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**INDICATORS MEASURING THE SUSTAINABILITY OF TOURISM
SEVERAL CONSIDERATIONS AND RESULTS FROM THE AUSTRIAN
PERSPECTIVE**

Supporting paper submitted by Statistics Austria*

PRELIMINARIES

This document is mainly referring to the OECD Document “Indicators for the Integration of environmental concerns into Tourism”, which was presented in several meetings of the Statistical Working Party (SWP) of the OECD Tourism Committee (TC).¹ The OECD-document is part of the OECD work program on environmental indicators and deals with tourism, the environment and sustainable development.

The following document is taking into account the initial discussions of the TC in the past years. The TC highlighted the need to widen the scope of the indicator set covering other aspects of sustainability (apart from economic ones; social and ecological as well as cultural aspects) so as to make it more useful for the analysis of tourism policies and of sustainable tourism developments. But so far relatively few comments, however, have been received on the choice of indicators and their relevance.

Therefore, the following document is

- providing a critical overview of those indicators proposed in the OECD document, taking into account relevance and implementation aspects, pointing out the problems

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of integrating these indicators into a tourism statistical system as well as possible data sources and data access (see Annex);

- providing a proposal on how the scope of the indicator set could cover the most important sustainability issues linked to tourism activities and policies;
- discussing several aspects to be covered and propose indicators that would best reflect these aspects;
- giving an overview and scenario related to the progress made in Austria in the field of sustainability indicators focusing tourism;
- evaluating the usefulness of the proposed indicators for the operational work, taking into account in particular the policy relevance, analytical value and measurability;
- identifying data sources necessary for the introduction of indicators;
- describing and interpreting preliminary results.

THE STARTING POINT

1. There is a growing need recognizing that tourism development has an impact on the social and ecological environment since tourism destinations have a sensitive and fragile environment which is increasingly threatened by the tourism industry itself.

2. Considering this fact the development of indicators measuring the sustainability applicable to the tourism industry was initiated by various (national and international) organizations and proposed for implementation.

3. But before doing further analysis on indicators and their relevance two items have to be defined: “Indicator” and “sustainability” itself.

What are indicators?

4. According to WTO: “Indicators measure information with which decision-makers may reduce the chances of unknowingly taking poor decisions....Which indicators will be relevant to tourism managers’ decision-making depends on the destinations’ attributes and the relative importance of these attributes to tourists. To determine an area’s sustainability, indicators are useful in helping managers understand the links between tourism-related activities and the continuing capacity of the environment to sustain them. Most indicators are quantitative measures (i.e., counts or sizes of things, or rates of change in these measures”.²

5. On the EU-level the “Structural Indicators” are the most well known and common ones, proposed by the Lisbon European Council and introduced by the European Commission. The “Structural Indicators” comprise a set of indicators relating to employment, innovation, economic reform and social cohesion. The Commission and the Council agreed a list of 35 structural indicators which were approved at the Nice European Council.

6. The European Commission defines “these indicators as useful for illustrating areas where more policy action is needed and for measuring the progress made in reaching the Lisbon goals. The use of indicators and benchmarks allows for an open assessment and comparison between Member States and other developed economies. This helps to show where there is scope for improvement in the Union and also encourages Member States’ governments to pursue reforms in these areas more vigorously. In this respect these indicators

provide a vital instrument for monitoring and comparing progress in the follow-up to the Lisbon strategy”.³

Sustainability - what is that?

7. Related to the item “sustainability” various definitions are available which differ according to the field of interest taken into account. Therefore, the common understanding of “sustainability” depends on “who” is working with and applying indicators; there are as many definitions of sustainability as there are researchers and organizations dealing with the term.⁴

- “To be sustainable, development must improve economic efficiency, protect and restore ecological systems, and enhance the well-being of all peoples.” (The International Institute for Sustainable Development, IISD)
- “Sustainable Development is our long-term cultural, economic, and environmental health and vitality.” (Sustainable Seattle)
- “A sustainable society is one which satisfies its needs without diminishing the prospects of future generations.” (Lester Brown, Founder and President of the Worldwatch Institute)

8. Related to tourism the World Tourism Organisation (WTO) defines “sustainability” as follows:

“Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It 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.”⁵

9. The European Commission (EC) goes beyond and declares that in particular in developing countries (this may be applied to other countries as well) tourism itself is able to contribute to the sustainable economic and social development of the recipient country. In the opinion of the EC tourism is a representative sector for implementing and monitoring the principles of sustainable development:

“Tourism’s contribution to sustainable development will be contingent on the ability of governments to plan and manage the development of tourism taking account of all economic, social, cultural and environmental aspects and the potential drawbacks and the industry’s commitment to adhere to the principles and practices of sustainable development in an open and competitive market.”⁶

The measurement of “Sustainability” - a comprehensive and regional issue

10. In many less developed regions with a weak economic structure and high unemployment rates tourism may compensate this lack of development and could provide work for the local population. However, tourism depends on – apart from the necessary infrastructure - intact nature, picturesque landscapes, clean lakes, rivers and beaches, unsoiled mountain regions etc.; a high quality of environment is a very important production factor of tourism industry as tourists do not want to move to polluted places which is one of the main travel purposes itself. In many areas sustainable tourism policies are more or less well developed; however, there is still a lack of guidance and information on how to monitor this progress. Given its economic,

social and environmental implications and its potential for growth, tourism plays and will continue to play a major role in our societies.

11. In order to measure the sustainability in tourism, comprehensive indicators are not available so far which provide a scala between 0 and 100, basis for an objective evaluation of sustainability or non-sustainability of tourism. This means that quantitative indicators have to be supported by qualitative information as well; through its combination comprehensive statements may become possible. Based on this information tourism may be considered sustainable or not, considering ecological, economical, social and institutional factors.

12. The evaluation of sustainability is always region-based, since a sustainable enterprise (hotel, etc.) is part of a region which may support “sustainability”, but it does not determine “sustainability” for a whole region. Nevertheless, at present various grades do exist on enterprise level, but not on region level. Furthermore, the client’s decision of visiting a destination mainly focuses on the region and its diversity and characteristics, but not on the single accommodation establishment. In other words, a “sustainable hotel” is of less interest than a “sustainable region”.

13. Therefore, sustainability and its measurement is a regional phenomenon; an evaluation of sustainability on higher aggregated (national) level is not feasible since in general the regions are too heterogeneous.

Problems of existing systems

14. Several approaches related to measuring-methods for sustainability do exist so far. In many cases, after having defined the indicators, further steps related to the implementation process have not been made so far. Apart from several studies related to indicators on environmental issues⁷ and pilot studies done by the WTO,⁸ only few detailed assessments of the scale and the limits of interaction between tourism and the environment have been attempted to make.

15. Two major problem areas are arising:

- Benchmarking with fixed quantitative target values for each indicator or criterion is not possible:
 - on the one hand the indicator itself implies a qualitative evaluation only (e.g. cultural aspects or intraregional quality of life cannot be measured in figures).
 - on the other hand some indicators dealing with important sustainability issues are closely connected with mostly biased evaluation where quantitative evaluation fails.
- Interregional comparison by means of quantitative indicators is hardly possible. As regards the regions’ diverse characteristics and situations the determination of specific target values seems counterproductive. For example a region’s bearing capacity of car-related tourism strongly depends on its geographical location:
 - an alpine mountain valley certainly bears less traffic than a flat and vast region. The indicator’s significance would not be enhanced by referring to the number of local residents’ cars.
 - holiday activities’ impact on the environment is affected by similar problems, for it cannot be measured by a quantitative indicator.

INSTRUMENTS MAINTAINING SUSTAINABILITY IN AUSTRIA

16. Within OECD countries, tourism development is generally co-ordinated by a central authority, namely a National Tourism Organisation (NTO). In some countries, however, control and planning are dispersed among different government administrations. In addition the responsibility for tourism planning is often shared by regional or municipal governments, and the management of eco-zones often involves different sub-national authorities requiring appropriate and sometimes resource-intensive coordination.

17. In order to direct tourists and suppliers of tourism facilities towards more environmentally friendly and more sustainable behaviour, regulatory, economic and information and social instruments may be used.

The tourism situation in general

18. In Austria tourism is structured in a very similar way as in other OECD countries. Apart from the NTO ("Österreich Werbung") there are many local tourist boards. As the accommodation, catering and tourism facility industry itself, Austrian tourist destinations are small and medium-sized. Apart from a few reverse examples (i.e. "Salzburger Sportwelt Amadé", "Europa-Sportregion Kaprun Zell am See", etc.) most of the tourist receiving municipalities pursue their own (parish pump) tourism policy.

19. Tourism in Austria in general is still highly concentrated in space and time. In winter it is mainly the western alpine part of Austria where tourism occurs; in summer tourism is spread all over the country, but nevertheless the western and southern part of Austria remains the tourism intensive one. Furthermore more than half of "overnights spent" occur in February, March, July and August. This increases the pressure on the nature and the social environment as well. - Recognizing this situation several official measures were introduced preserving the environment as much as possible.

Official measures

20. Government's regulatory measures to invoke a change from a purely expansionary tourism strategy towards an environmental friendly and more sustainable strategy can be:

- Environmental impact assessment procedures for tourism related projects, e.g. "Climate Alliance";
- Strategies for developing environmentally friendly building and construction practices for tourism facilities;
- Implementation and enforcements of environmental quality standards, ("Ecolabels");
- Standards for tourism facilities (rules for construction);
- Regional management plans for coastal and mountain areas;
- Regional traffic management plans (including tourism related transport), Austrian examples:
 - "Serfaus Village Subway" (Quiet Traffic Concept of the village of Serfaus)⁹
 - Ski busses
 - Dispersion of holidays (domestic tourism only);
 - Territorial and spatial planning.

