regions are not closed systems. They are even more open than national states for the trade of goods and services, migration movements and immaterial influences of all kinds. Only with close linkages and not on *an autonomous development path*, regions can develop in a successful way. Haber (1994) even talks about the "impracticality" of a sustainable regional development. The market and non-market trade-off processes as impact coherence have to be taken into consideration for both, at the development of objectives and concepts and at the monitoring and management processes. This is why sustainable regional development must be looked at in the area of conflict between function spatial job sharing, regionalisation, globalisation and the regional competition.

Thus, strategies of sustainable regional development are influenced by *exogenous and endogenous effect factors*. In recognition to these close linkage relations, the interregional justice even forms an essential basis of the discussion to a sustainable development. As a result of this, it has a respective significance in the agenda 21 of Rio de Janeiro and the resolutions for the Rio succession conference.

Regardless of all problems of a political, natural landscapes or functional justified border relations, regions are often defined in a *static view* as independent (economic) units. Economists derive the grade of sustainability of a region from the capability to generate sufficient added value. A static model calculates the economic value of regional resources like workforce, property and capital from the *discounted further net added value* of the region. This view includes both the intensity and permanence of regional generated added value. The *dynamic model* of sustainable regional development however, emphasis the regional innovation ability and the capability of a region to learn and to react flexibly to new challenges (cf. Thierstein et al. 2000).[5] As well tourism, which represents the mayor pillar of the economy in numerous alpine regions, is included into a regional production- an innovation system. In a dynamical way the interaction and networking of the actors (inter-and intra regionally) promotes the learning and innovation aptitude (Hotz-Hart, Berwert et al. 1999; OECD 1999).

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4 Corresponding to this paradigm, the economic capital stock is in the centre of the economic term on sustainability. In the single enterprise, economic capital can be measured by its capability to generate further free cash flows (i.e. free resources exceeding the replacement demand) and therefore scope for the next generations. This is why nowadays most authors calculate the corporate value on the basis of further discounted free cash flows (cf. Copeland et al. 1998; for tourism: Bernet & Bieger 1999). The added value is net, this means after deduction of depreciation, which is essential for the maintenance of the capital stock (cf. Rütter 1991; Bieger 1988).

5 Important aspects for the learning aptitude of regions and their possible blockage you can find at Grabher (1993), Rösch (2000), who transfers the model of life cycle on the learning aptitude of regions and at Crevoisier et al (2000), who describes the problem of the de-learning of the regions.

This concept regards innovation and learning effects more and more as an overall social process, which requires a sophisticated knowledge (regional knowledge) when it comes to networking and co-operation. Apart from the infrastructure of a region ("hardware") the individual ("software") related competencies (vocational, social, political, creative, etc.) play an important role for a knowledge based development strategy with endogenous potential. (Lawson 1999, Tödtling 1999).

Some catchwords are for example *„learning region'* (cf. Thierstein et al. 2000), *regional innovation systems*[6], the setup of *clusters*[7] and *industrial districts* with developmental stimulating *settings* (Maillat 1998, Crevoisier 2000.)

The connections of functions and the reciprocation between society, economy, politics, landscape and environment gain in importance from the afore described dimensions of sustainability. Thereafter, sustainable regional strategies should be regarded as *dynamic and process-orientated model of actions.* They are aligned on both, the safeguarding of material and immaterial basic living conditions and on the regional internal and external development potentials. Apart from the political administrative system with its institutional regulations the network of various regional actors and stakeholders is put together for a sustainable regional development.

Regions – in variable separation – are an *important level of action and implementation* of concepts and strategies of sustainable development (Thierstein & Walser 2000).

Regions, in terms of political levels, are the interface between communal self-administration and national legislation. On the regional level the view goes beyond local- and project related activities. The vicinity of the problems facilitates the realisation of national laws and regulations. Regions, as manageable and cultural determined field of activity, enable in many fields the mobilisation and sensitisation of the public (Hey et. al 1992). Furthermore, specific tasks are to be found in the front at a sustainable regional development, which can be handled better on a regional level than on any other political level:

There are for instance pattern of land use and infrastructure, regional supply, material flow, protection and usage of the nearby natural cultural landscape and cultural topics as the central point of a regional identity.

