

Environment and Tourism A basic scientific report for the German federal government

Summary

Darmstadt/Berlin, 2001

Ecological research plan of the German
Federal Ministry for
the Environment, Nature Conservation and
Nuclear Safety
R&D project 200 87 112

Martin Schmied, Öko-Institut e.V.
Matthias Buchert, Öko-Institut e.V.
Christian Hochfeld, Öko-Institut e.V.
Beate Schmitt, Öko-Institut e.V.

under contribution of Ana Simón,
Rainer Klütting und Volrad Wollny

Öko-Institut e.V.
Headoffice Freiburg
Postfach 6226
D-79038 Freiburg
Phone: 0761-4 52 95-0

Office Darmstadt
Elisabethenstraße 55-57
D-64283 Darmstadt
Phone: 06151-81 91-0

Office Berlin
Novalisstraße 10
D-10115 Berlin
Phone: 030-28 04 86 80

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On behalf of the
German Federal Environmental Agency Berlin

Berlin, December 2001

 **Öko-Institut e.V.**

Institut für Angewandte Ökologie • Institute for Applied Ecology • Institut d'écologie appliquée

**Geschäftsstelle
Freiburg**
Postfach 62 26
D-79038 Freiburg
Tel.: 07 61 / 45 29 5-0
Fax: 07 61 / 45 54-37

**Büro
Darmstadt**
Elisabethenstr. 55-57
D-64283 Darmstadt
Tel.: 0 61 51 / 81 91-0
Fax: 0 61 51 / 81 91-33

**Büro
Berlin**
Novalisstr. 10
D-10115 Berlin
Tel.: 0 30 / 28 04 86-80
Fax: 0 30 / 28 04 86-88

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Environment and Tourism - Summary

From problem analysis to recommendations for action

Tourism is one of the leading growth industries in the world. An around 25% increase in private holiday travel by Germans is forecast for the next ten years. This trend is underpinned above all by a sharp rise in the amount of travel abroad. While Germans are making the length of their holidays ever shorter, the holidays themselves are becoming more frequent and to ever more remote destinations. Although Germany is not a typical holiday destination, the economic importance of tourism is still great, with day excursions, private travel and business trips together contributing some 8% to the gross domestic product.

Alongside its economic and sociocultural significance, the environmental impact of tourism has for some years been under public scrutiny as one of the drawbacks of that industry, criticism being focused on the emissions of greenhouse gases and air pollutants from tourism-related transport as well as on the despoliation of landscapes by development, with consequences for biodiversity. The impact of tourism on the environment may be particularly negative in cases where tourism is in the form of a mass phenomenon or where environmentally sensitive regions are affected. Although an intact environment is essential for its economically successful existence in the long term, tourism itself is a major source of threat to and destruction of that environment and thus of its own natural foundations.

The German federal government has therefore been requested to submit an "Environment and Tourism" report to the Bundestag before the end of the present parliamentary term. In December 2000 the German Federal Environmental Agency (Umweltbundesamt, UBA) instructed Öko-Institut (Institute for Applied Ecology) to prepare a basic scientific report in this respect.

The goal of this basic report is, proceeding from an analysis of the problem, to devise recommendations for action to make tourism more environmentally sound. More specifically, the aim is:

- to identify the **environmental effects of tourism in Germany** as well as **examples of the environmental impacts caused by German tourists abroad;**
- proceeding from that basis, to propose **required actions** and
- to recommend **measures and tools for the more environmentally sound development of tourism.**

For the purposes of this report, tourism means private travel involving at least one overnight stay and serving the purpose of recuperation, holiday and/or pleasure as

well as visits to relatives. The recommendations of this report are addressed to the political and private-sector players.

Environmental impacts of tourism in Germany

Germany as a tourism destination

In 1999 – the year on which this report is based – Germany was the destination for 110 million private overnight visits by Germans and non-Germans. Private travel is dominated by holiday travel (two-thirds of all private overnight visits in Germany); in turn, some 50% of holiday travel is accounted for by city tourism, seaside holidays and vacation in the countryside. German and non-German private travellers made a total of 584 million overnight stays in Germany in 1999. This means that the average length of a private stay was 5.7 nights. In addition, the private domestic tourism market features a strong showing by short-stay travel involving a maximum of three overnight stays (55% of domestic private travel). Three-quarters of all tourism-related travel was by car, the proportion being as high as 80% in the case of short-stay travel.

