



43TH CONGRESS OF THE
EUROPEAN REGIONAL SCIENCE ASSOCIATION (ERSA)
Jyväskylä, August 27th - 31st, 2003

Monitoring system for sustainable tourism in Swiss Alpine Regions. Tools for regions to act on their own initiative

Julia JOHNSEN*, Anja UMBACH-DANIEL⁺, Klaus-Dieter SCHNELL*

Abstract

Self-sustaining ecologies, societies and economies in the alpine regions are essential for cultural and landscape preservation as well as for ongoing development. Particular attention must be paid to regional economy development and the role of tourism. In many alpine regions tourism is a very important economic factor to the local people, and may even be the only source of primary income from outside the region. It is assumed that the importance of tourism for economic development in the alpine regions will increase in future. Theories about regional sustainable development state, the regional level (or destination level as to say in tourism) is dedicated to conjoin the global concept of sustainable development and the intention of putting it into action.

The paper outlines the foundation and structure of the monitoring system for sustainable tourism development. In the second section, the basic concepts are explained and the role of tourism in regional development is described by means of current trends in the Swiss mountain regions. A brief overview of more recent literature provides a somewhat more in-depth understanding of the concept of "sustainable tourism development". Finally, we present our concrete plan for sustainable tourism development in (Swiss) Alpine regions. Normative and strategic goals were formulated for this plan.

The third section of the paper outlines the main features of the monitoring system for sustainable tourism development. What can be learned from existing measurement concepts and what are the basic functions and requirements of a monitoring system? We will show how deductive/inductive indicators can be identified using a combined approach. This is followed by the fourth section where the actual monitoring system is described. In this section, we explain how goals, explanations, indicators and data are related. The system brings together indicators for measuring status, for process analyses as well as for project assessment. The paper is concluded with an appraisal of the usefulness of the indicator set based on previous findings, previously open questions and a description of how development will be pursued in the future in in-depth studies.

⁺ Rütter+Partner, concertgroup, Weingartenstrasse 5, CH-8803 Rüschlikon, Switzerland, e-mail: anja@ruetter.ch

^{*} Institute for Public Services and Tourism (IDT-HSG), University of St. Gallen, Varnbuelstrasse 19, CH-9000 St. Gallen, Switzerland, e-mail: klaus-dieter.schnell@unisg.ch, julia.johnsen@unisg.ch

1 Introduction

For about a year now, a research project that is part of the Swiss National Research Program NFP 48 has been addressing the issue of what Alpine regions can do to maintain their status and natural, living and economic areas capable of autonomous action. This capability to act is considered necessary to protect the natural landscapes and habitats and the culture of the inhabitants and to develop them in a sustainable way. Special attention must be paid here to the economic development of these regions and the role that tourism plays in this development. In many Alpine regions, tourism is an important economic factor, if not the most important or even the only economic factor, that is able to generate primary income (i.e. income from revenues originating outside of the region) for the local population. One can assume that the significance of tourism for economic development in Alpine regions will continue to grow.

The project analyzes the development of tourism in five different Alpine regions over a longer time period. Questions are asked about the significance of tourism and factors that encourage and inhibit regional development. At the same time, indicators are used to analyze and assess the development of tourism with respect to sustainability (monitoring system) in regional case studies. Using this comparative analysis as a basis, a model which illustrates the regional economic significance of tourism for different types of regions as well as for the sustainability of various forms of tourism is created. This model includes not only the monitoring system but also a management model for sustainable tourism development which will be drafted and implemented in a participatory process with all of those regions involved in the project.

Normative research methods are applied, for example, to establish goals and postulates of sustainable development. The project also uses a deductive method: the factors relevant for sustainable development are identified by analyzing the regional development factors. The study combines case studies and indicators to measure sustainable development. This method is a combination of top-down indicators established for sustainable tourism development (basis indicators) and regional-specific indicators developed from the bottom-up.

This paper outlines the foundation and structure of the monitoring system for sustainable tourism development.

In the second section, the basic concepts are explained and the role of tourism in regional development is described by means of current trends in the Swiss mountain regions. A brief overview of more recent literature provides a somewhat more in-depth understanding of the concept of "sustainable tourism development". Finally, we present our concrete plan for sustainable tourism development in (Swiss) Alpine regions. Normative and strategic goals were formulated for this plan.

The third section of the paper outlines the main features of the monitoring system for sustainable tourism development. What can be learned from existing measurement concepts and what are the basic functions and requirements of a monitoring system? We will show how deductive/inductive indicators can be identified using a combined approach.

This is followed by the fourth section where the actual monitoring system is described. In this section, we explain how goals, explanations, indicators and data are related. The system brings together indicators for measuring status, for process analyses as well as for project assessment.

The paper is concluded with an appraisal of the usefulness of the indicator set based on previous findings, previously open questions and a description of how development will be pursued in the future in in-depth studies.

2 Tourism and Sustainable Regional Development

In this paper focuses primarily on issues that affect the structure of a monitoring system for sustainable tourism development. The goal of the underlying research project is to develop indicators that can help those responsible in the various regions to shape regional tourism in such a way that it becomes more sustainable. We have first analyzed the content of some of the nationally and internationally recognized definitions so as to be able to put this development work in a further context of sustainability and

sustainable tourism (see Section 2.1). Following this analysis, we described the unique characteristics produced by the relationship between tourism and sustainability using regions examined by the NFP48 project. At the end of this section, we have provided an overview of more recent work on the topic of sustainable tourism in tourism research.

2.1 What do the definitions say about sustainability and sustainable tourism?

Though no universally accepted understanding exists of what **sustainable tourism development** exactly is, the Brundtland Report of the World Commission on Economic Development (WCED 1987) suggested that sustainable development is a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Keeping this definition in mind, different governments, NGOs and researchers tried to come up with their own definitions, each with its own focus (Tab. 1). To compare the contents of these basic definitions, they were broken down into their tangible components and assigned to five different aspects of sustainable development, namely *Environment*, *Economy*, *Society*, *Processes/Decision-Making Systems* and *Ethics* (see Thierstein, Walser 2000, Schleicher-Tappeser et al. 1998).

<i>System</i>	<i>Goals</i>				
	<i>Environment</i>	<i>Economy</i>	<i>Society</i>	<i>Processes</i>	<i>Ethics</i>
Brundtland report	Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."				
WTO, WTTC, Earth Council (1995)	Sustainable tourism is "envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems".		The active contribution of tourism to sustainable development necessarily presupposes the solidarity, mutual respect and participation of all the actors, both public and private, implicated in the process, and must be based on efficient cooperation mechanisms at all levels: local, national, regional and international.		Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future.
EU Strategy of sustainable tourism	The growing of tourism should no longer refer in a damage of nature or use resources, it avoids negative effects or reduces them to the minimum.		Involvement of all stakeholders		Tourism should bring economically and socially balanced benefits.
Alp convention, Tourism	Environmentally-compatible tourism	Promote competitiveness of alpine regions in tourism, consider the contribution of tourism to socio-economic development		Knowledge sharing, joint programs to promote the quality of tourism	
Sustainable development strategy 2002	Areas of natural importance and biodiversity are to be preserved. The consumption of renewable resources is to be kept below the regeneration level. The consumption of non-renewable resources. Any impact of emissions and toxic substances on the natural environment and human health are to be reduced to a safe level.	Development is sustainable if prosperity and the capacity for economic development are preserved. (maintain income and employment, capital should at least be maintained and show qualitative improvement, Economic competitiveness and the capacity for innovation are to be improved.	Human health and safety are to be comprehensively protected, education is to be provided, ensuring individual development and identity. Culture is to be promoted, together with the preservation and development of the social values and resources that make up social capital.	Transparent decision-making involving a variety of parties should ensure that the concerns of sustainable development are considered to the greatest possible extent in political resolutions.	Equal rights and legal security are to be guaranteed for all, with particular attention to equal rights for women and men, equal rights and protection for minorities, and respect for human rights. intergenerational outlook (measures must address long-term problems or trends)

Tab. 1: Comparison of the components of different definitions of sustainability

2.2 Relationship between tourism and sustainable regional development

"Sustainable tourism" is not a new type of tourism but is, at its core, a management process. For a region in the Alps, the important issue is to plan and shape tourism in such a way that the focus is not only on the economic implications of tourism but also on how it affects the, the inhabitants and the man-made and natural environment.