Economic instruments

21. Economic instruments, such as charges, fees, taxes, subsidies, expenditure etc. may promote the internalisation of measurable externalities:

- Reviewing capital investment programs (for tourism development and tourism related transport);
- Price incentives can be used to diversify tourism regionally and temporally;
- Fines for illegal activities in protected zones (e.g. illegal camping or picking flowers);
- Expenditure or subsidies for environmental infrastructure (sewage treatment facilities or waste disposal facilities);
- Tourism subsidies can be interlinked to the fulfilment of environmental standards.

Information and social instruments

22. Information and social instruments are focusing on increasing tourists' and local residents' awareness of environmental concerns through information on the consequence of their choices and behaviour. They include information and public awareness instruments, designed to change structural consumer preferences over time (advertising campaigns, environmental education) and participation/ communication instruments, such as public participation in policy development.

23. The following possibilities may be taken into account:

- Developing public education campaigns and providing information and advice on the environmental impacts of tourism;
- Promoting eco-label programs through marketing campaigns;
- Development and implementation of a worldwide tourism code of ethics for governments, tourism industry and tourists;
- Providing training for personnel in tourism facilities ("Umweltbeauftragte: Environmental protection officers");
- Offering alternative forms of tourism in order to spread the demand geographically and to lengthen the season (development of specialised products);
- Cooperation of tourist destinations with the federal railways encouraging tourists to travel by train;
- Tourist destination cards offering within a defined region reduction for museums, parks and other tourist attractions combined with unlimited or low priced use of the public transport system. These cards encourage tourists to use public transport rather than their own car.

THE DEVELOPMENT OF INDICATORS

General remarks

24. The development of indicators in the tourism industry represents an approach to render sustainable development measurable. What is not measured can neither be managed nor improved. Monitoring progress implies considering all dimensions of sustainability and assessing the interactions between tourism and the environment on the one hand and tourism and social conditions on the other hand.

25. The great challenge is to establish a consistent and most notably significant, reliable and practicable set of ecological as well as economic and social indicators demanding as little data research and expenses as possible.

Qualitative or quantitative indicators?

26. Most of the indicators listed below (see chapter 3.5) are quantitative indicators, expressing economic, social and ecological states and developments in figures. This raises the question if quantitative indicators alone fulfil the above-mentioned requirements: Significance, reliability, practicability being at the same time little time and cost expensive. To enter into this question let us take one of the proposed ecological indicators as an example:

The number of tourist destinations with local transport plans integrating visitor management, comparing to total surface covered by land use plans (in % of total surface)!

27. This quantitative indicator is rather easily obtained and calculated and furthermore comparable with other regions and nations; this means the indicator can be classified as very practicable and demands little data research and expenses. Yet, significance and reliability is to be questioned: Regions and municipalities may have land use plans developed including local transport plans with visitor management but the indicator does not give any information as regards the plans' quality.

28. Qualitative interviews with local experts could back up or, if so, refute the above described quantitative indicator. However, such interviews are very expensive and time-extensive. Furthermore local experts' judgment may tend to be biased and short-sighted simply because they are often involved themselves into municipal politics and tourism related concerns.

29. This example clearly points out that many indicators cannot fulfil all the features an indicator claims:

- to be significant, reliable and practicable, and at the same time
- as little time- and cost-extensive as possible.

A combination of qualitative as well as quantitative indicators seems to be meaningful, therefore.

Level of aggregation and the particular focus of indicators

30. Tourism within a certain region is hardly spread but concentrated in small geographical units around lakes, beaches, valleys or thermal springs etc. Each region has therefore its particular features comprising tourism intense municipalities as well as less tourism intense municipalities.

31. The above-mentioned examples concerning measures (international, and national taken in different Austrian regions, cities, municipalities and holiday resorts regarding sustainable development) clearly point out, that indicators cannot be solely calculated on a national level. Those indicators that refer to the national level are designed to be used in an international context.

32. Significant results are to be achieved by classifying indicators for each level (national, regional, municipal level), which reflect the progress of sustainable tourism development in a useful way. Furthermore, seasonal variations must be taken into account.

33. Moreover, particular attention has to be given to environmentally sensitive areas, which are characterised by specific environmental conditions and a rich biodiversity:

- National Parks,¹⁰
- managed wildlife and nature parks,
- mountain regions, and
- urban areas.

34. The expansion of the indicator-set related to a more efficient coverage of social aspects raises the question whether additional areas, which are particularly sensitive from a social and cultural point of view, need to be identified:

- religious artefacts, or
- “social distance”.¹¹

Proposed indicators

35. The indicators, proposed in the OECD document “Indicators for the integration of environmental concerns into tourism policies”, comprise three main issues:

- i) Tourism trends and patterns of environmental and social significance (major driving forces and indirect pressures);
- ii) Interactions between tourism, environment and social conditions, including:
 - a) Effects of tourism activities on the environment (i.e. changes);
 - b) Positive and negative effects of tourism activities on social conditions, on cultural and social heritage as well as effects of social changes on tourism activities;
- iii) Economic linkages between tourism activities, environment and social conditions, and related policy aspects.

36. The OECD document states that

- i) the proposed indicators do have to be easy to understand, and
- ii) at the same time significant;
- iii) furthermore, data collection should not be time consuming and cost expensive.

37. The Annex contains a preliminary description of the proposed indicators as well as their significance, data sources available (related to the Austrian situation) and an evaluation of data reliability. For the majority of the indicators further research has to be done, in particular related to linking the various data sources, prerequisite for calculating the proposed indicators.

For some of these indicators, preliminary figures and results are available as presented in the following chapter.

Austrian results - an overview

38. In following part of the document preliminary results for several indicators proposed in the OECD document are presented and critically discussed as far as possible. However, it has to be remarked that the following presentation has to be seen as an initial paper, which has to

be discussed with any institution, expert or region concerned. The examples below were primary chosen taking into account the data availability and quality.

Indicator 1: Nights spent in tourist accommodation

39. Nights spent in tourist accommodation by domestic and inbound tourism is a key indicator, illustrating tourism trends and economic sustainability:

- In Austria over the last three years a general trend to high quality accommodation could be perceived whereas private tourist accommodation has been faced notable decreases.
- Overnights in 4* and 5* hotels as well as in 3* hotels increased steadily whereas overnights in hotels of lower quality and private accommodation establishments (1* and 2* hotels, private accommodation¹²) declined (see Text Table 1).

Text Table 1: Nights spent 2000 - 2002 by kind of accommodation

| Kind of tourist accommodation | Total nights spent | | | growth rate (in %) | | |
|-------------------------------|--------------------|------------|------------|--------------------|------|------|
| | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 |
| 4* 5* hotels | 31 533,579 | 32 513,666 | 33 628,559 | 6.3 | 3.1 | 3.4 |
| 3* hotels | 26 494,930 | 26 916,762 | 27 153,923 | 0.7 | 1.6 | 0.9 |
| 1* 2* hotels | 13 620,342 | 13 123,095 | 12 740,992 | -5.4 | -3.7 | -2.9 |
| Private accommodation | 10 703,093 | 10 391,933 | 10 160,844 | -4.2 | -2.9 | -2.2 |

Source: Statistics Austria

Indicator 2: Net tourist pressure

40. The “Net tourist pressure” is calculated on the basis of nights spent by non-resident visitors in the country deducted by nights spent abroad by resident visitors (inbound tourism minus outbound tourism).

41. This indicator reveals the net flow of tourists in the country. Data has been extracted from the publications “Tourism in Austria in the year ...” and “Holiday trips of the Austrians in the year ...” both publications elaborated by Statistics Austria; results for the last three years (2002, 2001 and 2000) could be achieved.

From **2001 to 2002** the net tourist pressure has risen by about 5 million nights (from 2000 to 2001: about -200,000 nights) due to decreased outbound tourism and increased inbound tourism (see Text Table 2).

Text Table 2: Net tourist pressure 2000-2002

| Year | Overnights Inbound | Overnights Outbound | Net Tourist Pressure | Ratio Inbound /Outbound |
|------|--------------------|---------------------|----------------------|-------------------------|
| 2002 | 85 791,658 | 19 935,162 | 65 856,496 | 4.3 |
| 2001 | 83 668,870 | 22 709,218 | 60 959,652 | 3.7 |
| 2000 | 82 533,652 | 21 393,193 | 61 140,460 | 3.9 |

Source: Statistics Austria

Indicator 3: Tourist nights spent per local inhabitant and km²

42. Tourist nights spent per local inhabitant reflects tourist density. Text Table 3 displays the results for 10 of the most important tourist receiving municipalities which had the highest tourist density (per local resident) during the year 2002.

Text Table 3: Tourist nights spent per local inhabitant

| Municipality | Inhabitants | Total nights spent 2002 | Nights spent per resident 2002 | Total nights spent in winter 2001/02 | Nights spent per resident in winter 2001/02 | Total nights spent in summer 2002 | Nights spent per resident in summer 2002 |
|--------------------|-------------|-------------------------|--------------------------------|--------------------------------------|---|-----------------------------------|--|
| Tweng | 310 | 329,190 | 1,062 | 320,891 | 1,035 | 9,774 | 32 |
| Untertauern | 453 | 457,267 | 1,009 | 425,932 | 940 | 32,818 | 72 |
| Ischgl | 1,489 | 1 241,455 | 834 | 1 125,451 | 756 | 101,071 | 68 |
| Serfaus | 1,091 | 828,613 | 759 | 598,465 | 549 | 217,808 | 200 |
| Fiss | 859 | 597,772 | 696 | 412,525 | 480 | 170,764 | 199 |
| Sölden | 3,066 | 2 115,693 | 690 | 1 717,281 | 560 | 390,493 | 127 |
| Lech | 1,466 | 989,719 | 675 | 865,767 | 591 | 124,641 | 85 |
| Saalb./Hinterglemm | 3,020 | 1 932,271 | 640 | 1 360,886 | 451 | 588,572 | 195 |
| Grän | 597 | 342,414 | 574 | 152,723 | 256 | 189,364 | 317 |
| Weißensee | 788 | 446,855 | 567 | 101,132 | 128 | 346,211 | 439 |

Source: Statistics Austria

43. Significant differences between summer and winter season can be perceived:

- Tweng, a small Austrian winter sport resort reaches the highest tourist/local residents rate (1,062 nights spent per local resident) for the overall year.
- For the winter season 2001/2002 this ratio amounted to 1,035 whereas in the summer season 2002 only 32 nights spent per local resident could be reached. Similar discrepancies between summer and winter season are visible in other winter sport resorts like Untertauern, Lech and Ischgl.

