Indicators for an Environmental Assessment of Tourism at National Level

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The paper first places the research within the context of international initiatives of developing environmental indicators for the tourism sector: indicator frameworks, data constraints and communication needs, national versus local approaches and indicator development procedures. The question of data availability, collection and processing is often undermined, and the national scale is the most relevant to analyse tourism driving forces and tourism/transport interrelationships. The main results of the French national assessment, led by the French Institute for the Environment in 1999–2000, are then presented, from the driving forces of environmental impacts (such as spatial and temporal concentrations, or the evolution of tourism demand as regards to the environment) to the contribution of tourism to the environmental impacts of the tourism sector, and to environmental impacts at the destination level. French mobility patterns are dominated by road transport; they are moving towards shorter stays and more frequent departures, which lead to a high impact situation. The accommodation capacity is strongly marked by secondary homes, which imply more constructions (and more space consumption) for the same number of stays. Environmental management initiatives, from public and private stakeholders, are unable to counter these long-term trends.

Keywords: tourism, environment, indicators, national, methods, France

Introduction

In the last few years, recognition of the environment as the 'raw material' of tourism has become a recurrent theme in the tourism sector. Public opinion has also become more aware of the most obvious impacts of tourism on the environment (Commission Européenne, 1999). Despite this, few studies have so far attempted to make exact assessments of the scale and the limits of interaction between tourism and the environment. The links are not always obvious, because the impacts of tourism do not necessarily appear where they are expected. Do tourists actually attach any importance to the environment in the places they visit, and if so, to which features? Is their environmental awareness changing? What are the main features that attract visitors to France? What are the main pressures exerted by tourism on the environment and what determines these pressures? In what ways do private and public sector organisations involved in tourism attempt to integrate environmental concerns in their policies, and are they successful in doing so?

To answer these questions, environmental indicators are expected to play a central role. The stakes behind the works on environmental indicators for tourism at a national level are diverse. The most obvious is the need to provide baseline information for tourism policies, especially for a highly fragmented tourism sector, whose impacts are often hidden by this fragmentation. Secondly,

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indicators are supposed to streamline statistical systems and data collection, in an industry where the weakness of the statistical data is often underlined. Thirdly, the construction of indicators is, at least in theory, linked with a decision-making process, and should be developed alongside with a policy process trying to integrate the environment in the tourism sector.

In practice, a review of past and current attempts (Ceron & Dubois, 2001, 2003), as well as the experience of the French Institute for the Environment developed in this paper (Rechatin & Dubois, 2000), show that indicators are facing too many demands and misunderstandings: the lack of reliable data, the illusion of a planning utopia favoured by indicators and the lack of political resonance of indicators, which often force authors to moderate their theoretical demands.

Trying to Conciliate Theoretical Exigencies and Practical Constraints

The book *Tourisme, environnement, territoires: les indicateurs*, issued by the French Institute for the Environment (Ifen) is part of Ifen's indicators programme, which has three factors: the assessment of links between different sectors of the economy and the environment (agriculture, industry, transports), the monitoring of the performance of public environmental policies (Ifen, 2000) and the definition of sustainable development indicators at the national level (Ifen, 2001; Levarlet, 1999; Rechatin *et al*., 1997). This led to adapt theoretical requirements of indicators to the objectives of this project.

What is an indicator, and what is it designed for?

An *indicator* is first *a variable,* which can take a certain number of *values* (statistical) or *states* (qualitative) according to circumstances (temporal, spatial). The key point which distinguishes an indicator from basic data is its capacity to carry a meaning which exceeds its pure quantitative value (for example a temperature of 39C° certainly indicates the temperature of the body of a person, but also the fact that he is ill (Rechatin, 1997). This significance comes from the interpretation which is made of them, from their use within a diagnosis or an analysis: a starting point of Ifen's work was to comment on indicators in an overall environmental evaluation of the tourism sector.

The building of indicators should rest on serious scientific bases and on reliable data. Using the term anywhere and anyhow is likely to jeopardise one of the major interests of the work on the indicators, which is to improve the available data and its presentation, so that the stakeholders can really understand them. Various authors have listed the requirements environmental indicators should comply with (Ruitenbeek, 1991; Rump, 1996). We detailed in another text (Ceron *et al*., 2000) the almost insurmountable difficulties to fulfil all these demands. Abiding strictly by them, would only lead to a list of indicators inapt to document a significant part of the concerns tourism raises with regards to the environment. It is certainly challenging and useful to keep all these requirements in mind, but it is also necessary to remain aware that each of them has more or less importance according to the specific list of indicators that is being constructed and its expected use: for instance, if the matter is to reveal trends and follow them, the homogeneity of series through time is indispensable. Since it is almost

sure that the indicators one can build will not possess all the ideal attributes, it is essential to specify their range and the limits of their interpretation through a comment: ideally an indicator should be able to stand without comments, but in practice it often is not the case.