But what are the concrete problems that the alpine regions are currently struggling with? These problems can be illustrated using the five pilot regions that were part of the NFP48 project as an example. These five regions were selected on the basis of two criteria, namely "tourism intensity" and "agglomeration proximity" (see Fig. 1). Tourism intensity is measured as the ratio of the total number of days spent in a location by visitors who only spend the day and those vacationing to the number of days spent in the location by the regional population. We assume that high tourism intensity is closely associated with a high level of professionalism in the local tourism industry and with the willingness and capability to invest. In this way tourism companies can adjust their businesses to sustainable goals accordingly. The proximity to agglomeration, in turn, influences the regional economic sensitivity of the region. Regions that are close to densely populated areas offer the population other types of activities and opportunities for spending money than tourism. In addition, there are often more visitors who come to these types of areas just for a single day.

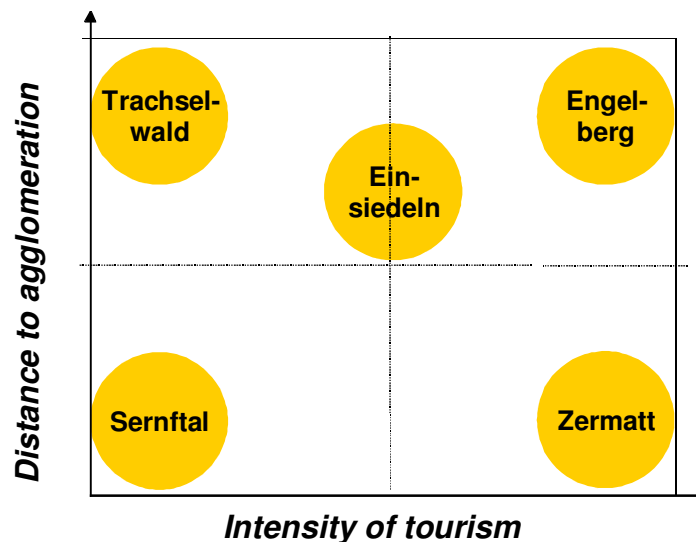


Fig. 1 Grid for selecting pilot regions

The pilot regions can be described as follows:

- **Region Trachselwald**

Situated 25 km north-east of Berne in the "Emmental", Trachselwald is one of 54 Swiss IHG regions¹, comprising 17 municipalities with approx. 34,000 inhabitants. Until today, tourism has played only a secondary role. In 1990, 21 % of the population continued to work in the primary sector. Most of the guests who come to Trachselwald only spend the day and don't stay the night in the region. The region's awareness of tourism is not very well-developed. The hotels and restaurants are not specialized, all of them have a traditional offering of products and services. The lack of cooperation between different stakeholders still acts as an obstacle to increased commercialization.

¹ IHG stands for "Investitionshilfegesetz für das Berggebiet" (Federal Law on Investment Assistance in Mountain Regions)

- **Region Engelberg**

30 minutes (by car) south-west of Lucerne, 1.5 hours from Zurich, Berne and Basel Engelberg is a very important winter sports destination in Switzerland with international flair. Engelberg is a region with high *tourism intensity* and *agglomeration proximity* with a high proportion of *guests who spend the night*. The expanse of Engelberg's natural environment, the many opportunities for active leisure and the proximity to the city of Lucerne make it enjoyable to go to Engelberg just for one day as well. Engelberg offers a huge range of different recreational facilities, events (in summer and winter) as well as summer and winter sports. The infrastructure in Engelberg is very good but requires a lot of money to maintain it. The decline in the average number of nights spent by tourists from 6 (1950) to 3.7 nights (1990) per person with an ongoing downward trend and the drastic increase in the number of tourists who just spend the day have created a whole set of new challenges for the region. These trends jeopardize sustainability both from an economic point of view (e.g. more expenditures for advertising) as well as from an environmental point of view (traffic problems). In addition, the important role that tourism plays for the regional economy makes Engelberg dependent on tourism and therefore vulnerable to national and international political and economic crises such as demonstrated by the impact of September 11th.

- **Region Zermatt**

One of the most well-known destinations in Switzerland, if not the most well-known, is Zermatt which is situated in the Canton of Valais and is a car-free resort which means it can only be reached by train or taxi. This fact alone suggests a remote location far from agglomeration in the region. Its mountain air and high altitude have made Zermatt an international health and spa resort and it has a high level of tourism intensity: tourism is the primary source of income in the region. The tourism infrastructure is mainly in the hands of the inhabitants, family clans continue to dominate the decision-making structures (although this trend is on the decline). Overnight stays in Zermatt tend to be above average. Due to the fact that a lot of new hotels were opened during the last few years, Zermatt has too much capacity in the summer months which leads to dumping prices. Still, the region has been able to retain its natural charm and its village-like character. Hotels and restaurants have excellent quality standards, the mountain railways, which are the engines of tourist development, will continue to be extended after the successful fusion. The region is marketed under the sign of the Matterhorn silhouette which will continue to remain a leading brand in the future.

- **Region Sernftal**

The Sernftal, 70 km south-east of Zurich is also part of an IHG Region. The inner Sernftal region with the municipalities of Elm, Matt and Engi is situated one hour south-east of Zurich. The Sernftal's most significant economic sector is tourism which is centered around protected nature reserves and monuments. Between 1995 and 2000, the region lost 1.5% of its population, which was the largest drop in population among all IHG regions.

- **Region Einsiedeln**

The region Einsiedeln is made up of 6 communities. About 40 km away from Lucerne and Zurich, it is well-known for its Benedictine abbey built in the 18th century. Today, pilgrimages to the Marian shrine are very popular in Einsiedeln, especially in summer. Often large groups of pilgrims, and very often (today more than ever) smaller groups of individual pilgrims, come to visit the sanctuary. The local community has, however, been let down by the large number of tourism buses in the city. Another problem is the number of commuters who travel by their own means to Lucerne and Zurich each day. The ownership structure of the hotels is problematic. Most hotels in the region are small, family-owned businesses that do not turn much profit. Therefore, it is quite difficult to find new owners to pass the business along to. Each year a lot of sporting events take place in Einsiedeln.

The Alpine regions generally face different requirements within the context of sustainability and tourism. In the socio-economic and socio-cultural arena: for a vacation region, it is first and foremost important that tourism generates adequate and lasting added-value for the region. The economic value of regional resources such as the workforce, land and capital can be calculated based on the discounted, future net added-value of the region. But this static outlook is not adequate. Having a dynamic

perspective on sustainable regional development emphasizes the ability of the region to innovate and learn and adjust to new challenges (see Thierstein et al. 2000; for tourism: Bieger 2001b). Interaction and networking between actors (intra and interregional) encourages both learning and innovation (Hotz-Hart, Berwert et al. 1999; OECD 1999).² Tourism is a strongly integrated regional and differentiated system. This system includes the integration of various economic sectors relevant to the tourism industry (Rütter et al. 1996), consideration of various types of tourism and activity cycles (e.g. tourists who spend the day and those who stay the night, arrival and departure, stay, local activities) as well as the effects on society and environment (transport facilities and mobility, use of land, local culture and identity, architecture, etc.). As a result, looking at the sustainability of tourism development from a purely industry-specific point of view will not be successful (Pils & Eltschka-Schiller 1999).