According to the Federal Statistical Office, at the beginning of 1999 Germany had around 54,600 hotels and similar establishments with a total of 2.46 million beds. Two-thirds of these were in traditional hotel business establishments such as hotels, inns, guest-houses and hotels garnis, the remainder being in rest homes, holiday complexes, residential training centres, lodges, youth hostels, holiday centres, holiday homes, holiday apartments, sanatoriums and health-spa hospitals. Between 1992 and 2000 there was a sharp rise in overnight accommodation capacity especially in the former East Germany, the number of beds in Germany undergoing an around 25% increase. At the same time, capacity utilization dropped from just under 43% in 1992 to a low of 35% in 1997. Since then, the figure has again risen, recovering to 38% in 2000. However, the German hotel market continues to be characterized by significant overcapacity.

Environment and tourism in Germany

In virtually all areas in which human activity has an effect on the environment it is also possible to detect the impact of tourism. The present report is confined to those areas of environmental concern which – in terms of geographical and chronological scope of impact – are of high and medium priority. The report investigates the impact on anthropogenic global warming, consumption of primary energy, loss of biodiversity (species diversity), land consumption, water consumption and water resources pollution as well as waste and noise.

A total of some 15.8 million tonnes of **greenhouse gases** were emitted (calculated as CO₂ equivalent) in Germany in 1999 in connection with private overnight travel. Consequently, private overnight tourism accounted for 1.6% of the total of 982.4

million tonnes of greenhouse gases emitted in Germany. This includes the indirect emissions resulting from the supply, conversion and distribution of fuels. International air transport is not included.

The majority of the greenhouse gases attributable to domestic tourism is emitted during travel to and from the holiday destination and during travel when at the resort, namely 63% or 9.8 million tonnes CO₂ equivalent (see Figure I), i.e. 7% of the emissions from all private passenger transport in Germany or the same as is emitted by three million passenger cars with average annual mileage. At around 28%, overnight stays likewise accounted for a significant proportion of emissions. Transport and overnight stays together are responsible for more than nine-tenths of the greenhouse-gas emissions from private overnight travel.

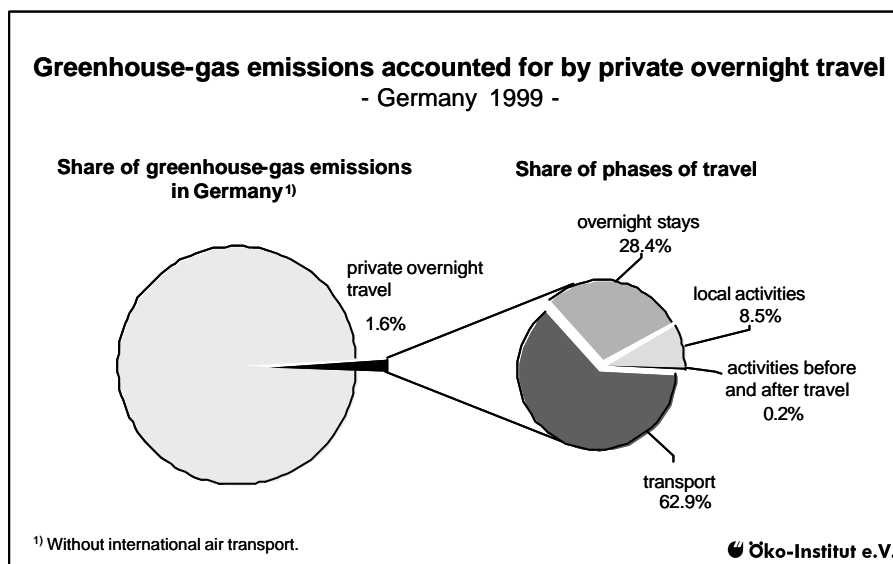


Figure I Share of total greenhouse-gas emissions (CO₂ equivalent) accounted for by private overnight travel in Germany in 1999 as well as proportions of greenhouse-gas emissions accounted for by the individual phases of travel