The concept of sustainable regional development will be substantiated by regional development concepts and strategies. This process can be determined by uncertainty and various conflicts (Minsch et al. 1998, S. 16f.). In particular, the co-operation of different lobbies concentrate on the protection of their own belongings. A way out of this dilemma offer networks of actors, who cooperate voluntarily. They are all guided by a mutual system of values based on sustainability. In such regional "*innovation coalitions*" (Thierstein 1997) actors do not work together because they have to - but because they want to. In this "value municipality" you can find representatives of the private economy, public authorities, NGO's as well as individuals – genuine "businessman personalities". Actually, they are the supporter of a sustainable regional development.

2.4 The objectives of Sustainable Tourism Development

For some years there has been in tourism as well an intensive discussion about sustainable development in tourism.[8] *Regional actors* (inhabitants, authorities, companies) as well as *guests* (tourists) have been involved. At this, the tourist is not defined by tourism specific activities. For the separation the stay apart of the daily accustomed surrounding, as well as the frequency and the distance of the travel plays the decisive role. (Antille, Rütter, Berwert & Jandeau 2001).

The *quality of touristic destinations* is a typically regional political problem: Guests are concentrated on a small geographic unit with a particular cultural and ecological-landscaped quality. This leads to a abreast of very different usage intensities on a small room. Questions about the regional competition between the destinations or – seen from the reversed angle – questions of the inter-regional (distribution) equity, play a very important role at the topic of sustainable touristic development.

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6 The concept of innovation systems which are applied on various spatial levels of action and analysis focuses on the interaction and interfaces between the various (regional) actors.

7 Cf. to the cluster approach and to the qualitative orientated analysis, Porter (1990), about clusters in an innovation system, den Hertog, Bergman et al. (2001). Cf. to a quantitative analysis of clusters due to input-output data cf. Peeters, Tiri & Berwert (2001). Methodological approaches and an empirical implementation for the regional set-up or assessment of input-output tables at Berwert (2000).

8 Cf. to international discussions on long haul holidays Cater & Lowman 1994.

Tourism represents on the regional level a *strongly integrated* and *differentiated system*. Among this system there are the integration of *different touristic relevant branches of the economy* (Rütter et. al 1996), the consideration of various types of tourism and their cycles of activities (e.g. day and overnight stay tourism, arrival and departure, stay, activities in the area) as well as the impact on the society and its environment (traffic and mobility, landscape use, local culture and identity, architecture, etc.). Therefore, a mere sectoral view of touristic development in terms of sustainability is not too promising at all (Pils & Eltschka-Schiller 1999).

As well in the alpine regions, where tourism plays in many regions a very important role in the regional economy, they have been discussing intensively about the *objectives and contents of a sustainable touristic development*. According to Müller & Flügel (1999) the objective system of sustainable touristic development in the alpine region refers to the following sectors:

1. prosperity contribution (income, added value, employment, reduction of disparities)
2. the subjective well-being, the cultural identity, the social adaptability of the humans, who live in the region
3. the optimal fulfilment of various guest needs
4. the protection of the environment and the natural resources, as well as the landscape with regard of ecology and aesthetics
5. the preservation of the diversity of cultural creations and the protection of cultural goods
6. the intrinsic aspects of equity in the sustainability concept, in particular the right of participation for future generations and the form of the competition among the touristic destinations.

Thus, sustainable touristic development can be defined as an environment responsible and social forming, guiding and developing of tourism as a purpose orientated system. (Müller, Flügel 1999).

According to Baumgartner (2000) the following *dimensions* for sustainable touristic development have to be taken into consideration

- *ecological dimension*: sound natural landscapes and anthropospheres are the most important resource for a touristic development[9]
- *economic dimension:* the basic principle of sustainable development comprises all sectors of economy. In particular as well the integration of touristic relevant branches of economy into the regional networked economy
- *sociocultural dimension*: sustainable touristic regions are characterised by a self-determined cultural dynamic and the integration of tourism into the local and regional culture
- *political dimension:* management and guidance systems for touristic regions take the following factors into consideration: economical, ecological, social, cultural, political and institutional
- *institutional dimension:* the development and realisation of sustainable strategies integrates all actors (access to information and participation at decision-making process
- *spatial dimension:* sustainable and touristic specific development is also dependent on other region's development. Non-sustainable ways of development have their source not only in the very region but are influenced by developments in other regions as well.
- To be completed is the *social dimension:* not only small groups or non-regional companies benefit from tourism, but the region itself. Everybody of the regional population "participates from the benefits"