An underlying framework

The theoretical framework on which this research was founded did not appear clearly in the final publication, although it is present throughout. Indeed, the European Environmental Agency proposes an improved framework (AEE, 1998) to the Pressure-State-Response model initially developed by OECD: *Driving forces* (economic and social factors or trends), *Pressures, State, Impact, Response* (DPSIR), which was favoured in our research. The social and economic tendencies draw attention to framing elements, which are not directly related to the environment, but which it is necessary to follow, so as to understand the evolution of the activity considered and the stakes related to sustainable development (it would be the case for example for diminishing working time, demography, income increase, the Euro, etc. when dealing with tourism). As far as the diagnosis is concerned, the distinction between *state* and *impact* makes it possible to part the direct effects of the pressures (on the environment) from their effects on communities.

Although the indicators were developed through the DPSIR framework, it was decided not to present the final document following this pattern: the main drawback of this option was a separation of interrelated indicators in different parts of the book. We presented each environmental issue in separate chapters (water, energy, waste, natural heritage, etc.).

Communication needs deeply impressed the final results. Indicators are considered as a way to make environmental information more easily understandable and handy to the users (Rechatin, 1999). Depending on the targeted stakeholders, the same issue can be presented in different ways. For example, the contribution of tourism transportation to greenhouse gas emissions was first evaluated for the whole tourism sector at national level. It was also calculated for a specific Paris–Nice trip, according to the mode of transport, to insist on individual responsibility. In practice, constructing a set of indicators must necessarily start with the choice of an editorial line, which includes defining the following:

- expected objectives: assessment (of the main trends, of public policies); help for decision-making; communication;
- the audience for which the indicators are built: civil servants which will require technical and detailed information, decision makers who usually demand high level scientific information, enlightened public (scientists), general public;
- the type of desired products: complete sets of indicators or selected indicators, indicators just meant to feed traditional assessment reports. Indicators should not be defined with vague or imprecise objectives (either decision making, environmental assessment), but with regards to expected products and publications. Moreover, indicators should be considered as 'part of' an overall assessment process, not as an objective by themselves.

Compared to other methodological research on environment and sustainable development indicators for the tourism sector (Consulting and Audit Canada, 1995; Middleton & Sieber, 1999), the main specificity of this project was to *calculate* indicators. Most authors acknowledge that availability of data is the key point in the elaboration of a set of indicators (Middleton & Sieber, 1999; Ruitenbeck, 1991; SCOPE 1995), sometimes without drawing the conclusions: the elaboration of indicators and the inventory of data sources should not be separate steps of the research (Cammarota *et al*., 1997). Indeed, there is a gap between theoretical expectations on indicators and practical achievement in the tourism sector (Ceron & Dubois, 2000, 2001). Confronting the theoretical objectives of indicators to the availability of data forces the rejection of irrelevant or unrealistic ones.

National approach, local features

The hypothesis of this project was that some critical issues could only be evaluated at a broader scale than the destination level (national, European, or international). This is especially the case for the contribution of tourism to the environmental impacts of transport, usually ignored at the destination level, apart from traffic jams and congestion (OECD, 2001). Transport was granted a central role in this project, to evaluate the links of tourism with greenhouse gas emissions, and infrastructure development of air pollution.

A few attempts were made recently to calculate environmental indicators for the tourism sector at national level (Andriola & Seminara, 1998; EPA, 2001; Spanish Ministry of the Environment, 2002).

Different perspectives were adopted: EPA decided, for example, to concentrate on leisure activities, and to calculate the profile of environmental impacts for skiing, fishing, hunting, boating, golf, casino gaming, amusement/theme parks, historic/cultural attractions, conventions and conferences, and waterside recreation. A detailed methodology is provided by the authors. Since the reliability depends on data collection and processing, this methodological step should be a common rule in indicator works. The EPA's method is based upon the use of ratios such as water consumption by overnight stay in hotels, or CO_2 emissions by passenger km travelled. EPA's work is a considerable attempt to monitor the environmental impacts of tourism at a national level. However, their works reveals a lack of ratios really specific to tourist activities and equipment, which, beyond the seemingly impressive results, undermines the outcome of this work. Moreover, some strong underlying hypotheses might induce wrong conclusions: for instance, the longer the stay (e.g. longer in waterside recreation than in casino gambling), the more important the environmental impact is, which might lead to conclude that shorter stays are better, whereas the need to reduce the intensity of transports of tourism would rather lead to incentives for longer stays (and less frequent departures).

Ifen's work concentrated on the national level, whereas the Spanish Ministry of the Environment looked for a set of indicators that could be calculated from a national scale to a regional and local scale. This will be an important step towards assessing the spatial distribution of impacts. It should nevertheless be kept in mind that the search of indicators available at all spatial levels implies a narrowing of the range of issues discussed.

Different works (Ceron & Dubois, 2001; Policarpo, 2001; Spanish Ministry of the Environment, 2002) underscore the need to introduce filters in order to prioritise issues of concern. The Spanish Ministry of the Environment gathered experts to discuss which issues should be assessed at first at the national level and for selected tourist spaces (coastal areas), with regards to criteria such as impact dimension, degree of responsibility of the tourism sector, degree of reversibility of the impact. Policarpo used exclusively the impact dimension criteria. This step of the process seems particularly adapted for associating decision-makers to the environmental assessment. It requires the definition of an adapted procedure, so as to warrant the neutrality of the project manager in the selection of priorities. In Ifen's work, this has not been addressed properly, since only the research team selected the indicators.