The **threat to biodiversity** from tourism cannot be represented as accurately in figures as can the emissions of greenhouse gases, because very many different ecosystems and species are affected, tourism is usually not the only threat and the data is often incomplete. However, on the basis of the loss of sand dunes and the threat to animal and plant species on Germany's Baltic coast as a consequence of tourism as well as on the basis of the damage suffered by vegetation because of rock climbers in Germany's uplands, it has been possible to demonstrate that the threat to biodiversity in Germany from tourism is not only qualitatively describable, but can also be quantitatively proved with reference to case studies. Of course, in a densely populated and highly industrialized country such as the Federal Republic of

Germany, biodiversity is under threat from a multiplicity of different sources, of which tourism is but one. On the other hand, it is often the case that tourism entails the development of regions which are relatively pristine and which have hitherto escaped other forms of impact. The tourism regions of Germany are frequently situated in areas of scenic beauty (North Sea, Baltic Sea, Mittelgebirge uplands, Alps and Alpine foothills) which at the same time constitute a significant proportion of the most valuable biotopes. In Germany, out of 509 different types of biotope, some 16% are classed as destroyed or threatened by complete destruction, while a further 54% are classed between highly endangered and potentially endangered – reason enough to devote special attention to a source of threat with the dynamic force of tourism.

As regards **land consumption** through tourism, there are no comprehensive German statistics, not least because many infrastructure facilities used by tourism are employed also for other purposes. The use of land for hotels and similar establishments can be estimated at a total of 27,800 hectares, equivalent to 0.7% of the total area of Germany used for settlement and transport. The use of land by tourism cannot, therefore, be said to be a national problem in Germany. However, this area of concern assumes special importance when one considers that holiday areas are usually concentrated in the vicinity of especially valuable ecosystems, such as the Wadden Sea, the Mittelgebirge uplands and the Alps.

Problems with **waste** arise above all through the geographical and seasonal concentration of waste generation in heavily frequented tourism regions. On the North Sea islands, the volume of waste generated in summer is between four and ten times that produced in winter. This places heavy demands on transport and storage resources as well as on the separation of recoverable materials. Overall, tourism accounts for around one percent of the total municipal solid wastes produced in Germany. Consequently, the volume of waste from tourism is not a key environmental concern in Germany.

In the past, **water consumption** has risen above all in those places where the hotel industry has responded to the increased demands of customers by, for example, building swimming pools and saunas. On the North Sea islands, high water consumption is accompanied by the risk that the groundwater level will fall and that saltwater will pass into the freshwater supply. Once again, therefore, this problem – like that of waste – is above all a local and regional problem (where, however, it is frequently irreversible). In 1999, around two percent of the total water consumption of households and small business establishments was accounted for by the hotel and catering industry, including private overnight stays at friends and relatives.

In view of Germany's well developed system of sewage treatment plants, substantial **pollution of water resources** by tourism is today the exception. However, high costs may arise in tourism areas because of the need to build sewage treatment plants with a capacity that is not used throughout the year. A particular problem is that of sewage disposal in remote mountain areas.

Holidaymakers contribute to **noise pollution** by travelling to and from their destination by car or aeroplane and by driving in cars at the destination. In some tourism regions, the very quality of people's holidays is adversely affected by the combination of holiday traffic, short-stay traffic and excursion traffic. Holidaymakers, in particular, have great need of peace and quiet. Consequently, it is travellers who are both the cause and victim of noise pollution. Further sources of noise connected with tourism are hotel and catering establishments and events as well as – for a limited time – the building of tourism-related infrastructure facilities in resorts.

To summarize, on the basis of the ascertained environmental effects, the impacts associated with the environmental consequences (irreversibility, spatial dimension) and the – in some cases – lack of problem-solving strategies, it can be stated that

- **global warming / primary energy consumption,**
- **land consumption and**
- **biodiversity loss**

are the main areas of environmental concern in connection with tourism in Germany. Further tourism-related areas of environmental concern may be of regional significance – this applies to noise pollution in particular.

Environmental impacts of foreign travel

Private foreign travel by Germans

Germans often opt for faraway foreign holiday locations, the destinations over recent years becoming ever more exotic and further and further away from Germany. The extent and nature of foreign travel are of increasing relevance with regard to emissions of greenhouse gases. In 1999 Germans made some 157 million private overnight visits, 67.5 million or 43% of which were to foreign destinations. Seven out of eight such visits abroad were in connection with holidays. At 10.1 nights, the duration of such visits was almost twice as long as in the case of visits undertaken in Germany (5.7 nights).