Due to various discussions about sustainable development in tourism, Baumgartner & Röhrer (1998), for example hold a very strict position: sustainable tourism can not exist in the narrower sense. It is very difficult to legitimate the most forms of alpine tourism in the term of a strict sustainable development. The ski industry and other forms of sport tourism often need changes of landscapes and other measures, which wear down non-renewable natural resources and thus, deplete the natural assets. A touristic development

9 In the context of tourism and ecological sustainability in the alpine region landscape the following topics are relevant: the change through touristic infrastructure and the resulting loss of natural landscape, the traffic related immissions as well as the energy use. Also of importance are waste disposal, water supply (snow cannons) and sewage disposal. (cf. Pils & Eltschka-Schiller 1999).

of a village with its necessary setup of the service culture influences the local culture as well. Traditions and long existing values are facing very often a fast change. (cf. Thiem 1994).

If you look at a region from the *perspective of its development*, the "sustainability" of the touristic use depends strongly on the form: from the ecological viewpoint, limits have to be defined, where are risks of irreversible developments of important natural resources. If there is a further use of natural and cultural resources conditional upon the touristic development, it can possibly be legitimated by the profits of newly created economic and sociocultural values for the region. Economic values can have a positive influence on demographic, sociocultural and natural development.[10] Thus, tourism can rather be legitimated according to a *weak viewpoint of sustainability*. But the questions is raised more and more, whether tourism has really created the relevant economic values, to enable a sufficient substitution.[11]

Nowadays it must be assumed, due to various indicators of a missing ability of a great part of the tourism industry to finance the necessary renewal investment (cf. Bieger et al. 2000), that sustainable economic values are no longer produced. This is why the whole sustainable development must be questioned. From the dynamic viewpoint it must ascertained that many regions will not cope with the *touristic change of structure*.

The assessment of the economic impact of tourism has to consider all effects of added values and incomes triggered off by tourism. Economically said, initiate touristic expenditures of guests an economic process - direct and indirect effect on the turnover – and therefore a value added chain on the supply side. It is above all the touristic industry (hotels, restaurants, cable cars, culture, sport, recreation, etc.) and further branches of the economy (retailer, personal services, post, telecommunication, etc.) which benefit from the demand. In addition to the direct-touristic turnover there is on the next step of the value added chain a non-direct-touristic turnover which are companies of advance demand and investment demand (building trade, agriculture, wholesaler and retailer, banks, insurances, etc.)

Finally, the income effects triggered off by tourism in a region have to be taken into account as well. You can assess the economic importance of tourism in a region through the contribution of tourism to the regional GDP (total value added of all tourism relevant branches of economy) or the employment. (Rütter, Berwert, Rütter-Fischbacher & Landolt 2001; Rütter, Müller & Guhl 1996).

2.5 State of the Art in Swiss Research on Sustainable Tourism Development

Up to now, the scientific discussion about sustainable tourism has concentrated above all on the *ecological dimension*. This is also true for Switzerland. Since the beginning of 1980 the term of sustainability has been discussed and its interrelation of environmental problems and touristic developments[12]. *This discussion has been described in the literature intensively (cf. Müller 1993, Müller & Flügel 1999). Important textual impulses about the conflict of interests* between tourism development and economic added value, protection of the environment, landscape and socioculture have their origin at the studies of the Forschungsinstitut für Freizeit und Tourismus (FIF) at the University of Bern (cf. e.g. Krippendorf 1987; Müller, Kramer, Krippendorf 1993).

There, a basic concept for a *sustainable, thus a "soft" tourism* was formulated, which is still today the basis of the discussion about sustainable tourism in Switzerland: Tourism development should take place within *the balance of the magical pentagon*. This magical pentagon consists of the following vertices: sound landscape, intact socioculture, optimal recreation facilities for guests, economic added value and subjective well being of the guests. Above these aims stands the main objective of „equity of participation for further generations".

In the eighties different approaches for the *measurement of the different effects of tourism* on environment, economy and society were developed. So the development of a core indicator system for a "harmonised tourism development" can be found at Seiler (1989). Another approach was developed by Thiem (1993). It dwells on the reciprocity between the main objective "Improvement of quality of life for as many

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10 Various studies regarding the environmental effects of tourism have been published in recent years. Exemplarily for Switzerland is Messerli & Meuli (1996).