At national level, there is a need to bring out the close links between changing patterns of tourism, their environmental impacts and more general social trends. For example, the way people part their time between work and leisure is a factor that determines whether they take their holidays over short or long periods, which in turn determines the intensity of transport use for tourism. The tax system, the situation of the real estate market and building regulations are all factors that influence the distribution of the various types of holiday accommodation and how much they encroach on the surrounding area. The two fundamental components of tourism – travelling and staying away from home – produce two kinds of impacts on the environment. Tourist travel has repercussions on greenhouse gas emissions and on the creation of new infrastructure. Holidays spent away from home have repercussions on the use of space causing alterations and fragmentation of landscapes, on the pressures exerted on natural environments, on the production of waste and sewage and on water and energy consumption.

However, the sheer diversity of tourism in France requires more than a purely national approach to reporting. Tourist destinations are usually classified into four major categories that reflect their geographical characteristics and the expectations they conjure up among holidaymakers:

- seaside resorts, which are primarily associated with sea bathing and long summer holidays;
- mountain resorts, which are perhaps associated rather too closely with winter sports;
- cities, which are often destinations for business tourism and where cultural tourism tends to take precedence over visits to family and friends;
- the countryside, where tourist activities are varied but tend to revolve around country cottage holidays with family and friends.

Patterns of tourism obviously vary in each of these categories and their impacts differ with each type of environment. This is why the second part of Ifen's work consisted in analysing the specific features of each of these four types of holiday destinations, in order to assess the concentration of activities and their seasonal variations: importance of the environment for tourist activities, environmental pressures, responses in terms of the integration of environmental concerns and the development of activities or types of resorts that are specific to the areas concerned (yachting, islands, Alpine skiing or agro-tourism for example).

Secondary data rather than primary ones

The French Institute for the Environment (Ifen) is responsible for collecting, analysing, collating and distributing scientific and statistical information on the state of the environment. It is not really supposed to produce new data through specific surveys, but to interpret existing ones from the environmental angle. This implies the use of secondary rather than primary data.

Addressing a topic which is not yet covered by a long-established system of official statistics required considerable efforts to collect and process relevant data. The statistic unit of French tourism directorate had only six employees when this study was carried out. For instance, an environmental assessment of the tourism sector required very localised data on accommodation capacity, at the community level, to calculate indicators such as number of bed places per km of coastline, or to cross data on tourism pressure with data on natural heritage. The research team had to collect data from various sources (professional syndicates, national statistic services) for all kind of accommodations and to check their reliability. Very simple indicators, such as the evolution of accommodation at the community level between 1990 and 1999, revealed unexpected difficulties.

It was also necessary to translate tourism statistic categories in an environmental perspective. For example, a stay away from home involves one trip, an overnight stay involves using water and energy and producing sewage and waste, while the occupancy rate of each type of accommodation partly accounts for the size of its environmental 'footprint'. Conversely, interpreting environmental data in the light of patterns in tourism illustrates the importance of the environment for tourist activities. We also had to cross-reference data on tourism and data on the environment to obtain indicators, for example of potential tourist pressure on natural areas, conflicts between tourism and other uses of the environment, tourist concentrations in natural areas or the effectiveness of environmental measures (sewerage systems for example) in tourist resorts. To build up these indicators, the Ifen research team called on many data producers whose findings have rarely been linked to the topics of tourism and the environment until now.

French Tourism: Time/Space Concentration

Recent trends in accommodation capacity were defined by comparing the 1988 and 1998 municipal inventories of commercial accommodation and data on second homes from the 1990 and 1999 population census. The comparison enabled us to locate areas of potential tourist pressure on the environment (Figure 1).

In 1999, coastal and mountain municipalities alone (1,643 municipalities, or 4.5% of the total) accounted for 48% of accommodation capacity in hotels, camp sites and second homes. Most highly popular tourist regions (such as the northern Alps, the Atlantic and Mediterranean coastlines and the Deauville region) have seen a steep rise in their accommodation capacity since 1990. Elsewhere (Massif Central, Ardèche and Tarn Gorges, the Cévennes Range, the Périgord and the Dordogne Valley, for example), a number of important tourist centres are emerging, sometimes attaining tourist densities (in terms of the number of beds per km^2) that are equivalent to those in the most heavily used coastal and mountain resorts.