Germans spent a total of 680 million nights abroad, equivalent to 60% of the 1,105 million bednights in connection with all private travel. Only one in seven overnight stays was with friends or relatives. In contrast, one in two overnight stays was in a hotel or similar establishment. The means of transport used for one half of all foreign travel was the car, while the aeroplane was used for over one-third. The number of private travellers going by aeroplane almost quintupled between 1976 and 1995.

The main travel destination was the Mediterranean. Of the 28 million visits to Mediterranean countries (excluding the south of France), in 1999 one-third were to Spain. Other major travel regions were western Europe (France, Benelux countries,

Great Britain and Ireland; 12 million visits) and the Alpine region (11 million visits). The number of visits to long-haul destinations (America, Asia etc.) – a category of special environmental relevance – was 5.4 million, equivalent to eight percent of all foreign travel.

Environmental impacts for selected visit types and destination regions

Owing to the multiplicity of travel destinations, different means of transport used and possible forms of accommodation (hotels, private accommodation etc.), it is difficult to draw a complete picture of all the environmental impacts of private foreign travel by Germans. In the following, therefore, **global warming** is used as an example of an area of environmental concern. In addition, in describing the emissions of greenhouse gases, the report confines itself to five typical types of travel which together account for 70% of all private foreign travel and for three-quarters of all overnight stays abroad: travel by air to the Mediterranean, travel by car to the Mediterranean, travel by car to destinations in western Europe, travel by car to the Alps and long-haul air travel. The calculations in the report relate only to travel to and from the destination as well as accommodation.

In contrast to other sources of emissions, aircraft emit air pollutants and greenhouse gases not only at ground level, but also in the upper troposphere, where, in addition to emissions of carbon dioxide, oxides of nitrogen and condensation trails ('contrails'; water vapour) also have an impact on the climate. Therefore, the overall radiative forcing impact caused by aircraft exceeds the impact caused by carbon dioxide alone by a factor of between 2 and 4. An average impact factor of 3 was assumed for the emission values given below.

Emissions of greenhouse gases per person on long-haul flights significantly exceed those for all other types of travel: 5.6 tonnes per person per flight – i.e. 35 times as much as for travel by car to the Alps (0.16 tonnes) and around four times as much as for travel by air to the Mediterranean (1.4 tonnes). Travel by car to the Mediterranean causes only one-quarter of the greenhouse-gas emissions from a corresponding flight.

The overall impact of foreign tourism on the climate results from the total emissions of all individual holidays and travel. Viewed from this angle, tourism by air to the Mediterranean assumes greater importance. Nevertheless, long-haul air travel retains its leading position in terms of emissions (see Figure II): 5.4 million long-haul tourists are responsible for more greenhouse-gas emissions than 16.9 million holidaymakers to the Mediterranean. In 1999, 30.1 million tonnes CO₂ equivalent were attributable to long-haul air travel, while air travel to the Mediterranean accounted for 7.1 million tonnes less. The emissions from all car travel added up to 5.8 million tonnes, around one-fifth of the emissions from air tourism.

In 1999 the impact on the Earth's climate of the five investigated types of foreign travel by Germans was almost four times as great as that of domestic tourism (59.0

tonnes as opposed to 15.8 million tonnes). The investigated types of foreign travel accounted for around six percent of Germany's total emissions of greenhouse gases (982 million tonnes CO₂ equivalent, excluding international air transport).