11 Cf. for developing countries: Mäder 1985 or the current discussion about the economic problems of Valais tourist communities; for the tourism industry: Bieger et al. 2000;

12 A different aspect of this connection is the scientific discussion about the consequences of the climate change for tourism (cf. Wanner et al. 2000) or the CLEAR-project about climate and environment in the alps. (Abegg 1996; for detailed regional-economic impacts cf. Bürki 2000).

participants as possible" and the sociocultural processes and impacts in the source and origin and destination culture. Important impulses for a *impact measurement of tourism* go back to the research papers within the scope of the MAB-research programme about the socio-economic developments and the ecological resilience in the mountain area, which was carried out in the eighties (cf. an overview of Brugger et al. 1984). Detailed analyses were carried out as well in the whole context *tourism and traffic*. Here as well, the negative effects on the environment, which are a result of touristic traffic, were in the foreground.[13]

At most of such research projects the focus was put on ecological impacts. There were hardly any detailed economic analyses on the single enterprise or on the regional level. However, a different direction of research deals almost exclusively with the *economic impacts of tourism*.

It focuses on both, the single enterprise (cable cars: Bieger et al. 2000, generally: Bieger & Bernet 1999; Scherer, Strauf & Behrendt 2001) and the region respectively canton (Valais: Rütter et. al. 2001; Bern: Rütter et al. 1995; Arosa: Grischconsulta AG 1997).[14] Single research projects are currently dealing with questions, which are as well for the suggested project of importance. There are for example the following projects:

- A current project, with the involvement of the institutes of the authors (Lässer & Ludwig 1999; Müller & Stettler 1999, Bieger 2001b).[15], is dealing with the economic importance of sporting mayor events and its cost-benefit aspects (economic, ecological and social factors).
- Regional-economic researches about the effects on added value und employment of tourism can be found at Küpfer (2000). The empiric paper deals with the regional effects on added value of Swiss national parks. [16]
- An economic assessment and a comparison of prices and quality features of Swiss ski resorts can be found at (Berwert, Bignasca & Filippini 1996). [17]

These research projects focus more on the economic effects. Ecological and sociocultural effects are not analysed at all or only marginally. There are only a few integrated research projects, which examine in a methodic and empiric way the different dimensions of sustainability. There is, for example a current research work at the geographic institute of the University of Zurich, which is dealing with the sustainable regional development in the biosphere reserve Entlebuch. It is as well examined, via key indicators whether the regional economy including tourism, develops onto the direction of sustainability. The sustainability evaluation of the *ski world championship 2003* in St. Moritz applies as well the integrative approach. Social, ecological and economic effects as well as dynamic aspects (effects of learning) were taken into consideration on the conceptional and process level. (Bieger, Müller & Elsasser 2000).

Larger research projects, which, apart from the basic development of indicators for the monitoring of sustainable tourism development, carry out comparing case studies of different tourism regions, do not exist in Switzerland.

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13 Cf. the numerous papers in the scope of the NFP 41 ‚Umwelt und Verkehr (environment and traffic)' as well as the various papers at the FIF in Bern (e.g. Müller et. al 1999)

14 For methodic aspects of such analyses cf. Rütter & Berwert 1999; Rütter et. al 1996, Scherer, Rinklin & Bieger 2001)

15 Institut für Tourismuswirtschaft, Hochschule für Wirtschaft Luzern; Forschungsinstitut für Freizeit und Tourismus, Universität Bern, Institut für Öffentliche Dienstleistungen und Tourismus, Universität. St. Gallen, Rütter+Partner, concert research.

16 A comparable study was carried out by Steiger (1993).

17 These compromise for example the capacity and comfort of the transport facilities, the altitude of the ski resort, the vicinity to bigger agglomerations or the part of the snow cannons.

3 Monitoring systems for sustainable development

3.1 The necessity of a Monitoring for a sustainable development

The development and implementation of measurement categories or indicator systems is explicitly postulated in the agenda 21. Moreover, should the indicators, after being operationalised, integrate all dimensions of a sustainable development. These measurement categories or indicators are an important decision guidance or decision basis and are meant for political decagon-maker and the broad levels of the public.