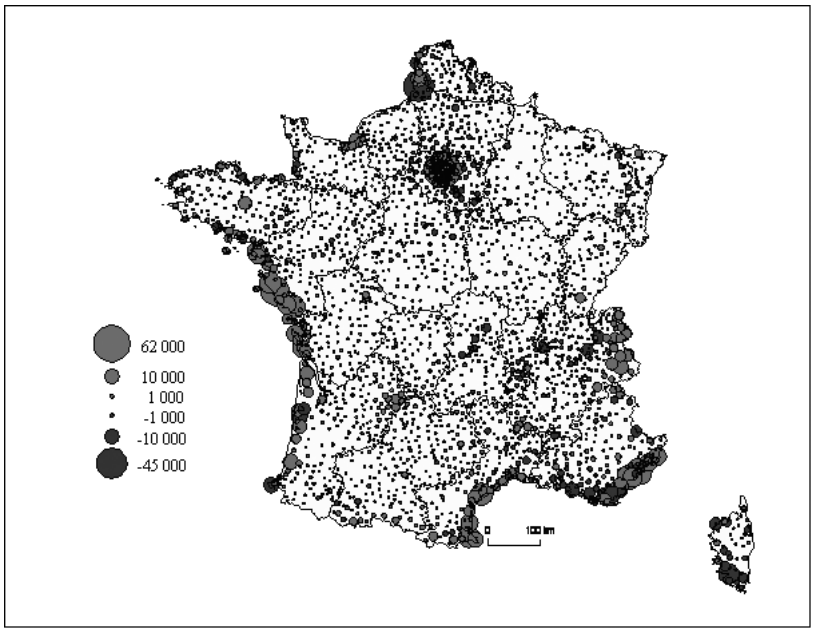

Figure 1 Trends in accommodation capacity in hotels, campsites and second homes (bed places), 1990–1999
Source: Ifen, based on INSEE Tourism Directorate (1999), INSEE (1988 municipal inventory communal, 1990 and 1999 population census)

The problem of school holidays

Although the situation is changing in qualitative terms (increase in the number of short holidays and decrease in the average length of stays), the main tourist seasons have remained constant and are determined by the dates on which family holidays begin, and by expectations of sunshine in the summer. In 1998, almost 30% of holidays away from home in France were taken during July and August alone (Directorate for Tourism/Sofrès, SDT Survey).

The policy of spreading school holidays more evenly over the year, which was adopted partly in response to requests from winter sports resorts hoping to lengthen their peak season, may well produce positive effects on the environment by reducing the intense pressure on transport infrastructure and modulating demand for new ski lifts and ski resort accommodation. Summer holidays are already being staggered in many European countries: for example, the school year begins between 8 August and the 15 September in Germany and between the 10 and 20 September in Italy.

Various factors suggest that tourist seasons may become more evenly spread over the year, although the actual effects of these changes are still uncertain:

- the reduction in working time, which may help to diversify annual holiday cycles;
- increasing numbers of retired people, for whom school holiday periods are not a problem;

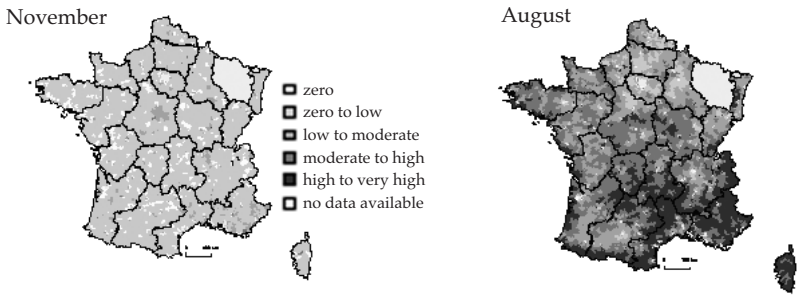

Figure 2 Tourism in France in November and August according to Mayors
Source: Ifen, based on Insee (1998 municipal inventory)

- increasing tourist numbers from neighbouring European countries, where holiday periods are different.

However, staggering holidays means attracting tourists out of season, and many resorts that are well equipped for specific activities, such as sea bathing or skiing, are finding it difficult to diversify their tourist supply. The idea of enjoying deserted beaches in winter hardly compensates for the lack of sunshine. The main problem is the lack of activities in tourist resorts that are designed for much larger numbers. It is therefore important to look more deeply into the motivations of tourists and to make more accurate assessments of actual out-of-season tourist numbers, so that appropriate incentives can be introduced.

The Tourist and the Environment: Conflicting Expectations

There are many preconceptions as to the sensitivity of tourists to the environment and it is not always easy for tourist operators to distinguish between fundamental and secondary issues. Sensitivity among tourists depends first of all on how well environmental information is displayed and distributed. Visitors walking around a city may well be aware of litter in the streets, but they may not always know when air pollution is in excess of permissible thresholds, even though the seriousness of the two problems is of a very different order. In coastal resorts, increased surveillance of bathing water quality and the Blue Flag Award Scheme have greatly helped to increase public awareness of sewerage problems, for example.

High comfort expectations

Higher expectations as to the amenities provided in tourist accommodation are increasing the demand for energy, which is fortunately being moderated by improvements in energy efficiency. More and more hotels are providing television in each room and installing air conditioning systems and swimming pools. Air conditioning units consume 90 to 150 kWh per m^2 annually (Accor, 1998), and swimming pools about 300 kWh per m^2 (Riahle, 1995). Energy consumption increases with the standard of tourist accommodation. Demand is also encouraging operators to install increasingly powerful equipment, as observed in ski lift operations. Using snow cannons to ensure snow cover throughout the season or

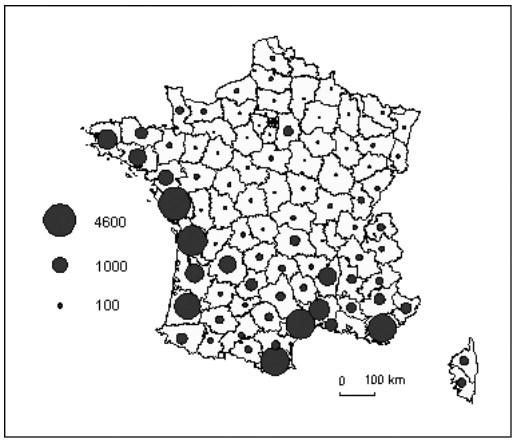

Figure 3 Number of bungalows, mobile homes and caravans in campsites, 1999
Source: French Camping and Caravan Federation

maintaining an interior temperature of 29°C in the 'Tropical Seas paradise' of the Center Parcs chain obviously requires a great deal of energy.