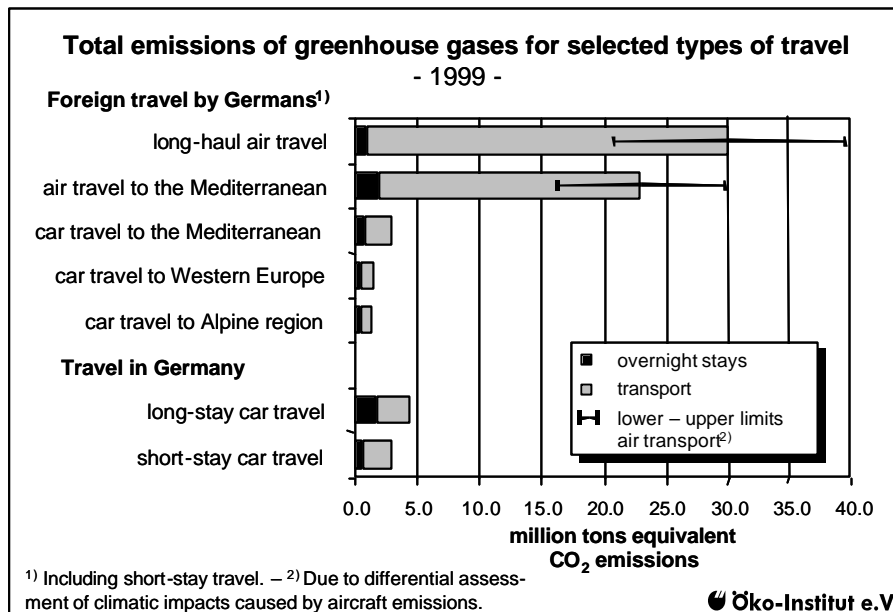


Figure II Total emissions of greenhouse gases for selected types of domestic and foreign travel by Germans in 1999 (for air transport in addition to the average value the currently discussed lower and upper limits of equivalent CO₂ emissions are shown)

As in the case of greenhouse-gas emissions, it was not possible within the framework of this report to make a complete analysis of the environmental problems caused by German foreign travel in relation to biodiversity loss, land consumption, water consumption, water resources pollution and waste generation. Therefore, selected areas of environmental concern have been presented as examples for the three foreign travel destinations which are of importance from the environmental point of view: the Alps, the Mediterranean and the Caribbean (as a long-haul travel destination). In contrast to tourism within Germany, in the case of foreign tourism importance also attaches from the environmental point of view to water consumption (particularly in arid regions) and waste generation.

Future trends in tourism

The basic conditions of tourism and the demands of tourists are in a state of ongoing change. For the period up to 2020, the trends point to dramatic growth especially in those areas which are of particular importance with regard to impacts on the environment. It is expected that there will be an increase in long-haul travel and flights, in holiday travel per person and in demands in terms of in-resort comfort.

This "revolution in demands" will more than outweigh any technical efficiency improvements in transport and infrastructure.

Value systems and consumer behaviour will have a great influence on the development of tourism. Multi-optional customers with multi-faceted, complex and – in part – contradictory lifestyles and patterns of consumption will embody the "New Tourist". The "New Tourist" will be a quality-conscious, seasoned traveller with a penchant for risk and adventure and with a longing for naturalness, authenticity and differentiation from the masses. They will be sensitive to environmental aspects, but will at the same time see travel as a social norm, something which will result in shorter, more frequent and longer-haul travel, i.e. a mode of travel which is especially detrimental to the environment.

Overall, the demand for holiday travel is expected by 2010 to increase by 25% in comparison with 1999. However, the number of people going on holiday will rise by just 5% from 75% to 80%. Consequently, growth will stem from the increase in the number of people taking two or three holidays. In Germany, between 17% and 19% of the population presently take more than one holiday. This will fall closer into line with the figure for comparable European countries (25% to 30%). The number of short-stay holidaymakers will probably rise from 37% to around 50%. Whereas domestic tourism will increase by only about 10% between 1999 and 2010, growth rates of 32% and 86%, respectively, are forecast for Mediterranean tourism and long-haul tourism. Aircraft will gain further in importance as a means of transport. In future, the length of individual holidays will tend to decrease further. The shorter average length of holiday must be seen in connection with the growth in the number of people taking two or three holidays as well as in connection with the disproportionately great increase in short-stay travel.

These trends will be sustained – albeit on a reduced scale – through to 2020 and will result in increased pressures on the environment, as will be indicated below, by way of example, with reference to the growth in **greenhouse-gas emissions**. Thanks to technological improvements, the forecast for 1999 to 2020 suggests that the emissions per person per holiday will fall by some 25% in the case of travel by air, by 20% in the case of travel by car and by 15% at accommodations. However, as a consequence of the growth in travel, total emissions of greenhouse gases from long-haul air travel will double to 61 million tonnes CO₂ equivalent. The increase in Mediterranean holidays will be 5%, while a 5% decrease is expected for travel by car within Germany (see Figure III).