Though, there is a considerable need of research, as far as the assessment of the objectives and criteria of sustainable development with the help of a indicator system, is concerned (Baumgartner & Röhrer 1998, S. 55 and the there quoted literature). If you consider the various number of approaches towards the development of indicators of sustainability[18], it is obvious, that despite numerous methodic deficits, the development of ecological indicators has progressed the furthest. Up to now there are no practicable concepts available for the economic, sociocultural and institutional dimension. This applies particularly to the whole tourist sector (Baumgartner 2000).

What shall be reached concretely by the operationalisation and the development of an indicator system for a sustainable development? By the use of an indicator it should be shown ascertainable and appraisable, to what extent a given objective is reached (Atteslander 1993). An operationalisation needs the development of an objective system as well the identification of essential and aim defining features. With these you can measure the grade of the achievement of the objectives (Baumgartner & Röhrer 1998).

Indicators of sustainability should show and measure *dynamic processes* (retrospective and prospective time rows and trends) as well besides *the differentiated assessment of different dimensions* of sustainability. Thus, progress or the direction of the development can be documented. These data can also be used in terms of benchmarking. (Müller & Flügel 1999, Szerenyi 1999b).

Apart of the *information and communication function* help indicators as well at the identification of prior problems and fields of action and thus at the concretion or further development of the model (cf. as well Libbe 1999). The use at the political decision process requires both political acceptance and the identification with the objectives and criteria at the various actors. Therefore, the development should be understood as a *successive decision and learning process* (participating approach). This requires as well as the definition of objectives and criteria, the dialogue with the different actors and lobbies. (Thierstein & Walser 2000).

Szerenyi (1999b) separates between general and specific *criteria of selection* at the setup of an indicator system or at the selection of single indicators. The former refer to general statistical criteria like, measurability, scientific character (clarity of the statement, transparency, comprehension, selectivity) and the adequate investment of funds for the objectives (cost effectiveness). The specific criteria compromise apart of the already mentioned function of communication the following ones: political acceptance and the prognosis function, the relevance of the reference or objective values, the compatibility with other indicator systems, the consideration of interests of socially weak groups, the relevance for inter-generative equity and the model conformity.

As an essential research paradigms at the development of tourism relevant indicator systems Müller & Flügel (1999) emphasis the *systemic and interdisciplinary approach* which can show the dynamic interactions between the various objectives and criteria.[19] Also potential and latent conflicts between the different

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18 A detailed description about the different methodic approaches and strategies for indicators of sustainability can be found at Szereny 1999b, focused on economic and social indicators at (Henseling 1999).

19 Towards this direction go the linkage indicators, which represent linkages of various indicators of different dimensions of sustainability (economy, environment, society); e.g. the land usage per guest of a holiday home (cf. SRU 1998). But there are time lags between the relation of cause and effect. (Müller Flügel 1999). Often there are no linear relations of interaction but the cause and effect chains depend often on numerous factors. This requires the application of mathematical-statistical evaluation procedure (multiple regression analysis, variance analysis, cluster analysis, etc.) (Diefenbacher et al. 1997).

sustainability premises should be shown.[20] These are of central importance for the management processes and the co-operation between the different actors. According to Müller & Flügel (1999) an implementation orientated research approach requires the *identification of key processes of sustainable and non-sustainable development* as well as the integration of political and entrepreneurial processes.

The assessment of sustainable development from the anthropocentric view, always has its own *subjective view* (assessment of quality of life of present and future generations). This is why it is strongly characterised by the individual perception. Subjective criteria, which relate on the differentiated perception of actors concerning landscape development, can be found for example at Kienast & Hunziker (1997).[21] Therefore, should an indicator system for the assessment of a sustainable development be completed by interviews of relevant actors (Behrendt & Neitzke 2000; for touristic events cf. Bieger, Müller & Elsasser 1999).

Furthermore requires the successive concretion of the abstract model of sustainable development a systematic *reduction of complexity*. Criteria and measurands of sustainability can only partly evaluate derived or defined objectives of sustainability (Szerenyi 1999b).[22] Additionally, for many indicators - particularly in the social sector - the data situation is very problematic. Often you can only collect data with an enormous effort of resources and time (Diefenbacher et al. 1997).