Similarly, the increasing proportion of individual houses built as second homes has increased the demand for land. From 1988 to 1997 the average surface area of a second home increased from 57 to 80 m^2, with plot sizes increasing from 700 to over 2000 m^2 (SITADEL Surveys, from 1988 to 1997). The same trend has become apparent in the gradual alteration of landscapes that are occurring in campsites. Although campsites were seen for long time as a cheap but rather basic form of holiday accommodation, they are now attracting a much more affluent clientele. More and more campsites are installing recreational facilities: 42% of French campsites offer catering services, almost 30% have a swimming pool and 20 to 35% offer simple rented accommodation.

Sensitivity to the environment among tourists

The French population seems to be increasingly motivated by the natural environment, as borne out by the rise in the number of visitors to national parks and regional nature parks and to nature reserves and islands and other sites managed by the National Coasts and Lakeshore Conservation Agency, and also by the increasing popularity of nature-based leisure activities.

According to a 1996 Cofremca (1997) study of visitors to national parks, tourists in mountain areas have a concern for the authentic character of protected areas: 64% were not interested in picnic areas with amenities, 91% rejected the idea of souvenir shops and 93% did not want to see fast-food restaurants in national parks. Visitors are also aware of the problem of excessive tourist numbers: 48% said there were too many people on footpaths and 43% felt they did not see enough wildlife. However, only 12% would agree to an admission fee to visit certain sites, only 13% would agree to pay for parking. Few thought that compulsory professional guides were a good idea. Respondents to the survey were more receptive to the idea of restricting access to natural sites by reducing the size and increasing the distance of parking areas.

The French population also seems very much aware of the impacts of coastal tourism. In a 1991 Sofrès survey, 42% of the interviewees thought that seaside real estate development is the main cause of coastal degradation, with 31% incriminating 'seaside industries' and 12% blaming tourist infrastructure (yachting harbours, campsites and golf courses). Responding to the question on their expectations of seaside areas, 81% said they wanted to experience unspoilt nature, 33% expected freedom of access to the sea and 28% wanted as little urbanisation as possible. Only 7% wanted to see more tourist amenities and high residential potential. Despite this, in 1992, 54% of the respondents spent holidays less than 500 metres from the seashore, and 66% stayed less than one kilometre away (ONT, 1993).

According to an analysis of correlations between the tourist attractions of municipalities and their natural and cultural resources (outstanding natural areas, boating lakes, listed sites and historic monuments), the attractiveness of the countryside has more to do with the quality and diversity of ordinary landscapes than with the presence of outstanding sites. These findings confirm those of various surveys, which show that 'authenticity' and 'real values' are among the most important reasons for spending holidays in the countryside. There appears to be strong market potential for tourist products geared to the discovery of the natural world, even if efforts to develop nature-based tourist products need to take account of this clientele of non-specialists with an interest in varied tourist offerings.

Tourism and Road Transport

In 1994, 61% of all journeys by car, excluding travel to and from work, were for private purposes (professional journeys: 36%; travel abroad: 3%). In that year, holidays and weekend travel accounted for 12% and 19% respectively of the 326 billion km travelled in family cars. The remaining 30% were local private journeys. 81% of the French population use their cars for private travel more than 100 km from home (INSEE, Transport Survey, 1994, from Gouider, 1998). Even for distances greater than 1500 km, 58% prefer to travel by car. The figures show that car traffic is much more sensitive to the summer holiday effect than rail or air traffic (Figure 4).

The average duration of holidays taken away from home dropped from 18 to 13 days between 1975 and 1994 (Insee survey on holidays, from Monteiro, 1996). From 1982 to 1994, the number of private journeys per person per year increased from 3.1 to 4.8, and the average distance travelled increased from 100 km away from home to 800–890 km (Insee survey on transport from Gouider, 1998). These trends alone increased the number of kilometres travelled for holiday purposes by 31% from 1982 to 1994.

Towards less polluting holiday travel?