44. Rather the same results related to the regional concentration of tourism could be observed.

45. Text Table 4 shows tourist density on the regional level broken down by summer and winter. February and July are taken as examples emphasising the difference between summer and winter months. The percentage in the last column presents the share of the number of tourists per km² comparing to residents per km².

Text Table 4: Residents and tourists per km²

| February 2002 | | | | | | | | | |
|-------------------|-------------------------|-----------|--------------|--------------|--------------------|-------------------------------|------------------------------------|--------------------------|---|
| Austrian province | Area in km ² | Residents | nights/month | tourists/day | tourists+residents | residents per km ² | tourists+residents/km ² | tourists/km ² | tour/km ² in % of tour+res/km ² |
| Burgenland | 3,965 | 277,569 | 86,459 | 3,088 | 280,657 | 70 | 70.8 | 0.8 | 1.1 |
| Carinthia | 9,536 | 559,404 | 820,670 | 29.31 | 588,714 | 58.7 | 61.7 | 3.1 | 5.0 |
| Lower Austria | 19,178 | 1 545,804 | 320,023 | 11.429 | 1 557,233 | 80.6 | 81.2 | 0.6 | 0.7 |
| Upper Austria | 11,982 | 1 376,797 | 434,379 | 15.514 | 1 392,311 | 114.9 | 116.2 | 1.3 | 1.1 |
| Salzburg | 7,154 | 515,327 | 3 733,302 | 133.332 | 648,659 | 72 | 90.7 | 18.6 | 20.5 |
| Styria | 16,392 | 1 183,303 | 1 076,812 | 38.458 | 1 221,761 | 72.2 | 74.5 | 2.3 | 3.1 |
| Tyrol | 12,648 | 673,504 | 6 901,512 | 246.483 | 919,987 | 53.3 | 72.7 | 19.5 | 26.8 |
| Vorarlberg | 2,601 | 351,095 | 1 289,820 | 46.065 | 397,160 | 135 | 152.7 | 17.7 | 11.6 |
| Vienna | 415 | 1 550,123 | 369,396 | 13.193 | 1 563,316 | 3,738.3 | 3,770.1 | 31.8 | 0.8 |
| AUSTRIA | 83,871 | 8 032,926 | 15 032,373 | 536.87 | 8 569,796 | 95.8 | 102.2 | 6.4 | 6.3 |
| July 2002 | | | | | | | | | |
| Austrian province | Area in km ² | Residents | nights/month | tourists/day | tour+res. | residents per km ² | tour+res./km ² | tour/km ² | tour/km ² in % of tour+res/km ² |
| Burgenland | 3,995 | 277,569 | 397,927 | 12,836 | 290,405 | 70 | 73.2 | 3.2 | 4.4 |
| Carinthia | 9,536 | 559,404 | 3 105,239 | 100,169 | 659,573 | 58.7 | 69.2 | 10.5 | 15.2 |
| L. Austria | 19,178 | 1 545,804 | 674,027 | 21,743 | 1 567,547 | 80.6 | 81.7 | 1.1 | 1.3 |
| U. Austria | 11,982 | 1 376,797 | 1 001,484 | 32,306 | 1 409,103 | 114.9 | 117.6 | 2.7 | 2.3 |
| Salzburg | 7,154 | 515,327 | 2 378,265 | 76,718 | 592,045 | 72.0 | 82.8 | 10.7 | 12.9 |
| Styria | 16,392 | 1 183,303 | 1 145,164 | 36,941 | 1 220,244 | 72.2 | 74.4 | 2.3 | 3.1 |
| Tyrol | 12,648 | 673,504 | 4 427,618 | 142,826 | 816,330 | 53.3 | 64.5 | 11.3 | 17.5 |
| Vorarlberg | 2,601 | 351,095 | 760,065 | 24,518 | 375,613 | 135 | 144.4 | 9.4 | 6.5 |
| Vienna | 415 | 1 550,123 | 755,785 | 24,380 | 1 574,503 | 3,738.30 | 3,797.1 | 58.8 | 1.5 |
| AUSTRIA | 83,871 | 8 032,926 | 14 645,574 | 472,438 | 8 505,364 | 95.8 | 101.4 | 5.6 | 5.5 |

Source: Statistics Austria

- In February 2002, 26.8% of persons per km² in the region of Tyrol were tourists whereas in July 2002 the share of tourists per km² decreased by 9.3 percentage points and reached only 17.5%.
- In Carinthia, emphasis is put on summer tourism: While in February 2002 only 5.0% of persons per km² were tourists, in July 2002 the share of tourists per km² amounted to 15.2%.

Indicator 4: Annual visitors in National Parks per km²

46. Text Table 5 displays the annual visitors (reference year: 2002) per hectare. The figures are based on estimations by the national parks' management boards. Yet, figures concerning same day visitors could not be received from the national parks "Gesäuse" and "Thayatal".

Text Table 5: Annual visitors per hectare in Austrian National Parks 2002

| | National Park "Hohe Tauern" | National Park "Gesäuse" | National Park "Kalkalpen" | National Park "Thayatal" | National Park "Donauauen" | National Park "Seewinkel" |
|-----------------------------|--------------------------------|----------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
| Area in ha | 180 | 11.052 | 20.825 | 1.33 | 9.32 | 9.691 |
| Annual same day visitors | 2 100,000 | No figures | 200,000 | No figures | 1 000,000 | 850,000 |
| Visitors/ha | 11.7 | | 9.6 | | 107.3 | 87.7 |

Source: National Parks' Management Boards

47. The highest ratio of visitors per hectare could be reached for the national park "Donauauen" (107.3). This is due to the fact that Vienna and its surroundings, being an area with a high population density, is very nearby (the national park "Donauauen" runs from the Viennese eastern border to the Slovak border) and, therefore, attracts more same-day visitors than the other five Austrian national parks.

Indicator 5: Accommodation capacity

48. Accommodation Capacity: Text Table 6 shows regional accommodation capacities broken down by enterprises and beds. The results reflect tourism density.

Text Table 6: Number of accommodation establishments (reference day 31/05/02)

| Austrian Province | Enterprises | Beds | Beds per enterprise | Residents | Area in km ² | Beds per km ² | Residents per enterprise | Residents per bed |
|-------------------|-------------|-----------|---------------------|-----------|-------------------------|--------------------------|--------------------------|-------------------|
| Burgenland | 1,251 | 33,045 | 26 | 277,569 | 3,965 | 8 | 222 | 8 |
| Carinthia | 11,898 | 218,873 | 18 | 559,404 | 9,536 | 23 | 47 | 3 |
| Lower-Austria | 3,232 | 72,249 | 22 | 1 545,804 | 19,178 | 4 | 478 | 21 |
| Upper-Austria | 4,339 | 86,370 | 20 | 1 376,797 | 11,982 | 7 | 317 | 16 |
| Salzburg | 13,174 | 213,680 | 16 | 515,327 | 7,154 | 30 | 39 | 2 |
| Styria | 7,161 | 118,833 | 17 | 1 183,303 | 16,392 | 7 | 165 | 10 |
| Tyrol | 25,173 | 388,094 | 15 | 673,504 | 12,648 | 31 | 27 | 2 |
| Vorarlberg | 5,893 | 82,204 | 14 | 351,095 | 2,601 | 32 | 60 | 4 |
| Vienna | 431 | 43,722 | 101 | 1 550,123 | 415 | 105 | 3,597 | 35 |
| Austria | 72,552 | 1 257,070 | 17 | 8 032,926 | 83,971 | 15 | 111 | 6 |

Source: Statistics Austria

- Tyrol, Salzburg, Vorarlberg and Carinthia have the highest tourism density, Lower Austria and Upper Austria the lowest. Residents per enterprise range from 27 in Tyrol to 478 in Lower Austria, beds per km² range from 4 in Lower Austria to 32 in Vorarlberg.
- Still, Vienna is an exception: In the Austrian capital, beds per accommodation enterprise are at an average of 101, whereas in Austrian provinces small and medium size enterprises dominate with an average of 14 to 26 beds per enterprise. Because of the high population concentration in Vienna 105 beds per km² and 35 residents per bed on the one hand and 3,597 residents per enterprise on the other hand, (Austrian peak values) Vienna can hardly be compared with other Austrian regions and must be treated separately.

49. The accommodation capacity and its relation to the local population and spatial concentration imply an aspect of social sustainability: In connection with Indicator 3 ("Tourist nights spent per local inhabitant and area") the above described indicators around the regions' accommodation capacity may give information about advantages and disadvantages for local residents. Induced negative and positive effects could be for example:

- Excessive prices in shops,
- Frequent traffic congestions,
- Overuse of natural resources on the expenses of local residents **etc.**

as well as

- Advanced infrastructure,
- Variety of leisure facilities,
- Cultivated, high-quality environment **etc.**

50. However, these results must be proved by qualitative investigations collecting data which reflect locals' perceptions: High tourist density (nights or beds per local resident or per area) does not necessarily mean that the above mentioned advantages and disadvantages can be derived from these indicators and applied for social sustainability.