There is, neither a consensus about the operationalisation of the concept of a sustainable development, nor *a consensus* about the needed indicators. At present there are in both the research literature and the real implementation almost endless indicator systems. Partly they have very different theoretical approaches, different spatial relation levels (international, national, regional and municipal) and different emphasis or orientation of content. In opposite to the scientific technical understanding of the term, which focuses on the principle of an exact as possible quantitative implementation there is the image of sustainability as a regulative idea (Homan 1996), which sees in the learning process as well the incentive for a social discourse about sustainable development. Baumgartner (2000) und Müller & Flüger (1999) hold the assumption, that pure quantitative and scientific oriented indicators for the operationalisation of sustainable development are insufficient and should therefore be supported by qualitative categories.

3.2 The international discussion about sustainable indicators

On international levels in different organisations it was tried to develop indicator systems for sustainability. They were in particular focusing on the international compatibility. They should be the basis for national indicator systems of sustainability (Lübbe 1999).

The approach developed by the *UN-Commission for Sustainable Development* includes a preliminary list of more than 130 indicators for sustainability. They are based on the agenda 21 and are divided into social, economic, ecological and institutional dimensions. The methodology of the CSD-indicator approach is based on the environment indicator system of the OECD and methodically on the *pressure-state-response* PSR (OECD 1998). The textual focus lies on the environment indicators.

The PSR-approach differentiates three different *types of indicators:* the pressure indicators compromise human and economic activities and processes, which have an influence on the sustainable development and lead to impairment of environment and natural resources; the state indicators, which induce at different actors (private households, companies, legislator) social decisions or actions within the scope of political measures or attitude changes.[23] Furthermore, sectoral indicators are integrated, which show interactions between the various dimensions of sustainability.[24]

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20 It should be taken into consideration that there are methodic problems, when the absolute value is measured at the "actual state of the sustainable development" (problems of aggregation and loading). While indicator systems supply important information about the direction or trend of the ways of sustainable development (cf. BFS 1998).

21 Buchecker refers 1996 in a study to two Swiss municipalities, that the participation of the population at landscape planning (e.g. model of the municipality, concept of landscape development) is relevant for the well being in this landscape and therefore for the sustainability.

22 In the same way it should be referred to the problem of aggregation and the linked problem of loading within or in between the different sectors of criteria (SRU 1998).

23 Cf. Szerenyi 1999b

24 For the prosperity index of the World Bank cf. World Bank (1995), and Serageldin (1996).

On the national level a pilot study exists in Switzerland, which has the CSD-approach of the UNO as its basis.[25] In this, the to be selected indicators should be implemented rapidly with help of the existing data. The evaluation and the preliminary selection of the indicators in the three dimensions of sustainability are partly relevant from the view of sustainable tourism development.[26] Nevertheless, there is still a demand of research and implementation, as in particular, both topics tourism and biodiversity are not covered sufficiently by the CSD-indicator system, as the evaluation of the CSD-indicator system concludes (BFS 1998).

3.3 Indicator systems for a sustainable regional development

On the level of regional and municipal indicator systems of sustainability there are a wide variety of approaches, which are based on different methodical fundaments. They rather orientate on case studies and regional specific problems and preferences than on methodical fundaments (Szerenyi 1999b). Due to the very general definition of the term, not only the experiences of local and regional actors have to be integrated but as well the general scientific criteria, the regional facts and the demand, when it comes to the development of regional or municipal indicator systems. (Behrendt, Neitzke 2000).

Some of the approaches for indicator systems of a sustainable regional development differ enormously. They can be classified in regard of their different objective targets.[27] Generally you can differentiate three types of indicator systems:

1. **Project indicators**

   They relate on the concrete assessment of projects and measures in regard of their contribution to a sustainable regional development. By applying them, you can for example identify best-practice projects and therefore important tasks of mobilising and sensitisation can be done. But in the same way the can be the basis for an internal regional benchmark on which basis the respective financial support of the different projects and measures might be decided.

2. **Process indicators**

   They relate on the description of the development processes in the area (municipality, region, state). In particular it is tried, also in the term of benchmark, to assess the integration of objective targets of the agenda 21 in these processes in a comparative way. As well in this case the **function of mobilising and sensitisation** plays an important role. It enables the (internal and external) assessment of the different agenda processes in terms of a collateral controlling and a periodical evaluation of these processes.

3. **Status indicators**

   They relate on the description of the actual state or on the decryption of a long-term development.