Because of their increasing frequency and their concentration over short periods in the year, tourist journeys are causing seasonal saturation in transport infrastructure. Based on results from 31 survey points, peak car traffic during the week is 60% higher than the lowest weekly traffic figures (+34% over average traffic flows). This peak traffic coefficient can be much higher for some roads that

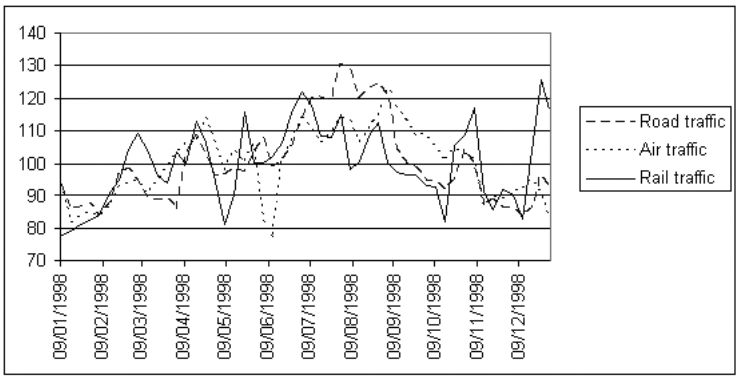

Figure 4 Weekly traffic per mode of transport in 1998
Source: National road traffic information centre, Directorate-General for Civil Aviation, SNCF
Average per transport mode = base 100
Road traffic: 31 traffic survey points representing traffic on major roads for 1998
Air traffic: weekly traffic in Paris airports for 1998
Rail traffic: weekly high-speed train traffic for 1998

are little used outside holiday periods. Most traffic congestion outside Paris occurs on the main holiday departure and return dates, with bottlenecks on some main roads and motorways in the southeast of France, which regularly reach saturation point.

The contributions of tourism to emissions of atmospheric pollutants are generally under-rated. Between 7 and 8% of all greenhouse gas emissions in France are caused by tourist transport. A family of two adults and two children travelling from Paris to Nice by air on a peak day will contribute more atmospheric pollutants of any type than with any other type of transport. A journey by plane will contribute five times more to global warming than the same journey by diesel train (160 kg carbon equivalent as against 30 kg) and two to four times more than the same journey by car.

Where Tourists Spend Their Holidays

Does ecologically sound accommodation exist?

Generally speaking, because of the positive and negative aspects that are inherent to each type of tourist accommodation, it is virtually impossible to rank them in order of ecological soundness. Hotels use a lot of water but they save space, while campsites in natural areas raise problems with sewerage and use up a lot of space, but do not generally cause irreversible alteration to the landscape. Second homes, although they are often and rightly criticised in coastal and mountain areas, can in some cases help to rehabilitate abandoned traditional dwellings in the countryside, and liven up depopulated villages during the holiday season. The environment soundness of different types of holiday accommodation can therefore only be assessed in the light of the specific features of each area and by crosscutting a wide range of criteria. The wide variation in the use of different types of accommodation (from about six weeks per year for

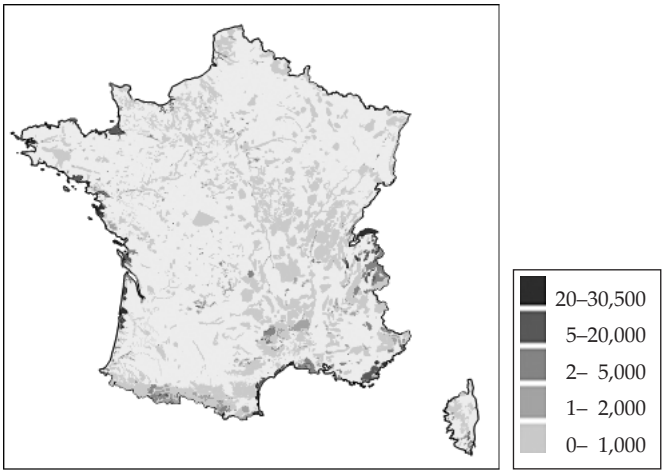

Figure 5 Tourist density in municipalities located within or near inventoried natural areas
Source: Ifen, based on Insee (1999 population census), DT / Insee (1999) and National Natural History Museum (Natural Heritage Inventory)
Unit: number of tourist bed-places per hectare

second homes to about 30 weeks for hotels) is a major factor in determining their efficiency in terms of land use. Proportionally, a much larger number of second homes would be needed to accommodate the same number of people as those using a hotel or tourist residence.

French holidaymakers tend to prefer second homes to rented accommodation

From 1982 to 1998, almost 335,000 new second homes were built, with concentrations varying widely across the country. From 1991 to 1998, the national average for new second homes was 4 per municipality, but the figures were as high as 88 in very popular tourist areas, 208 in seaside resorts and 434 along the Languedoc-Roussillon coast (SITADEL Survey from 1991 to 1998). With their very low occupancy rate, the use of land by second homes can seem very wasteful. Rented accommodation, timeshare schemes and house swaps (second or main homes), which can help to improve the occupancy rate, have not really found favour with French holidaymakers on an enduring basis.

Environmental concern and joint efforts among tourist resorts

Several highly dependable labelling schemes ('Gîtes Panda', 'Clés vertes' for camp sites or 'Hôtels au naturel') are attempting to extend their reputation beyond the strictly environmental sphere. The Clés Vertes scheme, for example, which began in Denmark, awards an eco-label to open-air accommodation and was recently adapted to the context in France (where 44 camp sites received the label in 1999), through a partnership between the French Naturist Federation and the Foundation for Environmental Education in Europe. The label is awarded on the basis of 38 criteria that are divided into three categories ('imperatives',