Indicator 6: Mountain specific infrastructure

51. **Data for mountain specific infrastructure was collected** on a regional basis (municipal data available, though not shown in Text Table 7):

- Km of ski runs
- Total number of ski lifts
- Accommodation enterprises per km of ski run

Text Table 7: Km of ski runs and number of ski lifts per region 2002/2003

| Austrian Province | Ski runs (km) | Ski-lifts (total) | Accommodation enterprises | acc/km of ski run |
|-------------------|---------------|-------------------|---------------------------|-------------------|
| Carinthia | 506 | 169 | 11,898 | 23.5 |
| Lower-Austria | 101 | 46 | 3,232 | 32.0 |
| Upper-Austria | 182 | 88 | 4,339 | 23.8 |
| Salzburg | 1,880 | 538 | 13,174 | 7.0 |
| Styria | 363 | 161 | 7,161 | 19.7 |
| Tyrol | 2,976 | 973 | 25,173 | 8.5 |
| Vorarlberg | 850 | 238 | 9,893 | 11.6 |
| Austria | 6,857 | 2,213 | 74,870 | 10.9 |

Source: Statistics Austria, www.bergfex.at and www.seilbahnen.at

52. This indicator reflects the impact of mountain specific infrastructure and gives partly indication of the impact of winter sport activities on the environment and illustrates the concentration of winter -sport in certain regions.

53. Regarding the concentration of nights spent during winter season, the importance of winter sport tourism for certain regions becomes evident.

54. Aggregated data per month and region (7 out of 9 Austrian federal provinces providing skiing infrastructure) concerning visitor and carriage statistics could be found on the official website of the association of the Austrian Cable Car Operators. 2 indicators displaying inter- as well as intraregional concentration of winter sport tourism could be calculated so far.¹³

55. Text Table 8 shows the amount of skier-days¹⁴ per month and Austrian federal province as well as the amount of skier-days per km of ski-run broken down by month and region.

Text Table 8: Skier-days per region and per km of ski-run

| Total number of Skierdays | | | | | | | |
|----------------------------|---------|-----------|------------|------------|------------|-----------|----------------|
| Austrian Province | Nov.02 | Dec. 02 | Jan. 03 | Feb.03 | Mar. 03 | Apr.03 | Winter 2002/03 |
| Tyrol | 174,322 | 2 328,096 | 4 328,097 | 6 496,829 | 4 608,120 | 1 327,660 | 19 912,285 |
| Salzburg | 88,757 | 1 185,375 | 2 534,224 | 3 307,931 | 2 346,274 | 675,992 | 10 138,556 |
| Vorarlberg | 50,863 | 679,289 | 1 452,258 | 1 895,637 | 1 344,552 | 387,383 | 5 809,984 |
| Carinthia | 31,622 | 422,323 | 902,888 | 1 178,542 | 835,925 | 240,841 | 3 612,144 |
| Styria | 27,004 | 360,645 | 771,027 | 1 006,424 | 713,844 | 205,668 | 3 084,615 |
| U-Austria | 11,894 | 158,846 | 339,598 | 443,278 | 314,412 | 90,586 | 1 358,616 |
| L-Austria | 8,044 | 107,437 | 229,691 | 299,815 | 212,655 | 61,268 | 918,913 |
| Total | 392,509 | 5 242,014 | 11 206,942 | 14 628,460 | 10 375,786 | 2 989,401 | 44 835,112 |
| Skierdays per km of skirun | | | | | | | |
| Austrian Province | Nov.02 | Dec. 02 | Jan. 03 | Feb.03 | Mar. 03 | Apr.03 | Winter 2002/03 |
| Tyrol | 59 | 782 | 1,672 | 2,183 | 1,548 | 446 | 6,691 |
| Salzburg | 47 | 631 | 1,348 | 1,760 | 1,248 | 360 | 5,393 |
| Vorarlberg | 60 | 799 | 1,709 | 2,230 | 1,582 | 456 | 6,835 |
| Carinthia | 63 | 835 | 1,786 | 2,331 | 1,653 | 476 | 7,144 |
| Styria | 74 | 994 | 2,124 | 2,773 | 1,967 | 567 | 8,498 |
| Upper-Austria | 66 | 875 | 1,871 | 2,442 | 1,732 | 499 | 7,485 |
| Lower-Austria | 80 | 1,064 | 2,274 | 2,968 | 2,106 | 607 | 9,098 |
| Total | 57 | 764 | 1,634 | 2,133 | 1,513 | 436 | 6,539 |

Source: www.seilbahnen.at

56. These indicators shed light on two different aspects:

- i) There are undoubtedly two leading Austrian winter sport regions (Tyrol, Salzburg) regarding km of ski runs, cable cars as well as the total number of skier-days. Yet within a certain winter sport resort and indicates the degree of utilization: Better information of the impact on the environment within a certain region can be extracted from it than from the indicator "Total number of skier-days" within a certain region. According to the figures the most affected regions in Austria (according to the whole winter season 2002/2003) concerning "Skier-days per km of ski-run" are not Tyrol and Salzburg (as could be easily expected for those regions are first in "Total number of skier-days").
- ii) On the contrary, Salzburg even concludes the ranking and Lower Austria, Styria and Upper Austria (though having but little winter sport tourism and concluding the ranking of "total number of skier-days") are first.

57. This leads to the conclusion that - at first sight - indicators on mountain specific infrastructure are more important for those regions being identified as important winter-sport destinations. Looking at the results of the above mentioned indicators it turns out that each region providing winter-sport tourism - no matter how large the resorts are - faces its particular problems and needs to find appropriate measures to counter negative effects and developments.

Indicator 7: Arrivals by transport mode

58. Tourist arrivals by transport mode give indication of different modes and stress of tourist travelling. Text Table 9 displays domestic tourist arrivals by the 4 most important transport modes (scheduled flights, charter flights, bicycle and other transport modes together account for a share of about 1%, and are not considered, therefore).

Text Table 9: Arrivals per transport mode (Domestic tourism)

| Destination | Total number of trips (in 1,000) | Means of transport | | | | | | | |
|----------------|----------------------------------|--------------------|-------------|------------------|-------------|-----------------------|------------|------------------|------------|
| | | Car (in 1,000) | In % | Coach (in 1,000) | In % | Motorcycle (in 1,000) | In % | Train (in 1,000) | In % |
| Burgenland | 115,6 | 98,8 | 85,5 | 9,1 | 7,9 | 0,1 | 0,1 | 6,1 | 5,3 |
| Carinthia | 477,7 | 388,8 | 81,4 | 40,0 | 8,4 | 2,4 | 0,5 | 40,5 | 8,5 |
| Lower Austria | 151,6 | 107,7 | 71,1 | 27,5 | 18,1 | 1,3 | 0,8 | 12,7 | 8,4 |
| Upper Austria | 197,1 | 147,5 | 74,8 | 30,4 | 15,4 | 0,6 | 0,3 | 18,0 | 9,1 |
| Salzburg | 391,7 | 313,6 | 80,1 | 48,1 | 12,3 | 0,8 | 0,2 | 25,9 | 6,6 |
| Styria | 455,9 | 379,3 | 83,2 | 41,5 | 9,1 | 0,5 | 0,1 | 31,2 | 6,8 |
| Tyrol | 279,8 | 225,0 | 80,4 | 26,2 | 9,4 | 1,5 | 0,6 | 25,0 | 8,9 |
| Vorarlberg | 75,6 | 51,5 | 68,0 | 8,7 | 11,5 | - | 0,0 | 15,3 | 20,2 |
| Vienna | 57,6 | 22,3 | 38,7 | 11,7 | 20,3 | - | 0,0 | 21,5 | 37,3 |
| Circular tour | 12,4 | 8,4 | 67,7 | 1,0 | 8,1 | 1,3 | 10,1 | 1,2 | 9,9 |
| Austria | 2 215,0 | 1 742,9 | 78,7 | 244,3 | 11,0 | 8,4 | 0,4 | 197,4 | 8,9 |

Source: Statistics Austria

- The most important means of transport for domestic holidays is the private car: 78.7% of all trips are taken by car, 11% by coach, 8.9% by train and only 0.4% by motorcycle.
- Burgenland and Styria constitute the largest share of car used for tourism travelling. This is due to the fact that especially in Burgenland, railways and other public transport systems do not cover the region sufficiently, flexibility without a car would be restricted.
- Again, Vienna is an exception: Only 38.7% of all trips are taken by car which is significantly below the Austrian average (78.8%). On the other side, the share of trips to Vienna being taken by train amounts to 37.3% and reaches almost the same level as “car-tourism”. This is due to the easy accessibility of Vienna by public transport in comparison to Burgenland or Styria. Moreover, high parking fees, traffic congestions and an efficient public transport system encourage tourists to abandon their cars.
- The Motorcycle as a means of transport for holiday trips is only relevant for circular tours and reaches a share of 10.1%.
- The most important destinations for coach tourism are Vienna (20.3%) and Lower Austria (18.1%).

Indicator 8: Population exposed to noise

59. In the OECD document the indicator concerning “noise exposure” can be found under “interactions between tourism activities and environmental and social conditions”. Apart from tourism induced resource abstractions such as water abstractions, land use, waste discharges etc. this indicator is described as “population exposed to noise levels from tourism facilities and airports” and therefore represents an important aspect of social sustainability.

60. Within the Austrian Microcensus household surveys on the population’s exposure to noise and air pollutants in their domicile have been conducted. The most recent data available is related to the reference year 1998 and give detailed information on people’s perceptions of noise exposure. Results are broken down to the NUTS 3 level and identify different noise sources, in particular traffic, (broken down by airports, trains and other relevant traffic participants) “inns, restaurants and pubs” and “other tourism facilities”. Furthermore, the results are presented by noise exposure during daytime and during nighttime.

61. It has to be remarked, that the results can be classified as qualitative and therefore very subjective because they are based on the individual's perceptions:

E.g.: Noise exposure arising from discos can be a great disturbance to elderly people whereas young people might consider the same noise source less disturbing because they probably benefit themselves from this establishment.

62. Yet the individual's subjective perception of noise exposure caused by tourism and tourism related facilities, can be one of the determining factors for his/her attitude towards tourism and tourists in the nearer surroundings.

63. **The first household survey** on the population's exposure to noise and air pollutants in their domicile was conducted for the reference year 1970 and was repeated about every three to five years.