If the tourism-induced emissions of greenhouse gases are to be lowered in future, the main focus of attention must be on air transport. Otherwise any efforts at reduction, e.g. within Germany, will be more than outweighed by a sharp rise in emissions caused by air transport.

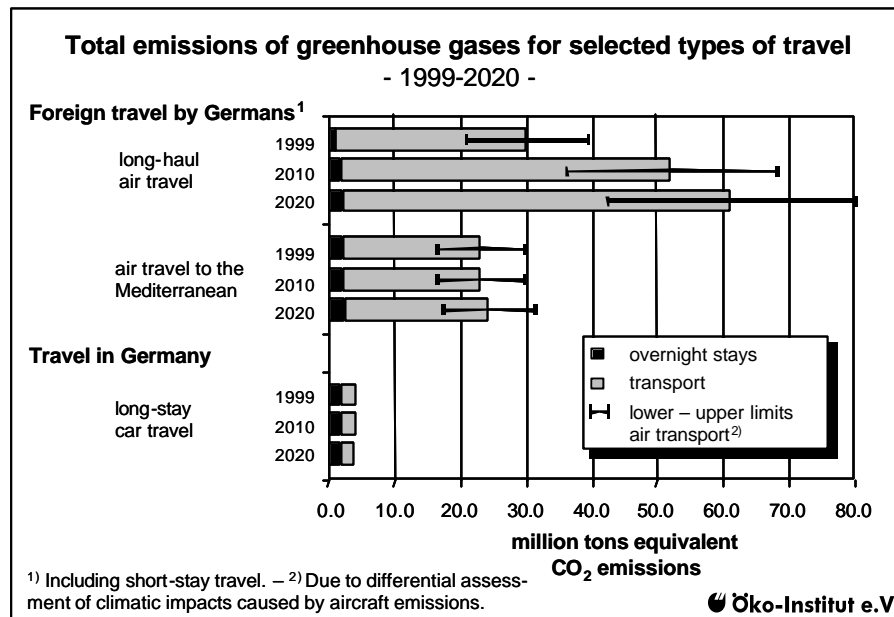


Figure III Total emissions of greenhouse gases for selected types of domestic and foreign travel by Germans from 1999 to 2020 (for air transport in addition to the average value the currently discussed lower and upper limits of equivalent CO₂ emissions are shown)

Required actions and players in environmentally sound tourism

Required actions

Germany has not yet conducted a thorough debate on national goals for environmental quality and environmental action with reference to tourism. However, such goals for environmental quality and environmental action form the basis for determining the required actions and thus constitute an important reference framework for the players concerned. Apart from a comprehensive diagnosis and description of the problem, the formulation of goals calls for extensive political processes of coordination and consensus-building. However, these processes have not yet taken place in Germany with regard to tourism.

Yet even in the absence of such a framework, it is possible, on the basis of the overarching cross-sectoral goals for environmental action, to decide on what actions are urgently required with regard to tourism. In order to determine the overarching goals for action, use is made of the draft of the strategic environmental policy programme (“Umweltpolitisches Schwerpunktprogramm”), a review of the national goals for environmental quality by the German Federal Environmental Agency as well as other national and international programmes and agreements.

For all the areas of environmental concern investigated in this report, it is clear that the discrepancy between the current pressures and the overarching goals necessitates measures to reduce environmental impacts. Tourism, as one of the causes of

environmental pressures, must make a contribution in line with its importance for overall impacts – this applies in particular to those areas of environmental concern which are of relevance to tourism: global warming, biodiversity loss and land consumption. Owing to the need for processes of coordination and consensus-building, this report is unable to devise specific goals for environmental quality or environmental action with regard to tourism.

The political, economic and social players – opportunities for action and measures already taken

Opportunities to work towards an environmentally sound form of tourism exist at various levels and in a multiplicity of political, economic and social bodies. Although international tourism – and, therefore, internationally operating persons and organizations – are assuming ever greater importance, the present study, as instructed, is confined to opportunities for action with regard to German tourism.