The most relevant issues in the area of tourism and environmental sustainability are changes to the landscape caused by the tourist infrastructure (ski slopes, mountain railways, golf courses, transport facilities, vacation houses, etc.), the associated loss of unspoiled natural areas, emissions caused by traffic (exhaust, noise and destruction of biotopes) as well as energy consumption and the associated emissions. Secondary issues include waste removal, water supply (also for snow-making machines) and sewage treatment, the latter also being important in the context of water run-off routes.

2.3 Recent Literature in Tourism Research on Sustainable Tourism

For years now, different approaches to developing indicator systems for sustainable development have been discussed. The development of sustainability indicators in tourism research has, however, only been explicitly discussed since the middle of the '90s (Ramm 2000, Baumgartner 2000, Baumgartner and Röhrer 1998, Becker et al. 1996, Pils and Eltschka-Schiller 1999, WTO 1996). The following section provides an excerpt of more recent trends in tourism research from the respective literature on this topic. New studies (Ryan 2002) suggest that "new tourism must be concerned with more than sustainability. Perhaps after three decades of academic and planning literature we must change our horizons and speak instead of sustained value creation for the tourist, the tourist industry and communities. Recent works by Gilson, Pratt, Roberts and Weymes (2000) emphasized the ability to mobilize beneficial actions through creating a culture that triggers that most important of all internal resources, human initiative and cooperation. Keeping this in mind, it becomes clear that it is necessary to add value through involving communities and stakeholders in an equitable process. Hassan (2000 p. 243) concludes that a central component of the paradigm of sustainable tourism is building relationships and alliances to strengthen the capacities of local communities and transform local economies in a sustainable way that is also good for the environment. This relationship-based approach requires cooperation between the key actors which are the private sector (hotels, tour operators etc.), the public sector and non-governmental organizations (NGOs) and informal citizen groups. The phenomenon of cooperation is inherently difficult to measure in a manner satisfactory to the end users. To create an indicator system, therefore, requires qualitative indicators as well (see also Baumgartner 2000). Traditionally, only quantitative data have been used because these were seen as more rigorous and credible. But what exactly is an indicator? Hart (1997)³ simply describes an indicator as "something that helps you to understand where you are, which way you are going and how far you are from where you want to be". Miller (2001) points out that indicators today have increasing resonance in politics, with a seemingly endless desire to measure the previously unmeasured. Rutherford (1998, p. 158) in his article "Pieces of a greater Picture" comments that the best indicators conceptually may not be available in practice, either because basic data are not selected or because the methodology to turn available data into indicators of the desired type is unavailable."

The literature study that forms the basis of the NFP48 project also determined that the development of environmental indicators is the most advanced at the current time. In contrast, there are no well-

² Important factors in the ability of regions to learn are provided by Grabher (1993) who provides possible obstacles to learning, by Rösch (2000) who transfers the lifecycle model to regions with respect to their ability to learn and by Crevoisier et al (2000) who addresses the problem of how regions "unlearn" abilities.

³ Hart in Miller (2001)

developed indicators applicable in the tourism industry for the economic, socio-cultural and institutional aspects.

3 A Monitoring System for Sustainable Tourism Development

3.1 *What kinds of monitoring systems already exist?*

The development and implementation of measurement categories or indicators is explicitly postulated in Agenda 21. International organizations (e.g. OECD 1998; U.N. (CSD) 1998) identified the necessity of monitoring sustainable development and created task forces to work on developing indicator systems. There are also countries like Switzerland as well as cities and communities, regions and other political levels that are attempting to achieve their self-imposed sustainability goals using indicator systems and to monitor the status of these goals. The primary components of indicator systems, i.e. the measurement categories or indicators, play an important role in assisting in decision-making processes and can be used by both policymakers as well as the general public. If one considers the *number of different approaches* to developing sustainability indicators,⁴ it is evident that there is neither a consensus on how to put this concept for sustainable development into operation nor a consensus about the necessary indicators. The existing, highly varied indicator systems can be broken down by the *regional level* for which they claim validity (e.g. country, project region, industry), *how this system came into existence* (top-down/bottom-up), its *target reference* as well as its *scope* and *content* (aspects of sustainability, topics) and its purpose (benchmark, project evaluation, etc.).

Today, there are only a few indicator systems in existence that were developed specifically for *monitoring sustainable tourism development*. These are the indicator systems of the World Tourism Organisation (WTO 1998), Naturfreunde Internationale (International Friends of Nature) (Pils/Eltschka-Schiller 1999), von Seiler (1998), Becker et al. (1996), the Danish project called "Destination 21" (Nyberg 2001, Ramm 2000), and the "Process-oriented Assessment Scheme for Sustainability in Tourism (Prozessorientierte Bewertungsschema für Nachhaltigkeit im Tourismus) (2002a) developed by Baumgartner.

There has also not been a *monitoring system for the effects of tourism for sustainable development* especially for *Switzerland* and the Alpine region. There have only been approaches developed for monitoring systems as part of specific research projects for clearly definable destinations⁵ or for specific major tourism events⁶. There are also methods for determining economic sustainability that are part of the project called 'Satellitenkontos Tourismus' for the entire national economy⁷ as well of within the context of individual industry studies.⁸ The following section provides an overview of the existing indicator systems for sustainable tourism development and reviews their usefulness for monitoring sustainable development in the Alpine tourist regions.

A set of eleven quantitative core indicators, developed by the WTO, and a supplement with three specific (type and location of the tourism region, e.g. mountain, or coast region, urban character,

⁴ A detailed description of the various methodological approaches and strategies for sustainability indicators is lists by Szereny 1999b, focusing on economic and social indicators with (Hanseling 1999).

⁵ See, for example, the work done at the Geographic Institute of the University of Zurich (Prof. Dr. Hans Elsasser as part of the project entitled 'Sustainable development in the biosphere reserve entlebuch: A conceptual framework for the assessment of sustainability).

⁶ See the study about the World Skiing Championship St. Moritz (Bieger, Elsasser & Müller 2000)

⁷ See Antille Gaillard, G. et al. (2003): Satellitenkonto Tourismus der Schweiz (Overall Economic Balance of Tourism in Switzerland). Berne: Federal Statistical Office (BFS)

⁸ For information on Mountain Railways, see the project supported by seco called 'Evaluation of the financial and business outlook for the Swiss funiculars' and for the hotel sector, the project entitled 'Success Indicators and Drivers Hotellery' funded by the KTI which are currently being conducted at the IDT-HSG.

unique ecological attraction etc.) composite indices, which have to be defined in detail, is used and developed in different regional studies (WTO 1996). The goal of the indicator system is to make it possible to monitor the negative and positive effects of tourism on the environment and socio-economic factors. Most of the proposed measurements of the indicators relate, however, to strongly aggregated contents. This is why, for example the suggested indicator "social impacts" is measured as the ratio tourists/residents. The "economic impact" concentrates on the rate of tourism relevant economic activities and the institutional component is reduced to the mere existence of a planning document, without questioning whether the document was created in a participatory process (cf. Baumgartner 2000). Interviews are scheduled to determine guest satisfaction and the impact on the local population interviews. There is not a benchmark planned for regions because the indicator values in various regions would be too different.