64. The results showed that the noise exposure is decreasing: The percentage of people declaring to be exposed to noise was steadily decreasing over the past thirty years. Yet, it was dropping faster in urban areas than in rural areas. The increasing volume of traffic all over the country leads to subjectively higher exposure to noise in rural areas. Furthermore people in cities and urban areas are probably more used to noise than people in rural areas.

65. In Text Table 10 the total number of people indicating to be much or very much **exposed by noise** in their domicile is displayed (broken down by region). According to the noise source, traffic is the most frequent one during daytime as well as during nighttime.

66. In comparison to other noise sources (namely noise from neighbours - though not displayed in Text Table 10 - or tourism facilities) noise from traffic declined steadily. Yet, the share of people being exposed to noise caused by tourism facilities is still not comparable to the share of people exposed to traffic noise.

67. The comparison of the arithmetic means of people exposed to noise by tourism facilities through the "Analysis of Variance" (=ANOVA) shows that neither during night nor during daytime significant differences between Austrian regions (according to NUTS 3) could be detected.

68. Related to traffic noise there are differences between Austrian regions: In particular Vienna's and other Austrian urban or industrially used areas' inhabitants are significantly more exposed to noise than other regions' inhabitants. However, traffic as such can not be attributed directly to tourism. Furthermore, the affected regions are urban or transit regions with heavy traffic. The results of the ANOVA suggests that rural regions, often being preferred tourist destinations, are less exposed to noise than other regions or at least tourism does not induce special noise exposure to the population in important tourist receiving regions in comparison to regions with another economic focus.

Text Table 10: People exposed to noise by source and region¹⁵

| Total number of people indicating "very strong" and "strong" noise exposure by noise source | | | | | | |
|--|----------------|----------------|-----------------------------|---------------|---------------------------|--------------|
| Austrian Province | Traffic | | Restaurants and Inns | | Tourism facilities | |
| | Day | Night | Day | Night | Day | Night |
| Burgenland | 14,244 | 11,104 | 526 | 2,239 | | 341 |
| L-Austria | 148,173 | 102,383 | 0 | 6,509 | | 661 |
| Vienna | 168,306 | 122,517 | 712 | 11,630 | | 3,667 |
| Carinthia | 43,457 | 26,604 | 890 | 4,779 | | 280 |
| Styria | 131,751 | 92,226 | 0 | 4,241 | | 860 |
| U-Austria | 96,671 | 48,500 | 271 | 4,947 | | 1,184 |
| Salzburg | 38,011 | 26,045 | 1,743 | 2,746 | | 773 |
| Tyrol | 36,146 | 24,197 | 368 | 5,493 | | 1,705 |
| Vorarlberg | 21,559 | 12,662 | 142 | 1,285 | | 69 |
| Austria | 698,317 | 466,239 | 4,651 | 43,869 | | 9,540 |
| % of people indicating "very strong" and "strong" noise exposure by noise source | | | | | | |
| Austrian Province | Traffic | | Restaurants and Inns | | Tourism facilities | |
| | Day | Night | Day | Night | Day | Night |
| Burgenland | 6.2 | 4.8 | 0.2 | 1.0 | | 0.1 |
| L-Austria | 32.2 | 22.2 | 0.0 | 1.4 | | 0.1 |
| Vienna | 13.5 | 9.8 | 0.1 | 0.9 | | 0.3 |
| Carinthia | 4.0 | 2.4 | 0.1 | 0.4 | | 0.0 |
| Styria | 32.1 | 22.5 | 0.0 | 1.0 | | 0.2 |
| U-Austria | 9.8 | 4.9 | 0.0 | 0.5 | | 0.1 |
| Salzburg | 7.3 | 5.0 | 0.3 | 0.5 | | 0.1 |
| Tyrol | 13.3 | 8.9 | 0.1 | 2.0 | | 0.6 |
| Vorarlberg | 1.6 | 0.9 | 0.0 | 0.1 | | 0.0 |
| Austria | 10.6 | 7.1 | 0.1 | 0.7 | | 0.1 |

Source: Statistics Austria

Indicator 9: Land used for tourism facilities

69. This indicator reflects the impact of leisure and tourism related infrastructure on the **consumption of land and space**. Based on the Austrian Housing Census, conducted every decade once, data was collected about the number of buildings being primarily used as a tourist accommodation establishment. Figures on national, regional and municipal level could be achieved for the reference years 2001 and 1991. In [Text Table 11](#) housing data on regional and, exemplary, important tourist receiving municipalities is displayed.

Text Table 11: Buildings used for tourist accommodation establishments¹⁶

| Austrian Housing Census: Occupancy of buildings (Regional Level) | | | | | | | | | |
|--|----------------------------------|-------------------------------------|---|----------------------------------|--|---|---|--|--|
| Austrian Province | 2001 | | | 1991 | | | growth rate: total number of buildings (%) | growth rate: hotels and similar (%) | net growth rate of hotels and similar (%) |
| | Total number of buildings | of which: hotels and similar | share of hotels and similar 2001 (%) | Total number of buildings | of which: hotels, inns, B&B | share of hotels, inns and B&B 1991 (%) | | | |
| Burgenland | 114,403 | 1,369 | 1.2 | 103,529 | 662 | 0.7 | 10.5 | 106.8 | 96.3 |
| Carinthia | 162,075 | 5,271 | 3.3 | 143,929 | 3,118 | 2.2 | 12.6 | 69.1 | 56.4 |
| Lower Austria | | | | 494,198 | 2,785 | 0.6 | | | |
| Upper Austria | | | | 307,850 | 2,316 | 0.8 | | | |
| Salzburg | 119,818 | 4,478 | 3.7 | 102,691 | 3,124 | 3.0 | 16.7 | 43.3 | 26.7 |
| Styria | 325,822 | 5,081 | 1.6 | 288,802 | 2,846 | 1.0 | 12.8 | 78.5 | 65.7 |
| Tyrol | 161,261 | 8,077 | 5.0 | 138,537 | 5,278 | 3.8 | 16.4 | 53.0 | 36.6 |
| Vorarlberg | 89,236 | 1,995 | 2.2 | 75,831 | 1,170 | 1.5 | 17.7 | 70.5 | 52.8 |
| Vienna | | | | 153,693 | 675 | 0.4 | | | |
| Austrian Housing Census: Occupancy of buildings (Municipal Level) | | | | | | | | | |
| Municipality | 2001 | | | 1991 | | | growth rate: total number of buildings (%) | growth rate: hotels and similar (%) | net growth rate of hotels and similar (%) |
| | Total number of buildings | of which: hotels and similar | share of hotels and similar 2001 (%) | Total number of buildings | of which: hotels, inns, B&B | share of hotels, inns and B&B 1991 (%) | | | |
| Sölden | 1,031 | 411 | 39.9 | 852 | 221 | 25.9 | 21.0 | 86.0 | 65.0 |
| Neustift/Stubai | 1,158 | 171 | 14.8 | 937 | 97 | 10.4 | 23.6 | 76.3 | 52.7 |
| Seefeld/Tirol | 813 | 181 | 22.3 | 748 | 138 | 18.4 | 8.7 | 31.2 | 22.5 |
| Ischgl | 506 | 272 | 53.8 | 440 | 132 | 30.0 | 15.0 | 106.1 | 91.1 |
| Mayrhofen | 926 | 178 | 19.2 | 828 | 120 | 14.5 | 11.8 | 48.3 | 36.5 |
| Zell am See | 2,282 | 174 | 7.6 | 2,020 | 142 | 7.0 | 13.0 | 22.5 | 9.6 |
| Saalfeld/Hint. | 1,147 | 385 | 33.6 | 1,029 | 287 | 27.9 | 11.5 | 34.1 | 22.7 |
| Bad Gastein | 1,341 | 174 | 13.0 | 1,256 | 145 | 11.5 | 6.8 | 20.0 | 13.2 |
| B. Hofgastein | 1,698 | 165 | 9.7 | 1,459 | 132 | 9.0 | 16.4 | 25.0 | 8.6 |

Source: Statistics Austria

70. In Text Table 11, the Austrian Federal Regions' share of buildings used for "Hotels and similar" for 2001 and 1991 as well as their growth rates are displayed. Although Salzburg and Tyrol have the highest concentration of buildings used for tourist accommodation establishments, other regions, headed by Burgenland, have higher growth rates and net growth rates. The net growth rate is the growth rate of "Hotels and similar" minus the growth rate of the total number of buildings.

71. The top ten Austrian tourist receiving municipalities reveal, as expected, a very high concentration of "Hotels and similar": Up to 54% of all the buildings are used for tourist accommodation establishments in these municipalities. Especially striking is the comparison to 1991: The share of "Hotels and similar" almost doubled in some of the municipalities. Further data sources on tourism related land use is to be found: Golf courses, indoor and outdoor swimming pools, public beaches, leisure, theme and adventure parks, etc.

72. In general the definition of this indicator in the OECD document is rather vague: What is to be included? Ski runs are definitely tourism infrastructure but there is already an existing indicator measuring the impact of winter sport related infrastructure. In Mediterranean countries indicators on beach use seem as important as the indicator on mountain specific infrastructure for alpine countries.

73. From the authors' point of view the aggregation of the data into the proposed indicator "land used for tourism facilities" does not necessarily lead to significant results.

Indicator 10: Energy sources used for heating in tourism facilities

74. This indicator is not proposed in the OECD document the authors are mainly referring to. However, data was collected by Statistics Austria concerning this issue: Energy sources used for heating in “Hotels and similar establishments” and “Buildings for culture, leisure, education and health” (though the latter obviously includes to a high degree schools and hospitals which are no typical tourism used establishments) are shown in Text Table 12. These results (on regional level, though possible also on municipal level) reveal the penetration and acceptance of renewable energy sources in the Austrian Federal provinces. Fuel oil and gas are still widespread and represent the most important energy sources although they are not renewable. In general, renewable energy sources (e.g. wood chips, pellets etc.) or alternative heating, through solar energy for instance, did not gain ground yet in tourism facilities.