The **German federal government** has already taken a long series of measures relating to the environmental impacts of tourism, based predominantly on market-, information- and participation-related tools. In contrast, a leading role is not played by regulatory, fiscal or planning-related tools or by environment-related grant schemes. Many of the tourism-specific environmental measures address two or more areas of environmental concern simultaneously. Specific measures are aimed primarily at the area of biodiversity/nature conservation. On the other hand, the areas of climate protection, tourism-related transport and land consumption are addressed only indirectly (e.g. through the Viabono green label scheme) or via other fields of policy (e.g. transport policy, soil protection). Many of the measures taken are based to a substantial extent on the participation and active support of the tourism industry. Consequently, industry carries a heavy co-responsibility for the success of a more environmentally sound tourism policy.

As far as the **German regional states ("Länder")** are concerned, tourism means at once economic policy and structural policy. Since the individual "Länder" are in competition for visitors from inside and outside Germany, there is only a limited willingness to cooperate. "Environment-friendly travel" plays virtually no role in the marketing efforts of the individual "Land" tourism associations or "Land" marketing companies. Usually, criteria for the promotion-worthiness of tourism-related projects are defined in tourism action plans or "Land"-level regional development plans. Furthermore, the "Länder" are able, through "Land" and regional planning and through the awarding of grant funds, to promote the development of more environmentally sound tourism products and to support initiatives at the local level.

It is at **local authority** level that specific form is given to the highly generalized directives and requirements laid down by federal government and "Länder". In the form of their permit-granting practices and land use policies (landscape planning, urban development planning), the local authorities have at their disposal a suitable

range of tools for tackling the mentioned areas of environmental concern. However, many local authorities make insufficient use of their opportunities for action. Local authorities are of particular importance with regard to environment-friendly tourism. Consequently, the federal government and "Länder" should, in their work, give greater support to local activities and players.

Even though tourism is named as a high-priority area for action in the Fifth Environment Action Programme of the **European Union (EU)**, this subject does not presently play an important role in EU tourism policy. There is no overarching model for a sustainable tourism policy for Europe. Nevertheless, especially through its awarding of funds, the EU has an effective tool for making tourism more environmentally sound.

In 1997, at the initiative of the German Environment Ministry, the German **tourism industry** issued an 'environmental declaration' ("Umwelterklärung der Deutschen Tourismuswirtschaft") in which it laid down guidelines for the activities and efforts of the various bodies of the industry. Although the guidelines are ambitious, the declaration contains no kind of binding quantitative and verifiable goals for action. There is, therefore, a need to further develop the declaration along the lines of a voluntary undertaking on the part of the tourism industry. Building on the declaration or going beyond it, activities aimed at making tourism more environmentally sound have been developed in certain areas of the industry.

All of the major German **tour operators** have declared their support for an environmentally sound form of tourism. Frequently, however, these words fail to be translated into concrete goals for action. In general, product design and product management are only to a very limited extent measured against environmental criteria – the mass market and, in particular, package holidays remain largely unaffected. The activities of small and medium-sized enterprises are confined to just a few companies in this sector. In January 1998 they joined together to establish a forum for new forms of travel ("forum anders reisen e.V."), which has developed verifiable environmental criteria and which is capable of assuming a pioneering role, including vis-à-vis major operators.

The interests of the **hotel industry** are represented mainly by the sector federation, Deutscher Hotel- und Gaststättenverband e.V. (DEHOGA), which, as early as 1991, published for the first time a brochure on "How to Run an Environment-Friendly Hotel" including a 40-point list with practical tips in the areas of energy, air and climate, water, waste and local environment. In general, however, the savings potential is still exploited insufficiently and by only a small proportion of the hotel industry.

Tourism **transport companies** provide transport by air, rail and bus. All carriers have made considerable progress in environmental protection through technological improvements. It is a fundamental aim of all carriers to increase the level of capacity

utilization. The attractiveness of the products offered by environment-friendly carriers can be enhanced by improvements in service, special tourism products and a suitable pricing policy. These efforts have in the past had only limited success.

The full report sets out further activities by relevant players, such as Deutsche Zentrale für Tourismus (DZT), Deutscher Tourismusverband (DTV) and non-governmental organizations (such as environmental and nature-conservation organizations).