Seiler (1989) limits his study to a set of seven quantitative indicators for the "evaluation of a harmonized tourism development" with a rating scale which the single measurement sectors are assigned to.⁹

In their study, *Pils & Eltschka-Schiller (1999)* differentiate 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. The study also breaks down tourism into various its geographical levels of impact (global, regional, local). The focus is put on the impact on the environment and the potential of pressure of tourism. Economic factors that have a positive influence on the sustainable development of a tourist destination, for example, a rise in employment brought about by tourism or its contribution to the regional added value of a destination, do not play a role in this concept. As an economic indicator, only the ordinal number "ratio of employment of the hospitality industry" is proposed. The system incorporates eight *minimum and leading indicators*. The indicator system has not yet been put into practice.

Becker et al. (1996) develop a demand-oriented indicator system for tourism in which the tourists are regarded as the most important decision-makers. The hypothesis here is that sensitized guests can motivate the tourism sector to rethink how they operate as a result of demand.¹⁰

Baumgartner (2000 and 2001) criticizes existing, purely quantitative indicator systems because, in his opinion, they do not sufficiently analyze social, cultural and institutional factors. He has developed a *tourism-specific sustainability monitoring system* (Baumgartner 2002) that incorporates the four aspects of: *environment, economy, socio-culture and institutions and processes*. The indicator system is regionally oriented and a benchmark has been rejected because, according to Baumgartner, regions cannot be compared because the existing conditions in each one are too varied. The indicator system has not yet been put into practice. The indicator system has a proposed set of 34 criteria/indicators as well as an indicator/criteria set ("leading guidelines") for the areas of environment, economy, socio-culture and institutional framework conditions. There are 17 key indicators and 17 exchangeable indicators drawn from the 34 criteria/indicators. The latter can be substituted for corresponding indicators/criterion from the list of "leading guideline sets". The indicator system represents a "*process-oriented assessment scheme*". It includes: socioeconomic status indicators (states), socio-economic driving forces, pressures on the natural environment, states of the natural environment and indicators for the institutional framework. Based on the methodology, the indicator system is supported by a combination of and/or the selection between expertise and participatory involvement of the regions. The results of the individual criteria and indicators are summarized as assertions via the four areas of environment, economy, socio-culture and institutional. The assessment of the individual indicators/criteria can be also presented in a star-shaped diagram (one star for each area).

⁹ These include, for example, the degree of overbuilding, the development of agricultural areas, transport capacity for going up and down the mountain in relation to the number of beds, the relationship between hotels and paratourism or the ratio between the number of beds and the number of residents.

¹⁰ These are broken down into spatial mobility indicators (mobility), prosperity indicators (strain on natural resources and the environment), employment indicators (impact on jobs), economic indicators (impact of tourist spending), cultural indicators (cultural impact).

The goal of the Danish project, *Destination 21* (2001), is to develop a *tourism label* that indicates which tourist destinations pursue sustainable tourism. Strictly speaking, it is a combination of a *sustainability label for tourism products* and a *sustainable management system* for the processes in the tourism industry (Ramm 2000: 43). The idea behind Destination 21 was to revitalize the Danish tourism product by differentiating it. One component of the Destination 21 managing tool is an indicator system that is based on *eight sustainability goals* and on three aspects found in the Brundtland report (WCED 1987) - Environment, Economy and Society. Destination 21 is regionally oriented and is geared primarily to small communities with less tourism; mass tourism areas are not the target group of the Destination 21 scheme. A destination that applies for Destination 21 goes through a 3-year cycle which is then repeated at a higher sustainable tourist development level by continuously developing goals. Seven pilot regions in Denmark have applied Destination 21 up to now; and evaluation is currently underway to determine whether Destination 21 is effective and whether it can be used internationally. During the qualification phase, a region must meet the eight general sustainability goals. This is the reason the indicator system was developed. It has a total of 37 indicators. These indicators are directly linked to the eight sustainability goals and are referred to them. There are no special leading indicators. These are primarily a process indicators designed to show evidence of development (annual reports). The indicators quantify or described a state, a development, and activity or a result with respect to one of the eight sustainability goals or a concrete goal of the tourism destination. Destination 21 exposes the economic dimension. The reason for this according to Nyberg (2001) is that the majority of representatives in the Destination 21 Organization come from the Danish tourism industry while environmental groups are underrepresented.

Conclusion

The usefulness of the indicator systems described here for monitoring sustainable tourism development in Alpine regions is limited by the following: a monitoring system for sustainable tourism development in Alpine regions must incorporate the entire bandwidth of factors relevant for sustainable tourism development. These include consideration of the three traditional sustainability aspects, environment, economy and society as well as consideration of the central role of tourism as an economic sector with respect to its supply and demand. The only method which fulfills this requirement is the process-oriented assessment scheme from Baumgartner (2002). When selecting the indicators, this breadth must be expressed as well. If the system is limited to a handful of core indicators such as the WTO method, the flexibility and transparency are compromised for an integrated understanding of how the concept of sustainable development is unique. In the same way, if the aggregation level is too high, such as it is for the WTO indicators, this can lead to distorted measurements and miss the practical problems. One other shortcoming of the indicator systems discussed is, with the exception of the WTO method, its practical application has not been tested.

A system defined from the outside like the one described by Baumgartner (2002) runs the risk of not being accepted in practice. To prevent this from happening, the potential users must be involved in developing the indicator system. This is, according to the literature, not the case with any of the existing methods. Baumgartner (2002) assumes that *using qualitative indicators* must be an indispensable component of the indicator system particularly where the perception of the inhabitants or visitors to the region is to be determined to assess a status or a process. The methods currently being discussed the most, however, limit themselves to large extent to quantitative indicators. The purpose of many indicator systems for sustainable development is to compare various regions at a national or even an international level. In contrast, Baumgartner (2000) is of the opinion that a benchmark between different tourism regions should not be allowed due to varying situations in each location and the different development objectives. However, he forgets that tourism regions like to compare themselves with other tourism regions. In addition, comparisons can give them an additional incentive for making changes. In conducting a comparison, absolute figures (e.g. for energy consumption) cannot be used but rather proportional values (per capita figures) and this comparison must take into account that each region is starting with a different set of circumstances (for example, days where heating is required in higher Alpine regions compared to Alpine regions in the Swiss sun belt such as Ticino or South Tyrol). Indexing these values would be one possible way of dealing with this problem.

3.2 Main Features of a Monitoring System for Sustainable Tourism Development

Several features for a monitoring system for sustainable tourism development can be summarized based on what has already been said. First, the measurement categories or indicators for relevant factors of sustainable tourism and regional development from which a monitoring system originates is not just an end in and of itself. To ensure that the indicators do not become arbitrary, they must be associated with a clear idea of what sustainable tourism development or regional development means.

The basic question, "what is the purpose of the indicator system?" is decisive in shaping the system itself. The following basic areas of application are conceivable:

- For monitoring purposes, i.e. to evaluate tourism and regional development with respect to sustainable development. What is the current situation in the region today and how will it develop over time?
- For management purposes, i.e. to guide development based on the observed development trends
- For benchmarking, i.e. to assess internal developments, processes or products in comparison with other competitors such as neighboring areas or regions that are visited by the same guest segment. Here, it must be kept in mind that the comparability between regions is limited (see Section 3.1)
- As a sustainability check, i.e. to assess the internal development level with respect to aspects of sustainable development, e.g. as part of a national sustainability strategy
- For motivational purposes aimed inwards, i.e. using understandable and meaningful indicators to initiate a discussion about long-term development expectations

A multi-purpose indicator system should be developed for monitoring and managing sustainable tourism development in Alpine regions. The focus of monitoring, on the one hand, should be the status and, on the other hand, the processes that encourage development. The monitoring system must be able to be adjusted to regional needs. This means that indicators are formulated in that either refer to region-specific goals or that make assertions about relevant topics in the corresponding region. The status assessment should still also contain criteria found in benchmark concepts of national or international indicator systems so that comparability can be established.