   The in this way collected data have different functions: They have the **monitoring function**; on a long term basis the change of the respective regional, national or global capital use is documented. In terms of a **benchmark** they help to compare the state of the development of different regions or nations with reference to viewpoints of sustainability. Additionally, they can play a significant role for the **mobilising and sensitisation** of the respective population by documenting via striking indicators the non-sustainability of a development (or as well the improvement of a up to then negative development).

The choice of suitable indicator systems depends now on the specific question or problem. It must be pondered thoroughly, whether a project, process or an actual state should be assessed with the aid of indicators.

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25 More than 20 countries take part at the country specific implementation of these CSD indicator sets. An evaluation of the indicator sets for Germany proved, that many of the indicator suggestions are not relevant for an industry country as Germany. Furthermore, it showed that indicators for important sectors e.g. traffic were missing (BMU 2000).

26 E.g. figure of the net migration, GDP per capita, annual energy us per capita, ratio of reserves, ratio of endangered species in relation to the total population of native species.

27 Cf. the overview, shown in the appendix about different indicator systems for regional development systems, which describe the current discussion in Germany.

3.4 Indicator systems for a sustainable touristic development

The development of indicators for sustainability in the sector of tourism had not been discussed explicitly until the mid-nineties (cf. Ramm 2000; Baumgartner 2000; Baumgartner & Röhrer 1998; Becker et al. 1996; Pils & Eltschka-Schiller 1999, WTO 1996).

Possible topics for indicators were for example compiled as preparation to the 7th CSD conference, New York 1999.

They comprise (according to Pils & Eltschka-Schiller 1999 and EcoTrans 2000):

- Traffic loads, e.g. transport energy use per day of stay
- Urbanisation and over-use of the infrastructure in mass and tourism resorts
- Processes of economic concentration and dependencies
- Thinning-out of peripheral regions
- Sociocultural consequences
- Ecological consequences (use of resources, landscape and natural landscape impacts)
- Temporary spreading, peak load impacts
- Control instruments in the sector tourism
- The ratio between origin and destination

A set of *eleven quantitative core indicators*, developed by the WTO, and a supplement with three specific (kind and location of the touristic region, e.g. mountain, or coast region, urban character, unique ecological attraction, etc.) composite indices, which have to be defined in detail, is used and developed in different regional studies.(WTO 1996, Baumgartner 2000).

Most of the suggested measurands of the indicators relate however on strongly aggregated contents. This is why, for example the suggested indicator "social impacts" is measured by the ratio tourists/residents. The "economic impact" concentrates on the rate of touristic relevant economic activities and the institutional component is reduced to the mere existence of a plan document, without questioning whether the document was created in a process of participation. (cf. Baumgartner 2000). For the guest satisfaction and the impact on the local population interviews are scheduled.

Seiler (1989) limits his study on a set of seven quantitative indicators for the *"evaluation of a so-called harmonised touristic development"* with a rating scale to which the single measurement sectors are allocated.[28]

Pils & Eltschka-Schiller (1999) differentiate in their study three different *cycles of activities in tourism:* arrival and departure, stay in the region and activities in the region. Indicators for the aspects of the use of environment and resources and the social aspects are proposed in each cycle of activity. Additionally it is differentiated into various geographical levels of impact (global, regional, local). The focus is put on the impact on the environment and the potential of pressure of tourism. As economic indicator, only the ordinal number „ratio of employment of the hospitality industry" is proposed. Becker et al. (1996) develops for tourism a demand oriented indicator system, in which the tourists are regarded as the most important decision makers. All against the background of the hypothesis, that sensitised guests can motivate the tourism sector to a rethinking via the demand.[29]

Baumgartner (2000) takes in a stock-taking and a criticism on the WTO approach the view, that a comprehensive assessment of sustainable development can be only done if you *combine the quantitative and qualitative indicators.* A similar approach is already realised within the scope of the Danish project Destination 21. The ongoing monitoring of this, on a national level, successfully implemented sustainable

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28 There is for example the grade of development and sealing, the development of agricultural area, transport capacities of cable cars, ski-lifts, etc. in relation to the number of beds, the relation of hotels and non-hotel accommodation, or the ratio of number of beds of residents. No economic indicators are suggested.

29 They are divided in mobility indicators, prosperity indicators (pressure on natural resources and environment), employment indicator (effects on the employment), economic indicator (effects on touristic expenditures), acculturation indicators (cultural effects).

touristic concept, bases on a combination of quantitative and qualitative indicators and tries to collect static, dynamic and process oriented criteria. Up to now, there is no existence of a monitoring system about the impacts of tourism for a sustainable development.