75. However, differences between Austrian Federal Provinces can be perceived: Tyrol, having the most intensive tourism industry, is the region with the lowest share of buildings both for “Hotels and similar” and “Buildings for culture, leisure, education and health” using renewable energy sources like timber or wood chips and pellets. Salzburg and Vorarlberg, being tourism intensive regions too, lead this ranking. These differences are due to subsidies from the federal governments: Several of them, like Vorarlberg and Salzburg, support alternative heating systems financially.

Text Table 12: Energy sources used for “hotels and similar establishments” and “buildings for culture, leisure, education and health”¹⁷

| Energy sources used for heating in hotels and similar establishments (2001) | | | | | | | | | | | | | | | | | | | | | |
|--|--|------------------------------------|------|--------|------|-------------------------------------|-----|----------------------|-----|----------------|------|-------|------|---------------------------------------|-----|------------|-----|-----------------------|------|----------------------|------|
| Austrian Province | total number of hotels and similar | Energy source and number of hotels | | | | | | | | | | | | | | | | | | | |
| | | fuel oil | | timber | | wood chips, pellets, sawdust, straw | | coal, coke, briquets | | electric power | | gas | | alternative heat sources (e.g. solar) | | other fuel | | long-distance heating | | not centrally heated | |
| | | total | % | total | % | total | % | total | % | total | % | total | % | total | % | total | % | total | % | total | % |
| Burgenland | 1,369 | 485 | 35.4 | 66 | 6.2 | 24 | 1.8 | 8 | 0.6 | 64 | 4.7 | 379 | 27.7 | 7 | 0.5 | 0 | 0.0 | 19 | 1.4 | 298 | 21.8 |
| Carinthia | 5,271 | 2,455 | 46.6 | 382 | 7.2 | 130 | 2.5 | 29 | 0.6 | 326 | 6.2 | 226 | 4.3 | 35 | 0.7 | 2 | 0.0 | 100 | 1.9 | 1,596 | 30.1 |
| L-Austria | | | | | | | | | | | | | | | | | | | | | |
| U-Austria | | | | | | | | | | | | | | | | | | | | | |
| Salzburg | 4,478 | 2,754 | 61.5 | 164 | 3.7 | 135 | 3.0 | 18 | 0.4 | 299 | 6.7 | 346 | 7.7 | 26 | 0.6 | 5 | 0.1 | 269 | 6.0 | 462 | 10.3 |
| Styria | 5,081 | 2,589 | 51.2 | 534 | 10.5 | 168 | 3.3 | 80 | 1.6 | 105 | 2.1 | 595 | 11.7 | 30 | 0.6 | 5 | 0.1 | 254 | 5.2 | 701 | 13.8 |
| Tyrol | 8,077 | 6,195 | 76.7 | 267 | 3.6 | 66 | 0.8 | 6 | 0.1 | 236 | 2.9 | 401 | 5.0 | 46 | 0.6 | 4 | 0.0 | 62 | 0.8 | 775 | 9.6 |
| Vorarlberg | 1,995 | 1,191 | 59.7 | 79 | 4.0 | 97 | 4.9 | 3 | 0.2 | 73 | 3.7 | 185 | 9.3 | 16 | 0.8 | 3 | 0.2 | 66 | 3.3 | 282 | 14.1 |
| Vienna | | | | | | | | | | | | | | | | | | | | | |
| Energy sources used for heating in buildings for culture, leisure, education and health (2001) | | | | | | | | | | | | | | | | | | | | | |
| Austrian Province | total number of buildings for c. l. e. h | Energy source and number of hotels | | | | | | | | | | | | | | | | | | | |
| | | fuel oil | | timber | | wood chips, pellets, sawdust, straw | | coal, coke, briquets | | electric power | | gas | | alternative heat sources (e.g. solar) | | other fuel | | long-distance heating | | not centrally heated | |
| | | total | % | total | % | total | % | total | % | total | % | total | % | total | % | total | % | total | % | total | % |
| Burgenland | 708 | 129 | 18.2 | 3 | 0.4 | 25 | 3.5 | 0 | 0.0 | 95 | 13.4 | 232 | 32.8 | 7 | 1.0 | 1 | 0.1 | 27 | 3.8 | 189 | 26.7 |
| Carinthia | 1,010 | 305 | 30.2 | 6 | 0.6 | 64 | 6.3 | 1 | 0.1 | 102 | 10.1 | 100 | 9.9 | 13 | 1.3 | 0 | 0.0 | 201 | 19.9 | 218 | 21.6 |
| L-Austria | | | | | | | | | | | | | | | | | | | | | |
| U-Austria | | | | | | | | | | | | | | | | | | | | | |
| Salzburg | 992 | 290 | 29.2 | 2 | 0.2 | 55 | 5.5 | 0 | 0.0 | 58 | 5.8 | 224 | 22.6 | 5 | 0.5 | 2 | 0.2 | 204 | 20.6 | 152 | 15.3 |
| Styria | 2,458 | 588 | 28.4 | 18 | 0.7 | 178 | 7.2 | 0 | 0.0 | 151 | 6.1 | 447 | 18.2 | 10 | 0.4 | 0 | 0.0 | 525 | 21.4 | 430 | 17.5 |
| Tyrol | 1,369 | 640 | 46.7 | 11 | 0.8 | 26 | 2.0 | 0 | 0.0 | 76 | 5.6 | 182 | 13.3 | 11 | 0.8 | 0 | 0.0 | 117 | 8.5 | 304 | 22.2 |
| Vorarlberg | 704 | 210 | 29.8 | 6 | 0.9 | 31 | 4.4 | 2 | 0.3 | 21 | 3.0 | 309 | 43.9 | 20 | 2.8 | 1 | 0.1 | 35 | 5.0 | 69 | 9.8 |
| Vienna | | | | | | | | | | | | | | | | | | | | | |

Source: Statistics Austria

Indicator 11: Water use for snow cannons

76. This indicator gives an indication of the pressure on water resources by winter sports. Although artificial snow shortens the growth phase during summer, it is a protection against damage caused by skiers and frost.

77. However, the negative effects of artificial snow on the environment have been stated by several studies. Limited air permeability of artificial snow results in oxygen deficiency and causes immediate damage on the soil and the whole vegetation.¹⁸

78. For one m³ of artificial snow, 250 to 350 litres (depending on the quality) of water are needed. The water used for the production has to fulfil certain quality criteria; in the federal province of Tyrol drinking water quality is even required. All over Austria about 30% (about 6,000 hectares) of the overall skiing area is covered artificially when natural snow is scarce. 9,000 kWh (kilowatt hours) energy consumption are necessary to cover one hectare skiing area with artificial snow during one year.¹⁹

79. By means of local experts' estimations, reliable figures for water abstractions and energy use by snow cannons could be calculated without great effort.

CONCLUSIONS

80. It is obvious that tourism is of great significance for the Austrian economy. Receiving a more detailed or concrete answer for policy makers related to its sustainability, indicators have to be introduced getting more information on the ecological and social agreeableness of the tourism development. This is a prerequisite of tourism, its development and success in the future.

81. Relevant indicators help to understand the size of tourism, its structure and its interrelation with the environment; furthermore, they support to manage tourism components and their relationship to the environment.

82. There are several conclusions to be drawn from these first steps towards preliminary results for Austrian sustainability indicator, as follows:

- Sustainability can never be measured by indicators alone (regardless of qualitative or quantitative or both): Profound knowledge of the whole region, its resources, geographic circumstances, economic pillars, (tourism) infrastructure, the cultural and historical framework etc. is necessary to interpret the figures and draw reasonable conclusions from them. Therefore, a solid group of experts is demanded in order to gain feasible results.
- Indicators - "A Management Information System – MIS": Besides the conventional tourism indicators (i.e. tourist overnights, tourist arrivals, TSA-values, stock of beds) that primarily reflect the economic aspect of tourism and its development over years, sustainability indicators take into account a lot of information of different statistical fields, aiming at a comprehensive overview of tourism in a wider sense within the socio-economic and ecological system. They permit decision makers (on regional, federal as well as national level) a broader view of the whole tourism system moving away from the traditional, one-sided economic approach. Therefore, sustainability indicators are to be seen as the translation of policy goals and as a consequence the foundation for further measures:
 - Fundamental tourism policy,
 - Development of new products,
 - (New) marketing concepts,
 - Protection of flora and fauna,

- Internal marketing campaigns: Involvement of local residents, positive interaction of locals and visitors.
- Goals need to be established by each region: As the Austrian results reveal, a general benchmark-system does not seem reasonable. The indicators should not only monitor and display developments but encourage regional policy-makers to establish a set of target-values and a catalogue of measures that should be taken in order to achieve satisfactory results.
- Doing analysis based on indicators requires a regular monitoring system which provides information on continuous basis revealing trends over time. Based on indicators' results which signal unacceptable levels of impact or stress to the environment, standards governing tourism activities have to be developed.
- This effort requires data comparable over time and space; in other words, it is important to ensure that data collection and compilation is done in a consistent way, according to internationally accepted standards and methodological rules. Indicators can only be built up when the data is not only available but also highly reliable.

83. In regard to Tourism related indicators, Austria is on the first step. Information society demands more and more data in shorter intervals than ever. In particular in this country where nature is doubtless the prerequisite of tourism, sustainability indicators are an important tool to gain reliable information on tourism in its wider context.