There are three types of indicators which can be used to achieve the purposes already mentioned:

- Status indicators to describe the current situation and changes over time for capital expenditures and resource use caused by the tourism system as well as for benchmarking aspects of sustainable development, for example, with other tourism regions.
- Process indicators to monitor regional and local developments as well as for (self) evaluation of the development processes (e.g. for creating tourism models or integrating tourism and Local Agenda 21). Process indicators also make it possible to assess whether targets and participation have been achieved as well as institutional interdependencies and planned cooperative structures.
- Project indicators assess concrete programs, initiatives and projects and sensitize and motivate people and encourage them to select "good/best practices".

4 The Indicator System and its Application

4.1 Establishment of normative and strategic goals for sustainable tourism development

It is only possible to select the indicators for monitoring sustainable tourism development as described above if there is a comprehensible *reference framework* available for this type of sustainable development. This is the only way that the selection of indicators from an abundance of parameters can be justified (see Birkmann 1999: 58). This reference framework simultaneously demarcates the items being examined by the indicator system and links the indicator system to the international theoretical discussion about sustainable development. The reference framework for our indicator system for monitoring sustainable

tourism development follows traditional management theories (Ulrich, Krieg 1972; Schwaninger 1994) which distinguish between a *normative*, a *strategic* and an *operative* management level.

- *Normative goals* form the actual *framework of the indicator system*. They express which long-term development for Alpine tourism regions is generally preferable. They *focus* the monitoring system on *tourism, Alpine regions and sustainable development*, thus establishing its boundaries compared to other indicator systems for other topics.
- The *strategic goals* provide *direction to sustainable tourism development*. They include instructions on how the region should acquire key strategic resources or preserve them, which competitive strategies it wants to adopt and how to bundle its energy and resources.
- The *operative goals* lay out a concrete plan for implementing the development strategies within the normative framework.

The following four normative goals were established in the project called "Nachhaltige Tourismusentwicklung im Alpenraum: Management und Monitoring" (Sustainable Tourism Development in Alpine Regions: Management and Monitoring):

- (1) The region is to be preserved and strengthened as *a natural, living and economic space* that is capable of autonomous action. In achieving this goal, the capital stock (economic, social and environmental capital) must be retained overall. The leading definition and concept of sustainable tourism development are closely associated with an enhanced ability of the region to take action, i.e. that intensifying a process that leads to sustainable (tourism) in a region also strengthens the ability of a region to act autonomously at the same time. Goal (1) is also closely related to the next goal
- (2) Tourism should contribute to *sustainable regional development*
- (3) Tourism should contribute to *satisfying visitor needs*
- (4) All interest *groups* are *included* in the process of structuring tourism development.

In coming up with the *strategic goals*, we oriented ourselves to the existing national and international definitions and strategies of sustainable (tourism) development which is supported by officially endorsed and politically legitimate documents (see Section 2.1). To justify the strategic goals, other assertions found in current academic literature were used in addition to the definitions and concepts of sustainable (tourism) development.¹¹

To derive the strategic goals, the definitions above were first broken down into their various components and assigned to the five aspects of *Environment, Economy, Society, Institutions/Processes* and *Ethics* (see Tab. 1). Then, the individual components were merged into one dimension and supplemented by the assertions originating from the academic literature (see footnote 11) and consolidated to form strategic goals. These were then linked to the four project goals and normative goals. The *relevance* of the strategic goals for sustainable tourism development was *documented using empirical and theoretical findings*. Finally, an explicit link to tourism was established.

Tourism development is closely *tied to regional development* in a mutual relationship. Regional development was taken into account when forming the strategic goals when (1) tourism development has a decisive effect on regional development or (2) the reverse is true in that regional development has a substantial impact on (sustainable) tourism development. This mutual relationship has been incorporated in the two normative goals (1) and (2) while Goal (3) covers the visitor needs aspect of

¹¹ Studies and writings of the following authors were included in establishing the strategic goals: Baumgartner 2000, 2001, 2002; Becker 1997a, 1997b, 1995, Becker et al. 1996; Bieger et al. 2000, 1999, Clifford (1995); Diefenbacher et al. 1997; Elsasser et al. 1995; Goodall 2000; Hunziker et al. 1999; Job 1996; Krippendorf & Müller 1986; Küpfer & Elsasser 2001; Losang 2000, 1999; Mäder 1985; Messerli 1998; Messerli & Meuli 1996; Messerli & Wiesmann 1996; Miller 2001; Müller 1999a, 1999b; Müller & Flügel 1999; Öko-Institut 2001; Pils 2000, 1998; Pils & Eltschka-Schiller 1999; Ramm 2000; Rütter et al. 2001, 1996; Seiler 1989; Thierstein & Walser 2000; Wall 1997; WTO 1998; WTTC&WTO 1996.

sustainable tourism development and Goal (4) is a process-oriented approach that includes all interest groups (see also the Institutions/Processes aspect).

The following table contains an overview of the strategic goals of sustainable tourism development.

No.	Strategic Goal
1	Careful use, preservation and renewal of the natural landscape and the habitats of a region
2	Preservation of biological diversity
3	Minimization of environmental and resource consumption (energy, air, soil, space, water)
4	Strengthening of development and the developmental ability of the region through tourism
5	Bolstering competitiveness by increasing the innovative capability of the regional economy, particularly tourism
6	Healthy public finances should be striven for as the building blocks of sustainable regional and economic development
7	Tourism should contribute to securing the regional economy in line with the needs of the specific location and its environment and to preserving the cultural landscape
8	Tourism should contribute in the long-term to positive added-value for the region, thus generating income and creating jobs in the region
9	Tourism should make an important contribution to maintaining local supply channels and to preserving the "public service" in peripheral regions
10	Social Capital (IDT): satisfying the social needs (relationships, quality of life) of the local inhabitants
11	A just distribution of roles and involvement of all interest groups should be striven for while upholding the principle of gender mainstreaming
12	The regional population should not become victims of tourism development
13	Tourism should contribute to the quality of life and to satisfying the socio-cultural needs of the local population.
14	A high-quality, innovative and up-to-date range of services along the entire tourism spectrum should serve to enhance the appeal of a region.
15	Efficient and goal-oriented marketing of the range of tourism services (communication, value for the money, product differentiation, securing market access, branding)
16	Tourism requires efficient and cooperation-oriented management of tourist organizations (destination management)
17	Heightened awareness of tourism among the population which is projected outwards
18	Wide participation of many actors as a prerequisite for long-term learning in the region
19	Regional and interregional network particularly in the tourism industry
20	Appropriate institutions and management structures in the regions to strengthen sustainable tourism development
21	Free access to information and transparent decision-making processes as the foundation for good cooperation among the various actors
22	Efforts are to be made to achieve cohesion from a social, geographic and time standpoint

Tab. 2 The strategic goals for sustainable tourism development in Alpine regions

4.2 Selection Criteria for the Indicators

To select the indicators, the strategic goals of the reference framework for sustainable tourism development (see Section 4.1) must be put into operation. For this step, we are supported by the available academic literature (see footnote 11) and by knowledge gained through the experience of the project members. It must be emphasized here that the operative goals will be discussed in the next project phase with regional actors and, as a result, can be subject to change. Indicators were developed to review the operative goals. The operative goals for which no indicator was found were omitted from the indicator system.