Recommendations for action – towards sustainable tourism

As has been demonstrated, both politicians and industry have in recent years made, or initiated, a wide variety of contributions towards making tourism more environmentally sound and therefore sustainable. However, in virtually all the presented areas of environmental concern, the measures that have been taken are not sufficient to comprehensively reduce environmental impacts. Consequently, important goals for the future must be:

- the setting of tourism-specific goals for environmental action,
- a more direct addressing of the key areas of environmental concern,
- impact assessments of the planned measures,
- a more environment-friendly product design on the part of providers of tourism services,
- greater support of the players at local level and
- international commitment to a more environmentally sound tourism.

It must, however, be clearly stressed that the influence of politicians and industry stops at the customers themselves. When choosing their travel destination and during their holiday, some customers are unwilling to allow themselves to be confined by environmental constraints. Only to a limited extent are customers aware of their own responsibility for an intact and attractive environment, a state of affairs which may not be susceptible to change by steering on the part of politicians and industry.

Recommendations for action at the political level

The following areas have been identified as central fields of action for measures by the political players – particularly by the political players at federal level:

I. Overarching action

- A. Setting of quantitative and qualitative goals for sustainable tourism in Germany.

II. Fields of action directly related to tourism

- B. Strengthening of tourism within Germany,

- C. Reducing the environmental impacts of air transport,
- D. Promotion of environment-friendly forms of transport,
- E. Enhancement of nature-conservation and land management,
- F. Making the hotel and catering industry more environment-friendly,
- G. Linking the promotion of tourism to compliance with environmental criteria and conditions.

III. Fields of action of a flanking and supporting nature

- H. Flexibilization of holiday periods,
- I. Strengthening of tourism foreign policy,
- J. Monitoring of measures,
- K. Research and vocational training for more sustainable tourism.

Individual measures may, if taken in isolation, have negative environmental impacts. Therefore, the subdivision into fields of action must not disguise the fact that an integrated approach is required if tourism is to be made more environment-friendly. Only through their interaction can the individual measures result in the requisite synergies.

The report presents in detail those specific measures which may be included under the above-mentioned fields of action and which players and areas of environmental concern are addressed by the measures proposed.

Recommendations for action by private-sector players and industry associations

The following fields of action have been identified for private-sector players and their industry associations:

I. Fields of action directly related to tourism

- A. Making products more environmentally sound,
- B. Creating incentives for environment-friendly mobility.

II. Fields of action of a flanking and supporting nature

- C. Voluntary commitments on the part of the German tourism industry,
- D. Active support of the Viabono green label scheme,
- E. Expansion of environmental management and communication.

The report likewise contains further details of these fields of action (specific measures, players, areas of environmental concern addressed).

Outlook

The purpose of the present report was, proceeding from a detailed analysis of the problem, to devise recommendations for action. Consequently, this report constitutes an important contribution to the further debate on the need to make tourism more environmentally sound.

It becomes apparent from the recommendations for action that an appreciable reduction of pressures on the environment in the key areas of concern will be possible only if those who are involved in tourism join forces in analysing the problems and in searching for solutions. An integrated approach is required if tourism is to be made more environment-friendly. Furthermore, the remarks in connection with the recommendations for action have demonstrated that a package of measures in a wide variety of areas may be necessary and advisable. It is imperative that those measures be appropriately coordinated.

Öko-Institut feels that the German federal government is excellently placed to achieve this with an **initiative which concretizes the guiding vision of sustainable tourism for Germany**. Such an initiative, providing a **guiding project**, would be capable, on the one hand, of encouraging a debate on approaches towards sustainable tourism and, on the other hand, of furthering a reduction of pressures on the environment as a result of tourism.

This initiative should be viewed primarily as a proposal for giving structure to the recommendations for action and is not a replacement for individual recommendations for action and measures, which, irrespective thereof, are necessary and advisable on account of the severity of the problems.

The report has also demonstrated that there continues to be a **considerable need for research** in the areas of "Tourism and the Environment" and "Tourism and Sustainable Development". These areas of research should receive greater funding in future.

Whereas many areas of manufacturing industry have established their own research programmes for the promotion of environmental protection and sustainability, no appropriate measures have been taken in the tourism sector. Such measures, however, are necessary and advisable, especially in view of the future increase in importance of the service sector in general and of tourism in particular. Research and science in this area is one of the keys to promoting and guaranteeing the sustainable development of tourism.

Öko-Institut feels that there is a need for research particularly in the following areas:

- Concrete definition of a model for "Sustainable Tourism",
- Research into motives and
- Tourism impact assessment.