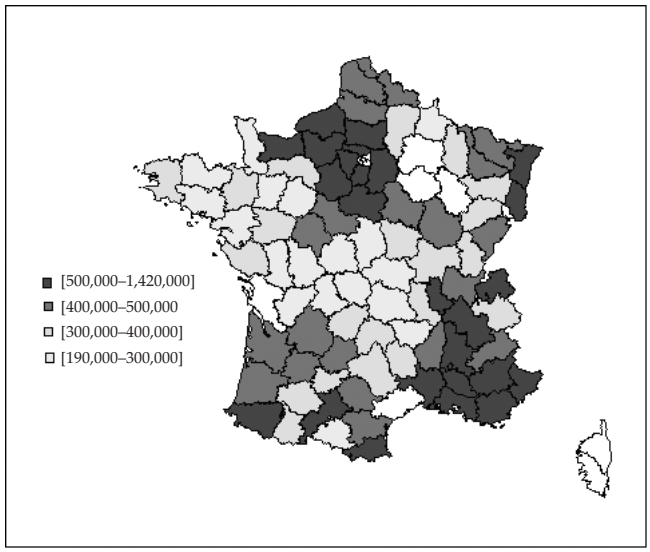

Figure 6 House prices in the countryside (French Francs)
Source: Safer, 1997

'medium-term imperatives' and 'ideal situation'). As yet, however, only a small number of establishments have joined these schemes.

Tourist resorts are beginning to embark on projects that combine environmental concerns in the broadest sense with commercial effectiveness, by focusing at once on authenticity, local resources, accommodation with character and concern for the quality of life and the natural environment.

An association called 'Les plus beaux villages de France' was founded in 1982 to protect, promote and develop the municipalities that receive the label. Municipalities joining the scheme have to fulfil a number of criteria concerning aspects such as the rural character of the area (less than 2000 inhabitants covered by the district administration or Chef-lieu), an architectural and/or natural heritage attested to by the existence of at least two protected areas or monument around, specific features of the built-up environment (immediate surroundings of the village carefully maintained, homogeneous buildings and varied itineraries) and village architecture (appropriate choice of building materials and colours, etc.). The quality of the local heritage has to be supported by active enhancement and promotional measures and by the provision of cultural and other activities. The main features taken into consideration concern traffic and parking management, floral decoration, the way advertising and electricity and phone lines are treated, recreational facilities, public amenities and a sound knowledge of tourist numbers and behaviour. The label is therefore awarded in recognition of efforts to enhance a high quality local heritage for tourist development purposes.

Environmental policies among major tourist operators

Whereas environmental management schemes (including certification procedures) have become increasingly widespread among large industrial corpora-

tions, they are still in their early stages among hotel chains and leisure parks. The Accor Hotels, which has created its own environment department and defined an environmental charter for hotel managers in 1998, is seen as a pioneer in the field. In 1999, the group signed a framework agreement for cooperation with the French Agency for the Environment and Energy Management which covers the 2600 hotels in the group as well as its car rental business. The first measures completed under the agreement include the installation of solar water heaters in several hotels in Southern France. The Center Parcs chain obtained ISO 14001 certification in 1999 for the environmental management systems implemented in 13 of its European parks, including two in France (Normandy and Sologne). Environmental management measures are designed to optimise spending (on water and energy in particular) and to provide opportunities for mobilising the company's human resources around strong and mutually agreed commitments to environmental goals. However, now that environmental plans and charters are being adopted, their actual implementation needs to be closely monitored.

Conclusion

The Ifen study briefly summarised here has scanned a topic that is rarely addressed and little documented, in particular at a national level. Information systems on tourism are not yet as sound as they should be, so the indicators developed are by no means beyond criticism and some deserve to be further discussed and improved.

Since the beginning of the 1990s, there has been progress towards a framework analysing the relationships between tourism and the environment, as well as towards more integrated reporting for the tourism sector. Beyond indicators, environmental evaluations of the tourism sector at a national level raise several questions.

- The recognition of the tourism sector as a major source of impacts in highly touristic areas, in particular the Mediterranean, which is still underestimated, incomplete and in contradiction with the industry's current motto 'The environment is the raw material for the tourism sector'. This motto suggests that environmental policies should not focus on tourism, owing to the industry's interest and capability to tackle the issue alone through voluntary agreements.
- The recognition of the major relevance of the national scale to develop environmental policies for the tourism sector. Environmental assessments for the tourism sector tend to concentrate on the destination scale on the one hand, on major companies on the other hand. However, the tourism supply comes from a majority of SMEs, and many tourism environmental impacts are not limited to the destination, but appear at a national level. This is particularly the case of the impacts of tourism on climate change, through greenhouse gas emissions, which local assessments could leave apart.

Thus, integrative environmental policies do require national environmental assessments of the tourism sector, even though the supporters of a self-regulation of the tourism sector might deny this. This constitutes part of the context of their further development or limitation.

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References

Accor (1998) *Guide Environnement de l'Hôtelier*. Paris.

Agence Européenne de l'environnement (AEE) (1998) *L'Environnement en Europe: Le Second Rapport d'Évaluation*. Elsevier Science.

Andriola, L. and Seminara, M.V. (1998) Indicatori di performance ambientale per il settore turistico. In *Decimo Raporto sul Turismo Italiano* (pp. 357–73). ENIT/ISTAT/ Touring Club Italiano.

Cammarota, M., Costantino, C. and Fängström, I. (1997) *Joint Final Report of the Sectoral Infrastructure Project. Tourism* (electronic edition).