For an indicator to become part of the indicator system, it not only had to refer to the reference framework but also had to fulfill additional criteria. Criteria for selecting indicators are important aids for reviewing indicators, for example, for the availability of data, for general measurability or their validity (does the indicator measure what it is supposed to measure?). An indicator system is not useful when, for example, the user realizes that it is difficult to gather the data or it is too time-consuming, or an indicator is completely meaningless for the user's region. It is the representatives of communities and regions, who are the target groups of the monitoring system to be developed, who are dependent on an

accurate indicator system because they have little time in their day-to-day work to modify a set of indicators imposed from outside. The following requirements must be fulfilled by an indicator system for monitoring sustainable tourism development:

Reference framework: first and foremost, an indicator must be relevant in relation to sustainable tourism development (assigned to a minimum of one postulate) and regional development. Its application must extend to Alpine regions particularly with respect to the assessment of its measurement values, and be able to identify places where action is necessary.

User-friendly/Manageable: the collected data must demonstrate an appropriate informational content and be meaningful for a phenomenon, must be linked to the environment of the users, be easy to understand and communicate and politically influenceable. Moreover, gathering and updating the required data should be able to be integrated into the day-to-day business of the institutions and project supporters involved without too much time and effort. This applies to both the quantity as well as the availability of the data.

Objectivity and measurability: the indicators must be logical and have a scientific foundation. A cross-section of indicators should also be quantitatively measurable to identify progress over time. However, qualitative indicators should also be used when appropriate.

4.3 *Applying the Indicators*

4.3.1 Indicators for the development status

Status indicators described the current state and can be used to analyze longer-term development. Conclusions about the gathered data play different roles: they have a monitoring function because they document changes to the respective regional, national or global capital consumption over the long-term. In the function of a benchmark, they help to compare the level of development of differing regions or countries from a sustainability perspective. They can also play an important role in sensitizing and mobilizing the respective local population by documenting the non-sustainability of a development (or also the improvement of a development that had been negative up to this point) using striking indicators. We make a basic distinction between status indicators which are assigned to the set of *basic indicators* and which can be applied to all mountain regions in the same way and status indicators that represent *regional-specific issues* and that are developed jointly with the actors in the region (see Section 3.2). For a status indicator to become part of the indicator system, it must be able to be used to fit into at least one strategic goal within the reference framework of sustainable tourism development. Moreover, its usefulness is reviewed using the list of criteria provided above. It is not necessary to have measurement values available at the current time and quantity to select an indicator. Currently, a preliminary, temporary basic indicator set is being created and then will be discussed in the four Swiss pilot regions with regional actors.

The following example is designed to illustrate indicator development: the strategic goal "careful use, preservation and recovery of natural landscapes and living spaces of a region" was formulated on the basis of the established definitions and strategies of sustainable "tourism" developments. The strategic goal provides the desired direction of regional development that still must be filled with content. From the literature and our own findings, we know that the natural landscapes and living spaces are at risk from, for example, expanding residential areas, Alpine skiing and through the direct destruction of individual biotopes (such as the blocking flowing water). This problem analysis allows the operative goals to be formulated that link to the strategic goal above them in the hierarchy and for which indicators can be developed to check them. An operative goal would be "preservation or increase of natural areas" that is monitored using the indicators "biotope networks" and "development pressure". Of course, the indicators will be made more precise for the users of the indicator system and the measurement process documented.

4.3.2 Indicators for Process Examination

In addition to the status of development, the monitoring system must also supply a picture of the processes for sustainable tourism development that stand behind the results of development. It should

be possible to assess the process at various levels, e.g. for community or regional development processes for Local Agenda 21. Based on this definition, a certain cooperative structure or the formulation of a model within an organization can also represent a process. As a result, the grid for examining processes should be created in such a way that the criteria can be adjusted to the framework conditions of the respective level or structure.

Although the focus or the sequence of certain steps varies from community to community and from region to region, there are still factors that have a decisive influence on the long-term success of each development process. To determine these factors, the grid provided is helpful.

The grid for process assessment includes the following four categories a) *Organizational factors*. How does a coordination group come into existence when various interests are taken into consideration? How is awareness raised and how does PR work? b) *Content aspects of sustainability*. Is there an integrated approach in line with the model of sustainable development? Is a general development model being developed or has there been an industry-specific model, e.g. for tourism, selected? c) *Methodological criteria*. Which participation options exist? Is there a process orientation and are the results opened? Will its success be (publicly) monitored? d) *Formal aspects*. How tightly is the process integrated in local policy administration, e.g. to what extent are politicians and selected representatives of the community integrated into the tourism development process? Are there regional or non-regional specific activities taking place?

Here, it must be kept in mind, that these processes are difficult for external experts to assess due to the different prerequisites. The best experts for structuring and assessing the sustainability of development processes are, as a result, always the people from the community. One possibility for measuring the process indicators could therefore also be a self evaluation. This could either be conducted by publicly convening groups that are made up of members of all of the most important interest groups. It would also be conceivable to form internal groups made up of tourism associations and community administration whose appraisal of the sustainability of development would then have to be made public. It is exactly in the area of community comparisons that the participation of the public will play a corrective role in adjusting assessments that are too optimistic or one-sided.

4.3.3 Indicators for Project Assessment

The third category in the monitoring system are the indicators planned for assessing projects, programs and initiatives from a sustainability perspective. They can either be used to evaluate these measures once they have been implemented with respect to their contribution to the sustainable development of a region or in the tourism industry or to identify good practices. The project assessment supports sensitization and mobilization of the local population as part of longer-term development processes.

Project assessment is based on the same classification system as the one used to analyze the definitions of sustainable development (see Tab. 1). In addition to the aspects of Environment, Economy and Society, various aspects of the processes as well as ethics are considered. The grid for project assessment is broken down into three sections with a total of 10 evaluation fields.

Project goals	Process in the project	Ethical foundation
Environmental goals	Flexibility of the selected method	Fairness between groups
Economic goals	Principle of subsidiarity	Fairness between regions
Social goals	Horizontal coordination / Networks	Fairness between generations
	Cooperation and involvement	

Tab. 3: Assessment of projects

How the project indicators will appear in the monitoring system for sustainable tourism development has not yet been definitively established. The grid has proved reliable for assessing tourism projects in its applications up to now, for example, in assessing the contributions to competition for sustainable projects in the area of economy and transport or determining the contribution of tourism projects to a strategy of sustainable regional development in the international Lake Constance region (Bodensee Agenda 21 2002).

5 Conclusions and Issues for Further Research

The monitoring system for sustainable tourism development outlined here deals with a clearly defined foundation with the criteria and goals of sustainability in tourism. The indicator set developed for this has not yet been widely used. The advantage is that the way individual factors developed can, as a result, be well observed. However, as part of the scope of further research, it will be necessary to streamline this wide set and work together with potential users to make it more manageable for regional development associations, communities and tourism organizations. This task will be part of the second part of the project which focuses on developing a suitable, situation-specific and usable management system.

We anticipate being able to arrive at conclusions at the end of the project about which direction sustainable or non-sustainable development processes are moving, in particular, due to the examination of dynamic processes (trends, innovation and learning processes, regional decision-making networks). This should expose potential conflicts as well as synergies between various sustainability goals which play a primary role both for management and control processes as well as for concrete recommendations for action.

The next step in the development of the monitoring system is the practice test for the indicator system that will follow in the five pilot regions in the summer of 2003. In these regions, the indicators will be presented and discussed in connection with a longitudinal analysis of the respective development in the regions. The focus of these discussions will be on assessing the usefulness of the indicators for regional governance of tourism development) as well as its ability to be adjusted to the respective regional situation.