BIBLIOGRAPHY

- Austrian Society for Tourism Research, Austrian Guest Inquiry 1997/98, Travel Expenditure in Austria, study commissioned by the Federal Ministry of Economic Affairs, Vienna, 1999.
- Baum, T., Making or breaking the tourist experience: The role of human resource management (p. 92-111). In: C. Ryan, The tourist experience: A new introduction, London: Cassell, 1997.
- Baumgartner, Ch., Institut für integrativen Tourismus und Freizeitforschung, Operationalisierbares Messsystem für Nachhaltigkeit im Tourismus, study commissioned by the Federal Ministry of Economic Affairs, Vienna 2001.
- Climate Alliance, Internet. "Climate Alliance Mission Statement", Internet <http://www.klimabuendnis.org/english/association/511a.htm>.
- Institute Francais de L'Environnement, Indicators for an environmental diagnosis of Tourism in France, ISBN 2-911089-38-3, Orléans 2002.
- European Commission, A European Community strategy to support the development of sustainable tourism in the developing countries, in: Communication from the Commission to the Council and the European Parliament, COM(1998) 563 final, Brussels 1998.
- European Commission, Internet. "The European Union Eco-label", Internet <http://europa.eu.int/comm/environment/ecolabel/>.
- Kremser, H., Nationalpark Hohe Tauern, „Bewerbungsbericht zur Verleihung der europäischen Charta für Nachhaltigen Tourismus“, Salzburg 2001.
- Nationalparks Österreich, Internet. www.nationalparks.at.
- Newesely, C. Cernusca, A. „Impacts of artificial snow on the environment“, Innsbruck 1999
- OECD, Indicators for the integration of environmental concerns into tourism policies, elaborated by the Working Group on Environmental Information and Outlooks, ENV/EPOC/SE(2001)3/REV1, Paris 2002.

- OECD, National Sustainable Indicators, Note presented by United Kingdom at the SWP on 12/13 December 2002, Paris 2002.
- Schigebiete Österreich, Internet. "Austrian Skiing resorts", Internet, www.bergfex.at
- Statistics Austria, „Environmental conditions and environmental behaviour“, ISBN 3-7046-1531-3, Vienna 2000.
- Statistics Austria, "Tourism in Austria in the year 2002", ISBN 3-901400-01-0, Vienna, 2003.
- Statistics Austria, "Holiday trips of the Austrians in the year 2002", ISBN 3-902452-10-2, Vienna 2003.
- Swoboda, H.G.: Tourismus Landschaft Umwelt. Ein Leitfaden zur Erhaltung des Erholungs- und Erlebniswertes der touristischen Landschaft, Vienna 1989.
- Wirtschaftskammer Österreich, Internet. "Österreichisches Umweltzeichen für Tourismusbetriebe", Internet <http://wko.at/bstf/download/Umweltzeichen.pdf>
- World Tourism Organization, 1996, "What Tourism Managers need to know. A practical guide to the Development and Use of Indicators of Sustainable Tourism", Madrid, 1996.
- World Tourism Organization, 2003, "Recommendations to governments for supporting and/or establishing national certification systems for sustainable tourism", Madrid, 2003.

¹ The document was elaborated by the "Working Group on Environmental Information and Outlooks", revised discussion document, ENV/EPOC/SE(2001)3/REV1.

² See WTO 1996.

³ European Commission, Memo 01/345, Brussels, 30 October 2001.

⁴ See: <http://www.cap.uni-muenchen.de/fgz/portals/sustainability/definitions.htm>

⁵ See WTO 2003.

⁶ **European Commission**, A European Community strategy to support the development of sustainable tourism in the developing countries, in: Communication from the Commission to the Council and the European Parliament, COM(1998) 563 final, Brussels 1998.

⁷ I.e.: Institut Français de l'Environnement, Indicators for an environmental diagnosis of Tourism in France, ISBN 2-911089-38-3, Orléans 2002.

⁸ I.e.: Prince Edward Island, Canada: Pilot study on indicators for the sustainable management of tourism.

⁹ In the 70ies the council decided to transform Serfaus in a pedestrian village. A large parking place was built at the entrance of the village and the skiers must have to get on buses to reach the ski lifts at the other end of the village. But with the success of the winter sport resort and the increased number of vacationers, the traffic quickly became unbearable. In spring 1984, the Serfaus council was considering a new transportation system. In 1984 the council approved the new project of the Freissler-Otis firm: a one-track underground train moved by a funicular system and leant on air cushions to eliminate the vibrations!

¹⁰ According to IUCN categories.

¹¹ The concept of "Social distance" describes the relation between tourism employees, residents of the host country, and visitors. The concept has its origins some hundred years ago when tourism was a highly elitist activity reserved to the aristocracy who used to travel for up to 40 months with all or part of their usual staff of servants.

¹² Private tourist accommodations include privately owned establishments (incl. lodgings in farmhouses), mostly very plain accommodation establishments similar to "bed and breakfast".

¹³ However, further data collection is very difficult: The Association of Austrian Cable Car Operators (within the Austrian Chamber of Commerce) is eager to publish data fit for marketing reasons: Number of cable cars, km of ski-runs and partly there is data available on area covered with artificial snow and number of ski-huts. Figures could be retrieved from the internet, either on www.bergfex.at (figures based on winter-sport resort) or on www.seilbahnen.at (figures based on cable car operators). www.seilbahnen.at is the official website of the association of the Austrian Cable Car Operators and provides more detailed data than www.bergfex.at. Besides the specification of km of ski-run and number of cable cars, information on number of ski-huts and area covered by artificial snow could be found- yet, not all of the operators published their figures.

¹⁴ Skier-days are defined as the number of skiers multiplied by the number of active skiing days within a certain period.

¹⁵ Figures for noise exposure caused by tourism facilities during daytime are not available.

¹⁶ Data for Lower Austria, Upper Austria and Vienna are not available, yet.

¹⁷ Data for Lower Austria, Upper Austria and Vienna is not available, yet.

¹⁸ See Newesely, C. and Cernusca, A.: “Impacts of artificial snow on the environment“, Innsbruck 1999.

¹⁹ See www.seilbahnen.at – official website of the Austrian Cable Car Operators.

Tourism trends and patterns of environmental and social significance

Overall tourism trends

| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
|---|--|--|----------------------------|--|
| <u>Nights spent in tourist accommodation</u> (by mode of accommodation) by: (1) domestic tourism, and (2) inbound tourism | Key indicator of tourism trends: Economic sustainability; difference between domestic and inbound tourism | Tourism Statistics: Monthly survey related arrivals/ nights spent; Preliminary results available see <u>Text Table 1</u> | Very good | National level, Regional level, Municipal level |
| <u>Net tourist pressure:</u> Nights spent by non-resident visitors in the country minus nights spent abroad by the country's residents (inbound tourism minus outbound tourism). If data available: Nights spent by non-resident visitors in the country per nights spent abroad by the country's residents. | Reveals the net flow of visitors in the country | Tourism Statistics: (1) Monthly survey related arrivals/ nights spent; (2) Holiday trips by the Austrians Preliminary results available see <u>Text Table 2</u> | Very good | National level |
| <u>International tourist arrivals:</u> (1) Same-day visitor arrivals: broken down by countries of origin; (2) Domestic tourist arrivals | Time series reveal trends: Importance and growth of the tourist sector | Tourism Statistics: (1) Monthly survey related arrivals/ nights spent; Microcensus 93/94: (2) Same-day trips of the Austrians (domestic and outbound only) | Very good Bad | National level, Regional level, Municipal level (tourist arrivals only) |

| Proposed indicators | Significance | (possible) data source(s) | Evaluation of data quality | Level of aggregation |
|--|--|---|---|---|
| <u>Tourist nights spent per local inhabitants:</u> Broken down by summer and winter season | Reflects tourist density ; local importance of the tourism industry; "social indicator" | Tourism Statistics Population Census Preliminary results available (see Text Table 3) | Very good | National level; Regional level, Municipal level |
| <u>Maximum population density:</u> In persons per km ² during highest peak months versus low season (or: summer versus winter) | Reflects local and seasonal concentration ; partly social significance : support by qualitative indicators needed (residents' perceptions) | Tourism Statistics Population Census Preliminary results available (see Text Table 4) | Very good | Municipal level Regional level |
| <u>Annual visitors in managed wildlife parks, natural parks/sights and national parks</u> If data available: monthly | Reflects number of tourists in sensitive areas , and areas of special protection; monthly data not available yet- reflect seasonal variation | National park centres: Estimations of annual visitors TOURMIS: Annual visitor numbers in selected Austrian natural parks, zoos and wildlife parks; Preliminary results available (see Text Table 5) | Good-average (partly based on rough estimations) | Per site |

| Socio economic trends in tourism | | | | |
|--|--|--|--|-----------------------------------|
| Proposed indicators | Significance | (possible) data source(s) | Evaluation of data quality | Level of aggregation |
| <u>Tourist receipts</u> : in % of GDP | Reflects the economic importance of tourism | TSA (results see "A Tourism Satellite Account for Austria") NA-statistics | Very good | National level; Regional level |
| <u>Household consumption expenditure on tourism and travelling</u> : In % of total private final consumption expenditure | Indicates major trends and structural changes in private consumption on tourism | TSA (results see "A Tourism Satellite Account for Austria") NA-statistics Austrian guest inquiry (GBÖ) | Very good | National level |
| <u>Tourism related employment</u> : Number of jobs in tourism industry; if data available: * seasonal workers (residents and non residents) as % of total tourism related employment * male/female * average earnings (male/female) | Reflects importance of tourism for the labour market; - social sustainability aspect: average earnings (difference: male/female), seasonal work: working conditions (qualitative indicators needed) | TSA (results see Table 7 "A Tourism Satellite Account for Austria") NA-statistics Austrian guest inquiry (GBÖ) Microcensus (LFS) | Good: Tourism related employment is difficult to estimate part-time work, hidden economy (work of family members) | National level; Regional level |