Ceron, J.P. Dubois, G. and Raoul-Duval, J. (2000) *Théorie et Pratique des Indicateurs de Développement Durable: Leçons d'une Application au Tourisme.* Limoges: CRIDEAU.

Ceron, J.P. and Dubois, G. (2001) Tourism and sustainable development indicators: Two French experiments facing theoretical demands and expectations. In *Proceedings of the International Sustainable Development Research Conference.* University of Manchester, Manchester, 5–6 April.

Ceron, J.P. and Dubois, G. (2003) Tourism and sustainable development indicators: The gap between theoretical demands and practical achievements. *Current Issues in Tourism* 6 (1).

Cofremca, Parcs nationaux / SEATM (1997) *Fréquentation et Image des Parcs Nationaux Ecrins, Pyrénées et Vanoise*.

Commission Européenne (1999) *Environnement. Ce que les Européens en Pensent. Principaux Résultats du Sondage Effectués dans le Cadre de l'Eurobaromètre 51.1*. Luxembourg: Office des publications officielles des communautés européennes.

Consulting and Audit Canada (1995) *Ce que les Gestionnaires du Tourisme ont Besoin de Savoir. Guide Pratique pour l'Élaboration et l'Emploi d'Indicateurs de Tourisme Durable*. Madrid: Organisation mondiale du tourisme.

Dubois, G. (2001) Codes of conduct, charters of ethics and international declarations for a sustainable development of tourism. Ethical content and implementation of voluntary initiatives in the tourism sector. *Proceedings of the TTRA Annual Conference* (pp. 61–83). Fort Myers, Florida, 10–13 June.

EPA (2001) *A Method for Quantifying Environmental Indicators of Selected Leisure Activities in the United States*. Washington: EPA.

Gouider N. (1998) Les Français prennent de plus en plus goût aux voyages. *Insee Première* 565 (January).

Ifen (2000) *Spatial Planning and Environment. Policies and Indicators*. Paris: Ministère de l'Aménagement du Territoire et de l'Environnement.

Ifen (2001) *Propositions d'Indicateurs de Développement Durable pour la France*. Orléans: Ifen.

Levarlet, F. (1999) *Les Indicateurs de Développement Durable. Méthodes et Perspectives*. Coll. Études et travaux. Orléans: Ifen.

Middleton, V.T.C. and Sieber W. (1999) *Tourism and the Environment at European level. A Practical Framework for Assessing the Issues with Particular Reference to Coastal Mediterranean and Alpine Regions*. Copenhagen: European Environment Agency.

Monteiro, S. (1996) Les vacances des Français, tendances longues et résultats détaillés de 1993 à 1994. *Insee Résultats, Consommation – Modes de Vie* 80–81 (March).

Observatoire national du tourisme (1993) La perception du littoral par les touristes français (été 1992). *Cahiers de l'Observatoire* 25 (July).

OECD (2001) *Household Tourism Travel: Trends, Environmental Impacts and Policy Responses.* Report n°ENV/EPOC/WPNEP(2001)14. Paris: OCDE.

Policarpo, D. (2001) Recherche sur les indicateurs pour un tourisme durable: Une méthode et un choix de définition d'indicateurs pour un développement touristique

durable, dans les pays en développement. Mémoire de DEA Recherches Comparatives sur le Développement, EHESS.

Rechatin, C. (1997) *Les Indicateurs comme Outils de Communication sur l'Environnement.* Ifen.

Rechatin, C. (1999) *La Diffusion de l'Information sur l'Environnement. Le Reporting Environnemental*. Coll. Notes de méthode. Orléans: Ifen.

Rechatin, C. and Dubois, G. *et al.* (2000) *Tourisme, Environnement, Territoires: Les Indicateurs*. Orléans: Ifen.

Rechatin, C., Theys, J. et al. (1997) *Indicateurs de Développement Durable: Bilan des Travaux Étrangers et Éléments de Réflexion*. Coll. Notes de méthode 8. Orléans: Ifen.

Rialhe, A. (1995) *Prise en Compte des Considérations Environnementales dans les Hébergements et les Équipements de Loisirs Touristiques*. Inestene report for the Observatoire national du tourisme, December.

Ruitenbeek, H.J. (1991) *Indicateurs d'un Développement Écologiquement Durable: Vers de Nouveaux Principes Fondamentaux*. Ottawa: Conseil consultatif canadien de l'environnement.

Rump, P.C. (1996) *State of the Environment Reporting: Source Books of Methods and Approaches*. UNEP.

Scientific Committee on Problems of the Environment: SCOPE (1995) Environmental indicators: A systematic approach to measuring and reporting on the environment in the context of sustainable development. Workshop of Ghent, 9–11 January.

Spagenberg, J.H. and Bonniot, O. (1998) *Sustainability Indicators. A Compass on the Road Towards Sustainability*. Wuppertal Papers 81. Wuppertal Institute für Klima, Umwelt, Energie.

Spanish Ministry of the Environment, General Direction of Environmental Quality and Assessment (2002) Environmental Indicators for Tourism. Working document for the International Seminar on Environmental Indicators for Tourism. Murcia, Spain, 8–10 April.