One future research issue will be how cooperation between various interest groups can be structured in the long-term from a sustainability standpoint. The dialogue between interest groups must be able to answer the question of which developments should be considered sustainable and which should not. The biggest challenge that the indicator system will be confronted with in the future are the continuously changing social norms and values.

Acknowledgements

This paper is based on a research project within the framework of Swiss National Research Program NRP 48 "Landscapes and Habitats of the Alps", funded by the Swiss National Science Foundation (SNF). The authors would like to thank all partners in the case studies in Einsiedeln, Engelberg, Zermatt, Sernftal and Trachselwald for their contribution to the outcome of the research project.

References

- Antille Gaillard, G.; Rütter, H. & Berwert, A. (2003) Satellitenkonto Tourismus der Schweiz (Overall Economic Balance of Tourism in Switzerland). Berne: Federal Statistical Office (BFS).
- Baumgartner, C. (2000). Nachhaltigkeit im österreichischen Tourismus: Grundlagen und Bestandes Aufnahme. Studie (Sustainability in Austrian Tourism: Study on Foundations and Current Situation) commissioned by the Federal Ministry for Economy and Labor (short version).
- Baumgartner, C. (2001). Operationalisierbares Meßsystem für Nachhaltigkeit im Tourismus (Practical Measurement System for Sustainability in Tourism) (short version). Commissioned by the Federal Ministry for Economy and Labor (<http://www.bmwa.gv.at/BMWA/Themen/Tourismus/Publikationen/Studien/24.htm>).
- Baumgartner, C. (2002). Prozessorientiertes Bewertungsschema für Nachhaltigkeit im Tourismus (Process-Oriented Assessment Scheme for Sustainability in Tourism). Dissertation. Vienna.
- Baumgartner, C., Röhrer, C. (1998): Nachhaltigkeit im Tourismus: Umsetzungsperspektiven auf regionaler Ebene. (Sustainability in Tourism: Implementation Alternatives at Regional Level) Vienna: Manz. (<http://www.bmwa.gv.at/BMWA/Themen/Tourismus/Publikationen/Studien/18.htm>)
- Becker, C. (1995): Nachhaltige Regionalentwicklung mit Tourismus: Ein Strategierahmen. (Sustainable Regional Development in Tourism: A Strategic Framework) *In* C. Becker: Ansätze für eine nachhaltige

- Regionale Entwicklung mit Tourismus (Methods for Sustainable Regional Development with Tourism) (p. 21-31). Berlin: Publisher for university communication.
- Becker, C. (1997a): Nachhaltigkeit im Tourismus - Beiträge der Trierer Fremdenverkehrsgeographie (Sustainability in Tourism - Contributions of the Trier Tourism Geography). *In* Trierer Geographische Studien (Trier Geographic Studies), No. 16, p. 349-356.
- Becker, C. (1997b): Nachhaltige Regionale Entwicklung mit Tourismus: Ergebnisse aus dem Forschungsschwerpunkt des deutschsprachigen "Arbeitskreises Freizeit- und Fremdenverkehrsgeographie" (Sustainable Regional Development in Tourism: Results of the Study of the German-speaking "Leisure and Tourism Geography Task Force". *In* Zeitschrift für Fremdenverkehr, Journal 52, No. 1, p. 19-24.
- Becker, C.; Job, H. & Witzel, A. (1996): Tourismus und nachhaltige Entwicklung. Grundlagen und praktische Ansätze für den Mitteleuropäischen Raum. (Tourism and Sustainable Development. Foundations and Practical Approaches for the Central European Region) Darmstadt: Wissenschaftliche Buchgesellschaft.
- Bieger, T., Laesser, C., Ludwig, E. & Caspar, P. (2000): Perspektiven der Schweizer Bergbahnbranche. Eine Fallstudie für die Transformation einer wichtigen touristischen Teilbranche. (Outlook for the Swiss Mountain Railway Industry. A case study for transforming an important tourism sub-industry), *Revue de Tourisme* 4/2000, p. 32-55.
- Bieger, T., Müller, H.R. & Elsasser, H. (1999): Eine Sport-Grossveranstaltung im Spannungsfeld zwischen wirtschaftlichen, ökologischen und gesellschaftlichen Ansprüchen. (A Major Sporting Event in the area of conflict between economic, environmental and social demands) St. Gallen, Berne, Zurich, St. Moritz.
- Birkmann, J. (1999): Eckpunkte für ein kommunales Nachhaltigkeitsindikatorensystem - insbesondere für die räumliche Planung. (Cornerstones for a Communal Sustainability Indicator System - Particularly for regional planning) *In* J. Birkmann, H. Koitka, V. Kreibich & R. Lienenkamp (Eds.) Indikatoren für eine nachhaltige Raumentwicklung. Methoden und Konzepte der Indikatorenforschung (Indicators for sustainable regional development. Methods and Concepts of Indicator Research) (p. 57-79). Dortmund: Institut für Raumplanung (Institute for Regional Planning), University of Dortmund.
- Bodensee Agenda 21 (2002): Dokumentation Projektwettbewerb "Nachhaltige Ausrichtung von Wirtschaft und Verkehr" (Documentation for the project competition "Sustainable Orientation of Economy and Transport"). Tübingen (www.regio-bodensee.net/agenda9).
- Clifford, G. (1995): What tourism managers need to know. Paper based on practical guide to the development and use of indicators of sustainable tourism. World Conference of the International Scientific Council for Island Development. Vol. 4. p. 55 ff.
- Destination 21 (2001). Destination 21 - a labelling scheme for tourist destinations with sustainable development. Copenhagen.
- Diefenbacher, H.; Karcher, H.; Stahmer, C. & Teicher, V. (1997): Nachhaltige Wirtschaftsentwicklung im regionalen Bereich - Ein System von ökologischen, ökonomischen und sozialen Indikatoren. (Sustainable Economic Development in the Regional Area - A System of Environmental, Economic and Social Indicators.) FeSt Series A No. 42. Heidelberg.
- Elsasser, H., Wachter, D., Denzler, S., Frösch, R. & Abegg, B. (1995): Nachhaltigkeit im Tourismus. Ein Diskussionsbeitrag. (Sustainability in Tourism. A Contribution to the Discussion) *In* C. Becker (Eds.): Ansätze für eine nachhaltige Regionale Entwicklung mit Tourismus (Approaches for Sustainable Regional Development with Tourism) (p. 7-19). Berlin: Publisher for university communication.
- European Commission (2001): Towards a Local Sustainability Profile - European Common Indicators. Interim Report, Brussels.
- Gilson, Pratt, Roberts and Weymes (2000): Peak Performance: Inspirational Business Lessons from the World's Top Sports Organizations. London.
- Goodall, B., Stabler, M. (2000): Environmental standards and performance measurement in tourism destination development. *In* G. Richards & D. Hall (ed.): Tourism and Sustainable Community Development (p. 63-82). New York: Routledge.
- Hart, S. (1997): Strategies for a sustainable world. *In* Harvard Business Review, Jan-Feb, pp. 76-76
- Hassan, S. (2000): Determinants of Market Competitiveness in an Environmentally Sustainable Tourism Industry, in: Journal of travel research, Vol. 38, Number 3, February 2000
- Hunziker, M. & Buchecker, M.. (1999): Bedürfnisorientierte Landschaftsentwicklung im Gebirgsraum - Ergebnisse sozialwissenschaftlicher Untersuchungen. (Needs-Oriented Landscape Development in Alpine Regions - Results of social science investigations) *In* WSL, Nachhaltige Nutzungen im Gebirgsraum. (Sustainable Uses