Within the scope of single research projects only basic approaches for a monitoring system were developed, which were only relevant for clear cut defined destinations or for single touristic mayor events. [30]

There are as well basic approaches for the collection of economic development within the scope of "Satellite Account Tourism", the national accounts as well as within the scope of single studies of branches. [31]

3.5 General requirements towards an indicator system

If an indicator system for the monitoring of the sustainability of regional development should be applied on regional level and simultaneously a high control impact should be gained, the following basic requirements have to be taken into consideration:

- *Easy manageability:* the collection and updating of the needed data must be integrated, without much effort, into the everyday business of the participating institutions and the project bodies.
- *Clearness*: for the motivated citizen it should be easy, by means of the criteria, to understand the objectives of the respective agenda process and where the concept of a sustainable development has its quality. In this way it is guaranteed, that the necessity of quality management is insightful.
- *Attractiveness*: there should be at least a representative selection of criteria with an emotional message. It should be strong enough to arouse the interest of the citizens, media and to stimulate communication via the objectives.
- *Ability to motivate:* the criteria should not represent an ideal situation of the remote future, but act as a support for the continuous improvement of the activities. Otherwise engaged actors might be discouraged by the uncompleted endeavours.
- *Objectiveness and measurability:* the criteria must be logically and should be well-funded in a scientific way. A transverse section of the indicators should be as well measurable in terms of quantity, to determine progresses in the period.

If a sustainability monitoring aims on the *comparison* of municipalities and regions (national and international) the requirement get even higher. It must be then checked, whether there are indicators for each single criterion, which are in use in other countries or regions as well. Therefore, the relevant indicator lists have to be consulted, whereas the CSD[32] list is the most important one, followed by other lists as the ones of OECD or EUROSTAT.

4 Conclusions

This paper deals with the problem of what could be done by regions in the alpine region to maintain and strengthen their status as an *autonomous capable of acting living space, economic and natural area.* This normative concept has according to the authors' understanding of sustainability a strong analogy with the *core requirements of a sustainable regional or touristic development:* How can a sustainable regional or touristic development in the alpine region be reached and in which way can processes be initiated and controlled towards the direction of sustainable development?

This main question compromises all dimensions of sustainability and is in process within the scope of a national research project, which is divided into four modules.

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30 Cf.. the papers about Ski world championship in St. Moritz (Bieger, Elsasser & Müller 2000)

31 For the cable car sector cf. the project „evaluation of the financial and entrepreneurial perspectives of Swiss cable cars" financed by seco; and for the hotel sector the project "Sucess Indicators and Drivers Hotellery", financed by KTI. Both projects are being carried out by the IDT-HSG.

32 http://www.un.org/esa/sustdev/csd9/csd9_indi_bp3.pdf

The *methodical papers in module 1* deal, firstly, with the definition and the clear cut of the term of sustainable regional or touristic development, secondly with the *identification of objectives and criteria* and thirdly, with endogenous and exogenous determinants of regional development processes. In the following, on top of that, a *basis indicator set* of sustainable development is established. Additionally, should the view of dynamic processes (trends, innovation- and learning processes, regional decision networks) show the direction towards sustainable and non-sustainable development processes move to. In doing so, potential conflicts should be shown as well as synergies between different objectives of sustainability, which are for the process of management and controlling as well for concrete recommendation of activities of greatest importance.

Module 2 is about five *regional cases studies*, in which the long-term development and the role of tourism is analysed. Furthermore, the touristic development is analysed about its sustainability and assessed, subjectively, by other actors. With this, a *regional adapted indicator set* with all actors in a participating process will be developed in two regional profound studies.

Module 3 consists of a comparing analyses and a summary of results of the case studies, where an analysis model of the *regional economic importance of tourism* for the various region is developed. On top on the summery of the empiric results, the *monitoring system for the development of touristic development* in the alpine region, as well as a *management model for a sustainable tourism* are finally developed in *module 4*. These models of action are being implemented in the participating regions.

Acknowledgements

This paper is based on work to set up a research project within the framework of Swiss National Research Programme NRP 48 "Landscapes and Habitats of the Alps", funded by the Swiss National Science Foundation (SNF).

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