| Infrastructure | | | | |
|---|---|--|---|---|
| Proposed indicators | Significance | (possible) data source(s) | Evaluation of data quality | Level of aggregation |
| Accommodation capacity by: * mode of accommodation * rooms * accommodation establishments and beds per km ² (regional level only) * residents per acc. establishment and per bed | Reflects tourism density; contains the social aspect: pressure on local residents though effects must be measured by qualitative indicators (high significance on municipal level) | Tourism Statistics Preliminary results available (see Text Table 6) | Very good | National level; Regional level; Municipal level |
| Secondary residences (as % of total residences); on municipal level: ratio permanent residences/secondary residences | National level: data available but limited significance; Municipal level: more difficult but high significance; Problem with secondary residences: Students and commuters | Population Census Microcensus 93/94: Same-day trips of the Austrians (domestic and outbound only) | Good, though outdated data (93/94):projections for 2004 are needed; estimations for students and commuters are required | Municipal level (National level little significance) |
| Specific Infrastructure in mountain regions: * km of ski runs and number of ski lifts per area , trans. capacity * number of accommodations per km of ski run * Tourists per km of ski run (monthly basis; possibly: daily) * km² of skiing area as % of total | Reflects the impact of mountain specific infrastructure . Gives partly indication of the impact of wintersports on the environment and illustrates the concentration of winter-sports in certain regions. | Local tourist boards; Cable Car operators: Visitor statistics; Skiing Lift Association Preliminary results available (see Text Tables 7 and 8) | Very good, though visitor statistics only on regional level available | Municipal level; Regional level (km of ski runs, ski lifts, skiing area) |

| Transport and mobility | | | | |
|---|--|--|--|---|
| Proposed indicators | Significance | (possible) data source(s) | Evaluation of data quality | Level of aggregation |
| <p>* Transport: Accessibility of tourism zones by public transport:</p> <p>* Frequency of public means o.t. during the week/weekends</p> <p>* Distance (km) covered by public transport: by means (train, busses, skibusses, local shared taxis, tram, underground, ...)</p> | Reflects accessibility of tourist destinations by public transport and dependence of tourists on their own cars or rented cars | Public transportation companies (schedules etc.) | Very good, but time intense research work required | National level: Distance covered; Regional level: distance per means; Municipal level: Frequency of public transport |
| <p>Arrivals by transport mode:</p> <p>* Split up into domestic and inbound tourism</p> <p>* Share of tourism in transport sector (displaying same day visitors too)</p> <p>* Average distance travelled per trip: Split up into inbound and domestic tourism and different modes of transport</p> | Gives an indication of different modes for tourism travelling | <p>Microcensus (Holiday trips of the Austrians)</p> <p>Preliminary results available for domestic tourism (see Text Table 9)</p> <p>Inbound tourism: Austrian Guest inquiry ("GBÖ");</p> <p>Data for "average distance travelled" demands elaborate and cost intensive research work.</p> | Very good | National level; Regional level |
| <p>Traffic congestions:</p> <p>Caused by visitors (including outbound till border and transit)</p> | Indicates the level of transport saturation; social significance: Frequent traffic congestions caused by tourism related traffic affects local residents' quality of life | To be explored: possibly traffic associations and local experts ; qualitative interviews required (local residents' perceptions) | Bad | Municipal level; possibly: Regional level |

Interactions between tourism and the environment

Air

| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
|--|---|--|----------------------------|-----------------------------------|
| <u>Share of tourism caused emissions of traditional air pollutants:</u> CO ₂ , Sox, Nox, Part., VOC, CO * by tourism related transport; * by tourist accommodation establishments and other tourist related facilities | Reflects the contribution of tourism to air pollution | Enviromental Statistics OllSnet: General data available at OECD database; yet tourism share has to be estimated; Experts | Average | National level Municipal level |

Waste

| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
|--|--|--|----------------------------|---|
| <u>Generation of tourism related waste:</u> share of tourism in annual waste generation | Reflects the intensity of waste generation by tourism activities | Enviromental Statistics "OllSnet": General data available at OECD database; yet tourism share has to be estimated; Experts | Average | Municipal level; (little significance on National level) Possibly: by site, hotel, |
| <u>Waste treatment and disposal capacities</u> | Is not necessarily tourism related: significance is therefore questionable as indicator in a tourism related context | Enviromental Statistics "OllSnet": General data available at OECD database Experts | Good | Municipal level; (little significance on National level) |

| Water | | | | |
|--|---|---|----------------------------|--|
| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
| <u>Water abstractions for tourism supply:</u> Share of tourism related use | Reflects the contribution of tourism to water abstraction- yet it does not shed light on the scarcity of drinking water and to what extent local residents are at risk to suffer from water scarcity caused by tourists' (over)use. | Enviromental Statistics "OllSnet": General data available at OECD database ; yet tourism share has to be estimated (by experts) | Average | National level; Municipal level |
| <u>Waste water treatment capacity:</u> Waste water discharges broken down by seasons | see: "waste treatment and disposal capacities" | Enviromental Statistics "OllSnet": General data available at OECD database; Experts | Average | National level; Municipal level |
| <u>Drinking water quality:</u> In tourism intensive areas, protected areas like National parks, mountain regions (as of a certain altitude) | Reflects attractiveness of the destination; difficult to measure to what extent tourism affects drinking water quality: The actual polluter is not easily identified. | To be explored: Possibly local experts ; certificates indicating faecal coliforms and heavy metals are expensive. | Bad | Municipal level |
| <u>Water use for snow cannons in m³</u> as % of total water abstractions | gives an indication of pressure on water resources by winter sports | Calculations by local experts ; benchmarks for calculations available (see "indicator 10: water used for snow cannons" | Good | Municipal level: by wintersport resort |

| Land and biodiversity | | | | |
|---|--|---|----------------------------|------------------------------------|
| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
| Use of land: * Land used for tourism facilities: accommodation and leisure establishments, specially land and resource intensive facilities like golf courses, ski runs, adventure parks,... | Focus should be given to tourist receiving regions; though outline and measurement is not clear yet: what is to be included in "tourism facilities"? | Local experts Tourist boards Housing Census: Preliminary results available (see Text Table 11 : Buildings used for hotels and similar) | Good-Average | Regional level; Municipal level |
| State of species: * State of mammals, birds, fish, reptiles, amphibians and invertebrates: percentage of threatened and decreasing species * State of vascular plants, mosses, lichens, fungi and algae: percentage of threatened and decreasing species | Significance is to be questioned: Does not indicate to what extent tourism affects biodiversity | "OII Snet": General Data available at OECD database | Good | National level |

| Energy | | | | |
|--|---|---|----------------------------|-----------------------------------|
| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
| <u>Energy source used for heating in tourism facilities:</u> broken down by *energy sources *hotels and similar and buildings for culture, leisure, education and health | This indicator is not proposed in the OECD document ; though significant data is available at Statistics Austria: Indicates the penetration of renewable energy sources in the tourism industry | Statistics Austria: Energy Statistics Preliminary results available (see Text Table 12) | Very good | Regional level Municipal level |
| Noise | | | | |
| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
| <u>Population exposed to noise</u> by tourism facilities and traffic | Contains a social sustainability aspect : Noise exposure through tourism facilities affects residents' perceptions and acceptance of local tourism negatively. | Statistics Austria: Qualitative surveys in line with the Austrian Micorcensus program Preliminary results available (see Text Table 10) | Good | Regional level |

Economic linkages and policy aspects

Regulatory instruments

| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
|--|--|---|--|---|
| <u>Catering and accommodation companies being accredited as "environmentally friendly"</u> ("Umweltzeichen", national and international eco labels): * As % of total number of tourist businesses * Number of municipalities being part of the climate alliance | Reflects the level of consciousness for environmental concerns among entrepreneurs and local authorities and the integration of environmental concerns in tourism management and planning. | Climate alliance; Austrian Chamber of Commerce | Good European ecolabel for tourist businesses is not very spread yet: Each country has its own ecolabel; criteria need to be standardised | National level; Regional level; Municipal level |
| <u>Surface covered by land use plans:</u> (% of total surface): Number of tourist destinations with local transport plans integrating visitor management | Gives an indication of the level of protection in tourist receiving areas; yet: This quantitative indicator cannot explain the plans' quality | To be explored: local experts, municipalities | Bad | Regional level; Municipal level |

| Economic instruments | | | | |
|--|---|---|----------------------------|---|
| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
| <u>Subsidies for tourism businesses:</u> Focus on sustainable objectives and environmentally friendly systems | Reflects the orientation of public subsidies to attain environmental and/or sustainability objectives | Federal and regional governments, municipal authorities | Very Good | National level; Regional level; Municipal level |
| <u>Prices for public transport and parking fees:</u> * in tourist receiving regions * Availability and dispersion of "tourist cards" including public transport and admission to museums and other tourist attractions for free or at reduced prices | Indicates a tourist destination's willingness to encourage its guests to switch to public transport | Local tourist boards; Local authorities; Public transport operators | Very Good | Municipal level; Regional level |
| <u>Charges at local level</u> for * Waste water treatment * Solid Waste disposal * Eco taxes | Indicates to what extent external costs are internalised | Local authorities, municipalities | Very Good | Municipal level |

| Information/social instruments | | | | |
|--|---|--|----------------------------|--|
| Proposed indicators | Significance | (possible) data source(s) | evaluation of data quality | Level of aggregation |
| <u>Tourist attitudes towards sustainable tourism, especially environmental concerns</u> including: * Tourists' willingness to pay more for sustainable holiday products * Attitudes towards WTO "global code of ethics" | Indicates not only tourists' overall awareness of sustainability especially environmental concerns but also their willingness to pay for sustainable development | To be explored: Qualitative investigation required | | National level (by means of Austrian guest inquiry) Possibly: Local level |
| <u>Number of tourist destinations implementing the "global code of ethics" for tourism</u> | Illustrates the commitments of tourism industry to develop practices with clients, providers of services and local populations in line with the global code of ethics | Local tourist boards | | Municipal level |
| <u>Level of social distance:</u> Social, economic and democratic status difference between tourists and tourism employees/locals | Indicates the level of equal opportunities and potential of social tensions between tourists and locals | Household incomes; travel participation; qualitative investigation required; | Good | National level; Municipal level |
| <u>Public expenditure on environmental information and education in tourist receiving regions.</u> | Reflects the public sector's willingness to educate children in schools as well as local residents. | Municipal authorities | Good | Municipal levels |