- in Alpine Regions) Publication for the conference "Forum for Knowledge" 27/28 October 1999, in the Davos Conference Center, p. 57-64
- Job, H. (1996): Modell zur Evaluation der Nachhaltigkeit im Tourismus. (Model for Evaluating Sustainability in Tourism) In *Erdkunde: Archive for Academic Geography*, Vol. 50, No. 2, p. 112-132.
- Krippendorf, J., Müller, H.R. (1986): *Alpsegen Alptraum - Für eine Tourismusentwicklung im Einklang mit Mensch und Natur. (Alpine Blessing, Alpine Nightmare - For Tourism Development in Harmony with People and Nature)* Berne: Kümmerly & Frey.
- Küpfer, I., Elsasser, H. (2001): *Tourismus im Schweizerischen Nationalpark - Eine Chance für die Region? (Tourism in the Swiss National Park - An Opportunity for the Region?)* In *Tourism Review*, Vol. 56, No 1+2, p. 48-50).
- Losang, E. (1999): *Nachhaltige Tourismusentwicklung - Quo vadis? (Sustainable Tourism Development - Quo vadis?)* In C. Becker (publisher): *Forschungsergebnisse zur nachhaltigen Tourismusentwicklung (Research Results on Sustainable Tourism Development)* 52 (p. 7-25). Trier: Geography Organization.
- Losang, E. (2000): *Tourismus und Nachhaltigkeit*. Trier: Trier Geography Organization.
- Mäder, U. (1985): *Sanfter Tourismus - Alibi oder Chance? Die Schweiz - ein Modell für Entwicklungsländer? (Soft Tourism - Alibi or Opportunity? Switzerland - A Model for Developing Countries?)* Zurich.
- Messerli, P. & Meuli, H. (1996): *Umwelt und Tourismus. Erfordernisse an die neue wettbewerbsorientierte Tourismuspolitik (Environment and Tourism. Requirements of the new competition-oriented tourism policies)*. BIGA series of works, Contributions to Tourism Policy No. 6. Berne.
- Messerli, P. (1998): *Touristische Entwicklung im schweizerischen Berggebiet: Suche nach ökonomischer und ökologischer Nachhaltigkeit (Development of Tourism in Swiss Mountainous Regions: The Search for Economic and Environmental Sustainability)* (short version). In H. W. Popp & E. W. Senn (publisher) *Lebens- und Wirtschaftsraum Berggebiet Schweiz. (Living and Economic Space in the Swiss Mountain Regions.) Agriculture - Industry - Tourism - Infrastructure*. Berne.
- Messerli, P., Wiesmann, U. (1996): *Nachhaltige Tourismusentwicklung in den Alpen - die Überwindung des Dilemmas zwischen Wachstum und Erhalten. (Sustainable Tourism Development in the Alps - Overcoming the Dilemma between Growth and Preservation)* In Hans Hurni et al. (publisher): *Umwelt Mensch Gebirge (Environment People Mountains)*. Contributions to maintaining a dynamic environment in habitats and living space. Festschrift für Bruno Messerli, (S. 175-194). Berne: Berne Geographic Organization.
- Miller, G. (2001): *The development of indicators for sustainable tourism: results of a Delphi survey of tourism researchers.* In *Tourism Management* 22, p. 351-362.
- Müller, H. (1999a): *Verkehrmanagement in Ferienorten. (Transport Management in Vacation Destinations)* In *Zeitschrift für Fremdenverkehr* Vol. 54, No. 2, p. 65-77.
- Müller, H. (1999b): *Der Tourismus als Motor für den Nutzungswandel im Gebirgsraum. (Tourism as the driving force behind new uses for Alpine regions)* In WSL, *Nachhaltige Nutzungen im Gebirgsraum (Sustainable Uses in Alpine Regions)*. Publication for the conference "Forum for Knowledge", 27/28 October 1999, in the Davos Conference Center, p. 25-31.
- Müller, H., Flügel, M. (1999): *Tourismus und Ökologie: Wechselwirkungen und Handlungsfelder. (Tourism and Environment: Reciprocity and Areas of Action)* Berne study on leisure and tourism 37. Berne: FIF, Forschungsinstitut für Freizeit und Tourismus (Research Institute for Leisure and Tourism), University of Berne.
- Nyberg, L. (2001). *Destination 21 - A discussion contribution on a scheme for sustainable tourism development.* *Tourism review*, Vol. 56, Nr. 1-2, S. 54-56.
- OECD (1998): *Towards Sustainable Development. Environmental Indicators*. Paris.
- Öko-Institut. (2001): *Umwelt und Tourismus. (Environment and Tourism) Foundations for a report of the federal government (short version)*. Berlin.
- Pils, M. (1998). *Position paper of Naturfreunde Internationale about the role of tourism within the context of sustainable development for the seventh conference of the U.N. committee for sustainable development (CSD) in New York, April 1999.* Vienna.
- Pils, M. (2000). *Tourism as an integral part of a European sustainability strategy.* In: *European Forum for Sustainable Development*.
- Pils, M., Eltschka-Schiller, G. (1999). *Indikatoren für Nachhaltigkeit im Tourismus. (Indicators for Sustainability in Tourism)* Vienna: Naturfreunde Internationale.

- Ramm, N. H. (2000). Towards Sustainable Tourism Destinations: An analysis of the process involved Destination 21 and the case of the island of Møn. Master Thesis. University Lund.
- Rutherford, I. D. (1998): Pieces of a greater Picture. *In* Moldan, B., Bilharz, S. & Matravars, R. (Eds.): Sustainability Indicators: Report of the project on indicators for sustainable tourism (pp. 149- 156).
- Rütter, H.; Berwert A.; Rütter-Fischbacher U. & Landolt M. (2001): Der Tourismus im Kanton Wallis - Wertschöpfungsstudie. (Tourism in the Valais Canton - Study on Added-Value) Commissioned by the Valais Canton. Sion: Finance and National Economy Department of the Valais Canton, Service Office for Tourism and Economic Development.
- Rütter, H.; Müller H. & Guhl, D. (1996): Value-Added Tourism. Berne: University of Berne Forschungsinstitut für Freizeit und Tourismus (Research Institute for Leisure and Tourism).
- Schleicher-Tappeser R., Lukesch R., Strati F., Sweeney G.P., Thierstein A. (1998). Instruments for Sustainable Regional Development. The INSURED Project - Final Report. EURES Report 9.
- Seiler, B. (1989): Kennziffern einer harmonisierten touristischen Entwicklung. (Indicators of harmonized tourism development) Berne study for leisure and tourism 24. Berne: FIF, Forschungsinstitut für Freizeit und Tourismus (Research Institute for Leisure and Tourism), University of Berne.
- Thierstein, A. & Walser, M. (2000): Die nachhaltige Region: ein Handlungsmodell. (The Sustainable Region: A Model for Action) Series of works published by the Institute for Public Services and Tourism. Contributions to the Regional Economy; Vol. 1. Berne, Stuttgart, Vienna.
- United Nations (1998): Work Programme on Indicators of Sustainable Development of the Commission on Sustainable Development. New York.
- United Nations (2001): Indicators of Sustainable Development - Guidelines and Methodologies. New York.
- Wall, G. (1997): Sustainable Tourism - unsustainable development. *In* S. Wahab, J. J. Pigram (ed.): Tourism, development and growth. The challenge of sustainability (p. 33-49). London.
- WCED World Commission on Environment and Development (1987): Our common future. Oxford und New York.
- WTO (1998): Guide for Local Authorities on Developing Sustainable Tourism. Madrid.
- WTTC World Travel and Tourism Council; WTO World Tourism Organization & Earth Council (1996): Agenda 21 for the Travel and Tourism Industry. Towards Environmentally Sustainable Development. Madrid.